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Industry 4.0 -
developing a smart strategy for
getting ahead in manufacturing.

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Recognise and realise the opportunity.

Although the concept of Industry 4.0 and the Industrial Internet of Things (IIoT), have been widely explored in recent years, the challenge for many businesses in the manufacturing and supply chain sectors is to decide how best to realise the opportunities offered by these emerging new technologies.



80% of manufacturers believe that smart factory technology will improve their supply chain relationships.

Annual manufacturing report 2019 – Hennik Group



Phrases such as smart manufacturing, the Industrial Internet of Things and Industry 4.0 are an established part of the modern business lexicon. But, while most businesses recognise the potential for value creation from smart manufacturing, few are fully equipped to realise this goal.

Making a smart investment.

While businesses are under pressure to adapt to the new digital era, a clear picture of the potential risks and opportunities is fundamental if true competitive advantage is to be realised.

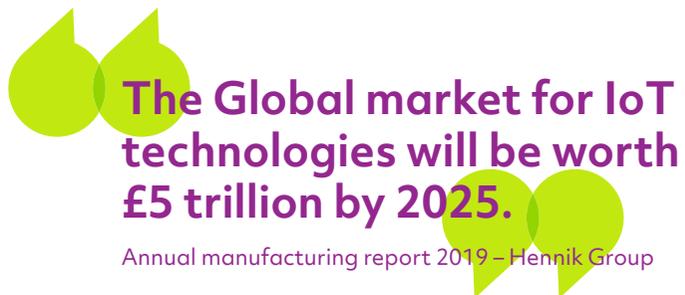
→ **For manufacturing businesses, the imperative is to establish a clear strategy that can release the benefits of advances in smart manufacturing.**

The companies best placed to reap maximum advantage are those that align their organisational philosophy with smart manufacturing strategic goals.

→ **Indeed, it is not necessarily those making the biggest investments, but rather the smartest investments in smart manufacturing.**

While the growing connection between the physical and digital worlds has been underway for decades, the central premise behind the digital transformation and development of a smart manufacturing platform is that it provides the agility necessary to compete in today's fast-moving business climate.

It is far more than industrial automation, instead smart manufacturing is about using digitally-enabled tools to reduce innovation and product development cycles, allow customised products at scale and cut costs.



The Global market for IoT technologies will be worth £5 trillion by 2025.

Annual manufacturing report 2019 – Hennik Group



Getting connected.

Using advances in information and communications technology such as Big Data, cloud computing, augmented reality and artificial intelligence, together with advanced robotics and automation, 3D printing, decentralized control systems and other technologies is increasing efficiency, improving resource use and accelerating responsiveness to changing consumer demands. As these technologies increasingly mature, every step of the manufacturing process and its supply chain is becoming connected and streamlined. This is a fundamental change.



According to the 2019 UK Annual Manufacturing Report from Hennik Group, close to 80% of manufacturers believe that smart factory technologies will improve their supply chain relationships. The report also notes that the global market for IoT technology will be worth £5 trillion by just 2025.



Developing an Industry 4.0 strategy.

Digital technologies are being adopted across the manufacturing sector and they are beginning to achieve notable cost and productivity improvements.

For instance, a February 2019 report from telecoms giant Ericsson notes that IoT sensors that enable monitoring of the working environment allow better temperature regulation.

→ **It's estimated that more precise control of heating and air conditioning could cut 10-20% off energy costs, with equivalent reductions in carbon emissions.**

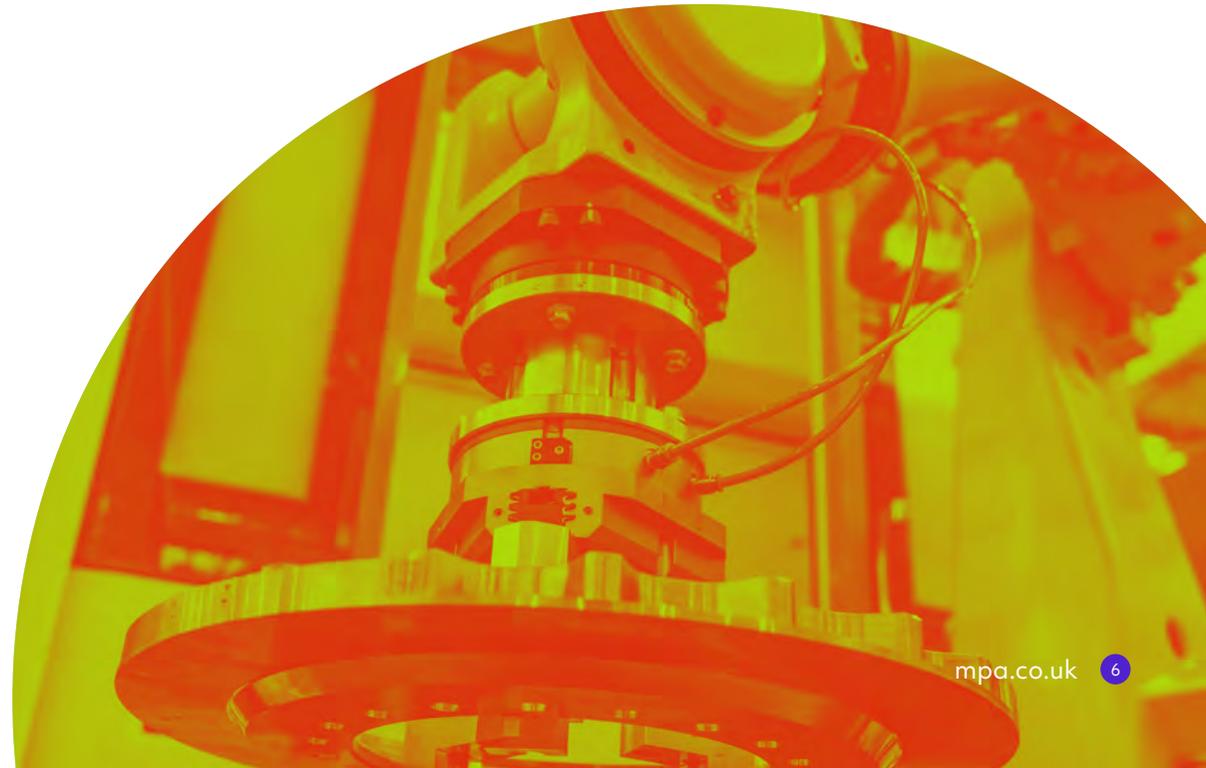
However, while most manufacturers are investing in increasing their digital capabilities, much of this investment is being executed in a piecemeal fashion as many manufacturers still explore smart manufacturing approaches on a trial basis.

As a result, few have fully integrated smart manufacturing into their business and operating models and have not achieved the agility required to drive enterprise value.

→ **Tools such as robotics and machine-to-machine communication improve productivity, better analytics can support improved insights into customer preferences and digital twins can help to improve design and performance.**

The greatest value comes when these new technologies and advanced capabilities are integrated throughout the value chain.

In planning and preparing intelligently for business change, manufacturers need to start being bolder in their vision, strategies and actions. Recognising that bigger benefits can only emerge when they focus Industry 4.0 capabilities on improving their overall organisational performance, manufacturing industry leaders are developing stronger business alignment in their smart strategies and roadmaps to optimise their technology investments.



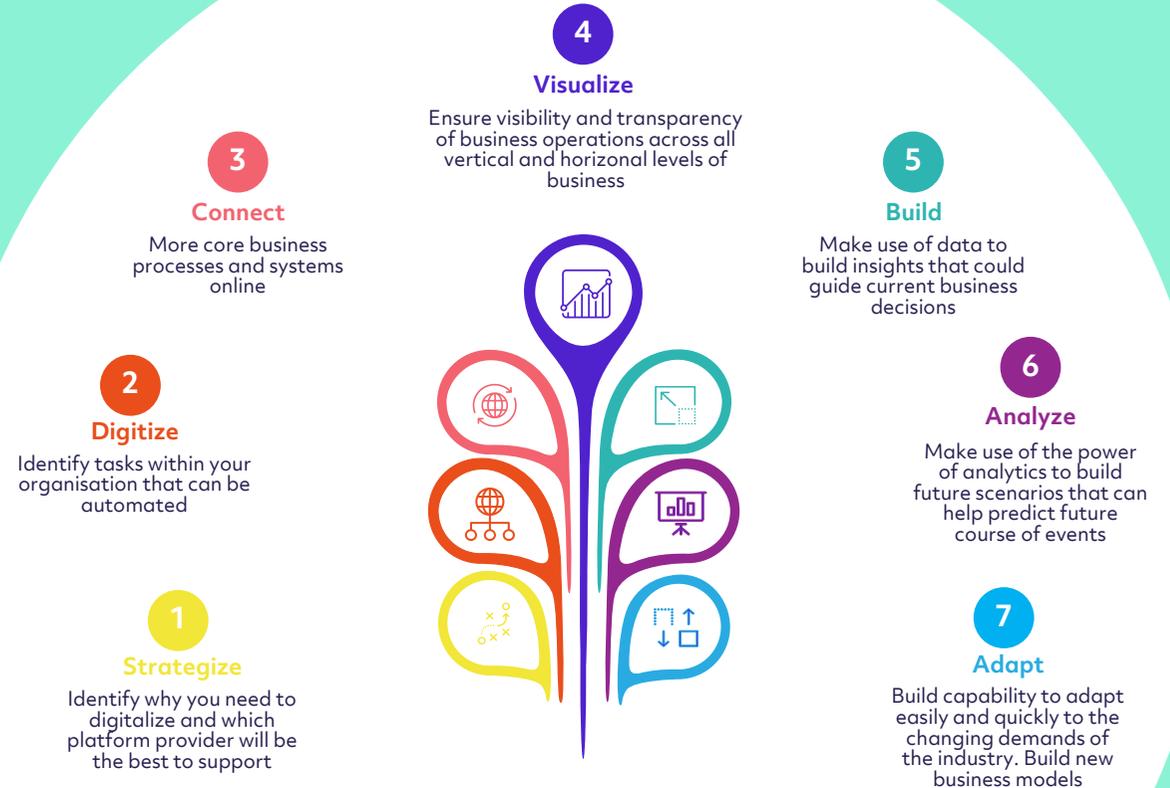
Creating value and competitive advantage.

Viewing the transition as an opportunity for competitive differentiation, smart manufacturing pioneers are looking for a strategic advantage in their financial and business models. Rather than strictly focusing on conventional return on investment metrics, smart manufacturers are instead considering a far wider set of potential value drivers to assess the cross-enterprise benefits from smart technology and deliver a step change in performance.

For example, a well-executed smart manufacturing strategy allows a business to understand the value of customer data in improving speed to market and can therefore add new value to the product lifecycle. By improving the flow of customer data holistically across the extended enterprise, a smart strategy effectively creates value.

In addition, the flexibility supported by a smart manufacturing platform allows companies to explore new markets and potential opportunities that would typically be closed under normal business-as-usual-conditions. This does mean that maturity in smart manufacturing cannot be simply bought-in.

The real challenge of developing a smart manufacturing strategy is aligning the strategy to the business and effectively communicating that vision. It is vital that employees are engaged right across the enterprise to build support for the digital transformation, particularly in light of potential concerns such as job security and the threat of potential cyberattacks.



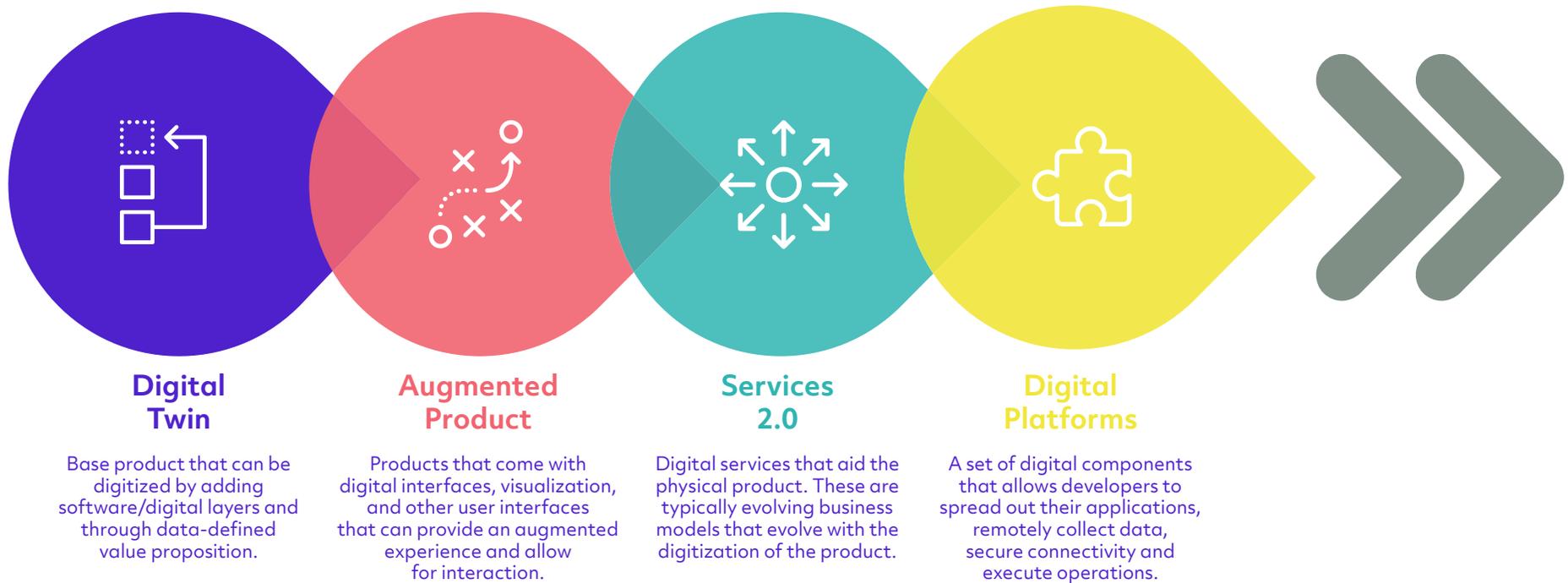
The Dawn of Digital Industries - Frost & Sullivan

Digital evolution.

It is also important to recognise that the digital transition is not a one-time event but a process. New technologies are continuously emerging and consumer demands are evolving and changing too. As a result, to maintain a competitive lead, manufacturers need to be able to adopt and appropriately apply new technologies as they emerge.

Digital technologies are not necessarily a solution for all business challenges. How products are manufactured may not change with the use of smart manufacturing. However, identifying a business problem and exploring how smart technologies can address that issue will improve enterprise performance, freeing up resources to build additional smart manufacturing capabilities.

Process diagram.



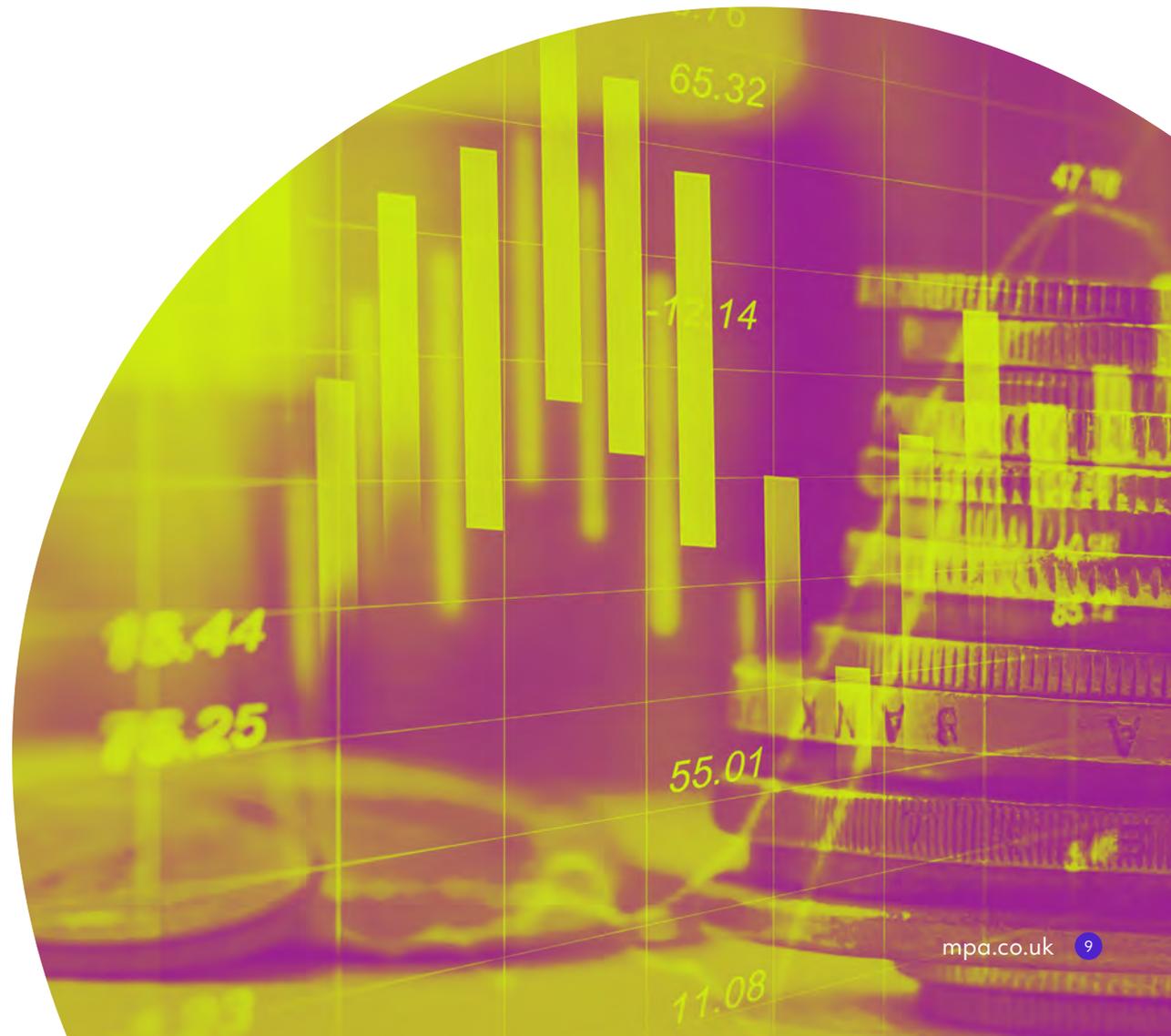
Investing in smart technology.

While developing a smart manufacturing strategy can certainly help businesses identify where new technologies and processes can yield commercial dividends, executing any strategy inevitably requires investment.

→ Global investment is evidently soaring as manufacturers turn to new digital technologies.

For instance, the recent Smart Manufacturing: The Rise of the Machines report from analysis firm GP Bullhound reveals that Europe's smart manufacturing market is valued at around £19.4 billion.

→ Smart manufacturing is already generating large investment volumes, receiving more than £5.4 billion of venture and growth funding globally in 2018, the report adds.



Financing smart manufacturing.

Meanwhile, Europe had seen a surge in the number of funding rounds related to smart manufacturing in recent years.

Stumping up significant sums of cash to fund new technology or processes can be a sticking point for many manufacturers though, particularly where simple ROI metrics may not reveal the true commercial benefits of new collaborations and markets that may emerge as a result.

Common routes to funding include balance sheet loans and simple overdrafts, asset finance or equity investment.

Other sources of appropriate finance include venture capital, angel investors or private equity funding. However, there are also some attractive routes available to significantly reduce both CAPEX and OPEX costs arising from a smart manufacturing transition.



There are multiple sources of finance available to engineering firms looking to invest in smart factory developments.



The EU market for smart manufacturing is valued at £19.4 billion.

Smart Manufacturing: The Rise of the Machines

Incentives for innovation.

Given that the transformation enabled by the digital age is having profound impacts on every business sector, many governments and authorities are offering incentives to establish new smart technologies. This potentially represents a welcome source of funding for those manufacturers looking to build up their smart manufacturing inventory.

→ **Indeed, there is a clear trend among governments around the world seeking to boost innovation by offering tax and other incentives that are designed to attract investment in transforming their operations.**

In the UK, tax credits, grants and other support measures are available for R&D activities focused on innovation in areas such as smart manufacturing. Emphasising this point, Ian Campbell, Interim Executive Chair of Innovate UK, speaking at the Eureka Global Innovation summit held in May, observed:



Innovate UK wants the country to be the best place in the world for businesses to innovate and grow, to maximise the economic and societal benefits of innovation over the long term.

Ian Campbell, Interim Executive Chair of Innovate UK



Tax credits and grants.

The UK also offers tax credits for investment on smart manufacturing R&D. Both small and large companies that spend on R&D to develop or enhance products, processes and services are eligible.

→ **For small and medium enterprises the tax credit incentives alone can recover up to a third of the total investment.**

Significant investment may temporarily tip a company into a loss making position and in this case the payment will be made in cash from HMRC. For larger businesses with a turnover of more than 100 million euros or that employ more than 500 staff, up to 12% of qualifying expenditure can be offset by claiming a Research and Development Expenditure Credit (RDEC). As a result, new and amended tax incentives and other breaks offer an important opportunity for manufacturers hoping to develop a smart manufacturing programme.

→ **In July, Innovate UK also launched the latest round of its Smart Grants initiative to fund businesses developing smart manufacturing capabilities. This round is worth £25 million.**



Value through partnerships.

Certainly, there are opportunities to limit the effective costs when it comes to implementation of a smart manufacturing strategy. However, it is also vital that companies setting out to establish a smart manufacturing posture are able to gain the maximum benefit available from such incentive schemes by engaging with appropriate experts who are not only well-versed in the financial opportunities available, but can also help them to build more collaborative industry networks.

At MPA we are able to partner with companies to secure the maximum value from appropriate tax credits, grants and other sources of non-conventional funding. By supporting wider industrial networks, coupled with the flexibility enabled by the smart factory, we can also help clients identify and exploit new market opportunities.



Companies must focus on the core issues and align their smart factory vision with the business strategy to get the most from these new digital technologies. As Dr Nikolas Westphal, director at GP Bullhound, says:



Smart manufacturing is the future and, ultimately, we believe that automating repetitive tasks will enable us to concentrate on those qualities that set us apart from machines and algorithms: being and acting human.

Dr Nikolas Westphal, Director at GP Bullhound



With considerable financial support available from a range of incentive schemes, barriers to implementation of the smart factory are reduced or removed and the smart factory becomes an achievable goal.



Putting the right tools in place will allow manufacturers to develop a low-cost smart factory roadmap that can be financed and executed to increase operational efficiencies, improve customer outcomes and accelerate innovation.

About us.

The pace of change is relentless. If your business doesn't keep up, it will fast be left behind.

At MPA, we live and breathe innovation. We use our expertise, experience and knowledge to partner with businesses just like yours, supporting you to maintain and grow your business, and releasing you to come up with the next big idea.

MPA. Always Moving. Because innovation never stops.



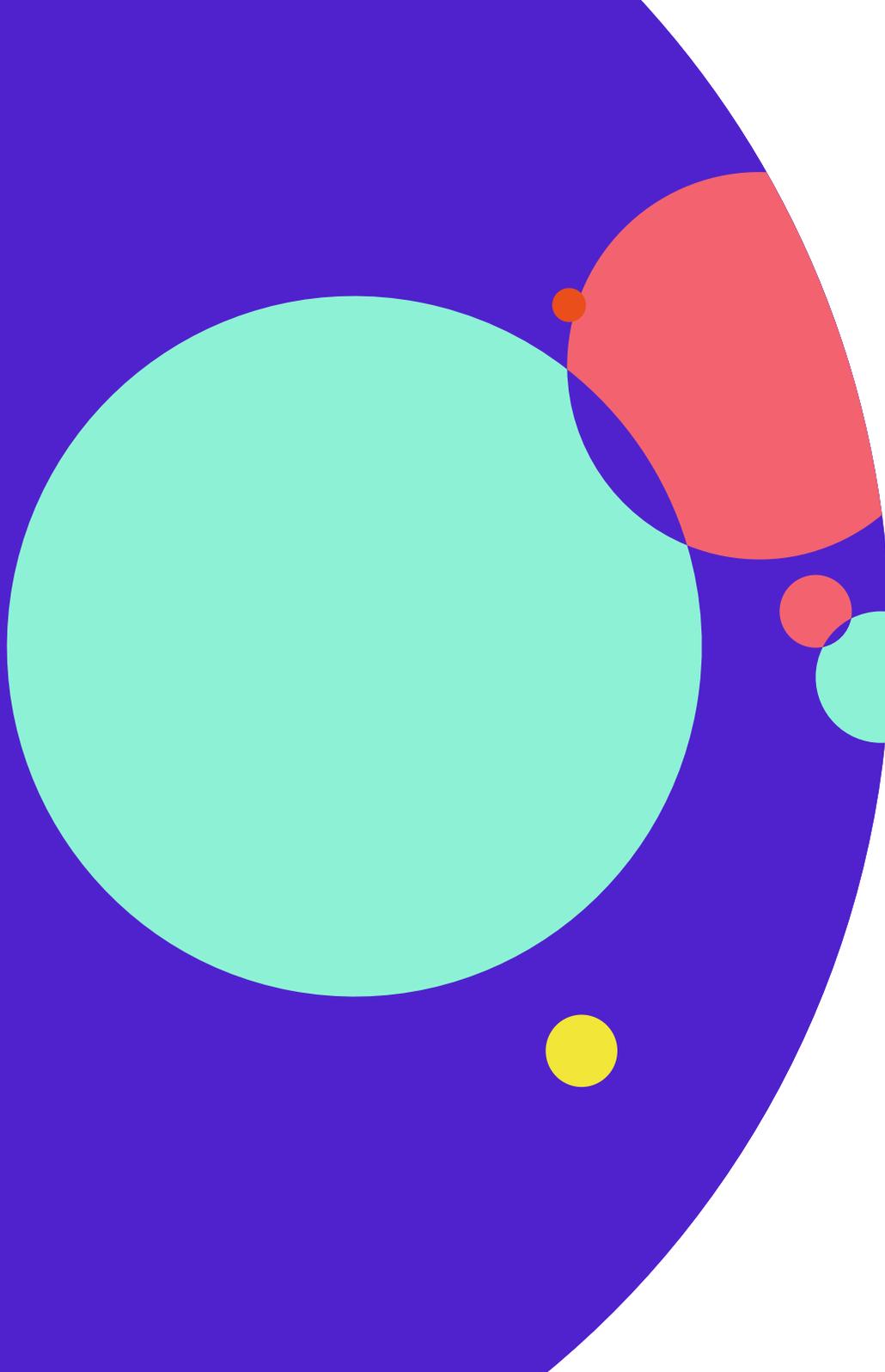
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