
The digitalisation of everything
How the industrial sector is seizing the potential of AI, ML, and big data
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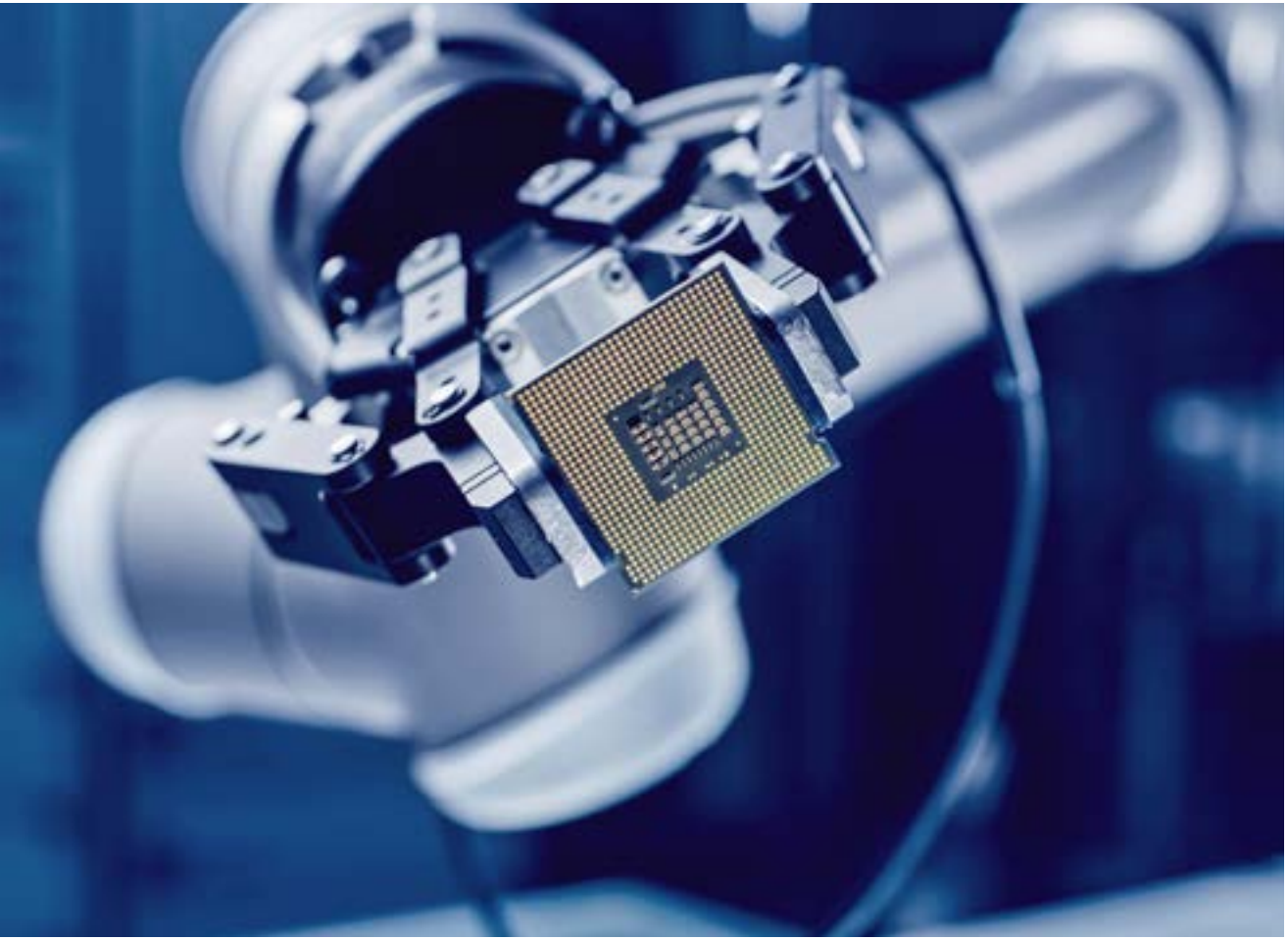

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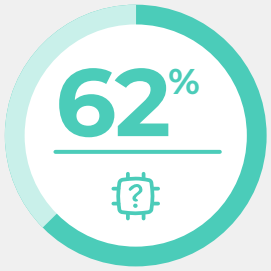
The need to do both: Combining digital with industrial processes

The digitalisation of everything means that, to stay competitive, **you need to offer more than something that works.** Every single part of what you do needs to communicate, so you can constantly learn, innovate, and improve your offer.

This presents an enormous challenge. Because, while the future of industry demands a raft of digital skills in DevOps, cybersecurity, AI, AR and so on, these things don't necessarily solve the problems of right now. Whatever challenge is sitting on your desk today – whether it's process efficiency, workflow optimisation, or a complex engineering challenge – isn't going to get fixed by the digital future-proofing work that will set you up for the next twenty years.

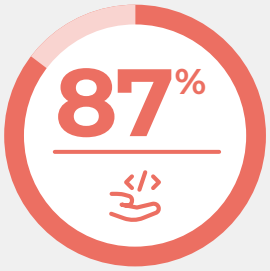
You must find a balance between these competing demands: **and that's what this report is all about.** We've spoken to the people on the ground tasked with walking the tightrope between day-to-day operations and long-term planning to find out their key challenges and how they're solving them.

The results chime with what we've been hearing from within the industry for a while:



of companies don't understand which technologies can deliver the business benefits they need.

of industrial firms plan to adopt design thinking principles into their products and services.



of industrial companies say digital skill shortages are holding back their plans.

say their organisation needs to become more like a tech company.

Our report dives deeper into the industry findings so you can learn more about the challenges your peers are facing, as well as getting opinions from our industry experts on how to solve them.

Results are taken from Expleo's BTI 2023 report, which spoke to manufacturing and industrial leaders across 6 countries with +5,000 employees. For the full breakdown, please see https://expleo.com/global/en/bti-2023/#report

PART ONE

The challenge of combining industry knowledge with digital

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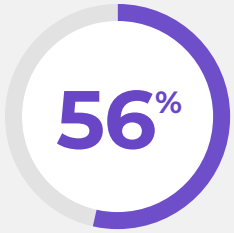
The challenge of combining industry knowledge with digital

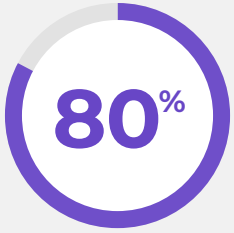
It's impossible to overstate the pace of change to industrial business models – or the speed of the innovations needed to keep up. The problem is, many industrial companies don't have enough skilled digital engineers. **Over half (56%) say that skills shortages are having an impact on their plans.**

A contributing factor is the difficulty in recruiting and retaining digital professionals. 'Attracting enough qualified candidates' (36%), 'retaining talent' (36%), and 'developing a broader skills of creativity, collaboration, and problem solving' (32%) rank as the top three staffing and skills challenges.

Industrial companies lack digital skills



say that skills shortages are having an impact on their plans.



say skills such as AR are currently lacking

The challenge of combining industry knowledge with digital

To overcome this, a third of businesses are starting to use AI to do more with less (34%) and train up existing employees with digital skills (41%). But even this isn't a panacea, as the implementation of such programmes slows down the ability to complete current projects.

These skill shortages are found at each stage of the industrial process, through design, manufacturing, and especially at the in-service stage, where ongoing customer experience relies on a diverse and growing range of skills.

For example, 64% of businesses have cybersecurity as a focus area for the next 1-2 years, as post-sale service increasingly relies on access to financial records and functionality.

In an environment when 'delivering the best customer service' is named as the top priority by almost half of industrial businesses (47%), it's no surprise that skills such as AR experience are prized – 80% say they're currently lacking. Meanwhile, 'SaaS adoption' (45%), 'Machine Learning/Artificial Intelligence' (41%), and 'digital twin, modelling, and process mining' (32%) are ranked as the top priorities for the next two years.

Skills shortages imperil today's projects and tomorrow's growth

Industrial companies understand that they need to change, with 59% of businesses saying 'transforming our business model' is now a key focus area for their organisation.

The companies that succeed will be those that can combine business transformation with tactical changes that make an impact today. For instance, 47% of businesses are investing in digital customer experience as an immediate growth driver. At the same time, 36% are investing in their own training academies to produce a pipeline of talent equipped with digital skills for the industrial sector.

THE INSIGHT

Don’t delay digital.

To solve today’s challenges, industrial companies need a new set of skills.

Hervé Garnousset
Chief Technology Officer
Expleo

The days when industrial companies could rely purely on engineering skills are gone. Today, they also require teams equipped with digital skills to solve complex challenges – across the manufacturing, design, and service stages.

But which skills should you focus on to make a tangible impact? That’s the key question all industrial companies must get right.

1) Start with practical fixes – To harness the power of digital technologies, you have to tackle tangible issues. You need to prove the value of digital in a discrete way, without changing everything all at once. This can give you the headroom to implement longer-term transformation because people see the benefits.

2) Process changes deliver long-term results – For digital upskilling, you need to think about process as much as hard skills. DevOps is a good example of this. It allows companies to test, iterate, and get products to market faster. From experience, a lot of companies don’t have this capability and depend on traditional, linear software development, which is much slower.

3) Hire for now, train for the future – Getting the right people with the right skills is tough – there isn’t a magic bullet or a one-size-fits all approach. You need to balance current needs with long-term planning. At Expleo, we have a hiring process that aims to recruit mathematicians and individuals with computer science backgrounds, right up to PhD level.

Their skill sets are now particularly valuable to help with the rising complexity of AI, which is playing an increasingly central role in our customers’ operations. At the same time, we have our Expleo Academy where we train our staff and customer teams in digital skills with an engineering context.

Find the right balance

Technological advances like AI are already reshaping the way industry works, and that’s only going to accelerate, if you’re not preparing for that future, you’re going to be left behind. But day-to-day business reality can’t be put on hold while you figure everything else out. That’s why identifying areas for small wins or discrete process changes will always be more effective than trying to do everything at once.

PART TWO

Getting the best ideas from everywhere

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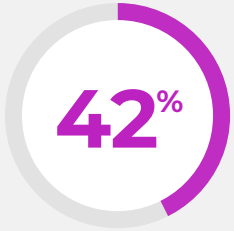
Getting the best ideas from everywhere

Here's the good news. While industrial businesses require specialism, many of the digital tools are agnostic. A digital twin can be just as effective in aerospace as in automotive and marine. Production chain automation or compliance checking technology can work for any business where those things are necessary.

Industrial firms are planning ahead.

view speed to market as a focus area.



want to increase their agility over the next two years.

PART TWO

Getting the best ideas from everywhere

Proof matters

50% of businesses view speed to market as a focus area. Business leaders and their teams need to look outside the confines of their industry specialism for innovations.

This is especially true where there is a disconnect between the c-suite and those in charge of delivery. 64% of businesses report a lack of senior management commitment to digital transformation projects. This is correlated to the 57% of businesses who say there is an insufficient focus on the quality and reliability of digital solutions.

This produces a negative cycle of poor digital innovations, leading to c-suite disillusionment and, therefore, even less commitment to making sure execution works. Pointing to other businesses and scenarios where digital projects have led to tangible benefits is a good way of breaking that cycle, offering a proof of concept before any R&D budget has been spent.

Siloes are hampering growth

The drag that siloes place on innovation is well understood. 38% of industrial businesses identify fragmentation and project siloes as the key challenge blocking their transformation. Part of that is internal.

65% of companies report that they struggle with sharing data between systems and departments and 64% say they can't use data to create new revenue-generating services.

This contributes to wider siloes on a sector/business level. If you can't describe a given challenge and the way it interacts with other parts of your business, it's harder to identify how other businesses have solved an equivalent challenge.

Partners can help – but they're not all equal

42% of industrial companies want to increase their agility over the next two years. To do this, they must think beyond their own immediate context, forging better internal collaboration and benefiting from greater cross-industrial expertise. But currently 65% say the lack of an open approach to systems design is hampering their collaboration.

A proactive way to solve this is to work with a partner that can expose your business to the ideas beyond your range of expertise. An external partner who has been through transformation projects with other businesses will naturally have the insights to accelerate time to market and help you avoid pitfalls.

But even this approach presents challenges. Almost half of industrial businesses (42%) say that the lack of experienced external delivery partners, with the right balance of skills in engineering and digital, is a major challenge in tackling business transformation.

THE INSIGHT

Get the best ideas from everywhere

How cross-industry sharing can accelerate your innovation

Christophe Cazes
Head of Innovation
Expleo

Innovations in digital engineering happen across every sector – and you can learn from them to speed up you own innovations. So, rather than trying to invent something new, you can spend your time improving something that already works to your needs.

Here's an example of how cross-industry innovation sharing can lower development costs, accelerate speed to market, and generally up the pace of digitalisation projects.

What aerospace can learn from automotive

Aerospace faces big challenges. Global air traffic could double to 8.2bn passengers by 2037. By some estimates, this require 38,000 new planes over the next 20 years.[1] At the same time, all these new aircraft must be compliant with increasingly stringent safety and sustainability requirements.

So, how do aircraft manufacturers deal with this increase in demand, while improving quality and controlling costs?

If you're in aerospace, you won't find the answer by looking at your competitors. They're all looking at the same challenges.

But glance across to the automotive industry and you can see a whole range of businesses who have already confronted this confluence of rising demand and fierce competition over quality and cost. The experience isn't interchangeable – but, by looking at automotive industry good practice you can get a head start in how to improve performance and efficiency in aerospace.

For instance, the automotive sector is ahead of aerospace in terms of things like production chain automation and logistics flow optimisation. Both are essential in increasing product development speed, removing endless prototyping loops, standardising production at scale and maximising efficiency.

By understanding how automotive businesses integrated these tools and technologies into their advanced project labs, product development centres and operations, aerospace OEMs can get to the right answer faster. This will help avoid the mistakes made by other businesses and smooth change management.

Get to what works... now

This is just one small example – but there are countless others, for every industry and use case. At Expleo, cross-industry idea sharing is central to what we do. We work across a wide range of industrial and non-industrial sectors. So, even when a challenge feels like it's brand new, we've got the ability to look for similar challenges in other industries to shine a light on the best way forward.

[1]Global Outlook for Air Transport, IATA, June 2023

PART THREE

The challenge of industrialising digital at scale

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PART THREE

The challenge of industrialising digital at scale

Industrialising processes, services and products successfully has always been a major challenge. But with digital technology driving ever-increasing expectations of post-sale upgrades and improved experiences, it's harder than ever.

Industrial firms are planning ahead.

55% are already using AR technology to speed up design and prototyping.

48% say they're embracing digital tools to increase employee collaboration.

PART THREE

The challenge of industrialising digital at scale

Data is a stumbling block

64% of industrial businesses see data as a key challenge in delivering new services. There are many reasons for this: a lack of skills, absence of sector knowledge, siloed systems preventing knowledge sharing and so on. In an environment where digital is everything, the inability to process, analyse, and use data is always going to impede innovation.

Indeed, expanding concepts and pilot projects is identified as the major blocker to transformation by over a third of industrial businesses (34%).

Investment is good, but understanding is critical

Encouragingly, industrial businesses are embracing the digital tools needed to solve the data challenges. 41% are making significant investment in AI and Machine Learning to help them turn data into actionable insights more quickly, while 55% are already using augmented reality technology to speed up design and prototyping.

Businesses also understand where digital innovations can deliver most value: 48% say they're embracing digital tools to increase employee collaboration, while 59% see how digital can improve productivity.

Despite these positive signals, there are still significant barriers to industrialising digital solutions.

The largest is a lack of understanding: a troubling 62% of industrial businesses say that they don't understand which technology delivers the benefits they need for their transformation projects.

This lack of digital engineering knowledge directly impacts the ability to industrialise and scale projects post-pilot. Even successful pilots run aground on the rocks of spiralling costs and unforeseen dependencies when attempting wider rollout.

THE INSIGHT

From pilot projects to scale

How industrial firms can put the right technology to work.

Thomas Benoist
Head of Digital Sales
Expleo

Today, industrial firms have a substantial design phase and service phase, which provides opportunities to innovate and generate recurring revenue. Across this extended value chain, digital technologies are taking centre stage.

But how can you test the potential impact of new technologies, and then scale them?

1. You need patience – There are different ways to evaluate technologies. You can be experimental, using a win-fail-fast approach to identify if a new technology is worth it. Or you can learn as you go, accepting that a solution won't work 100% on day one but will make things better in the long-run. Both ways require patience and good communication.

2. Proof of Value beats Proof of Concept – Using direct data for proof of value is more effective than just showing that a technology 'works'. It means you can get buy-in from the wider business about the measurable, practical impact you're making.

3. Embrace your data – The factory floor is now a digital environment. Companies have IoT-enabled machines and production lines creating huge volumes of data to support new use cases. It's this data that also lets you answer the key questions around scaling technology: how will it deliver ROI? How will it work across your business? How does it fit into your global roadmap?

Industrialise technology at the scale you need

We helped a global automaker develop a new predictive maintenance service, which they wanted to deploy for onboard chargers and electric vehicle batteries. They were sending a lot of vehicle-related data to the cloud and asked us to help them use it to predict breakdowns.

We created a solution using machine learning that could predict if (and when) a battery or on-board charger was going to fail — with 99% accuracy. This enabled the company to fast-track innovation and develop a solution using the data already in their business.

Expleo's primary focus is executing ideas. We make sure we understand the practical, day-to-day realities of how your business operates. So, once we know what's happening on your shop floor, we can start to build a roadmap that helps us solve problems Immediately.

Digitalisation: A challenge too critical to tackle alone

For most industrial businesses, digitalisation remains an enormous challenge. While most understand the need to embed digital within their processes, there is still a major struggle to understand what technology is required and how it will benefit their business. In turn, that leads to difficulties in recruiting the right talent and getting c-suite buy-in for transformation projects.

Despite this, there is a hunger to transform. It's encouraging that **60% of businesses plan to adopt design thinking to ensure the longevity of their products and services,** while 70% acknowledge that they need to be more like a technology firm in terms of delivering post-sale service, ongoing upgrades and so on.

However, the standout statistic from our report is the greatest challenge:

62% of companies don't understand which technologies can deliver their required business benefit. That also explains the 42% who express frustration in lack of experienced partners to help guide them through transformation.

Businesses can't go it alone. They need external support in marrying together engineering and digital expertise, while at the same time being able to contextualise challenges with reference to the wider industry.

Only this understanding can help plug the skills and knowledge gaps that are holding industrial businesses back, and help them find the balance between getting digital projects underway today, while preparing for long-term transformation.

... you can

If any of the challenges in this report feel familiar, we'd love to have a conversation to see how we can help you solve them.

At Expleo, we're experts in digital and engineering, so we can get you straight to what works. Helping you identify what's going to make the impact you need, then working with you to get there.

Let's talk