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The Digital Twin Industry Report

Insights from top executives

96%
of leaders say digital twins are worth the climb

#SALMANQADIR

Introduction

A transformative technology that's exceeding expectations

Leaders have given a clear and comprehensive verdict on the business value of digital twins

Burkhard Boeckem
Chief Technology Officer,
Hexagon AB

Digital twins: a driving force for industry or just the latest hyped technology?

Opinions on this technology are abundant, yet the conversation has often missed its true value — until now.

Defining digital twins is complex. They can range from a simple, stand-alone representation of a product component to an intricate, dynamic representation of activities and assets within a building — or an entire city.

This report examines the adoption of digital twin technology across 11 industries, exploring its profound impact on business value. By surveying 660 C-suite executives and their teams, we uncovered the innovative ways organisations use digital twins and the connection between technological maturity and organisational success.

From the unseen benefits you won't expect to the nuanced lessons learned from those ahead of the game, our insights reveal the state of digital twin adoption and where the technology is heading.

While challenges exist, organisations that have integrated digital twins are seeing real, positive results. But rather than just taking our word for it, we invite you to explore the data and discover the story for yourself in the pages ahead.

For the purposes of our research, we define a digital twin as:

Digital twin —
a precise digital representation of the physical world that uses dynamic data to simulate, analyse, monitor and optimise performance

We spoke to

660

C-suite executives and senior leaders across

11

industries

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Contents

Digital twins are driving organisational value

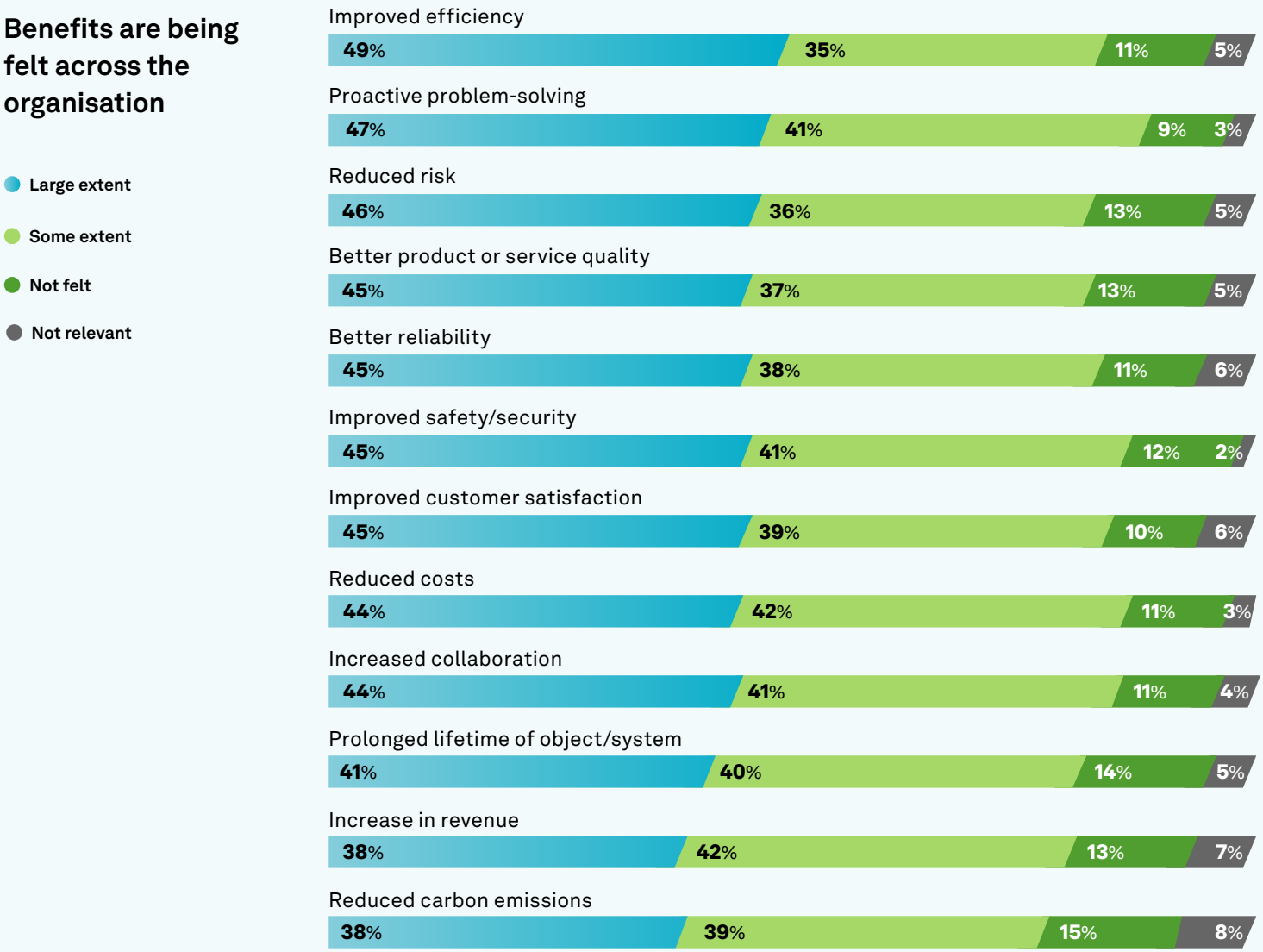
The evidence is clear: digital twins bring clear and visible benefits to organisations.

The vast majority of executives have strong views on the benefits they think digital twins can deliver. Of all respondents, 62% point to there being immense value from the technology. In fact, only 2% ***don't*** think digital twins can provide any value.

Those benefits are felt across organisations, particularly when it comes to operational value: for example, 49% cite improved efficiency as a major benefit.

Of course, the bottom line is crucial. While less than half (46%) have a structured system to track return on investment (ROI), those that do are seeing significant returns: 92% are seeing an ROI of more than 10%.

Benefits are being felt across the organisation



8 out of 10

organisations say their digital twin is helping reduce their carbon emissions

Digital twins are having a sizeable impact on organisations' financial health

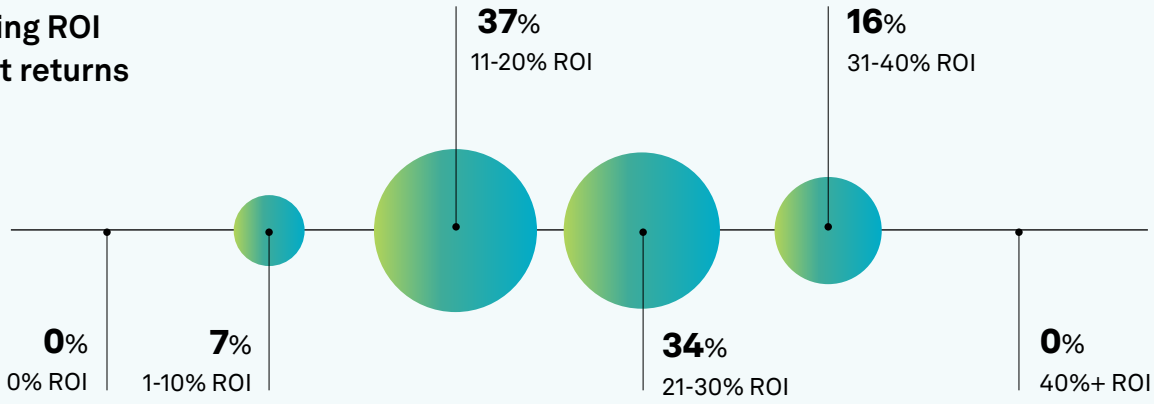
Average cost saving

19%

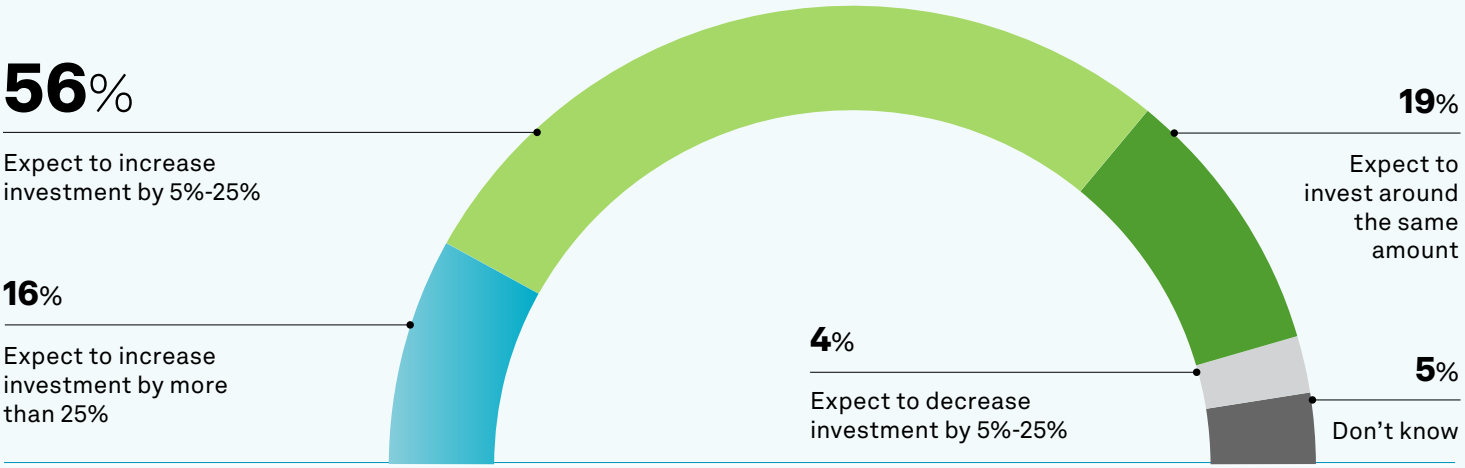
Average revenue growth

19%

Those that are tracking ROI are seeing significant returns



The value created by digital twins is reflected in a broad will to invest over the next 12 months



Reality exceeds expectations

When it comes to the benefits digital twins create, a big difference emerges between perceptions and reality

One message resonates loud and clear from our findings: digital twins deliver far greater value than leaders expect.

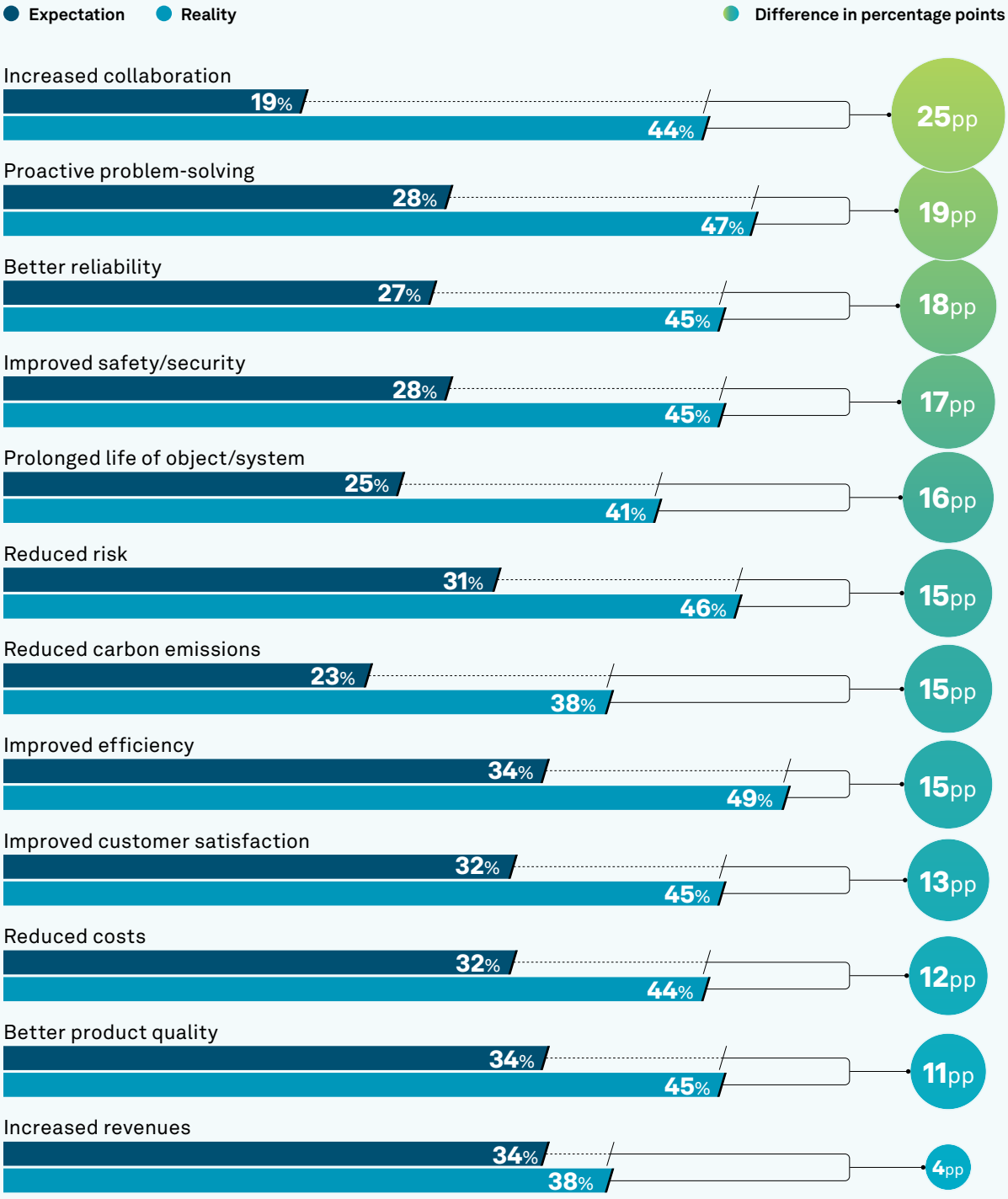
To understand if benefits are meeting expectations, we asked respondents who don't have a digital twin to rate how they perceive the benefits of digital twins. We also asked the same question to executives using digital twins in their business.

The results showed that those not yet using the technology are undervaluing its potential. For instance, of those without a digital twin, only 19% of respondents expect the technology to be able to significantly increase collaboration. However, 44% of respondents with a digital twin cite increased collaboration as a benefit they are already seeing — a difference of 25 percentage points.

Likewise, just 28% expect to see a big boost in proactive problem-solving, yet 47% are seeing this benefit.

Interestingly, the gap lessens when the benefits become more quantifiable. For instance, reduced costs, better product quality and increased revenues had the smallest difference between reality and expectations. In the case of increased revenues, the reality-expectation gap was just 4 percentage points.

Digital twins deliver far more value across the organisation than people expect



This chart shows the answers from two distinct groups of leaders.

The expectation data is based on the answers of 106 leaders who do not have a digital twin, who were asked about the benefits they expect a digital twin can create.

The reality data is based on the answers of 554 leaders who do have a digital twin, who were asked to what extent they are seeing each benefit.

> We should be more strategic, acknowledging that we have time to start somewhere and build over time."

Mark Cichy
Director of Design Technology, HOK

75%

who say they are very familiar with digital twins think they can deliver immense value for their organisation

Why is this? While benefits like problem solving and collaboration are incredibly valuable, it isn't easy to define their ROI: organisations may underestimate these benefits until they witness them at work.

Some sectors might be wary of digital transformation generally. There may be an understandable frustration with hype around new tech, with organisations growing increasingly disillusioned as new technologies are promoted as miracle solutions only to disappoint.

It's a complex subject, and there's little doubt that the precise attitudes and answers will depend on your business.

High risk of failure, fear of change or lack of urgency are all reasons often cited by management consulting firms and industry media. No matter the reason, against the backdrop of costly failures, it's little wonder that some organisations are wary of new technology.

Mark Cichy, director of design technology at HOK, a global design, architecture, engineering and planning firm, says "The technology has become a bit overhyped, and that's led to scepticism. There's confusion over what exactly it can achieve."

In his industry, organisations are wary because they have witnessed the failures of a range of solutions that over promised but underdelivered.

It's important to more widely demonstrate practical examples of the benefits rather than promoting them as a cure for a range of problems, Cichy believes.

"We should be more strategic, acknowledging that we have to start somewhere and build over time," he says.

The sustainability opportunity

With sustainability high on many agendas, digital twins' impact on carbon emissions is hugely encouraging

38%

of leaders see significant carbon emission reduction

15%

is the average reduction in emissions

Digital twins can also play a valuable role in cutting carbon emissions. But, once again, we face a discrepancy between reality and expectations.

Fewer than one in five respondents without a digital twin (23%) think digital twins can significantly cut emissions. And more (25%) don't think digital twins can deliver any carbon reduction.

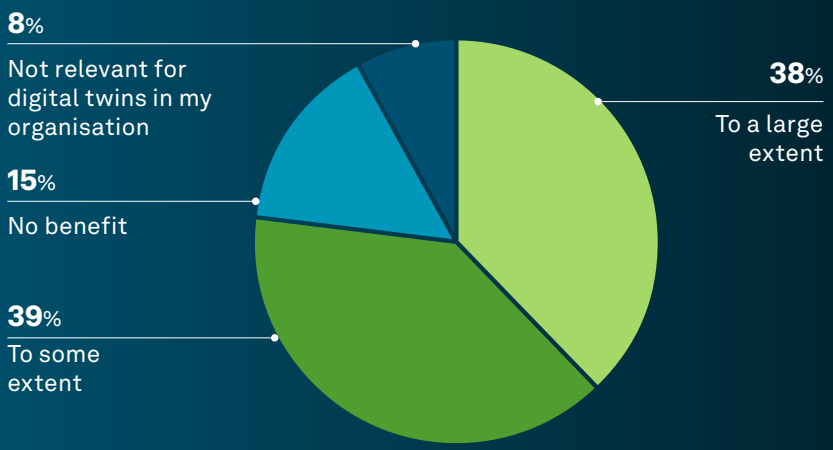
Yet the reality is much more positive. Across all sectors, 38% of respondents with a digital twin reported seeing a carbon emissions benefit to a large degree. Among those seeing a carbon reduction, the benefit is substantial: they report emissions falling by an average of 15%.

The benefits are clear: they provide precise, data-driven insights into the carbon emissions of a particular entity or system. For instance, the World Economic Forum has highlighted how digital twins, when paired with AI, can help building management systems generate significant emissions reductions through predictive maintenance, scenario testing, risk management and automated real-time reporting.

Of course, the benefits of cutting emissions will vary depending on your sector. Take the petrochemicals and chemicals industry — according to Zero Carbon Analytics, this sector makes up 6.1% of global emissions by end use, similar to the level of iron and steel and nearly double the emissions generated from cement. This is only set to rise as demand for petrochemicals increases.

Almost half of our respondents in the petrochemicals sector are seeing a large reduction in carbon emissions through their use of digital twins. For companies with a critical sustainability agenda — which is a growing majority — the opportunity is there for those willing to commit.

To what extent are organisations seeing reduced carbon emissions?



The pull of AI

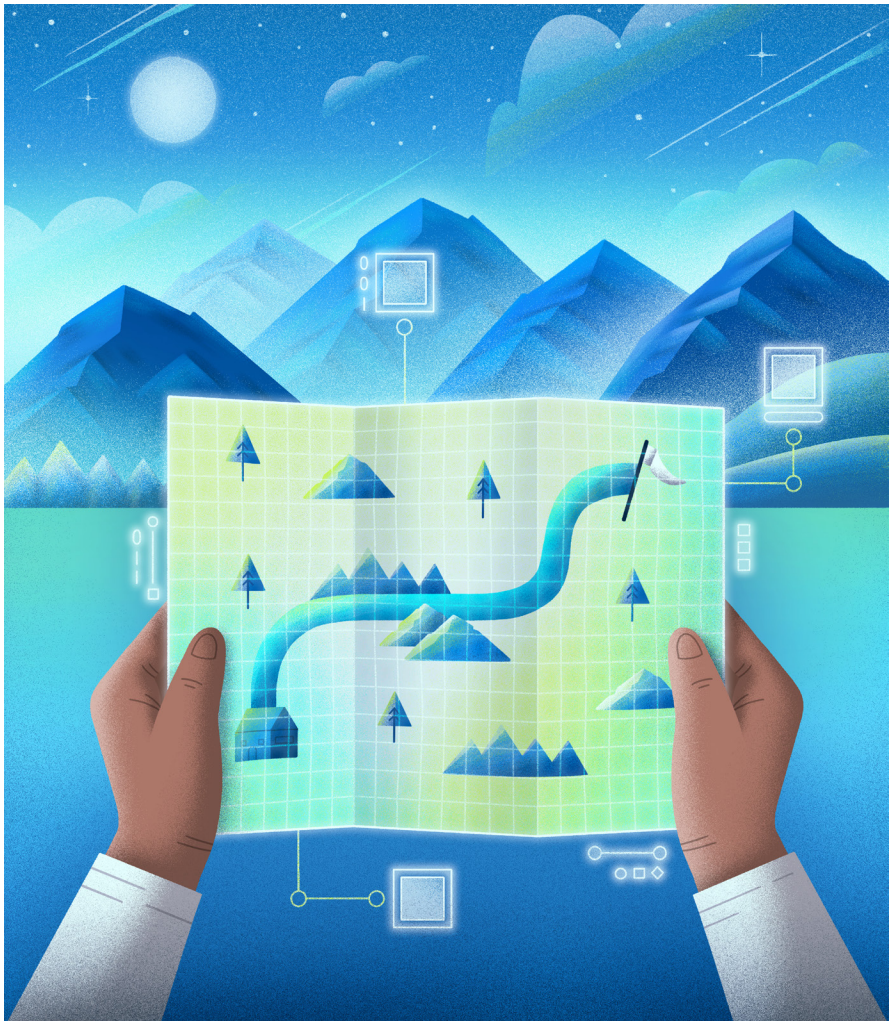
AI advancements are helping leaders navigate their path to growth

When it comes to future investment in digital twins, one factor weighs heavily: the impact of AI. The vast majority (80%) of leaders say AI has made them more interested in digital twins; these are two technologies that seem intrinsically linked.

AI is already a key feature in digital twins — the most prevalent use cases are the processing of front-end data (59%) and enhancing the user experience (56%).

80%

of respondents say AI has made them more interested in digital twin technology



Johannes Maunz, vice-president of AI at Hexagon, says that AI is an integral part of a digital twin throughout its lifecycle. He points to three key areas:

1. Creating a digital twin

"When a digital twin is created, AI might assist the planning process or augment the reality data capture with specific information. It might also remove unwanted items from the digital twin: like humans or tools on a construction site."

2. Updating a digital twin

"AI reduces the time and cost in keeping a digital twin up to date. For example, it takes 20 minutes to fly a drone over a construction site and then post-process the data. Previously, this would have taken hours and hours."

3. Easing access

"AI enables users to see results in a very visual way — by colour coding, using different layers or split views. Also, by leveraging metadata and language models, we can ensure users get access to the exact information they need at that point in time."

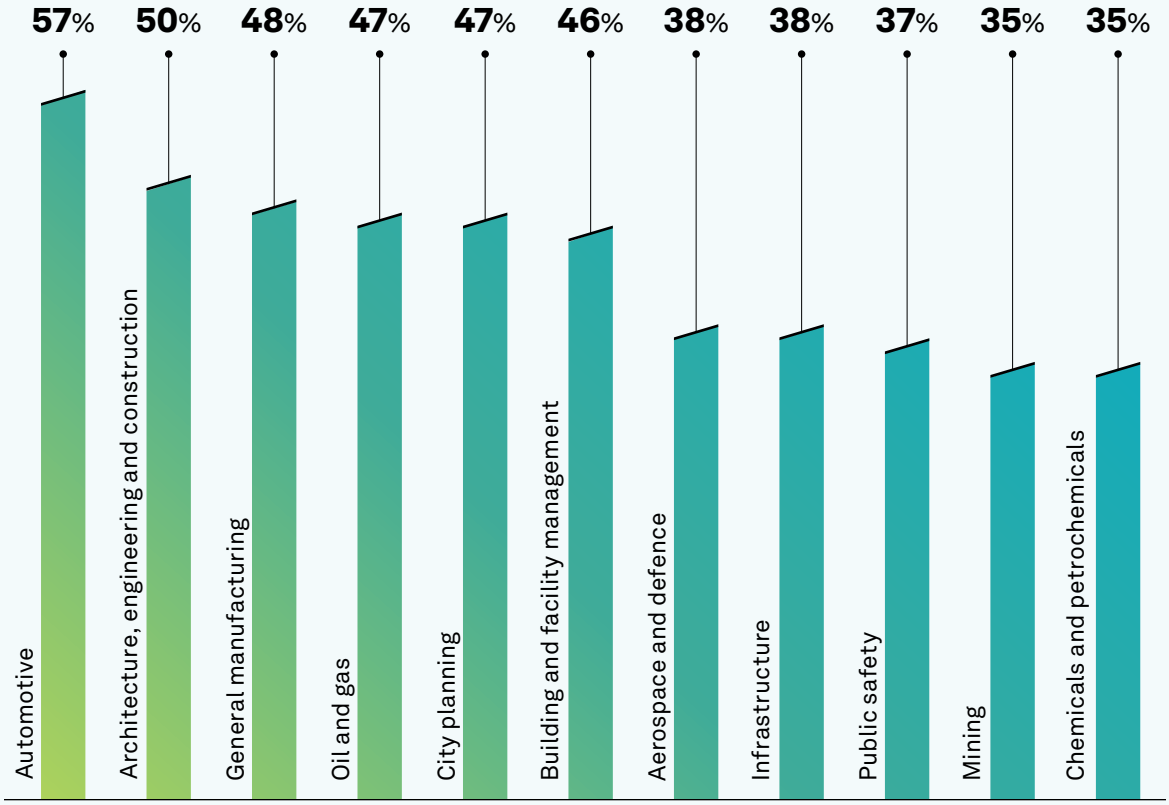
It's this last point — democratising access to key information — that Maunz emphasises. "Easing access is almost as important as having the data in the first place," he says. "The most attractive digital twins are making use of LLMs (Large Language Models) to let people on-site or in the field access data in an easier form."

A significant number of senior leaders are committed to investing in AI functionality, with 43% of leaders planning to add AI functionality in the next year.

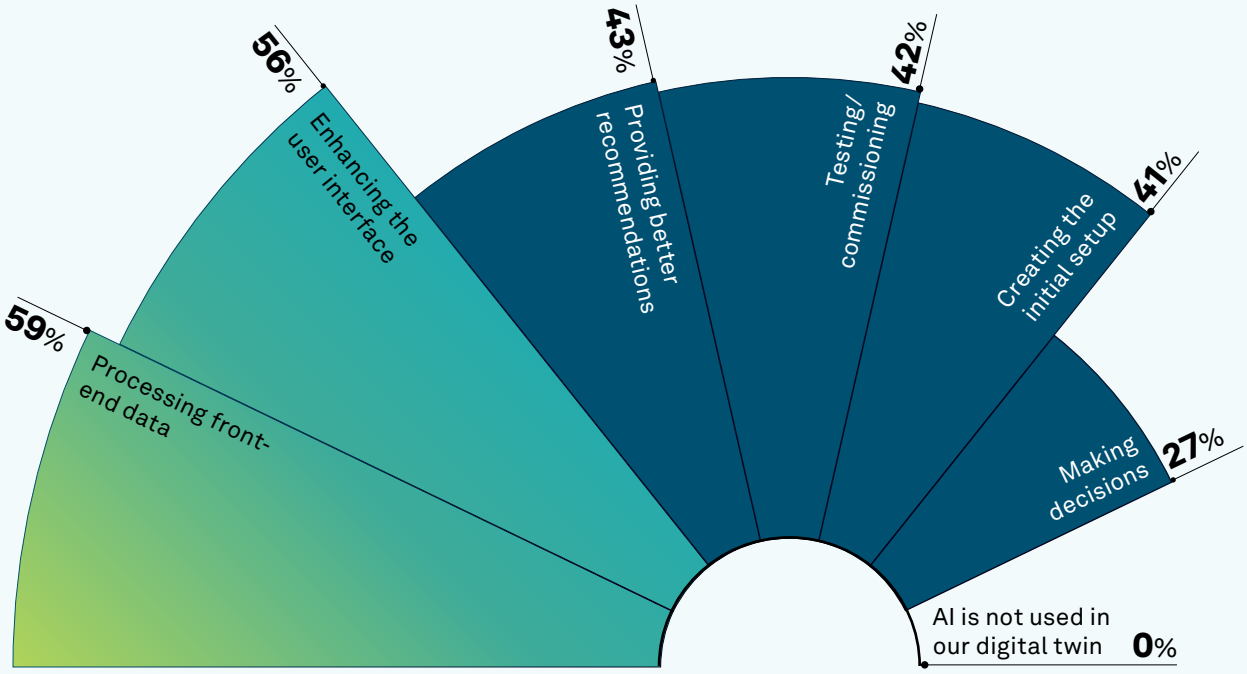
To reap the rewards, Maunz has two pieces of advice. "Be curious but always think about what the AI is actually good for. Not everything is of equal value."

"And secondly, don't try to do it all yourself. Do your research and find a partner. Think: am I just buying a product off the shelf or will it be something, like Hexagon's Reality Cloud Studio, that will have new features as it develops, that will enable your data to get more precious and where more insights will be possible?"

Plans to add AI functionality varies substantially across sectors



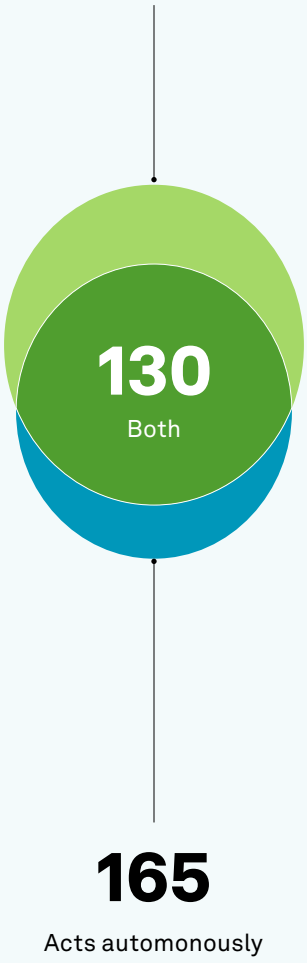
AI is mostly being used for processing front-end data and enhancing the UX



Five myths debunked

As a rapidly developing and transformative technology, digital twins are often misunderstood. Here, we discuss five key myths

More organisations are using digital twins to inform humans than to act autonomously



Myth 1
Digital twins replace human expertise

Might your digital twin be destined to become a completely autonomous entity with little human oversight? Our data suggests not. While over half of respondents (53%) say their digital twins can make at least some decisions previously made by humans, a greater percentage (59%) say they are informing human decision-makers.

A digital twin is an exceptionally advanced form of data visualisation, enabling a real-time simulation of a physical entity, location or process. The combination with AI (see p10) empowers data-driven decision-making, enabling users to see deeper, and boosts monitoring, analysis and optimisation. However, such advances aren't going to remove humans out of the decision-making process — at least for now.

Myth 2
A complete digital transformation is needed

There is no reason for an organisation to completely transform its processes and operations to accommodate a digital twin — many companies start small, taking a phased approach.

This could begin with a single component or use case before scaling up. Frank Suykens, Senior Vice President of Visual Computing at Hexagon, says digital twins add value at every step of their implementation. "Often companies begin small, generate value and then expand their use", he explains (see p20). "People start to see the value, then they ask where else they can add on to their digital twin."

Myth 3
Digital twins demand a lot of perfect data from the start

Organisations can develop their digital twin based on the data they have available at the time; a digital twin can start out on a small scale and then grow. And, as we discuss later in the report, data quality is an area that can be improved upon over time.

Simply producing more data is often not the right choice. Operational data usually exists, even if it's written down with pen and paper: the challenge is digitising, indexing and validating that data.

Myth 4
Digital twins are only for equipment

There is a common misconception that digital twins are only for 'things' — like an aircraft engine, a wind turbine or another type of machine. While digital twins can aid in areas like predictive maintenance, many respondents are seeing immense value in much more diverse applications.

For example, digital twins can be created for an entire supply chain, production line or quality control system. In sectors like public safety (see p18), their use is for complex, non-engineered systems where things like crowd management need to be modelled.

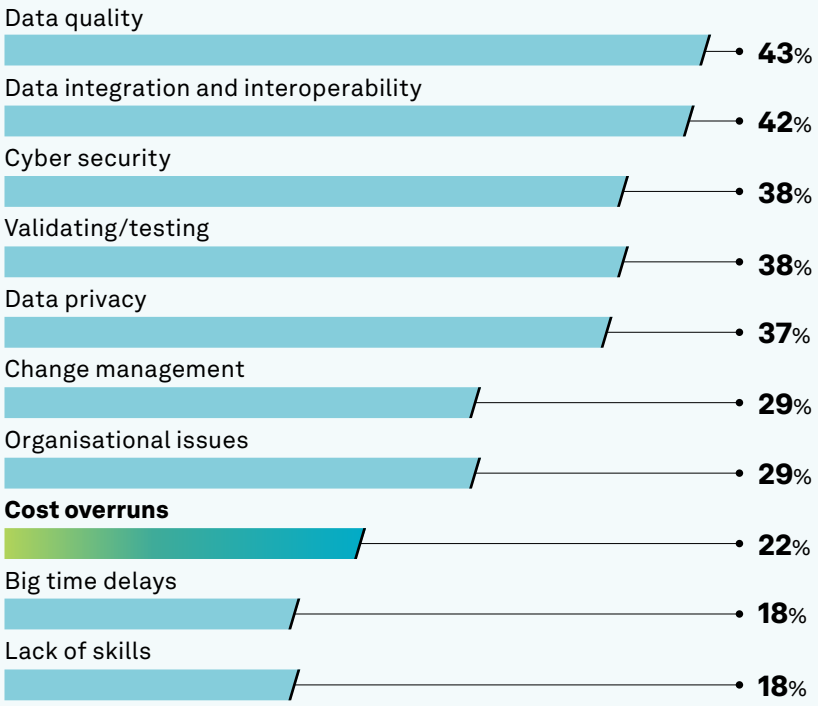
Myth 5
Implementation will massively overrun on costs

As with plenty of new technology, many believe that digital twins will be costly and come in over budget. But this isn't the case, according to our survey results.

When it came to the challenges of implementation, cost overruns were way down the list across all sectors, ranking eighth as the most common challenge. Some sectors are proving particularly adept at cost-control: while 22% reported this as an issue, it was lower for oil and gas (13%), public safety (13%) and mining (18%).

And, for those industries such as city planning and construction that do report slightly higher cost overruns, it's a problem cited by less than a third of respondents.

What challenges did organisations face when building their digital twins?



The Hexagon view: Technology that empowers humans

We believe digital twins can empower humans — not replace them.

By having access to real-time insights and predictive capabilities, you and your organisation can optimise operations. In some industries, digital twins are able to provide updates or simulate tasks that previously required putting people in unsafe situations, which makes our workforce safer overall.

The true value of digital twins is informing and enhancing decision-making across a range of industries. No one knows your company better than you and your team — digital twins can enhance your success.

The Digital Twin Value-Maturity Matrix

Find out where your industry is positioned in technical proficiency and business value

Digital twins offer value for businesses in any sector, though the pace of adoption naturally varies. Hexagon's Digital Twin Value-Maturity Matrix offers a snapshot of where industries stand when extracting business value from their digital twins.

About the matrix

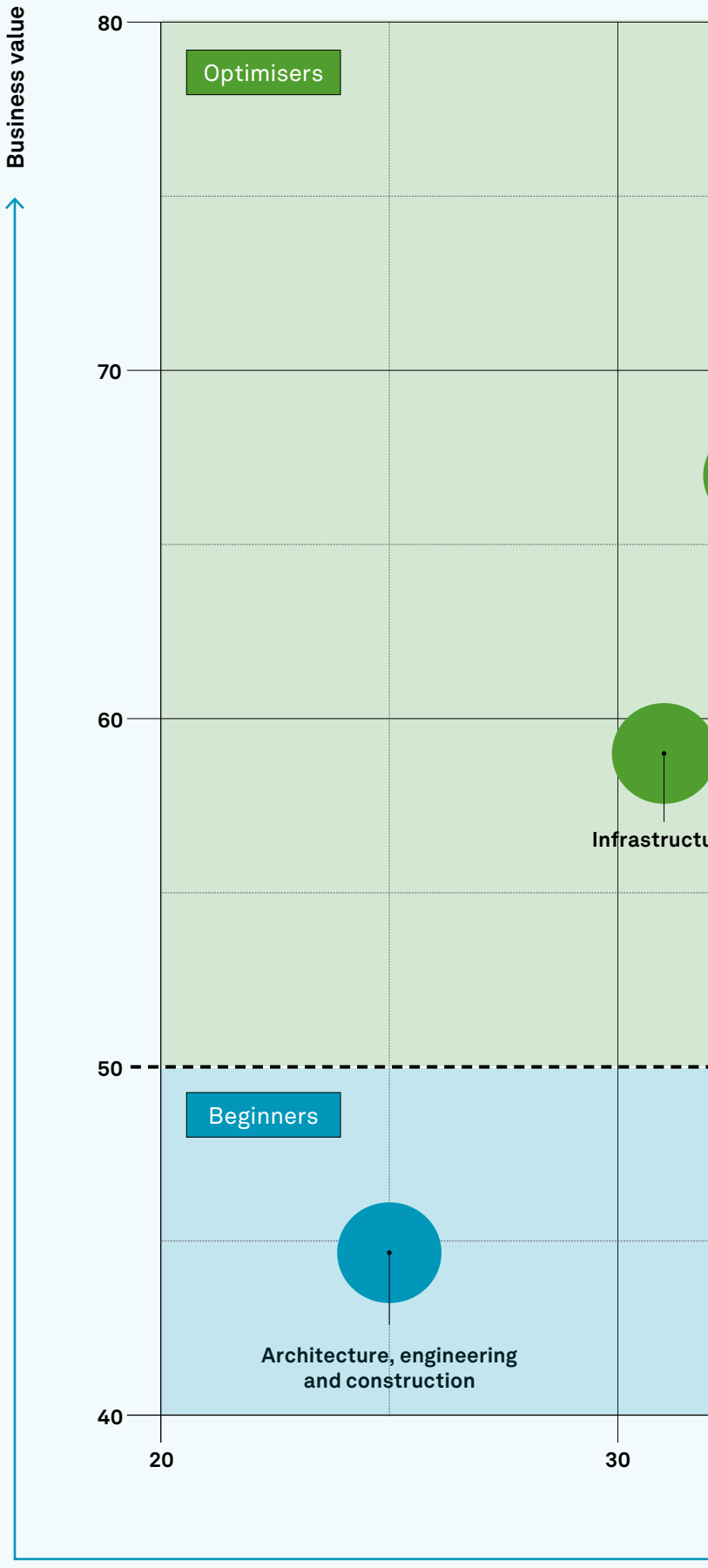
The matrix is designed to reflect technical proficiency and the value digital twins create for organisations. A sector's placement is based on a score generated from technical maturity and business value.

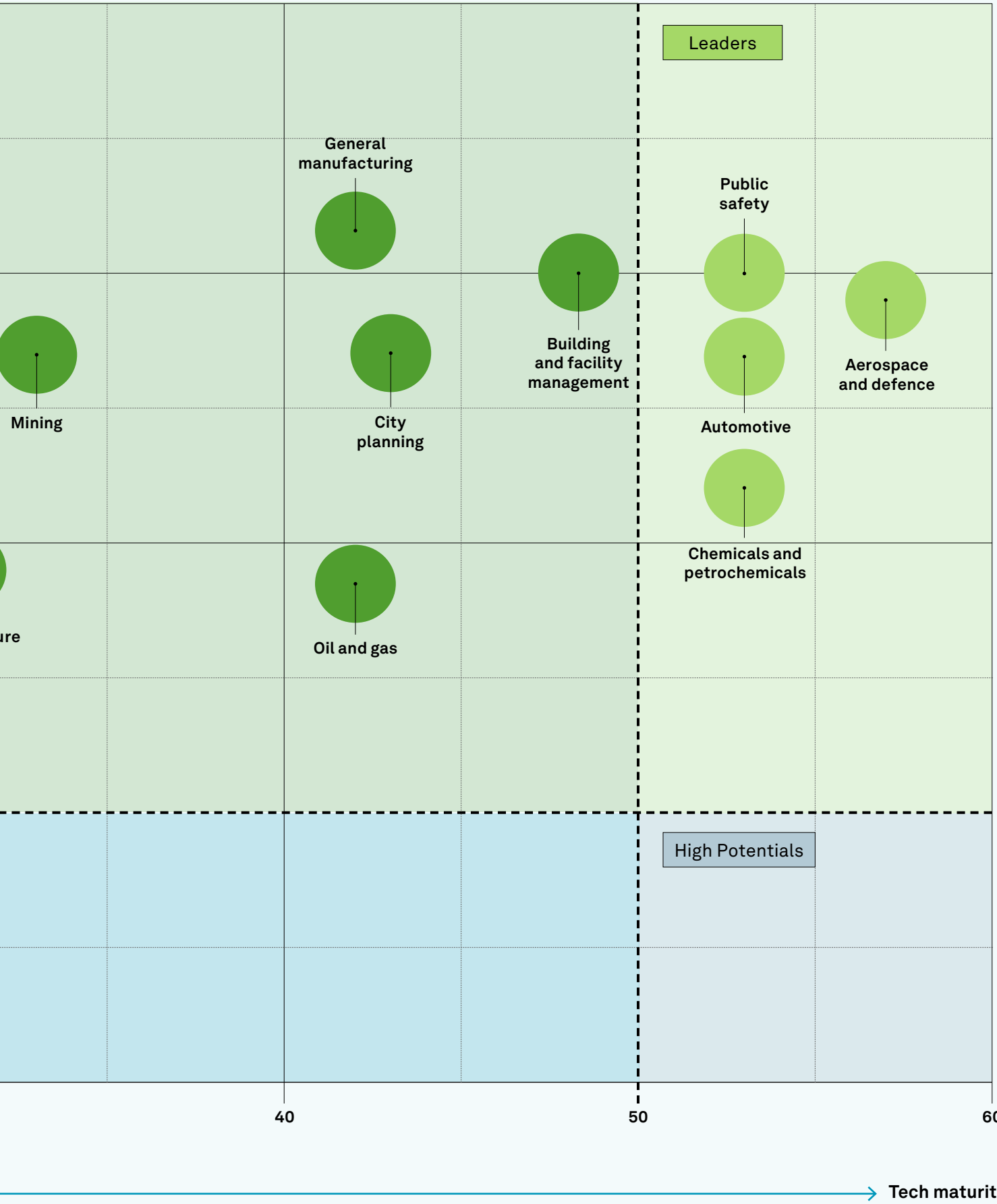
Technical maturity is based on factors such as the scale of implementation, integration with other digital twins and AI deployment. A score of 0 was applied to respondents with no digital twin and no pilot projects.

Business value is based on a mix of perceptions conveyed in the responses, including business data such as ROI and the benefits being felt.

To find out where your business ranks on our matrix, take **Hexagon's Digital Twin Value-Maturity Assessment**

Measure your digital twin's impact




Leaders
General manufacturing
Public safety
Building and facility management
Aerospace and defence
Mining
City planning
Automotive
Chemicals and petrochemicals
Oil and gas
High Potentials
40
50
60
Tech maturity

Digital twin maturity: Beginners, optimisers and leaders

Companies in each of our different groups discuss how they're overcoming problems, generating value and planning for the future

Beginner: Architecture, engineering and construction

Lower technical maturity and lower business value

Joshua Marriott is director of virtual design and construction at The Weitz Company, the sixth-oldest AEC company in the U.S. The company deploys digital twin 'visualisations' across a range of projects, including Building Information Modelling (BIM).

Marriott sees a range of benefits, notably the confidence it provides decision makers in data. As a general contractor, The Weitz Company typically has 50-100 subcontractors working on a project at any given time, with up to 1000 labourers on site. For busy management staff, "giving them the ability to have data when they need it is extremely powerful — they're not spending their time looking up information or outdated plans."

Why is the AEC sector at the beginner level? Marriott says the different elements of the process — from architects and engineers to construction firms to the clients themselves — often have different expectations for what a digital twin should comprise. This disconnect could be slowing adoption more widely.

Mark Cichy at HOK, meanwhile, notes that architecture is fundamentally different from a sector such as aerospace or automobiles. In architecture, many performance factors can be analysed retroactively without having to actively monitor the building. Many buildings are old, he says, "and just aren't as sophisticated as cars have become," lacking the sensors required for the dynamic stream of data.

While there is undoubtedly scepticism, Marriott is positive when looking ahead. "With the advancements of visualisation, reality capture and robotics, we're in a revolution as an industry, and I see that accelerating."

> "We're in a revolution as an industry, and I see that accelerating."
>
> **Joshua Marriott**
> Director of Virtual Design and Construction, The Weitz Company

Optimiser: General manufacturing

Lower technical maturity and higher business value

National Medical Products, based in California, U.S., manufactures its own tooling on-site to produce its needle-free injection device, the J-Tip. A digital twin depicts the tooling process before machining begins.

For Harit Patel, operations engineer and strategic growth manager at National Medical Products, the use of digital twins has helped to elevate the company's manufacturing capabilities. "It makes it more efficient. It allows us to really control what the machine is going to do, helps us optimise the processing and the cutting; you can literally just click one button and it gives you an efficient way of doing exactly what you want, nine times out of 10."

That's particularly important for a manufacturing process where any error made using the company's hefty 4-axis lathe is going to be costly. "If you do something wrong it's game over or a hefty bill," he adds.

Manufacturing is a highly promising area for digital twins. The sector is historically a source of innovation and change, one that is well used to disruption. Flexible production lines and increasing quality demands benefit greatly from a factory and product line digital twin — indeed, in a McKinsey report into the next frontier of factory optimisation, 86% of senior executives said a digital twin was applicable to their organisation.

In general manufacturing, digital twins are often used on specific use cases: like supply chain efficiency, asset management or energy optimisation. These applications yield significant value, even if the use cases are narrow, which limits technical sophistication.

Additionally, manufacturing involves complex machinery and physical systems — transitioning to a digital-first approach can require a lot of time and investment, delaying the achievement of full technical maturity. Patel believes the potential of digital twins is underestimated in his sector at present — something that could change with greater awareness.

With digital twins, manufacturers can foresee potential problems or sources of failure; they can design and test their products, and they can even analyse entire production lines using a virtual sandbox. It seems likely that as digital twins grow more embedded, manufacturing will increasingly embrace the technology.

High Potentials

Technical maturity yet limited value

The High Potentials are firms that have built strong technical capabilities in digital twins — but are not yet seeing significant value. Thankfully, none of the sectors fell into this category, but some individual respondents did. What do they have in common?

Management attitude is a clear issue. Even though firms in this quarter have invested in technology, the management's belief in digital twins is below average. Only 7% of managers at High Potential companies are strongly enthusiastic about digital twins. Among other firms with digital twins, this figure approaches 45%.

It's important to note that the High Potentials aren't giving up. Some 62% are increasing their spending in the next 12 months. Data is key: more than half plan to improve its collection.

Leader: Public safety

Higher technical maturity and higher business value

Kelly Robertson is the administration of justice professor and department coordinator at Fullerton College, California. Her work involves teaching and training students in the use of technology for justice and administration departments — digital twins are a large part of the course.

Public safety, a leader in our Matrix, is a sector where digital twins have an increasing number of use cases. Robertson points to digital twins helping detectives create simulations at crime scenes, and fire departments generating predictive simulations of wildfires based on changing factors like the weather.

Additionally, digital twins enable organisations to develop incident management systems, effectively manage events and accurately assess and predict vulnerabilities.

Although public safety is not usually an early-adopter of technology — and many public safety organisations are naturally unwilling to share a great deal of information about their technology — digital twins are being widely recognised. For Robertson, it's because there's an inherent need for situational awareness.

"Public safety organisations have traditionally been behind the eight ball. Law enforcement, for example, gets a lot of pushback from the people with the purse strings — and that's been at the cost of public safety. But its position as leader is due to the strong need for situational awareness. These are life or death situations."

Yet for Robertson, the apparent success in adoption and impact is down to the sector's ability to show how the technology is impacting people's lives. "Officials see that it works. Then the public see how it works," she says.

"Our ability to really show and demonstrate how technology is an additional tool to protect the public and first responders is necessary. The use of 3D scanners at a crime scene or accident reconstruction allows public safety professionals to be more effective and efficient. Drones, robot dogs, real-time dispatch, records, analytics and command centres provide law enforcement and first responders with management systems to make a positive impact on the communities they serve."

Looking ahead, Kelly expects more and more public safety departments to find further use cases for the technology. But that needs to go in tandem with external communication. "It's all about educating the public. And that's something we need to move forward — to show people we're here to help."

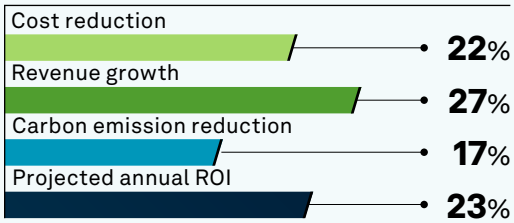
> "Public safety's position as leader is due to the strong need for situational awareness. These are life or death situations."

Kelly Robertson
Administration of Justice Professor and Department Coordinator, Fullerton College, California

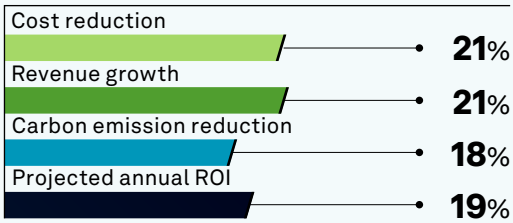
Industry benchmarks: What is the average value created across industries?

This is a sector by sector breakdown of the measurable impact digital twins are having. The data — showing average cost reduction, revenue growth, carbon emission reduction and projected annual ROI — shows a technology having a significant effect across all industries.

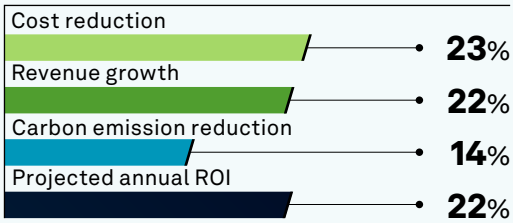
Automotive



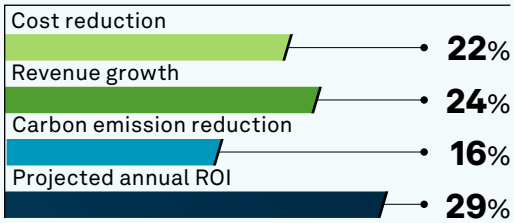
Aerospace and defence



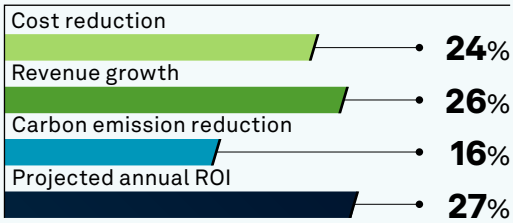
General manufacturing



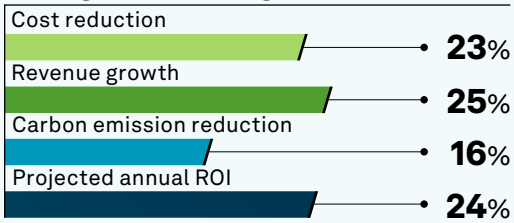
Mining



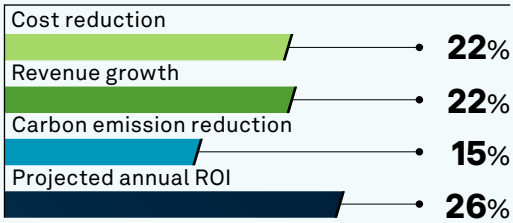
Oil and gas



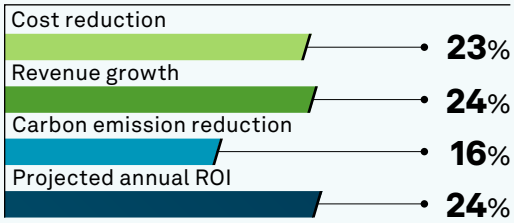
Chemicals/petrochemicals and refining/manufacturing



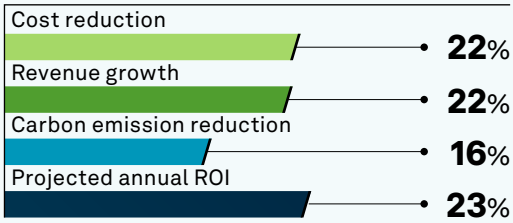
Infrastructure



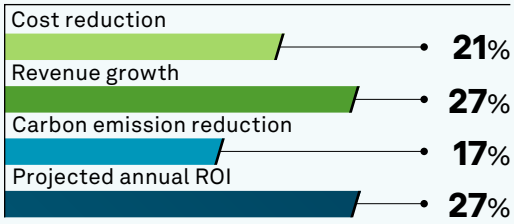
Building and facilities management



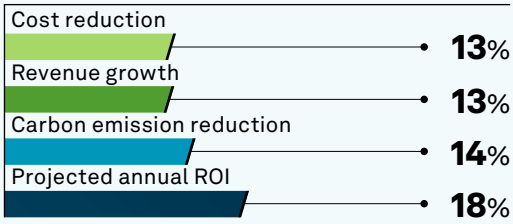
Architecture, engineering and construction



City planning



Public safety



Making gains at every step

As companies progress on their path, they'll see benefits at each stage

Frank Suykens
Senior VP of Visual Computing, Hexagon AB

Even a small-scale digital twin can deliver mighty benefits. Step-by-step enhancement can increase that value — at a pace that suits your organisation.

Digital twins provide value at every stage and on any scale. As the technology becomes more integrated into your organisation, the benefits will increase. At Hexagon, we have some customers who need a full CAD plan for their site: this could show the locations of engineers on a site, assets in particular buildings, or other types of real-time information.

We also have customers whose digital twins are single-use, built on LIDAR or other types of scans — of a factory floor, for instance — which can be updated with additional data as necessary.

There are a wide range of starting points for digital twins, depending on your needs and the different types of data you have. But, as you add more data and integrate the twin further into your organisation, you will see a process of incremental gains.

Starting from small beginnings

For example, consider BASF, the largest chemical producer in the world. Working with Luciad and HxGN Smart Sites, BASF built a digital twin of its 6km² Antwerp site, providing a dynamic common operating picture that allows users to view different data types. This ranges from planning for on-site construction to displaying the location of printers across different offices.

This is an enormous digital twin project, but it had relatively small beginnings. Now, a significant percentage of employees in BASF Antwerp use the digital twin application every day.

Adding data sources, bit by bit

Even when the initial scope is bigger, the addition of new data sources can reap more gains. For example, we've worked with the City of Klagenfurt in Austria to create a digital twin of the city, transforming its urban planning.

The majority of digital twins are integrated with other digital twins

> The more information you have connected together, the more use cases you can pursue."

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This was built on 19,000 individual images taken from a four-and-a-half-hour flight over the city. The project started with a 3D model of the city, but it's continued to grow with the addition of data on infrastructure, vegetation and beyond.

A phased approach has many benefits. It can be easier to get buy-in at all levels if you begin on a small level and only seek to expand after you have demonstrated the value of the technology.

Increasing integration reaps rewards

As companies deepen their use of digital twin technology, they will increasingly integrate it with wider elements of their business — and with other digital twins. Our survey shows the majority of digital twins (63%) are integrated with others, bringing benefits in areas such as cost savings (56%) and improved insights from data (53%).

The more information you have connected together, the more use cases you can pursue. However, it's vital to ensure you move carefully, avoiding any danger of overwhelming people with information.

Again, a phased approach has clear benefits: by taking it one step at a time, you can realise the benefits of digital twin integration at a pace that suits your organisation.

More integration = more benefits

Respondents reported on average three benefits from connecting their digital twin. Here are the most-cited:

56%
Cost savings

54%
Improved ROI

53%
Better insights from data

47%
More holistic view

38%
Can improve risk management

29%
Gives multiple views into the asset or system

The difficulties of getting good data

Accurate data is imperative for maximising the value of digital twins — organisations are working to improve this

To build and implement a digital twin is not without its challenges. And when it comes to the key obstacles facing organisations, our survey points to a clear conclusion: it's all about the data.

Data took the top two spots for the challenges that executives and their organisations faced when building their digital twin, both in terms of data quality (43%) and integration and interoperability (42%). Accurate and timely data is paramount to a fully functional digital twin that creates the maximum value for a company: this is clearly a challenge that needs addressing.

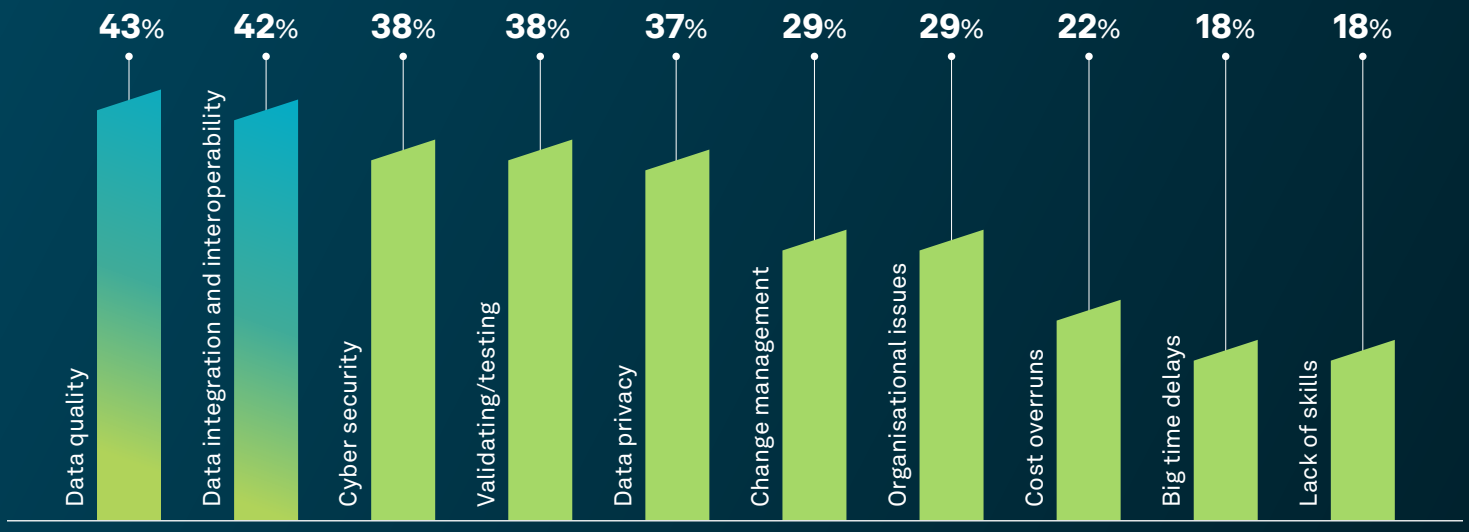
HOK's Mark Cichy says that in the AEC sector, there may be a lack of knowledge and experience in extracting, leveraging and organising data. Contractors, engineers and architects "are not data scientists, and margins are generally so razor-thin, you don't just have somebody on staff who can create order out of what is typically very, very messy information."

However, things are changing. Cichy's firm is developing different strategies on a project-by-project basis to mine, categorise and structure data, while it utilises a range of technologies to leverage information. "We're using AI on a number of initiatives to create order where there was none before."

That work is indicative of a broad proactivity to tackle the data problem. Our survey shows that companies are investing to address this challenge. When it comes to where organisations will be spending money for the next year, improved data collection is the number one enhancement. Indeed,

Data issues are currently the top two challenges facing organisations

Challenges encountered when building their digital twin



56% of respondents across sectors are prioritising this.

It's important to note that, despite these challenges, companies continue to use and see the benefits of digital twins. Even 'imperfect' digital twins are creating significant value. While four out of ten executives had a problem with their data quality, a clear majority of that group (71%) said that they saw immense value in digital twins — in line with those who reported no data issues.

This demonstrates an opportunity to add functionality over time as data gathering and integration advances, underscoring the theme of continuous improvement. As organisations improve their data quality, the benefits will only increase.

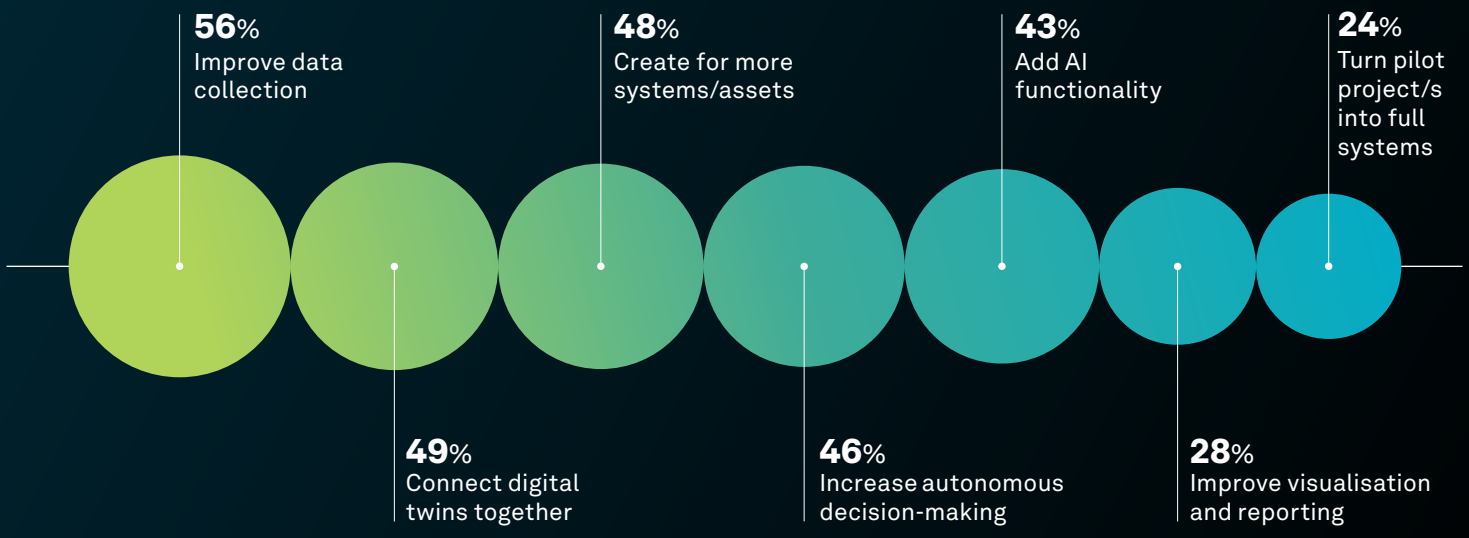
The Hexagon view: The power of the right partnership

The troubles that organisations have with their data only highlights the importance of finding the right technology partner to support you on your digital twin journey.

Through our software platforms and hardware solutions, Hexagon can deliver the most precise, high-quality and actionable data available. That enables you to put the data you're collecting to use — providing the insights and analytics to inform critical business decisions.

But organisations are aware of this — and planning to improve data collection

Areas where organisations are planning to enhance in the next 12 months



The untapped potential for small-to-medium businesses

It's not just enterprise-level organisations that have transformative digital twins.

In our research, small and medium businesses (SMBs) are those with annual revenues below $50 million. Digital twins hold huge promise for this group — though many organisations of this size are yet to fully embrace the benefits.

1 SMBs are yet to fully grasp the impact of digital twins

Almost half — 49% — of executives who hadn't heard of digital twins were from organisations with revenues of less than $50 million. Low awareness shows this technology remains relatively immature among SMBs, reflecting the fact it's thus far been pitched at the enterprise level. Yet the opportunity is huge.

Less than half of SMBs have integrated digital twins

Is your digital twin integrated?

2 SMBs have mighty digital twins

SMBs that embrace the technology are already reaping the rewards. They're seeing numerous business benefits, including improved efficiency, prolonging the lifetime of objects or systems and boosting customer satisfaction.

96% of SMBs that use digital twins see value. This figure is comparable with larger organisations, proving the utility of the technology for all.

That extends to the ROI too. Of the SMBs tracking ROI of their digital twin, 44% project an annual ROI of 11-20%, whereas 50% project an annual ROI of 21-30%. Both figures are higher than those of their larger peers, proving a smaller company size has no bearing on outcomes.

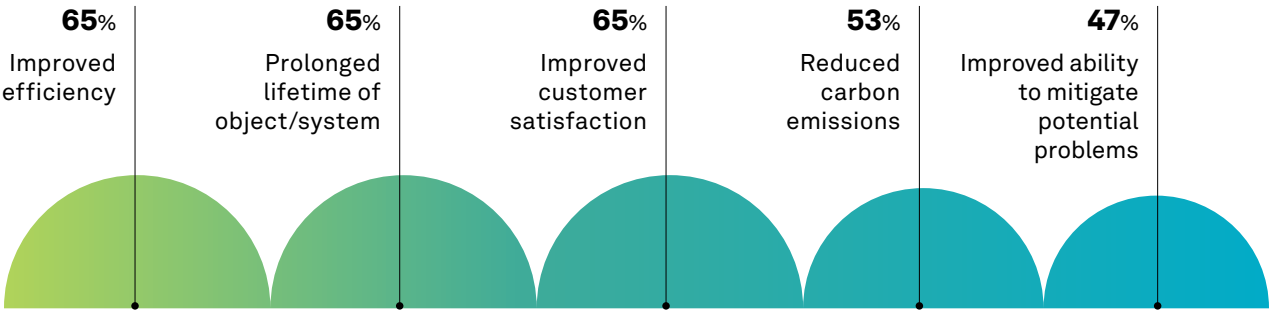
3 Challenges ahead include integration and data collection

SMBs face unique challenges. Some of these challenges may be due to resource constraints, both financial and in terms of employee bandwidth.

Compared to larger organisations, the digital twins at SMBs are less integrated into their wider operations. Just 47% of firms with revenues below $50 million say their digital twin is integrated, compared with 70% of firms in the $50 million to $250 million category.

Data quality and consistency are also obstacles, cited by 53% of SMBs as a top challenge in building their digital twin, compared with an average of 43% overall.

SMBs are seeing multiple benefits to a large extent



Survey methodology

How we put our global survey together

This report used data from Hexagon's Digital Twin Value-Maturity survey, which surveyed 660 C-level executives and their direct reports about the adoption of digital twin technology within their organisations.

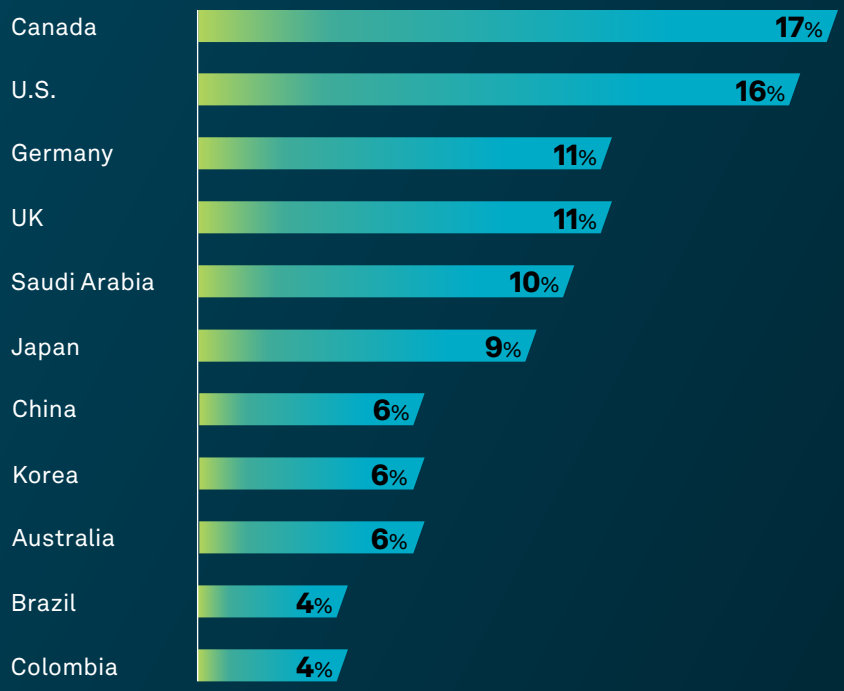
We surveyed respondents from Australia, Brazil, Canada, Colombia, China, Germany, Japan, Korea, Saudi Arabia, the UK and the U.S.

We focused on 11 sectors: AEC, aerospace and defence, automotive manufacturing, buildings/facilities management, chemicals/petrochemicals, city planning, general manufacturing, infrastructure, mining, oil and gas (extraction and pipelines) and public safety. Each sector featured 60 respondents.

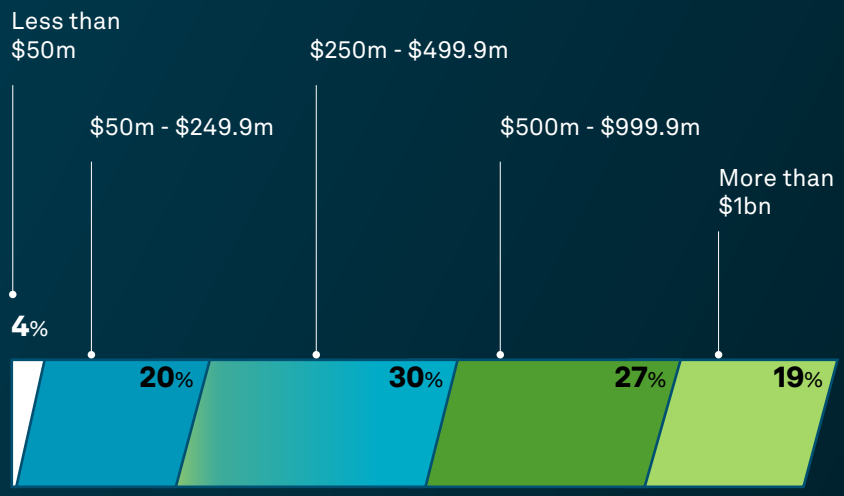
The fieldwork was conducted over the phone and online between April and June 2024. To qualify, respondents had to meet a certain criteria — to either be a top-level decision maker or report to a top-level decision maker.

Questions focused on both the technical maturity of their digital twin and the business value they are seeing.

Geographical split



Company revenue overview



To find out how Hexagon can kickstart or advance your organisation's digital twin journey, head to our online hub.

If you have a digital twin and want to see how it measures up on our matrix, take Hexagon's Digital Twin Value-Maturity assessment.

Hexagon is the global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector and mobility applications.

Our technologies are shaping production and people related ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us @HexagonAB.