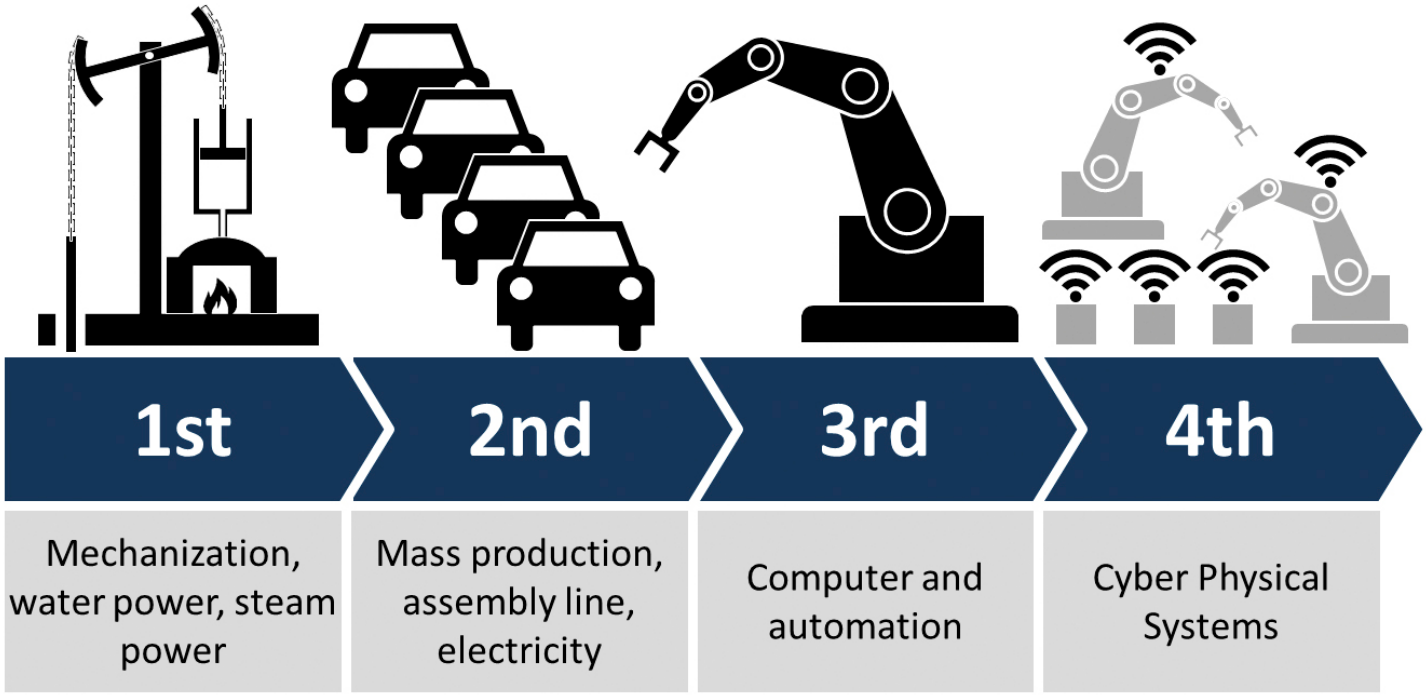
eBook

HOW TO MANUFACTURE A SMARTER FACTORY

FOREWORD: WELCOME TO INDUSTRY 4.0

k3 syspro



FOREWORD: Welcome to Industry 4.0

The UK manufacturing sector is going through a new industrial revolution, known as Industry 4.0, a term brought about by the astonishing rise in data volumes, the emergence of sophisticated business analytics, new forms of human-machine collaboration, and the soaring popularity of robotics and additive manufacturing techniques. This fourth industrial revolution is all about connected and collaborative manufacturing. It's an age where technology applications are connecting with machines and people on the shopfloor to ensure seamless supply chain automation from the moment a sales enquiry is recorded, right through to the final despatch of a product, and even field service performance monitoring.

Industry 4.0 fuels the creation of smart intelligent factories where cyber physical systems monitor physical processes, creating virtual copies of the physical world to make decentralised decisions. They connect and communicate with each other and humans in real time over the Internet of Things, providing instant business critical data which can be used to make more immediate and effective decisions by all participants of the manufacturing value chain.

By leveraging Industry 4.0, manufacturers can become more self-sufficient, competitive, profitable, and attractive to customers, but the UK still has a distance to go before it is really reaping the rewards. The good news is that embracing Industry 4.0 is not as difficult as it may sound and many manufacturing businesses already have many of the tools at their disposal required to create smarter factories, smarter employees, and smarter products.

This guide aims to reveal some of the small steps that you can take in your manufacturing business to better utilise your ERP solution, revolutionise your business model, and catapult your company ever closer towards Industry 4.0.

Why embrace it?

Industry 4.0 maximises the technology already available to manufacturers throughout the supply chain. Not only does it help individual applications to connect and collaborate with each other, but can also empower your people to make faster, more informed decisions to improve existing business processes and add even greater value to customers.

At a time when manufacturing is becoming more competitive globally, a connected supply chain can help your business to improve customer and supplier relationships, boost productivity, increase innovation and continue to grow your business with a positive effect on skills, jobs and the wider economy.

Top Tips

1. Start with what you already have. Industry 4.0 is a fusion set of different technologies, some of which are very well established. Look at how you can link together isolated technologies in your factory.

2. Focus on your competitive strategy – don't just bring in new technology for the sake of it. What value will it add to your customers and workers? How will it reduce costs for your suppliers? How will this add value to your manufacturing business?

3. Integrate your different technologies and get your robots talking to your ERP system, your ERP system to your 3D printer, your warehouse to your ERP. Share all your data and use the latest analytical tools to spot patterns and trends, don't be afraid to share this with customers and suppliers as well as your team.

4. Create a hub of advisors around you including businesses in your supply chain that have already embraced Industry 4.0. Cosy up to one of the Government's Catapult centres, which exist to improve UK manufacturing innovation. Your ERP provider and local academic institutions should also be involved in this and may even be able to help you access funding for your Industry 4.0 strategy.

5. Create an internal team to drive the agenda, to work cross functionally with product development, marketing, production, customer services. This team can then create and execute your Industry 4.0 plan. Industry 4.0 can't happen in isolation – it's all about people and processes, as much as it is about technology.

JARGON BUSTER

Cyber Physical Systems

A cyber physical system is a piece of technology which is controlled and monitored by computer-based algorithms, tightly integrated with the internet and its users. It is a term which is used to describe the integration of technologies and people in the manufacturing sector with well-known examples including the smart grid, autonomous vehicle systems and automated pilot avionics.

Industry 4.0

Industry 4.0 is the term used to describe the fourth industrial revolution, the current trend of automation and data exchange in manufacturing technologies. Key to the formation of the fourth industrial revolution is the emergence of cyber physical systems, the Internet of Things and cloud computing.

In Practice

K3 Syspro has traditionally been a provider of advanced SYSPRO Enterprise Resource Planning (ERP) solutions for manufacturers and distributors throughout the UK and Europe. For many years the company helped manufacturing companies to experience cost, time, and efficiency savings throughout the supply chain by automating processes and working smarter.

With the advent of Industry 4.0, the business recognised the potential to work closely with manufacturing and supply chain businesses through best-in-class technologies, to help businesses integrate the value chain, better understand customers, enhance automation, become more responsive, and

facilitate a transformation to factories of the future. The business spent time developing its own tools to integrate SYSPRO and other applications to increase supply chain automation, adding systems integration and data manipulation tool DataSwitch, and HR solution Equator HR to its product portfolio.

These products put K3 Syspro in an exclusive market position to work closely with manufacturing and distribution businesses to create a truly connected manufacturing enterprise, with seamless integration of technologies across the supply chain. As you read on to discover the many case studies of K3 Syspro customers that have utilised these technologies, you'll also learn how you can transform your business ready for Industry 4.0.

Useful references

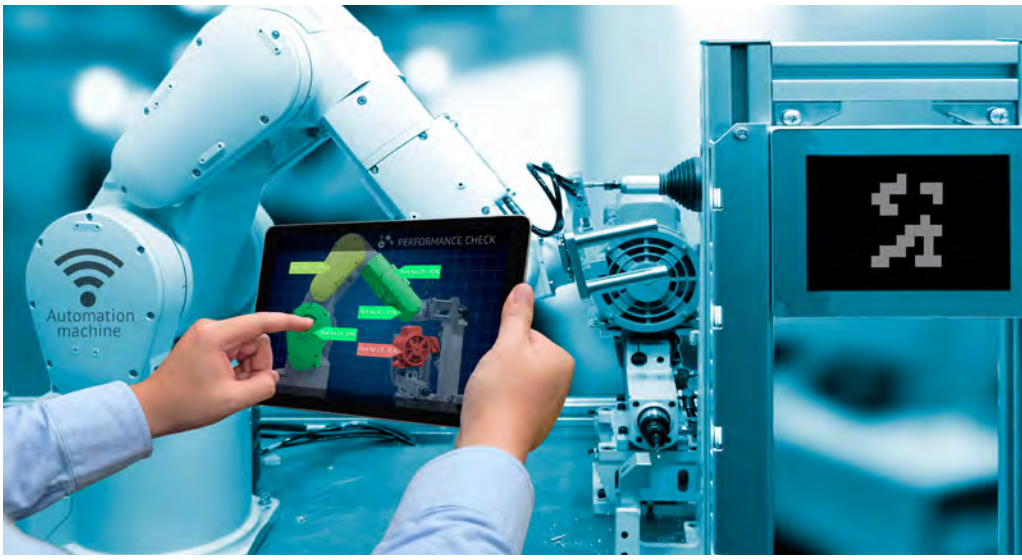
The Manufacturing Technology Centre – one of the UK government's seven High Value Manufacturing Catapult Centres, has its own virtualisation cave and has helped many manufacturing businesses adopt Industry 4.0 strategies.

McKinsey – a pioneer of early Industry 4.0 commentary, and an organisation which has an interesting take on the fourth industrial revolution.

UK Government Manufacturing 2005 Report – contains an interesting perspective of the challenges ahead for UK manufacturing organisations, which could be solved by Industry 4.0.

Leading Practice

Siemens Congleton manufactures and supplies more than 1.2 million variable speed drives to 78 countries, for use in a range of motion control technologies. The business anticipates that its customers will require greater configuration and customisation of its products as the market matures, creating a number of supply chain challenges. In order to respond to demand the business is reorganising its entire factory set up, using virtualisation to enable workers to visualise complicated production layouts. Emerging technologies such as a collaborative robot lab and smart glasses, are also being deployed to make the new manufacturing systems more efficient and flexible, as the business plans its production facility ready for 2020. Virtualisation is allowing the business to test product, work station and factory layout concepts in the virtual world before making them a reality, de risking any future capital investments that may be required and helping the business remain competitive as customer demands change in the future.



SNEAK PEEK

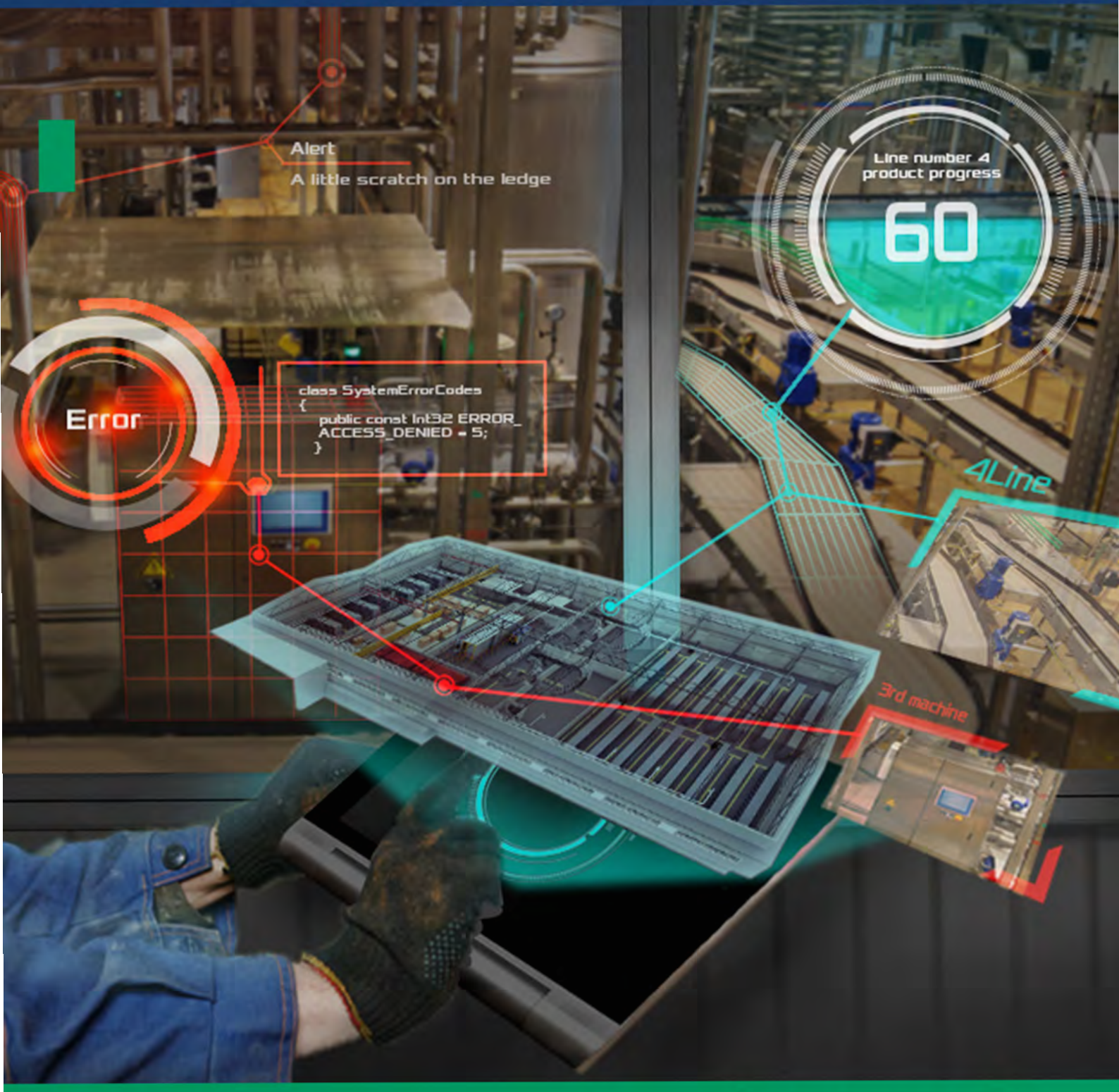
CHAPTER 1: The Future of Manufacturing

In this chapter we address 'servitization' and the benefits it can bring. The days of 'point of sale' being the last contact a manufacturer has with their product are becoming a thing of the past. Servitization is allowing manufacturers and their customers to not only build a more effective product but a stronger relationship too! This is exactly what K3 customer, G&B Electronics, and business services and document technology products provider, Xerox, are doing. We'll take a look into how both companies are embracing a servitized business model to remain relevant within their market.

eBook

HOW TO MANUFACTURE A SMARTER FACTORY

CHAPTER 1: THE FUTURE OF MANUFACTURING



k3 syspro

CHAPTER 1: The Future Manufacturing business model

For the visions of Industry 4.0 to become reality, manufacturing companies need to begin by looking at their existing business model. It's no longer enough for manufacturers to operate to a Just In Case business model. The age of manufacturing products in bulk and waiting for customers to buy them, are becoming lost in the past as consumerisation changes demands and increases individualisation of customer needs. Breakthroughs in technology and regulatory changes, together with the convergence of sectors, are forcing manufacturers to rethink their business model to become more responsive, lean, and productive.

For a while, the concept of servitization has been considered a megatrend that will significantly impact manufacturing. Instead of just selling products, businesses are beginning to wrap services around those products to deliver maintenance and support agreements, track product performance out in the field and benefit from long term rental agreements rather than one-off purchase fees. This enables businesses to provide greater customer service, increase customer retention, potentially increase the customer spend and boost profitability by acting as a partner in the servitization of customers themselves.

As new technologies lead the industry towards Industry 4.0, you need to make sure that your business model facilitates a better technological impact, rather than having the technology dictate your business model. Start analysing the results of your ERP data collection to see where you can improve your processes and streamline your business model, in order to improve your capacity, your responsiveness and your customer service levels.

JARGON BUSTER

Servitization

Servitization is the term used to describe the transformation of a manufacturing business model from a product-focused orientated approach, to a more service-focused strategy. It involves businesses developing the capabilities they need to provide services and solutions that supplement their traditional product offerings so that customer stop purchasing products and instead, purchase the outcomes that the product provides. Key to servitization is the adoption of advanced services – services developed to deliver added value to customers, based upon in the field research. For example, installing sensors into a product and measuring performance in the field can highlight an opportunity to deliver advanced services through preventative maintenance contracts.

TOP TIPS

1 Ask your customers what they want. Do they want support agreements, or do they see value in consultancy and training? There's no point changing your business model if your customers don't want to join you on the journey, or will not see the value at the end of it.

2 Do the numbers. Switching to a 'pay per use' business model can affect cash flow for some businesses so make sure you can sustain a potentially challenging interim period. Speak to your bank manager or specialist lenders to ensure your financial forecasts are robust.

3 Invest in technology. For a business model such as servitization to be successful, technology such as sensors and 3D printers is hugely beneficial. Intelligent devices can enable products in the field to be monitored to schedule agile service intervals or Big Data algorithms which help you predict future service issues to prevent customer downtime, making your servitization strategy successful.

4 Don't forget what you already have. Analysing the business critical data held in your ERP can help you on your new business model journey. For example, calculating how much inventory is wasted each month can help you cut down on raw materials purchasing and by forecasting orders by looking at historic trends, you can start to move from a just in case purchasing strategy, to a just in time strategy, accelerating production and saving overhead costs.

Why embrace it?

Your competitors already are! The UK Government's Future of Manufacturing report in 2013 highlighted that 39% of UK manufacturers employing over 100 people in 2011 included services in their business model, up from 24% in 2007. What's more, in The Manufacturer's 2016 Annual Manufacturing Report, only 18% of people thought their business was purely about product sales. A product-service hybrid can be more difficult for your competitors to replicate than linear process manufacturing. It's often possible to re-engineer a product to make improvements on the original, but when that product is embedded in a longer term contractual relationship including servicing, training, consultancy, and payment, the overall system is more difficult for competitors to replicate.

Your customers demand it! The immediacy and convenience of products and deliveries in the consumer world is becoming an expectation in the business world. As new generations come up through industry, their expectations about the purchasing experience, how things are paid for and product customisation differ greatly from the one size fits all philosophy of the past. Manufacturers need a business model which creates value through every stage of the supply chain; one which creates new sources of revenue, retains customers over long term agreements and boosts innovation at the same time. Trends such as servitization respond to this need.

JARGON BUSTER

K3 Dataswitch

K3 DataSwitch is a purpose built systems integration and data manipulation tool which enables businesses to become more efficient through automating processes. It provides the missing link to standardise the flow of information between unconnected or disparate software systems. The tool is developed in house by integration experts at K3 Syspro and is compatible with any ERP application, including SYSPRO ERP.

In Practice

G&B Electronics is a 35-year old contract electronics business, which previously specialised in design and development, with a low volume manufacturing service. However, upon noticing a change in market demand for a complete turnkey electronics solution, the business has utilised its existing SYSPRO ERP solution, together with K3 DataSwitch to transform its business model to become an electronics manufacturing business with test development and post sales non warranty product support services.

The company's previous main line of business application was effective for design, but lacked in manufacturing functionality. The business required greater data collection capability, Advanced Planning and Scheduling (APS), and wanted to integrate its financial package into its manufacturing execution system. A fully integrated SYSPRO ERP solution provided G&B Electronics with a single source of information for all mission critical business information.

As part of the drive towards transitioning the business model from design to manufacturing, the company has had to implement new processes for dealing with warranty support, re-calibration and product re-configuration. SYSPRO's Serial Number Tracking functionality is making it possible for the business to effectively track the movement of all manufactured items through the production line and the wider supply chain. Many of its customers' products are rented out, but calibrated and configured by G&B in order to keep them operating to full capacity. This is part of the company's transition to a servitized business model, and makes it important that all items can be tracked and accounted for at all times.

By automating individual processes through SYSPRO and DataSwitch, the company is making small steps towards big changes in its overall business model, enabling it to win more business from the defence and aerospace markets, and support their customers throughout the product life-cycle journey.

Leading Practice

With the mission statement of "making office work a little simpler, a little less tedious and a little more productive," Xerox, a global seller of business services and document technology products, started exploring the printing environment from a holistic perspective rather than assuming that customers simply wanted cheaper equipment and supplies.

Instead, the business began to adopt a service-led business model for its product offering, as an attempt to gain greater control and ownership of its products, whilst providing greater customer value, Xerox developed and implemented its Managed Print Services (MPS). This is a unique service led business model which offers Xerox customers 'pay per-click' scanning, copying and printing of documents. Instead of owning the products that Xerox manufactures, the customers rent the products over a period of time, paying instead for the services the products provide. The company continues to develop capabilities in document management business process and information technology outsourcing in line with its wider business objective today.

Useful references

2016 Annual Manufacturing Report - The Manufacturer's annual look at the UK manufacturing industry and predictions for the future of the sector.

MSTLN - The Manufacturer Thought Leadership Network.

Aston Business School's Advanced Services Group - A servitization centre of excellence.

Xerox - Servitization Story.

SNEAK PEEK

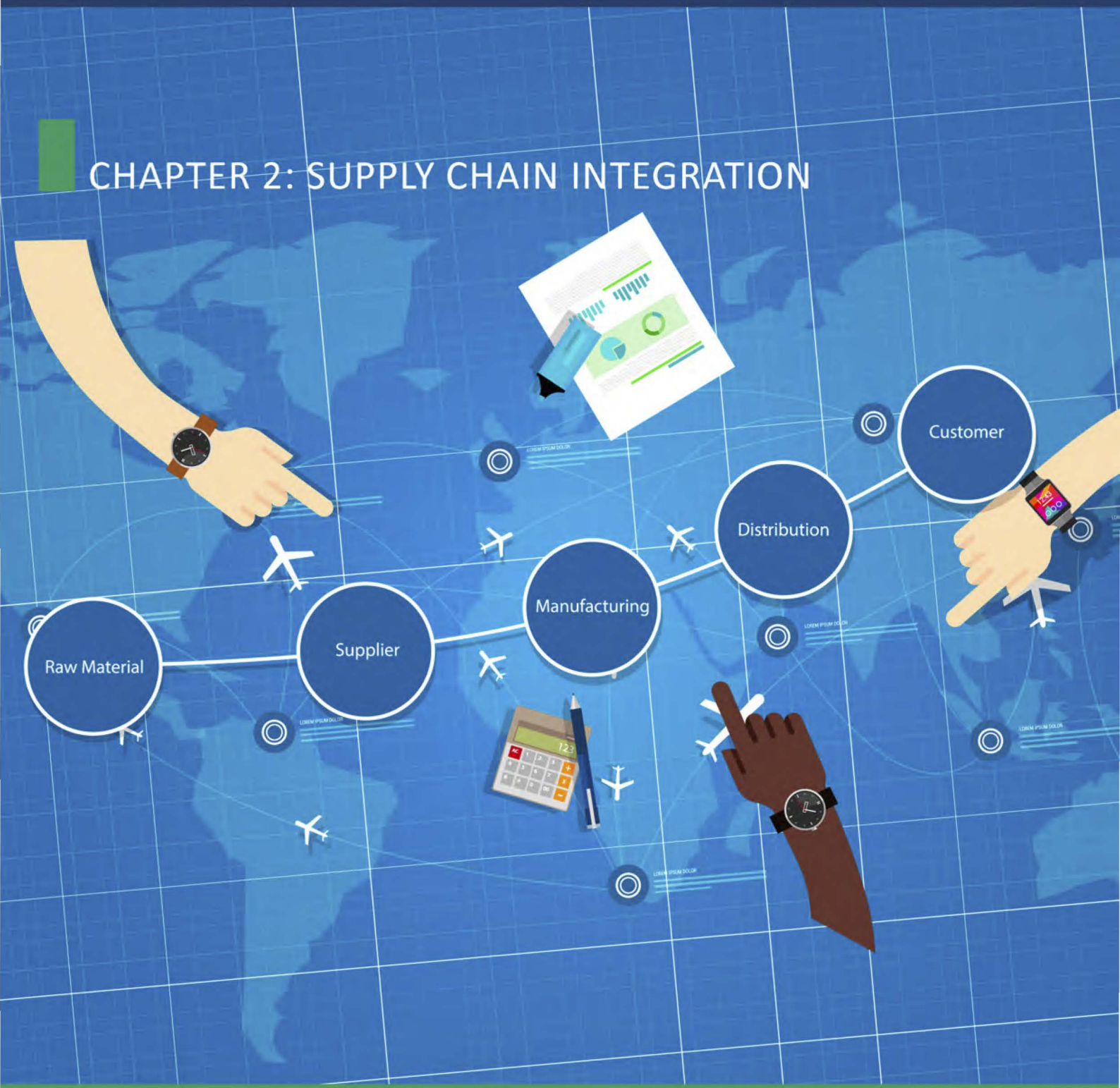
CHAPTER 2: Supply Chain Integration

Integrating the supply chain is critical to the success of a manufacturers if they want to be part of the fourth industrial revolution. In this chapter we will cover the benefits of an integrated supply chain, such as reduced costs, and also a few tips on successfully integrating your supply chain. K3 customer and world leading axle supplier, BPW, provide our case study for how K3 are helping UK manufacturers integrate the supply chain. While our leading practice looks into how global computer technology company, Dell, integrated its suppliers into the ordering process for a seamless configure to order approach.

eBook

HOW TO MANUFACTURE A SMARTER FACTORY

CHAPTER 2: SUPPLY CHAIN INTEGRATION



k3 syspro

CHAPTER 2:
Supply Chain Integration

If there is one single factor critical to the success of a manufacturing business during Industry 4.0, it is supply chain integration, but this does not just refer to technology and business systems. Whilst it's true that a completely integrated technology stack underpinned by a centralised business system such as ERP is vital to the creation of any connected manufacturing enterprise, it's also important to integrate suppliers, customers and the entire supply chain.

There are various ways you can integrate your supply chain, but the simplest is to select specific vendors to provide specific inputs and develop an agreement for them to provide a set amount of inputs during the year at a set cost. You will need to make sure that your business systems are accessible and open enough to integrate with those of your suppliers and customers, but secure enough not to be accessed outside of this network. Supply chain integration is about bringing parties together through technology, so you can foster closer relationships with all the key stakeholders in your supply chain.

The other route to supply chain integration is through vertical integration, when the supply chain of a business is owned by the business. However, this usually requires an ambitious acquisition strategy that may not be necessary.

JARGON BUSTER

Vertical Integration

This is an approach to integration where integration partners are purchased by one entity, in order to instantly gain a position of power in the integration journey. This is the opposite to horizontal integration, which is a more organic approach to integration based upon shared ideologies, standards and goals, where there is no major financial 'owner' of the supply chain.

Electronic Data Interchange

Electronic Data Interchange is the transfer of data from one computer system to another via standardised message formatting, without the need for human intervention. EDI permits multiple companies to exchange documents instantly, and electronically.

TOP TIPS

1 Ask your customers what they want. Pinpoint how your customers see value and integrate the supply chain around this point in order to deliver even greater value.

2 Make the most of what you have. You needn't go straight for a vertical integration strategy if you already have good relationships with existing supply chain partners. Look at quick and easy ways you can add some integration into these relationships; for example by trading via Electronic Data Interchange

3 Look at where you can share data. You may already be integrating with a distribution partner, which is sending you data on delivery rates. Are you sharing this with your customers to keep up-to-date with the progress of their order once it leaves your shop floor? Supply chain integration can start small and build up to more effective collaboration.

In Practice

BPW are one of the world's leading axle suppliers and wanted to seamlessly integrate the way in which it communicates critical data between itself and its parent company through the use of SYSPRO ERP and K3 DataSwitch. When announcing new orders to the parent company, the business previously had a manual approach, which would see staff raise a sales order locally, and then repeat this process in order to raise the order with the parent company.

This involved multiple key strokes, multiple screens, and multiple processes, which resulted in a large paper trail. It was time consuming and admin-heavy, and the business recognised that by automating this process and integrating more effectively with its parent company, it could free up time to spend on other more demanding tasks.

K3 Syspro was able to provide an advanced solution which integrated with the company's existing SYSPRO ERP solution, effectively facilitating the communication of critical data and Electronic Data Interchange (EDI) records to its parent company. This has eliminated administration time previously involved in sales order processing and is enabling the business to place an order via SYSPRO, and have the information automatically transferred to BPW's own server, where, provided it meets all the EDI requirements, it is later transmitted to a remote server before going on to the company's parent company. The order is then confirmed and emailed back to the customer with the individual job number and delivery date, with the entire process taking place once the user clicks 'end' to place an order.

Why embrace it?

An integrated supply chain can help you to improve your customer retention levels. The more integrated your services are with those of your suppliers, and the demands of your customers, the higher the cost would be when switching to a new supplier. It can also accelerate your responsiveness levels to customers and help you implement a business model transformation.

When you have integrated your technologies and systems with the wider supply chain, the data you will be collecting can be very powerful. Data covering every aspect of the supply chain, from the flow of materials and cycle times to inventory levels and end customer demand patterns, can help the entire supply chain improve efficiencies together, resulting in overall benefits to the customer.

And, of course, when you are working in this integrated way with your customers and your suppliers, it can be a lot easier to reduce costs. By analysing the data you are collecting together, you can start to identify areas of waste and work with the wider supply chain to enable margins to be conserved, while overall prices are reduced.

TOP TIPS

4 Use your data. Take advantage of SMAC (Social, Mobile, Analytics, Cloud) to access and share the information you are gathering from the supply chain. Analyse information on the go to forecast stock outs and over production, in order to make your own operations leaner. The Internet of Things and the boom of sensor production is making it easier for organisations to collect important data, but this is a pointless exercise if you are not using the data to integrate your supply chain.

5 Take people with you. Like any major ERP implementation, supply chain integration requires people and processes as much as technology. Empower people in your supply chain to share and use data and make sure you have their buy-in and aren't forcing them into an integration strategy that they do not understand.

6 Find the right partner. Integration can be challenging so it will help to hire the services of an integration specialist. A tool like K3 DataSwitch can help you accelerate systems integration and effectively communicate data between different systems and people, to help you translate your Big Data lakes into meaningful data pools.

JARGON BUSTER

Internet of Things

The Internet of Things is the name used for the network of physical devices, vehicles, buildings and other items such as sensors, which collect and exchange data of the internet, due to the accessibility of cloud computing. In 2013 the Global Standards Initiative defined the IoT as "the infrastructure of the information society." Essentially, the Internet of Things allows data to be collected, moved and shared across a common platform: the internet, creating opportunities for integration of the physical world into computer based systems.

Useful references

Industry Week Article

Explaining the importance of supply chain analytics.

Dell

Supply chain integration case study.

K3 Dataswitch

A powerful data manipulation and systems integration tool.

Leading Practice

Dell is well regarded for its supply integration strategy, a three-year plan aimed at redefining the supply chain to increase product choice, increase delivery speeds, and reduce prices for customers, while increasing Dell's own margins.

The company started by asking its own customers where they saw value when purchasing from Dell, and then engaged its network of suppliers to further embed them into the supply chain to collaboratively expand on these value drivers. Following feedback from customers, Dell concentrated on three core areas: configure to order manufacturing, a just-in-time inventory model, and measurement of the cash-to-cash conversion cycle. Not only did this strategy enable Dell to respond more immediately to customer requests, but it also helped the business to improve its own lean initiatives and cut wasted costs out of the supply chain.
Naturally, with a transition to just-in-time inventory, the business needed to integrate its suppliers more effectively into its ordering processes, so that materials could be delivered seamlessly at the point they were required for an order. With a configure-to-order approach. Dell's entire supply chain had to become more reactive around the needs and demands of the customer, it would never have been enough for Dell to adopt this approach alone.

SNEAK PEEK

CHAPTER 3:
Big Data Analysis

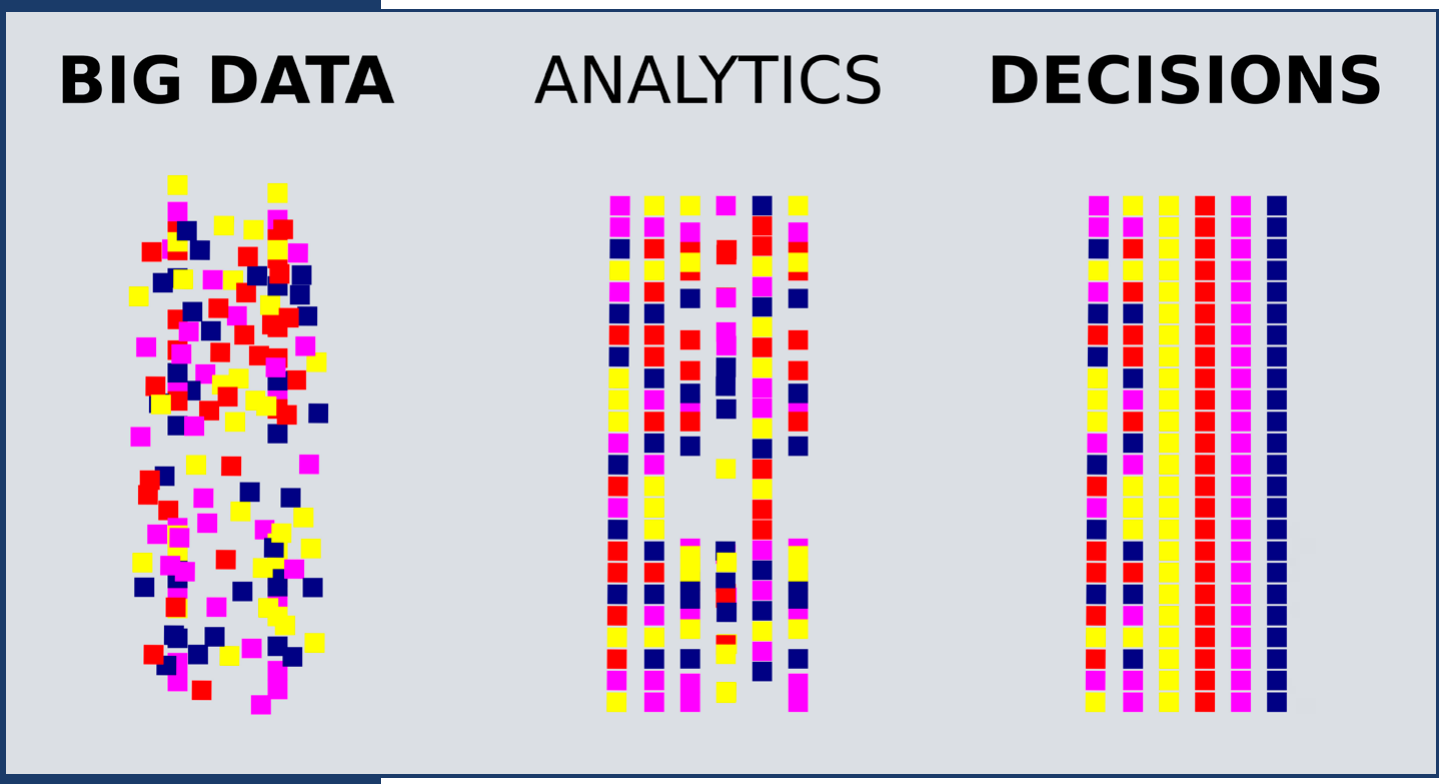
Big Data analytics is the process of examining large data sets to uncover patterns, correlations, market trends and various useful business information that had previously been hidden. This chapter will provide some top tips on implementing Big Data into your business, which in turn will provide all the information you'll need to improve areas of value for your customers. We'll look into how healthcare and consumer goods manufacturer (and fellow Salfordians), PZ Cussons, make the most of the data extracted from their SYSPRO ERP solution. General Electric will be the subject of our Big Data leading practice, we'll look into how GE reduced total cost of ownership of their products for customers with GE reducing margins and also pass energy saving advice onto their customers.

eBook

HOW TO MANUFACTURE A SMARTER FACTORY

CHAPTER 3: BIG DATA ANALYTICS

k3 syspro



CHAPTER 3:
Big Data Analysis

Manufacturing businesses are no strangers to data collection. Every day organisations are collecting valuable data about their customers' orders, production schedules and performance, delivery rates, transactional costs and expenditure, profit margins, etc., but how often are we using this data to make better informed, and faster decisions? The role of Big Data is prevalent throughout Industry 4.0. With more integration and increased technology stacks, information is going to be coming into your organisation thick and fast – you need to extract it thick and fast as well.

Big Data analytics is the process of examining large data sets containing a variety of data types to uncover hidden patterns, unknown correlations, market trends and other useful business information. By analysing the data your business is collecting, you can insightfully switch to new and more competitive business models, understand in more depth what you customers want from you – and when they will want it, identify areas of supply chain waste, and streamline your own costs and processes.

But it can be difficult to know where to start and this is where integration becomes important. By channelling all your business data through a centralised ERP solution, you can quickly access a single view of your supply chain information and begin to track patterns, spot trends and empower your own people to make better decisions that will improve your overall business performance.

JARGON BUSTER

Data Scientist

The role of the Data scientist is an evolutionary role that has stemmed from business and data analyst roles. Whereas a data analyst often only looks at data from a single source or application, a data scientist will explore and examine data from multiple sources, whether or integrated or disparate. They are highly trained at discovering insight, patterns and trends from masses of data, which organisations can then turn into competitive advantage, or use to solve a business problem.

Big Data

Big Data is the term used to describe extremely large data sets that can be analyse computationally to reveal patterns, trends and insight relating to human behaviour, interactions, and performance.

TOP TIPS

1 Start with a business problem. Identify an issue in your processes and gather customer insight to see how you can improve this process. Understand how your customers view the problem and collect the relevant data pertaining to that process. Then access a tool such as Microsoft Cortana Analytics to turn that data into useful information that you can solve the problem with.

2 Think strategically. Once you've had a go at data analytics, start to build this into your wider business strategy. Explore ways you can use this data to disrupt your industry and improve your service offering, engaging key stakeholders and decision makers within the business.

3 Employ a data scientist once you are ready to take the next step into Big Data analytics. There's a lot you can do yourself, but hiring a professional can really help you to exploit the data within your business. They will be able to extract and manipulate data more thoroughly than you, so that you can turn it into insight that senior members of the team can execute.

Why embrace it?

Big Data analytics is not as difficult as it may sound. The accessibility of cloud services today makes it easier for manufacturers to store data securely in one place and transform large data sets into small data insights that can be acted upon. You can do a lot with your existing ERP solution, just by extracting the data you are sending to it regularly, and Microsoft also has a number of tools that can help forecast product demand, predict customer churn, predict machine failure or even product failure rates and causes.

Data analytics has accelerated a lot from the days you needed complex and often, inaccessible data algorithms, to analyse your critical business data. Your ERP system and data held in the cloud can quickly give you all the information you need to improve areas of value for your customers. Take inspiration from the consumer space and eCommerce's popular recommended purchases tactic. Or from Google Maps on your phone, which can start to understand your behaviours and tell you how to get to your meeting automatically. This is all done through data analytics and trend forecasting.

Industry 4.0 is about bringing manufacturers closer to their customers and there are few more effective ways to do this than through Big Data analytics. By having the right information at their fingertips, engineers can make the right design choices, your machines know what products to assemble and your maintenance team can increase machine utilisation. This all results in a more immediate and exacting customer service, increased retention rates, and ultimately, improved revenue streams.

JARGON BUSTER

Cortana

Cortana is an intelligent personal assistant created by Microsoft for many of its applications. It can be used by the enterprise in conjunction with a powerful Cortana Analytics Intelligence Suite, which can help manage and analyse large swathes of business data, helping turn this into intelligent action.

SYSPRO ERP

SYSPRO Enterprise Resource Planning software is a specialist manufacturing and distribution application, which can empower businesses in these sectors to streamline efficiencies, automate processes and extract more value from simple, linear manufacturing processes. The application successfully automates and integrates core business processes, such as taking customer orders, scheduling operations, and keeping inventory records and financial data. K3 Syspro is the UK and European partner of SYSPRO.

In Practice

PZ Cussons Beauty is a wholesale business providing personal care and beauty products to high street retailers including Boots. In order to successfully respond to demand, the business must work closely with its retail and distribution customers as well as its network of global manufacturing partners, in order to scale production up or down on demand.

Big Data analytics plays a significant role in this business planning process. The company uses a multiple technology stack for analytics, but it all starts by analysing the transactional data being entered into its SYSPRO ERP solution. This gives PZ Cussons the ability to view growth and decline of sales, and the company can target this down to an individual product or brand. This data then helps the company forecast ahead for the future, planning for demand down to an individual SKU code. This enables PZ Cussons to advise its global network of manufacturers on future production schedules, as well as allowing PZ Cussons to align future sales plans with its own financial targets and budgets for the year.

The company's Big Data analytics does not end here though. In order to be immediately responsive to demand, the business needs to understand and predict consumer behaviours and trends. The company is integrated into many of the EPOS systems used by its retail network. This allows it to view real time sales of individual products and brands in order to draw comparisons between different calendar years. This enables the business to understand consumer behaviour, which drives retail behaviour and manufacturing production schedules. If PZ Cussons can understand what its customers want before they know themselves, it can alert its network of manufacturers and successfully balance supply and demand.

Leading Practice

General Electric is a power user of Data Analytics and Machine Learning across the globe, particularly in predicting performance of its jet engines, turbines and medical scanners. GE uses this information to feed back into the design phase, increasing the quality, operational efficiency and extending the maintenance intervals for its products. This in turn reduces the Total Cost of Ownership of its products for its customers without GE having to reduce margins.

GE shares this data with its customers, informing them how fast to run trains in order to conserve electricity in a cost effective manner, and providing software to enable pilots to manage fuel consumption, saving the airline industry billions.

In addition, the use of data informs GE's own servitization strategy. Over a third of the business is now focused on servicing equipment – moving to a zero (unplanned) downtime regime through intelligent devices with sensors and implementing controllers that can be configured in real time. To give an idea about the amount of data being analysed, a day's worth of Twitter feed amounts to about 80GB of data, one gas turbine engine generates 520GB per day.

Useful references

General Electric
Data analytics case study

Forbes
Ten ways Big Data is revolutionising the supply chain article.

SNEAK PEEK

CHAPTER 4: Robots & Automation

No longer just a privilege of automotive manufacturers, chapter four covers robots and automation. Robotics and automation products are more affordable now than ever before and are a staple of Industry 4.0. We'll cover the jobs that are created, not lost, as a result of automation and how robots boost productivity, competitiveness and therefore overall margins. Our top tips include: thinking where robots integrate into your existing technology and focusing on added value not cost reduction. K3 customer BPW. Civil aircraft engineers, Airbus are world leaders in robots and focus of our leading practice, going as far as experiments with wearable robots.

eBook

HOW TO MANUFACTURE A SMARTER FACTORY

CHAPTER 4: ROBOTS AND AUTOMATION

k3 syspro

CHAPTER 4:
Robots and Automation

It used to be the case that few manufacturers outside of the automotive sector would have a requirement for, or the funds required, to invest in robotics and automation. But as the sector has accelerated its own output levels through the use of robotisation, other sectors have taken note and begun to embrace this new trend.

The result is that robotics and automation products are more available and affordable today than they have ever been, and they are beginning to be implemented in shop floors across the UK. At face value, the argument for robotics and automation is a strong one; they do not require annual salaries, they don't have 'off' days, and they can start work immediately. In many cases, manufacturing plants already have robots on the shop floor connected to their ERP systems, enabling them to begin production the moment a sales order is finalised, in order to deliver instant service to the customer.

Simply investing in robotics and automation, though, is not enough for your manufacturing enterprise to thrive during Industry 4.0. They need to be integrated into the wider business strategy and into a smart, Big Data environment. They should be there to solve a problem in the business, often a manual, admin-heavy task; robots should not end up being supplemented by more manual work.

In this regard, the UK can begin to create smarter factories where people collaborate with robots, tedious business processes are automated and people are being empowered by machines to make better decisions.

JARGON BUSTER

High Value Manufacturing Catapult Centre

The UK's High Value Manufacturing Catapult Centre network is the result of a collaboration between the government, academia and industry. There are seven centres locate strategically across the UK, acting as a catalyst for the growth and success of advanced manufacturing in the UK. The individual centres offer access to world-class manufacturing equipment, expertise, and collaboration opportunities for manufacturing businesses of all sizes, and from all sectors.

Robotisation

Robotisation explains the mass adoption and integration of robots and intelligent devices into industry. It also defines the way that these machines interact and communicate with each other.

TOP TIPS

1 Think about where robotics and automation fit into your wider business strategy. Once implemented, robots are difficult to remove so you need to make sure your people are behind the decision to implement a robot. Some may fear for their jobs, but others will embrace the new opportunities that this will bring.

2 Virtualise robots and automation first. The logistics of where a robot fits into an existing process can be tricky. It's always useful to partner with an organisation such as The Manufacturing Technology Centre to virtualise the implementation of robots in your factory and de-risk some of the costs and investment involved, before introducing them to the real life shop floor.

3 Think about how robots will integrate into your existing technology framework and how their role supports other automation workflows. Can they receive customer orders and bills of materials directly from your ERP solution to commence production? Are they communicating the completion of production back to the ERP system to notify the warehouse and the customer? Can quality information be fed into Microsoft Cortana Analytics so you can continually improve this automation?

4 Think about your ROI. We'd all like a fancy robot on the shop floor but we don't all have a need for this. Think carefully about the value a robot or automation will bring both to your employees and your customers. Don't just think about cost reduction, instead focus on how this cost reduction is going to add greater value.

Why embrace it?

Believe it or not, robots and automation can create jobs as well as value. It may seem counter intuitive that a machine which has been purchased to take over a manual task can create a new job, but a recent International Federation of Robotics study estimated that over two million jobs would be created in the next eight years due to robots. Robots improve productivity, which boosts competitiveness, improves revenues, generates economies of scale, and therefore improves overall margins. This creates demand for more design and engineering jobs to innovate and create new products and services, in turn, opening up more sales opportunities.

Job creation does not end there. Robots and cobots change the skill requirements on the shop floor, opening up the industry to a new workforce generation and making the sector more appealing to young people. This helps to bridge the industry wide skills gap, and often this diversity can spawn creativity. Robots also have the capacity to work in dangerous or hazardous environments where people would be facing health and safety risks.

Robots and automation reduce costs and time. It also helps to keep manufacturing in the UK. Robots do not require a salary, enabling UK manufacturers to compete with cheaper overseas labour. And often, the process that a robot or automation takes over frees up the employee previously performing the job to concentrate on other areas of value within the business. Gartner predicts that by 2018 the total cost of ownership for the factory floor will be 30% lower than it is today as these technologies mature. And, of course, not every job can be robotised or automated. They may collect and respond to data, but rarely do they have the business experience or knowledge required to effectively analyse this data and use it to make important decisions.

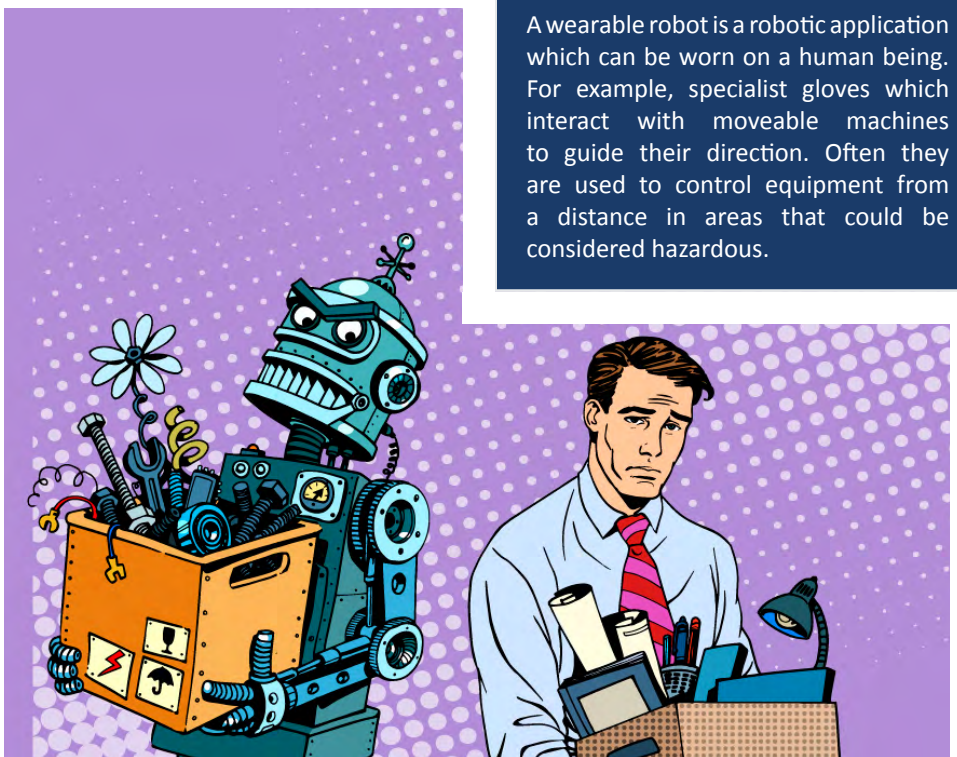
JARGON BUSTER

Cobots

A cobot is a collaborative robot, which has the capacity to physically interact with humans in a shared workplace. This is an advancement of previous robots, which often operate autonomously, or with little guidance.

Wearable Robots

A wearable robot is a robotic application which can be worn on a human being. For example, specialist gloves which interact with moveable machines to guide their direction. Often they are used to control equipment from a distance in areas that could be considered hazardous.



In Practice

BKW Instruments is a leading supplier, manufacturer, and distributor of instrumentation solutions across a number of industries including water, pharmaceutical, food and beverage, oil and gas, energy, HVAC and more. When looking at the ways the business could automate a number of its manual manufacturing processes, while increasing output the company explored the ways leveraging machine to machine data could help.

As a supplier, BKW already utilised machines in order to automate a number of its stock reordering processes. However, it was the company's out of the box thinking which saw the company utilise the same technology within its own manufacturing processes. The company uses 3D barcodes and QR codes to create unique job cards, which creates bespoke routes through the shop floor. These routes are determined by information held on each job card and can see each individual job pass through each work centre, from machining, calibration, configuration and inspection. QR codes are scanned at each stage of the manufacturing process, which relays information directly back to the company's centralised ERP system.

This real-time information not only ensures that the company can create a comprehensive works schedule for each job, propelling its productivity levels as a business, but it has also meant that BKW are now able to provide its customers with a greater level of customer service throughout the entire manufacturing process, from point of sale right through to distribution and after-sales support.

Yet the benefits of automation haven't stopped there for BKW, the company has also reported a 100% increase in the number of quotes it is now able to produce in a single day, while the introduction of automated stock re-triggers has also reduced the time the company previously spent on re-ordering by 50%. This has meant that staff are able to concentrate on other areas of the business, including future development.

Leading Practice

Airbus has introduced a range of technology to the shop floor over the last few years, including 3D printers, cobots, robots and virtual reality systems, as part of its 2020 programme.

As well as stand-alone robots, Airbus is also experimenting with wearable robotics that, for example, take the heavy lifting out of "human" jobs. Cobots are working alongside humans in an integrated collaborative Human – Robot process model.

The company is also investing in developing robots that can copy what they see, but also reconfigure their tasks with a degree of autonomy to adapt to a change in circumstances, e.g. avoiding a collision or changing the degree at which a bolt is fitted into a drill hole. 3D printers are computing the best materials to use in production, and also helping to develop new ways to produce products, enabling Airbus to significantly reduce the weight of parts within an aircraft, improving fuel economy, and reducing both the carbon footprint as well as airline running costs.

Useful references

Airbus
Robotisation case study

The British Automation and Robot Association
The voice of robots and automation in government and academic departments

The Manufacturing Technology Centre
One of the UK government's seven High Value Manufacturing Catapult Centres.

SNEAK PEEK

CHAPTER 5: Megatrends

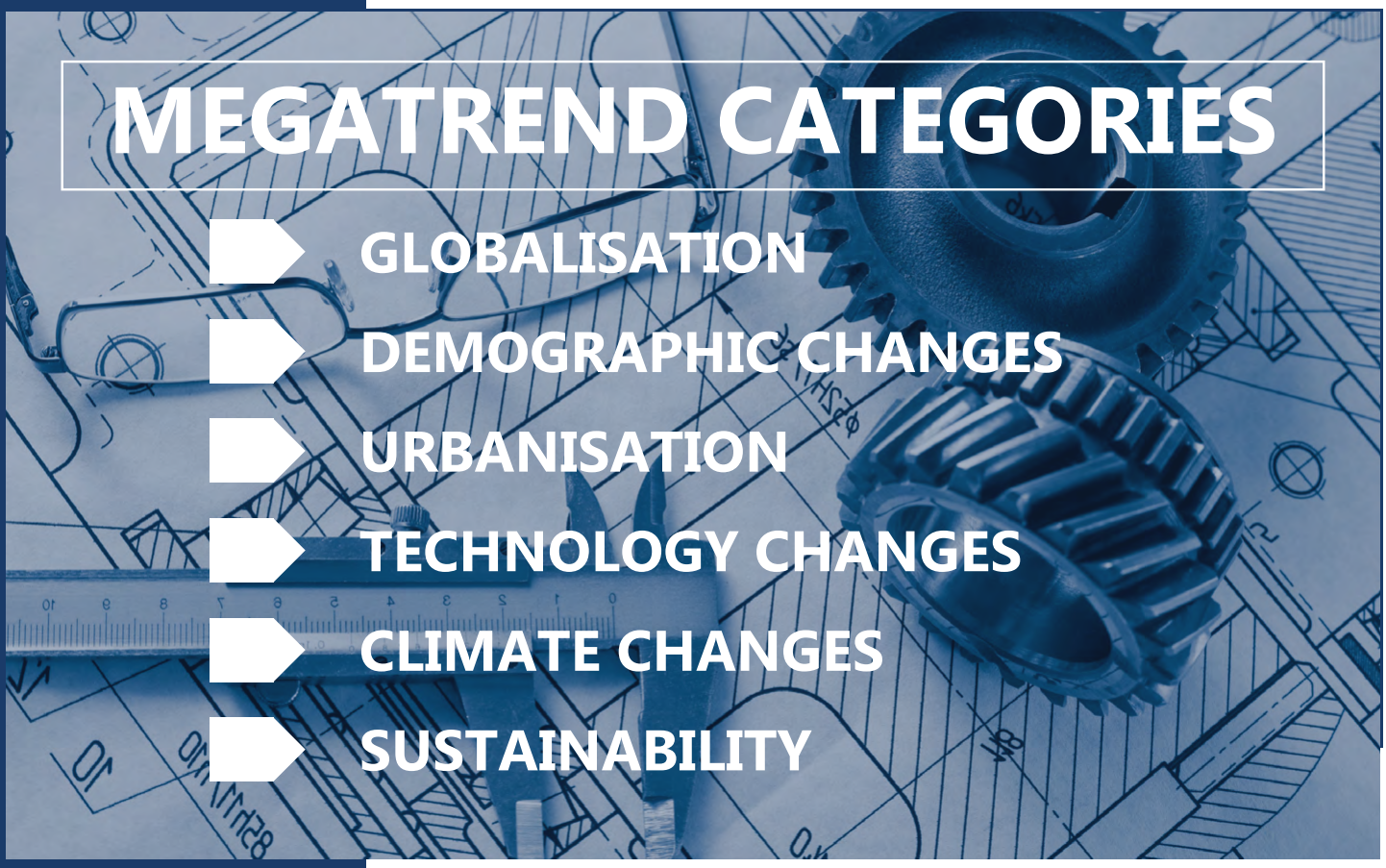
In the final chapter we'll be covering the megatrends that could help keep your business competitive for the foreseeable future and will retain relevance with your customers. Our top tips include tying megatrend research and analysis into your strategic review and keeping an eye on the competition's approach to megatrends. A meaty but easy to digest set of bullet points will cover a variety of megatrends in practice while our leading practice inspiration will again come from Industry 4.0 powerhouse, Rolls-Royce.

eBook

HOW TO MANUFACTURE A SMARTER FACTORY

CHAPTER 5: MEGATRENDS

k3 syspro



CHAPTER 5: Megatrends

If your business is busy planning its route to, and through, Industry 4.0, you're going to become quickly accustomed to all the perceived changes and revolutions affecting the manufacturing industry, so you can plan how to best take advantage of them. These challenges and opportunities, like everything covered in our Industry 4.0 guide, often fall under the umbrella of megatrends.

A megatrend is a pattern or a movement which is predicted to have a major impact on business and society as a whole. In the past, robotics has been considered a megatrend and servitization, which we cover in our chapter about transforming the manufacturing business model, is predicted to be a megatrend for the next few years at least. But a megatrend is not always something that you can confine to your particular industry, there are also external megatrends that could affect the way you plan your growth strategy for Industry 4.0.

The PwC categorises megatrends into six different areas:

- globalisation
- demographic changes
- urbanisation
- technology changes
- climate change
- sustainability

A lot of the chapters in this guide introduce megatrends that fall under technology changes, often brought about by globalisation and urbanisation. For your organisation to really thrive during the fourth industrial revolution, and even be among the first to prepare for the fifth, you'll need to be aware of, and continually plan for, megatrends.

JARGON BUSTER

Globalisation

Globalisation is the process by which the world is becoming increasingly interconnected as a result of massively increased trade and cultural exchange. This trend has increased the production of goods and services globally.

SYSPRO ERP

SYSPRO Enterprise Resource Planning software is a specialist manufacturing and distribution application, which can empower businesses in these sectors to streamline efficiencies, automate processes and extract more value from simple, linear manufacturing processes. The application successfully automates and integrates core business processes, such as taking customer orders, scheduling operations, and keeping inventory records and financial data. K3 Syspro is the UK and European partner of SYSPRO.

TOP TIPS

1 Make identifying and analysing megatrends part of your strategic review, so that you can follow the impact of these trends closely early on to see if their impact is accelerating or shrinking before you commit to any action. Keep an eye on what the big consultancies such as PwC, McKinsey, and Ernst and Young have to say about megatrends.

2 Don't try and keep up with every megatrend. Focus on trends that are relevant to your business, your customers, your supply chain and the markets that you serve. Weigh up the opportunities of megatrends against the threats to make an informed decision on whether or not to take action.

3 Identify your own megatrends. Keep an eye on what your competitors and adjacent sectors are doing to see if you can identify a new industry trend early on. This way, you can start to embrace a new trend early and take advantage of opportunities before it becomes a bandwagon for jumping on, setting your business up as an industry leader.

Why embrace it?

Megatrends help your business to remain competitive over a long term period, and continually keeps you relevant to your customers. By keeping abreast of current and future predicted megatrends, you can learn to understand the future challenges and opportunities your business will face, and identify opportunities to disrupt your industry and give you a competitive advantage. Don't just take megatrends at face value though, think about how they are relevant to you, how they can help to improve your business strategy, and discuss them with colleagues and the rest of your supply chain.

Failing to acknowledge, or plan for megatrends, can affect previous capital investments you have made. For example, new updates to ERP systems are often brought about by megatrends. The next version of your business system may have additional functionality to cope with an overwhelming increase in mobile device usage, providing new mobile functionality for remote locations. If you're not aware of this change, or what has influenced it, you could be paying for an update that you will never properly utilise and any hesitation to have the update could render your systems legacy, voiding the initial investment.

JARGON BUSTER

Servitization

Servitization is the term used to describe the transformation of a manufacturing business model from a product-focused orientated approach, to a more service-focused strategy. It involves businesses developing the capabilities they need to provide services and solutions that supplement their traditional product offerings so that customer stop purchasing products and instead, purchase the outcomes that the product provides. Key to servitization is the adoption of advanced services – services developed to deliver added value to customers, based upon in the field research. For example, installing sensors into a product and measuring performance in the field can highlight an opportunity to deliver advanced services through preventative maintenance contracts.

In Practice

There are a number of megatrends that can affect manufacturing businesses today, which include, but are not limited to the following:

Information as the new currency. We've mentioned the need for manufacturers to integrate their supply chains in a previous chapter in this guide and this is never more important than in a world where data is fast becoming the new currency. Today's buyers have unparalleled access to information on pricing and profitability, meaning that they have never been more informed of the total cost of ownership of a product. As a result, customer loyalty is becoming harder to win, and new business opportunities are becoming more competitive. This is why everything that is mentioned in this guide about connecting systems, unifying the supply chain and adding greater customer value is key to helping your business stand out from the rest of the market.

The new workforce.
The world's manufacturing labour market is transforming. The workforce is aging and women and minorities are starting to increase their share of the workforce. Manufacturing businesses need to introduce new strategies to attract and retain the next generation of talent in order to remain successful.

Global market risks and opportunities.
The UK is facing a future away from the European single market and needs to begin forming trade partnerships with the rest of the world in order for the manufacturing sector to thrive. At the same time, businesses are still battling cheaper labour markets and steel prices in countries such as China, and fighting to retain its position as a global economic force. There are risks and opportunities presented by evolving global markets, but businesses need to understand what these are, and

what impact they will have, if they are to enjoy growth.

Regulatory changes.
The ever changing regulatory requirements are making it increasingly difficult and expensive for manufacturers to succeed globally, affecting employees, customers and taxpayers. This makes it even more important for manufacturing businesses to have agile and flexible business models which enable them to react quickly to regulatory changes.

The opportunities and threats of technology.
Connected devices and integrated systems are key to the success of Industry 4.0, but as manufacturing organisations start to collect, store, and use more business critical data, they become more vulnerable to attacks on their IP. Any investment in new technology must be made with additional investments in security and data protection for businesses to take advantage of technology opportunities.

Useful references

Rolls Royce
Power by the Hour article

PwC
Megatrends Analysis

Leading Practice

The importance of keeping abreast of megatrends is highlighted by Rolls Royce and its servitization journey. Over fifty years ago the business stopped selling aero engines as individual products and instead began to charge customers for the power that the engines delivered. The customer started to pay for the outcome of the product and Rolls-Royce provided all of the support and maintenance to ensure that its aero engine continues to deliver this power, whilst retaining ownership of the engine itself.

This strategy, today known as servitization, has become hugely successful because it aligns the interests of customers and the supplier. Previously Rolls-Royce earned money through time and materials, selling and repairing engines. Typically, the worse the engine was, the more maintenance it required, and the more money Rolls-Royce would make. But customers do not want unreliable engines that are always going off for repair, they want reliable products which allow their aircraft to perform to their maximum potential, a demand that Rolls Royce responded to through servitization.

Servitization was recently cited as a megatrend to affect manufacturing, but Rolls Royce has already cemented its history as one of the first businesses to take advantage of this trend. As a result, the company has trademarked its “power by the hour” strapline, and has continually been looking at ways to continue to advance its servitization strategy, while other businesses begin to take the first steps on their own servitization journeys, fifty years later.

eBook

HOW TO MANUFACTURE A SMARTER FACTORY

CHAPTER 6: PULLING IT ALL TOGETHER

k3 syspro

CHAPTER 6:
Pulling it all Together

The Industry 4.0 vision can be a frightening and daunting one. The idea of talking to customers to request feedback, integrating more closely with the rest of the supply chain, implementing robots and automating processes in your business can become too much to take in, but the key is in taking small steps which lead to big differences.

For many manufacturing businesses the inter-connected factory of the future is still light years away, and there is an ideology that only big corporate organisations such as Siemens and Rolls Royce are actually anywhere near to making this dream a reality. Whilst businesses of this size are helping to lead the way, many smaller manufacturing businesses are already taking small steps to automate their production lines, servitize their business models, and embrace new megatrends. For example, many manufacturing organisations are already performing predictive scheduling to help them forecast and prepare for demand, but they don't label this IoT adoption, nor are they taking it a step further by integrating their raw material suppliers into the process.

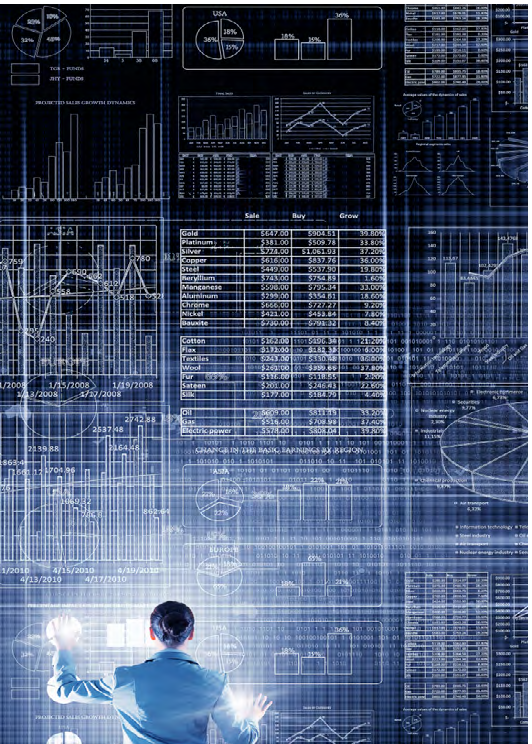
The key to operating a successful inter-connected factory lies in taking small steps, rather than taking a big-bang approach to automation. And those businesses that have a centralised business application such as SYSPRO ERP at the heart of operations, are best placed to begin this revolution. Often, the future of manufacturing just requires a change in thinking. Stop pushing transactional data through your ERP system and ignoring it until it's time to produce annual reports and instead, start to access and analyse this data in real time to make instant decisions. Stop trying to guess what your value offering is to customers and actually engage with them to ask them what they think it is. Stop trying to 'fit in' with various elements of your supply chain and take decisive action to integrate all of the key links that make your manufacturing enterprise successful. The most important investment required to create a modern and successful manufacturing enterprise is not a financial one, it's a time investment. Take the time to think about your existing business processes, engage the right partners and stakeholders and take action to improve them with the customer in mind. Speak to K3 Syspro about how you can maximise your SYSPRO investment and ask us about the supplementary applications we can provide to your organisation. Stop talking about Industry 4.0 and use the tools already at your disposal to start being a part of the future of UK manufacturing.

TOP TIPS

1 Understand your business processes. If You don't understand what your existing business processes are, you cannot begin to develop a connected factory, or a smart supply chain. Identify small areas where automation, robots, or new business models can make a difference and evolve your plan from there.

2 Take your people with you, and involve other people where necessary. There are a number of manufacturing organisations and institutions that can help you on your journey to Industry 4.0. Spend time finding who they are (we've mentioned a few in this guide), and speak to them about your aims and objectives. It is likely they can help you, or share experiences of other businesses that had a similar plan.

3 Start with your technology vendor. You probably already have a lot of different business systems and technologies already implemented in your factory. Speak to K3 Syspro about how you integrate and maximise these technologies, and start to use them differently to perform more effective data analytics. It makes sense to utilise the tools already at your disposal, before you explore investing in new resources.



Why embrace it?

As global markets tighten and currencies remain unpredictable, the impact of Industry 4.0 becomes even more significant for businesses that can leverage technology to improve product quality, experience zero tolerance on defects and yield greater revenues from the results of advanced services. Manufacturers can develop more reactive and flexible business models, improving customer retention levels and helping to win new business in competitive markets.

The Internet of Things and robotisation enable manufacturing businesses to enjoy a range of labour cost savings, enabling them to concentrate on hiring people to focus on product innovation and supply chain efficiency, instead of employing people to carry out repetitive and uninspiring tasks. It's also reduced the numbers of health and safety incidents in the workplace and enabled businesses to respond more immediately to customers, moving from just-in-case production strategies to just-in-time business models.

As the individual chapters of this guide demonstrate, small changes to catapult your business towards Industry 4.0 can bring you closer to your customers, help you save costs throughout the supply chain and enable your business to build a greater competitive advantage. At a time when the customer is in control, it's those businesses that align themselves closely with customer requirements and demands which will truly prosper during the fourth industrial revolution.

In Practice

Grant Instruments specialises in the design and manufacture of medical equipment for sample preparation, scientific analysis, data acquisition and data analysis, providing solutions to the global scientific and industrial markets. The company has a worldwide reputation for quality, reliability, service and support and is one of a growing number of manufacturing businesses always seeking to automate and integrate its entire value chain as the manufacturing sector enters Industry 4.0.

The company wanted to start servitizing its business model in order to respond more effectively to its customers and add value. By implementing two applications from K3 Syspro (an advanced SYSPRO ERP system and K3 Dataswitch), Grant Instruments was able to significantly streamline its stockholding process and slash average delivery times from 10 days to just five days.

The company also wanted to fully utilise the data being sent into the system to ascertain how many raw materials and how much storage was required. By analysing the information, Grant Instruments has been able to halve the stock it holds.

The data manipulation and systems integration through SYSPRO and Dataswitch also allows Grant Instruments to trade with itself overseas, enabling inter-company transactions between China, India and the UK. Grant Instruments understood its business processes and what it needed to do to servitize the business. The company recognised that it needed to streamline its operations, streamline its supply chain and utilise the data more effectively to achieve efficiencies and cost savings. Working with K3 Syspro to implement an integrated system has helped the business to achieve significant results across different functions which has, in turn, added value for its customers.

Leading Practice

Siemens is already pioneering the factory of the future at its manufacturing in plant in Germany where machines and people are working together hand in hand. The business is focused on continuing to improve both the organisation of the shopfloor and machinery, and individual processes that affect customer responsiveness, demand fluctuations and configuration requests. As a result, it virtualises any perceived change to the shop floor before investing in new equipment, or re-arranging existing layouts, and has a built a team which is tasked with continually improving product innovation.

Siemens has one shared goal across the organisation: not to invest in robots and automation for the sake of it, or to replace people, but to create a productive manufacturing environment where people work together with machinery to streamline operations, reduce overheads and supply chain costs, and pass on even greater value to customers all over the world.

Useful references

Siemens - Factory of the Future case study

The Manufacturing Technology Association - an organisation which helps manufacturers get the most out of their technology investments

Previous Chapters

CHAPTER 1:
The days of 'point of sale' being the last contact a manufacturer has with their product are becoming a thing of the past. Servitization is allowing manufacturers and their customers to not only build a more effective product but a stronger relationship too.

CHAPTER 2:
Integrating the supply chain is critical to the success of manufacturers if they want to be part of the fourth industrial revolution. In this chapter we will cover the benefits of an integrated supply chain.

CHAPTER 3:
Big Data analytics is the process of examining large data sets to uncover patterns, correlations, market trends and various useful business information that had previously been hidden.

CHAPTER 4:
No longer just a privilege of automotive manufacturers, chapter four covers robots and automation. Robotics and automation products are more affordable now than ever before and are a staple of Industry 4.0.

CHAPTER 5:
In chapter five we'll be covering the megatrends that could help keep your business competitive for the foreseeable future and will retain relevance with your customers.

All of the the chapters are now available for download in one eBook. Visit our download page for more information.

JARGON BUSTER

Internet of Things

The Internet of Things is the name used for the network of physical devices, vehicles, buildings and other items such as sensors, which collect and exchange data of the internet, due to the accessibility of cloud computing. In 2013 the Global Standards Initiative defined the IoT as "the infrastructure of the information society." Essentially, the Internet of Things allows data to be collected, moved and shared across a common platform: the internet, creating opportunities for integration of the physical world into computer based systems.

Lean

Lean is a systematic method for the elimination of waste within a manufacturing supply chain. In this instance, waste could be defined as anything from literal raw materials, to time, or manual tasks. Lean also takes into account waste created by overburden, known as MURI, and waste created by uneven workloads, known as MURA.

SYSPRO ERP

SYSPRO Enterprise Resource Planning software is a specialist manufacturing and distribution application, which can empower businesses in these sectors to streamline efficiencies, automate processes and extract more value from simple, linear manufacturing processes. The application successfully automates and integrates core business processes, such as taking customer orders, scheduling operations, and keeping inventory records and financial data. K3 Syspro is the UK and European partner of SYSPRO.

K3 DataSwitch

K3 DataSwitch is a purpose built systems integration and data manipulation tool which enables businesses to become more efficient through automating processes. It provides the missing link to standardise the flow of information between unconnected or disparate software systems. The tool is developed in house by integration experts at K3 Syspro and is compatible with any ERP application, including SYSPRO ERP.

k3 syspro

get **in touch**

K3 Syspro
Baltimore House
50 Kansas Avenue
Manchester
M50 2GL

Phone: +44 (0) 161 876 4498
Email: info@k3syspro.com
Web: www.k3syspro.com

SYSPRO™
Simplifying your Success