GHD Digital

THE INNOVATION IMPERATIVE

SURVIVING DISRUPTION THROUGH DIGITAL TRANSFORMATION

Foreword

In the last few years, we have seen companies dial up the innovation agenda to an extraordinary degree, accelerating the pace of innovation by some estimates of six to seven years. I've been working in the digital innovation space for over two decades, and it is unlike anything I have ever known.

I am proud to share findings on the state of innovation in organisations today. With a unique focus on the critical infrastructure, utilities, oil and gas, and environment sectors, our report shares perspectives from senior executives across industries and geographies on how their practices relating to innovation have changed since the pandemic.

The research provides a fascinating insight into how thinking has changed and what it means for organisations, and the people they serve, in the future. One thing has become clear: the confluence of a pandemic, digital acceleration and climate change has created market forces that require innovation for ongoing success of organisations.

It was encouraging to learn that 94 percent of executives regard digital innovation as an opportunity rather than a threat. This shows that the value of digital is now largely understood, not as an expense but an investment. The catalytic effect of the pandemic on this mindset shift cannot be understated.

Three key themes stood out for me:

1. Before the pandemic, innovation was in a box. It was an activity undertaken when an organisation had time or inclination. It was optional. During COVID-19, innovation became ubiquitous. Organisations had to become innovative in saving money, operational efficiency, engaging with its people, and in the way they served clients. Organisations were compelled to respond to the changing needs of their customers and citizens.

2. The advantages of digital acceleration can be seen across the board – from the roll-out of vaccines around the world to the rapid shift to remote and hybrid working through the use of online tools which have continued post-COVID as a permanent model for many organisations. In our report, we share five capabilities we consider essential to the future success of organisations embracing innovation.

3. Strategy and technology capabilities are not enough. Organisations need strong, suitable leadership to survive, thrive and grow. Digital transformation is the responsibility of all leaders, from the CEO down.

If I may add a little on my personal experience over these last two years and observations on the opportunities to come. Beware the perils of short-termism. Short-termism impacted a number of industries, who focused too much on profit, cutting staff and were not prepared for the return in demand. For example, in many industries, as the demand reduced, they were quick cut staff.

It highlights the need for organisations to invest for their future financial successes now, because we are going through one of the most profound changes in history. To come out of this change positively, organisations need to learn what needs to stay and what needs to go, and then focus on the future. This needs to happen over the next 12–24 months to ward off a potential existential crisis because the world is changing rapidly.

I've observed that almost all sectors we work with, are seeing new business opportunities aligned to social and community objectives. Corporate social responsibility is no longer a nice-to-have but a must-have to stay in business. There will be no ESG (environmental, social and governance) agenda without innovation through technology. Organisations will need to effectively record, report and reduce their emissions and improve social outcomes.

I hope you enjoy our report. And given the unusual times we are currently living in, I know it will be something that I will come back to read years from now.

Please reach out to me if you would like to share thoughts of your own.

Kumar Parakala
President, GHD Digital

About our research

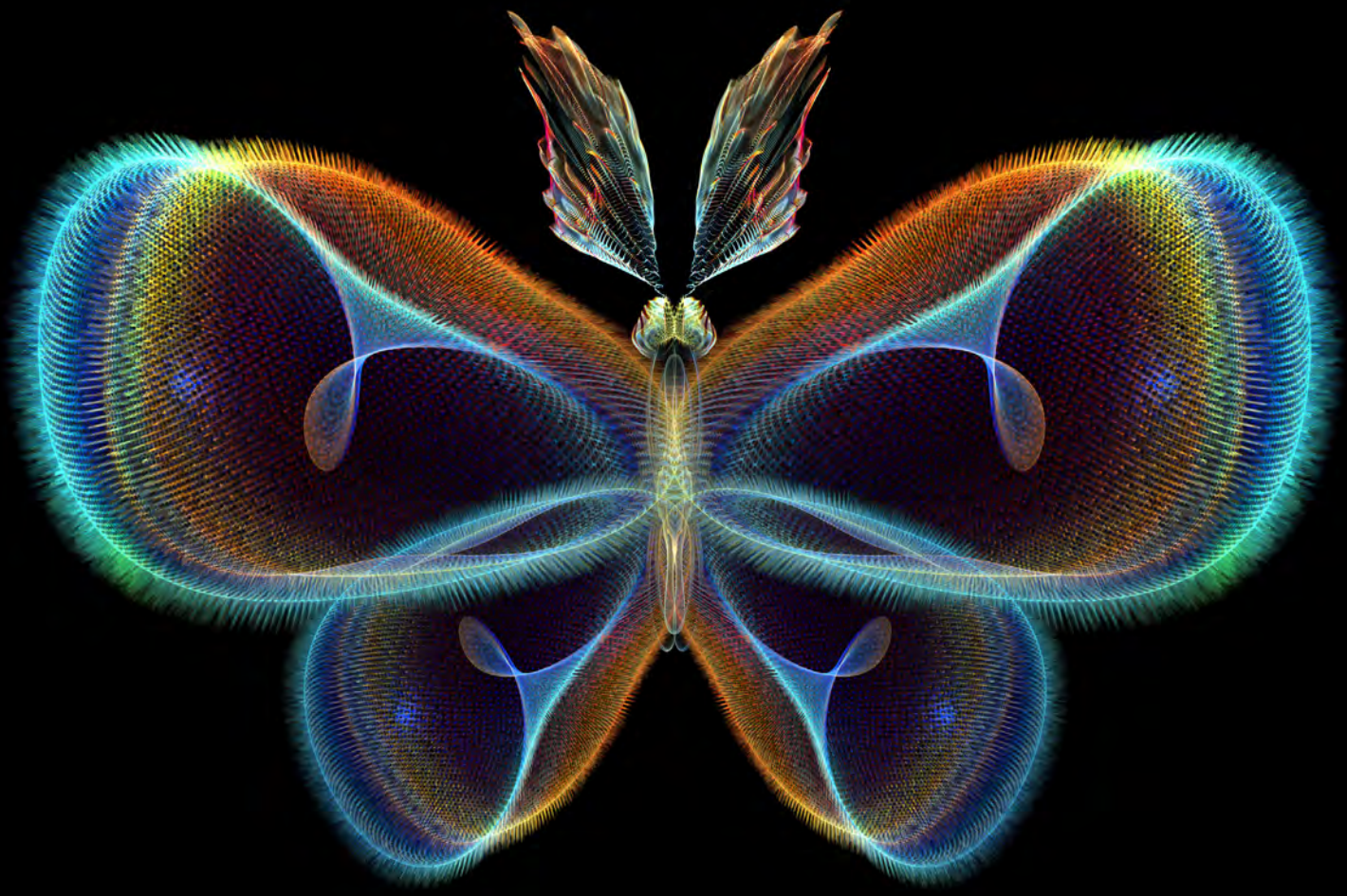
During March 2022, GHD Digital and Source Global Research surveyed 777 senior executives from Australia, Canada, New Zealand, Saudi Arabia, United Arab Emirates, United Kingdom, and United States. Our intent was to understand whether organisation's attitudes or practices relating to innovation had changed as a result of COVID-19 and other disruptive forces.

Executives were drawn from a range of sectors, including infrastructure, construction, transportation, energy and natural resources, and within those sectors, respondents came from privately owned companies, publicly-listed companies, government bodies and public-private entities. In May 2022, the survey was followed by in-depth interviews with additional senior executives from industry and GHD experts, to further understand the themes emerging from the survey data.

No longer a 'nice-to-have', today innovation is a 'must-do,' thanks to a range of new challenges.

Organisations and individuals still married to legacy approaches and old-school processes are placing themselves at risk.

Table of contents



Section 1 2 3

Why is innovation the new imperative?

After the tumult of the last few years, innovation has moved to a new address, and senior executives around the world are racing towards it.

The status quo is being de-constructed, fresh thinking is bubbling up, and there is a confidence and a bullishness that did not exist pre-COVID. For many organisations that historically were never quite ready to innovate and experiment, there is a major change – suddenly they are getting on board. No longer a 'nice-to-have', today innovation is morphing into a need and a 'must-do' attributed to a range of new challenges. Those organisations and individuals still married to legacy approaches and old-school processes are placing themselves at risk.

McKinsey estimated that companies accelerated the digitisation of their customer and supply-chain interactions and of their internal operations by three to four years during COVID-19. And the share of digital or digitally enabled products in their portfolios accelerated by seven years.

Our survey of 777 senior executives from Australia, Canada, New Zealand, Saudi Arabia, United Arab Emirates, United Kingdom, and United States indicates that this is a global phenomenon.

89% **of executives believe that disruption and uncertainty in their industry is creating greater pressure on their organisation to innovate**

Most notably, it is taking place in sectors that have traditionally been regarded as somewhat off the pace when it comes to innovation and digital technology. Executives in the infrastructure, construction, transportation, energy and natural resources sectors, are experiencing a mindset shift and are re-framing their expectations of how they can apply innovation within their organisations.

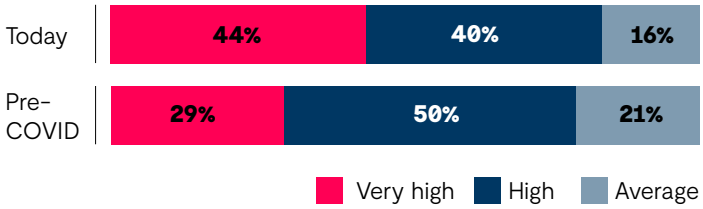
For many organisations, the COVID-19 pandemic kick-started new approaches, new thinking and new ways of working. Across the world, executives told us that, when it comes to innovation, there's a real sense of progress and a tangible shift across their organisations. When they were asked about perceptions of innovation performance today compared with pre-COVID, leaders saw a significant improvement. In the US, for example, executives rated their innovation performance as very high, with levels rising from 27 percent pre-COVID to 44 percent today.

At an industry level, we were most struck by a significant lift for those working in government, with 44 percent rating their innovation performance as very high, compared with 27 percent pre-COVID. As many of us saw at a personal level, the pandemic and its consequential lockdowns, social distancing and remote working forced organisations to find new ways for their show to go on, breaking down many historical barriers to change.

A perfect storm of disruption

While COVID-19 was clearly a key force impacting innovation, the canvas of disruption affecting the infrastructure, construction, transportation, energy, and natural resources sectors was already broad and complex.

Figure 1. How would you rate the innovation performance of your organisation today?



Before COVID-19, the Fourth Industrial Revolution (or Industry 4.0) had already been making its presence felt, characterised by the rapid development and convergence of technologies across multiple spheres, including physical, digital and biological. Industry 4.0 brings huge opportunities to create new forms of value within these sectors. Given the relatively low starting position when compared with industries such as financial services, technology and automotive, there is now significant white space and plenty of low-hanging fruit for these sectors. Today, organisations are engaging with automation, data analytics and artificial intelligence (AI), merging the physical and digital worlds, at previously unseen levels.

Take the Investa Property Group in Australia, which is constantly pursuing new ways to drive value from digital and data capabilities in the sector. Investa has been involved in several award-winning developments that blur the physical and digital worlds using cutting-edge technology.

Industry 4.0 is inter-woven with other immense disruptive factors. The global energy transition and the pursuit of decarbonisation is a colossal consideration for strategic leaders, and this is strongly evident in changing customer preferences, new regulatory requirements, and subsequent impacts on capital flows. And as we emerge from the COVID-19 pandemic, a series of supply shocks, inflationary pressures and talent shortages are further challenging resilience, even before the war in Ukraine further destabilised the global economy.

Disruption can also manifest itself in a far more positive form, such as the generational investment flowing from the USD1 trillion bipartisan Infrastructure Bill in the US.

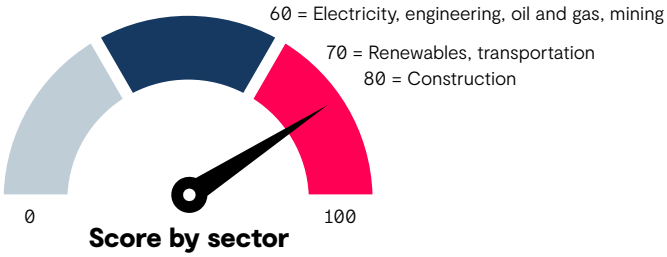
“The two main drivers of disruption are data transparency and access to information. We have a lot of information problems in real estate. Unlike the stock and bond markets, there is no Bloomberg. No “ticker symbol” for a building. Historically, in real estate, we have operated through hyperlocal expertise, keeping huge amounts of information in our heads, on spreadsheets, in small, siloed pools of data. But we are now blending together hundreds of live datasets into an interface that allows us to ask questions, discover new patterns and see hidden trends.

For example, we can now easily blend demographic, income, housing, sales price, rental rate, commute times and social infrastructure data – and start planning where to build affordable housing or emergency housing shelters. With such sophistication, we can innovate in a way that we never could before. One of our newer buildings, 60 Martin Place in Sydney, has 22 thousand IoT (Internet of Things) sensors throwing out a huge amount of continuous data, and we’ve got analytics on it constantly.”

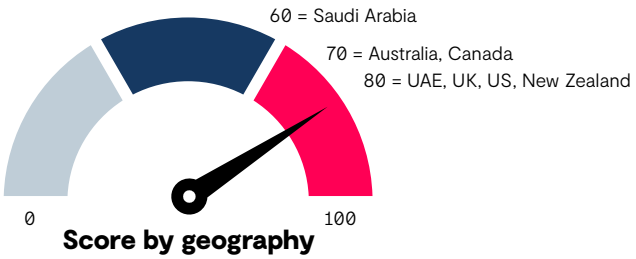
» Joanna Marsh, General Manager, Innovation and Advanced Analytics Investa Property Group

To take a snapshot of how this combination of factors is being experienced, we asked our respondents to share perceived levels of disruption in their industry, on a scale of 0-100, with 100 being the highest level of disruption. The findings suggest that relatively high levels of disruption are being experienced across different countries, and perceptions of disruption were largely consistent, despite the very different profiles of their respective economies.

Figure 2. Thinking about the levels of disruption in your industry, please give a score out of 100, where 100 is the highest level of disruption and 0 is the lowest level.



Highest % of respondents scores in looking at all geographies and sectors



Similarly, respondents from the infrastructure, transportation and construction sectors reported higher levels of disruption comparable with their peers in the energy and natural resources sectors.

While a greater proportion of executives believed there was more disruption today when compared with pre-pandemic levels, the margins were modest. Clearly for many, disruption was already a feature of business as usual, pre-COVID.

Beyond this snapshot, we were keen to understand the relative importance of the different drivers of disruption, and a clear picture emerged. Technology and digital transformation were consistently highlighted as the key driver of disruption for executives in all countries.

For most leaders, disruption is always top of mind; evidenced by corporate and business strategies that focus on assessing the type of disruption, by whom, the level of risk and whether the disruption provides opportunities for creating new value. In recent times, disruption has become all encompassing, impacting not only an organisation's brand but its staffing profile and structure.

Prior to the technology disruption that was 'the Internet', most organisations experienced disruption via advancements in new products or services. Some of these included new technology or new competitors entering a market, especially where incumbents did not have defensible and hard to copy value propositions.

Technology and digital transformation are the number one drivers of disruption for executives in all countries.

Figure 3. Would you say there is more disruption in your industry today when compared with pre-pandemic levels?

54% Saudi Arabia

46%	45%	42%	40%	40%	37%
UK	Australia	New Zealand	Canada	UAE	US

“Every part of the energy sector, including existing and new assets, supply chains, utilities, and the geopolitical consequences of energy dependence, are being looked at through the lens of increased electrification, renewable gases such as hydrogen, and the difficult challenge of dealing with emissions from the most hard-to-abate industries such as steel and cement.

Energy transition will last several generations, require new technology, skill sets that are in short supply globally, and new ways of digital and technological thinking that will ultimately propel revamped energy grids from production and transmission right through to how consumers both purchase and create their own energy.”

» Tej Gidda, Global Leader, Future Energy
GHD

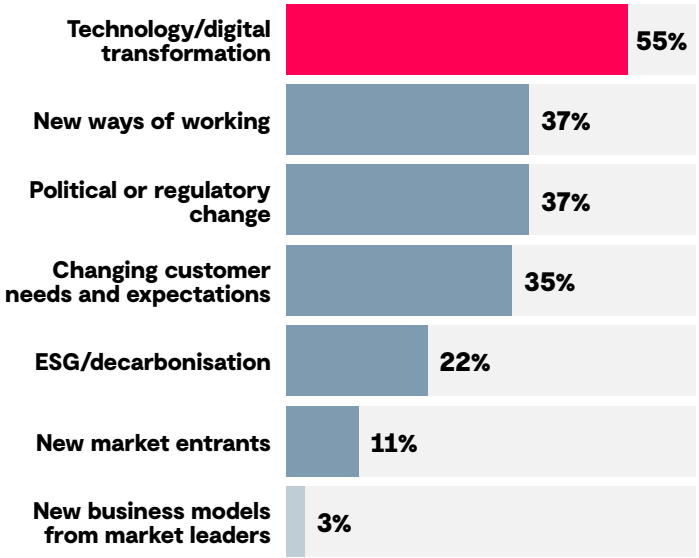
The Internet age seeded the explosion of new disruptor organisations who created new ways to find and secure customers, hold inventory, reimagine supply chains and move across geographic boundaries. Many organisations flourished while others suffered from this systematic disruption and did not survive.

Today's leaders need to understand that technology and digital transformation goes beyond incremental improvement of an organisation's value proposition to be competitive. Highly innovative businesses know that disruption comes in complex guises. Not only are they client centric but they invest in business model innovation to protect their market share and better impact clients. They do this because disruption is experienced through not only what an organisation does but how it operates.

"The traditional transportation planning cycle is 20 years, but if you tell that to anyone today, they fall out of their chairs. We have urban congestion problems, such as the need to take internal combustion engine vehicles off the road, shared and autonomous vehicles, equity issues, increased traffic fatalities and climate change impacting ports, roadways, and all transportation infrastructure. These require accelerated and holistic approaches to solve complex and large-scale problems."

» **Suna Taymaz, Market Development Leader, GHD Digital**

Figure 4. What would you say are the main drivers of disruption in your industry today?



"Disruption and uncertainty is here to stay, there's no doubt about it. With the convergence of the physical, digital and biological worlds, this state of transformative change was already brewing as we entered what we now know as the Fourth Industrial Revolution. Today, it's sincerely in turbo gear."

» **Jacyl Shaw, Global Practice Director - D-Lab GHD Digital**

“The world is changing fast - in favour of the customer. It’s easier than ever for customers to learn about alternatives, to advocate for (or against) your brand, to make the switch to someone else. Organisations cannot afford to not be plugged into their customer’s world to better understand their needs and expectations.”

» Steve Lennon, Practice Director - Australia
GHD Digital

“The Fourth Industrial Revolution is not about technology. In its essence it’s about society and people. Organisations need to shift their focus towards people, their needs, wants, expectations to truly unlock innovation. Because beyond AI, robots and the metaverse - the future of work will be about what truly makes us human: our empathy, our kindness, our purpose.”

» Hind El Aoufi, Practice Director - D-Lab, EMEA
GHD Digital

Effective leaders guide their teams through their organisation's digital transformation journey. By moving them from a business that considers using digital tools and technologies to becoming a truly "digital organisation", they establish the best defence against disruption. At the same time, they use disruption to their advantage to create and capture new market share or create new markets and value for clients and future customers.

Across industries, ESG and sustainability appeared to be less of a driver of disruption than anticipated. Only respondents in the oil and gas industry put it at the top – understandable given that the oil and gas industry is at the forefront in terms of urgency to decarbonise their businesses. However, when asked about the areas of their business that have the most potential for digital innovation over the next three years, environment, EHS (environment, health and safety) and sustainability/ESG are ranked only second to customer experience and customer service.

Not surprisingly, those respondents with environment, EHS and sustainability/ESG roles identified their area of the business as having the most potential for digital innovation in the next three years.

The relationship between the drivers is also complex, with a high level of inter-connectedness. New ways of working have been generated and sustained by a 'tech-celeration' of the use of digital tools. At the time of this study, most organisations have made the necessary pivot to hybrid working, but there is more work to do to optimise policies and refine approaches. The evolving needs and expectations of customers and citizens often demand innovation in the use of digital channels and experience design. And the achievement of ESG and decarbonisation goals will be impossible without technology innovation.

Figure 5. Where within your organisation (by functional role) do you see the most potential for digital innovation in the next three years?

	Digital	Environment, EHS and Sustainability/ EGS	General management	Innovation	IT/ Technology	Operations	Strategy
Customer experience/costumer service	38%	27%	33%	44%	43%	35%	35%
Sustainability/ESG	39%	43%	29%	29%	35%	33%	27%
Sales and marketing	23%	23%	25%	23%	27%	24%	27%

Figure 6. What would you say are the main drivers of disruption in your industry today?

	Construction	Electricity	Engineering	Infrastructure	Mining	Oil/ gas	Renewables	Transportation	Water
Technology/digital transformation	55%	53%	59%	57%	40%	58%	51%	61%	74%
Political or regulatory change	34%	33%	24%	40%	54%	34%	35%	46%	26%
New ways of working	39%	37%	40%	40%	37%	23%	36%	37%	22%

Digital's role in building a sustainable future

For companies and society alike, digital technology has the power to significantly accelerate the journey towards a more sustainable and lower carbon future. At the heart of the sustainability transition is data. This is reflected in the responses from environment, EHS and sustainability/ESG professionals who identified big data and data analytics as a key technology to be part of their organisation's digital strategy. Digital technologies enable the acceleration of sustainability or net zero programs through automating data collection, management, tracking and reporting. They enable the use of data to track progress towards sustainability goals in real-time. Additionally, dataset integration and the application of digital technologies enhances decision making and accelerates progress towards sustainable outcomes.

For example, when operations data is integrated with emissions data, water use data, or waste generation data, we can apply AI and machine learning (ML) to optimise operations to reduce emissions, water use, or waste generation. Different operating scenarios can be assessed using predictive analytics to forecast future sustainability outcomes and enable more informed decision making.

"The sustainability/ESG/ decarbonisation movement is still in its formative years, and as such, there are few embedded ways of working. It's therefore easier to build digital innovation into the very fabric of sustainability/ESG/ decarbonisation, accelerating the progress to a more sustainable business and future."

» Brett Roberts, Global Market Leader - Environment GHD Digital

Innovating to stay relevant

In this climate of volatility, the need to stay relevant – by finding new ways to create value for stakeholders – is critical. To meet this need, innovation is both the process by which to get there and the outcome. The fresh thinking creates something new valued by its users. The only way to remain relevant to customers, and to keep them safe from negative disruption, is to plant and protect innovation within the organisational DNA.

Consider the Buffalo Water Authority in New York, US. In addition to complex challenges around corrosion control, the Authority must address real concerns relating to the presence of lead in private service lines throughout the city. With 40,000 or more of these lines hidden underground, locating them is a huge challenge. Even with the benefit of generational investment coming via the US Infrastructure Bill, it is critical that they adopt a resource efficient approach. To do this, they have become highly innovative in the use of data analytics and modelling not only to better locate the service lines, but also to consider other factors, to ensure they are serving citizens in an equitable way.

The lead service line replacement is an integral part of providing equitable solutions and environmental justice to Buffalo's citizens by improving customer affordability and improving equity of its service levels. There is increasing awareness about environmental justice and a need for the delivery of services to be uniform across all neighbourhoods of the city. We are using statistics to identify these regions, which otherwise may not receive the same levels of service like infrastructure upgrades.

"Our focus now has transitioned because it has to. We will never have enough resources, so we must be smart. We can no longer do the status quo. We know if we stay on this path, we're going to look the same in 10-20 years, and that means underserved communities will be further underserved, and go even further down. We can't do it anymore. We have to be innovative in everything that we do, to get the most out of the limited resources that we have."

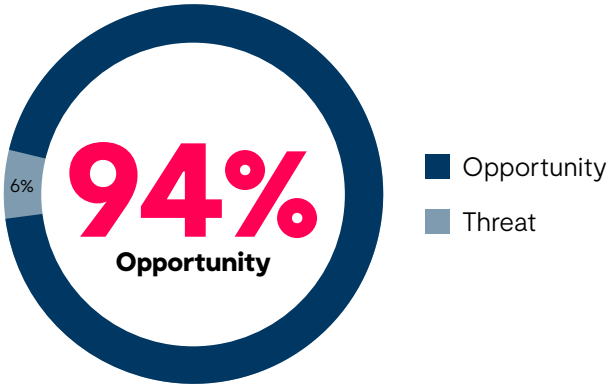
» Oluwole McFoy, General Manager Buffalo Water Authority

Embracing the opportunity

In the face of extensive disruption, there is unquestionably an abundance of opportunity to innovate. Before, during and after the pandemic, many organisations have driven through a range of incremental or continuous improvements, while others have doubled down to explore, experiment and test new and disruptive ways to create value.

When asked about the strategic focus of their innovation efforts, executives indicated that a greater proportion of innovation is now digitally-related. The split of approximately 60/40 digital to non-digital innovation was notably consistent across all countries. At an industry level, there was more variance, with those working in construction indicating a 50/50 balance, and only those in the nuclear sector reporting a greater balance towards non-digital innovation (55 percent).

Figure 7. Is digital innovation predominantly an opportunity or threat to your business?



“During the pandemic, executives became comfortable with using new tools and technologies, and this gave them a belief that they are further ahead in their innovation journey than their peers. But they need to be mindful of the risks. I’ve seen many examples in other industries of the perils of failing to develop the right business models for our changing world.”

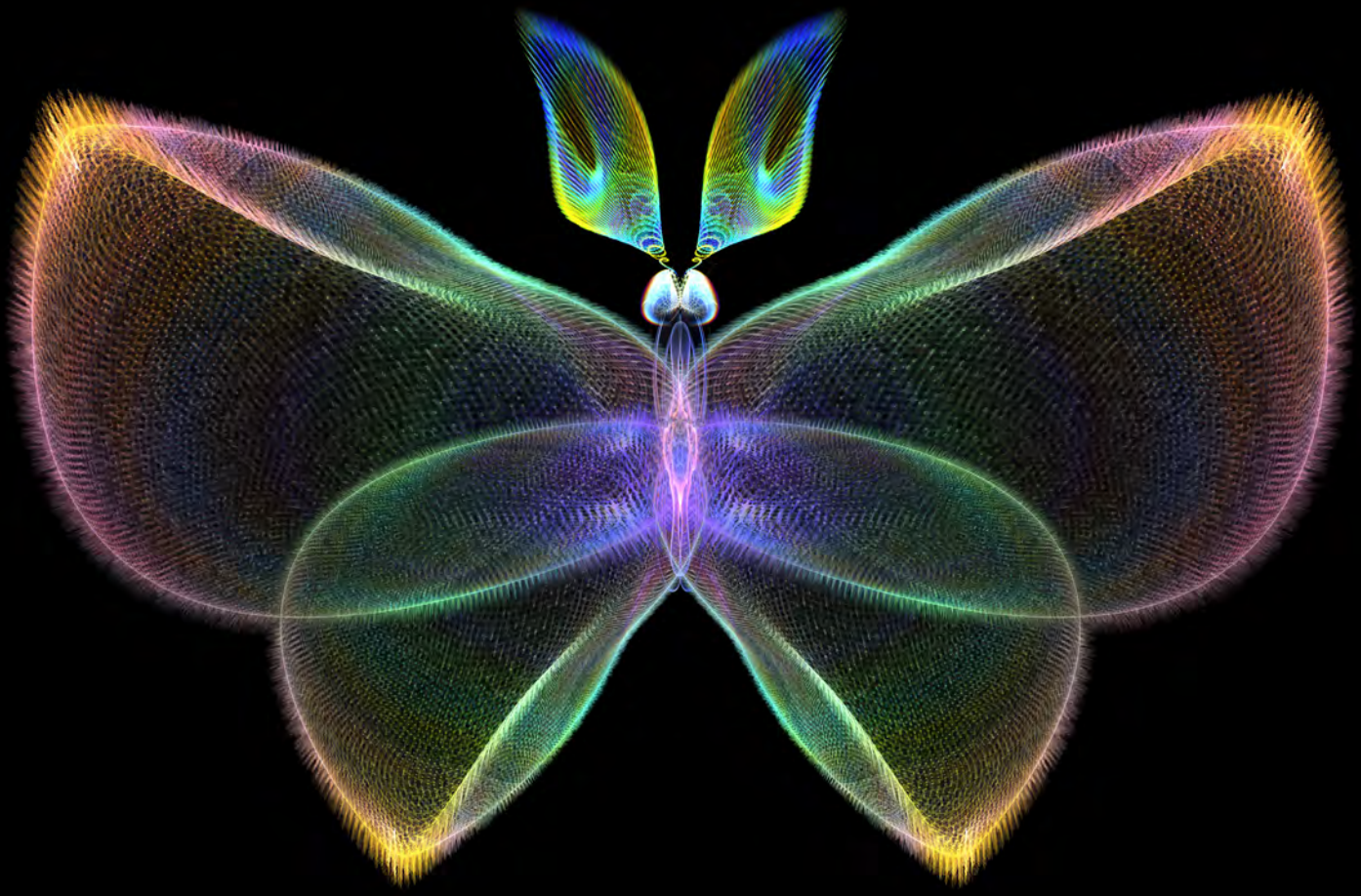
» Kumar Parakala, President GHD Digital

“I would say the balance of digital innovation to other forms of innovation is more than 50/50, particularly if you include data. All of our technology initiatives are focused on digitisation, so probably 60/70 percent plus is that space. So that is the big focus, and it takes many forms. We are not inventing very much in terms of digital, but it’s applying existing tech to our complex sector and context.”

» David Murphy, Director of Research and Innovation
Level Crossing Removal Project (LXRP)

“Leading innovation and advanced analytics, my job is to drive value, and to partner with cutting edge companies to create the data science tech we desperately need as an industry. I look at the market, and all I see are opportunities.”

» Joanna Marsh, General Manager,
Innovation and Advanced Analytics
Investa Property Group



Section 1 2 3

The acceleration of innovation

A transformation of innovation

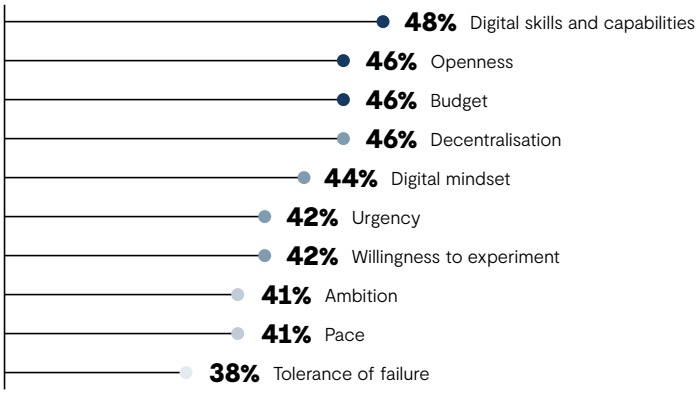
In an existential crisis, the standard way of doing things is threatened. The reverberations of the pandemic created both appetite and tailwind for new thinking, new digital innovation and new technology. Previous constraints and assumptions fell away. It was no longer wise or acceptable to either view innovation as a 'nice-to-have' depending on time and budget, or to play catch-up by becoming a 'fast follower'. Long-held assumptions were upended during the pandemic, leading to an explosion of digitally-enabled innovation.

That's not to say that all organisations have found innovation easy. For many it has made things harder, with constraints on finance and talent, and huge challenges in bringing people together. But overall, in almost every dimension, executives across the world reported important positive shifts.

We've identified six key themes that are essential to any organisation needing to innovate, evolve and survive ongoing disruption.

Figure 8. How has COVID impacted your organisation's digital innovation in terms of the following factor?

63% Scale



"Since the start of the pandemic, innovation has changed beyond all recognition. The existential crisis and associated shocks have led to a level of innovation that was previously unimaginable, but now making history."

» Kumar Parakala, President GHD Digital

"COVID-19 convinced people of what's possible. Going forward it should give us a great foundation for implementing change. In future when we turn up and propose to change how things are done, people will hopefully leverage this experience and have less fear."

» David Murphy, Director of Research and Innovation Level Crossing Removal Project (LXRP)

01

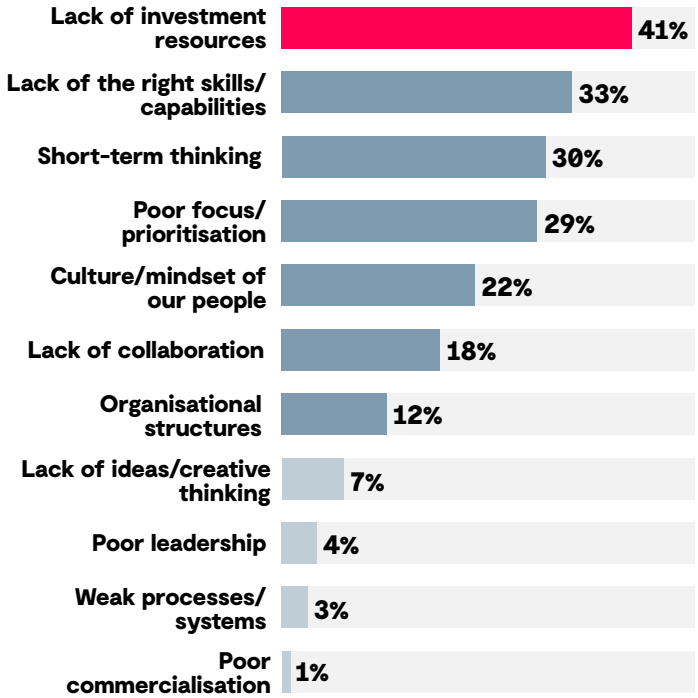
Unifying around the why

Responding effectively to the joint challenges of addressing disruption and embracing innovation makes a clear case for change. But with cost pressures and thin margins, it can be hard to justify investment in new ways of doing things – especially when newly increased costs do not bring immediate benefits. A crisis can create the necessary burning platform for innovation and strategic renewal, and when COVID-19 presented humankind with this opportunity, it responded with electrifying pace. Inertia and bureaucracy were shrugged off, people took action, and today this climate of action-orientation persists.

Take the City of Medicine Hat in Alberta, Canada. Known as 'The Gas City', it is unusual in that it owns and operates an oil and gas exploration company, its own power generation plants, and all its own utilities. As well as dealing with the huge challenges of energy transition, and decommissioning wells, it has moved aggressively on digital transformation across a range of services. Strong progress had been made; when COVID-19 hit, core platforms were ready, but the laser-focus that emerged during the pandemic enabled the team to accelerate innovation in an unparalleled way.

With the ongoing nature of the global pandemic, the wider impacts are still being felt, so we are not in a position to turn the page and return to normal. COVID-19 and related issues continue to demand a high level of focus, and there is certainly no shortage of other whys requiring highly focused responses. In this context, it is worth taking note of the words written on Marty Robinson's whiteboard – "Clarity and time and dollars will give you the desired results you want."

Figure 9. Which of the following factors will make it more difficult for your organisation to deliver on its innovation priorities over the next three years?



> **"These industries have always battled with that burning platform. Why innovation? Why digital? And then COVID-19 unified everyone around one why, and showed us how when we embrace innovation we can achieve great things. I think that's never going to be taken away."**
>
> **» Sylvain Emeric, Practice Director - D-Lab Australia GHD Digital**

> **"I always say if you give me focus and money I can move the world, we can move the needle. When you give me 20 areas of focus and not quite enough money, then I can't deliver impact. COVID-19 gave us the focus. The gift was, 'Here you go, this is the number one priority right now, and it's actually the only priority, other than keeping the lights on.' So, never waste a good emergency."**
>
> **» Marty Robinson, CIO City of Medicine Hat**

Our global sample agreed with Marty. The key barriers to innovation over the next three years included lack of investment, short-term thinking, and lack of focus and prioritisation.

02

Accelerating through the waiting phase

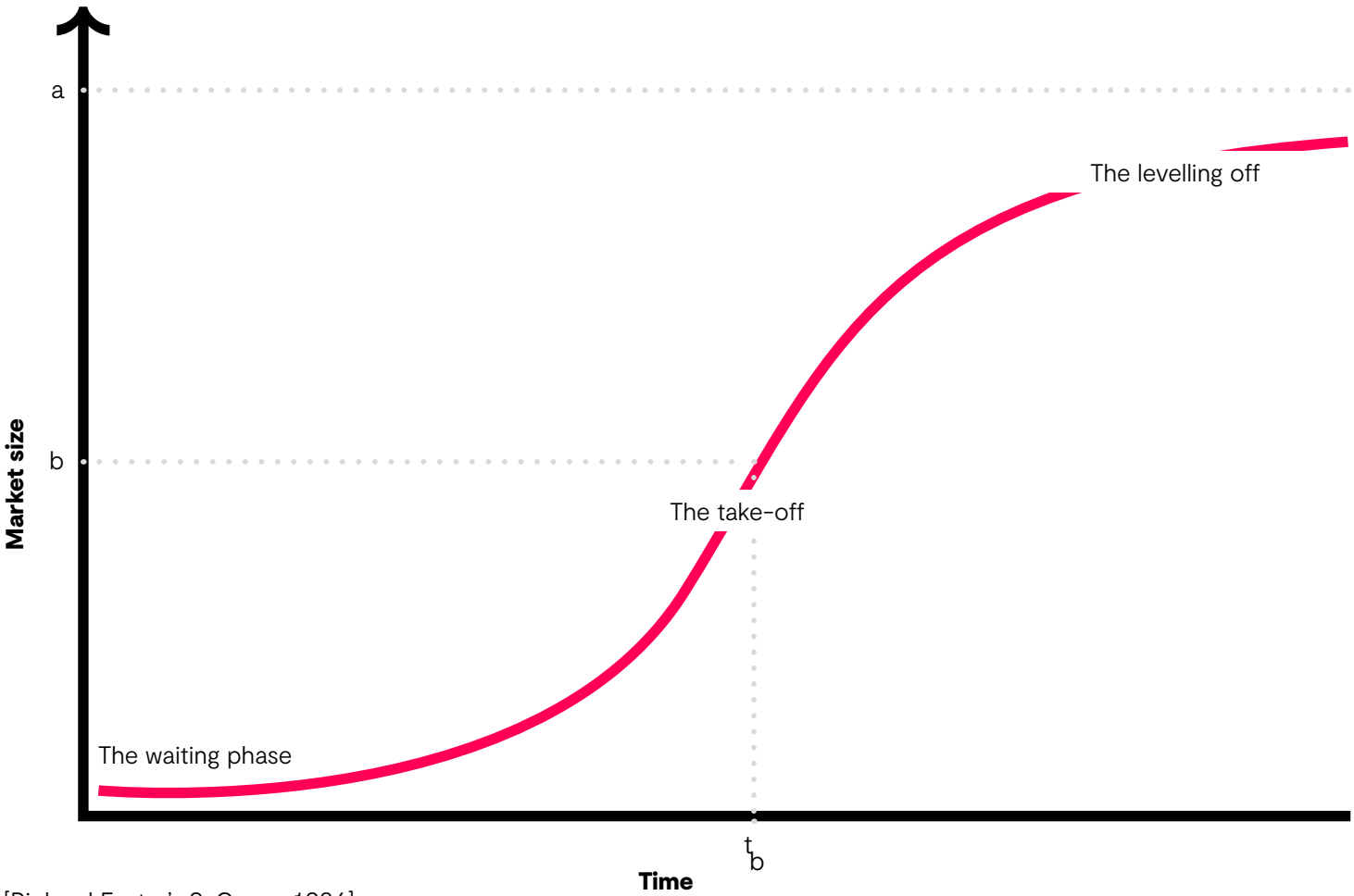
The catalytic effect of COVID-19 is strongly felt, but notably, most executives talked of the pandemic in terms of expediting existing plans and trajectories, more so than bringing in the radical or the new. COVID-19 has more often been an accelerant on fires that were already burning. Organisations have sped up their progress across a number of different trajectories, and our findings suggest innovation is accelerating rather than cooling off.

When facing a problem that is directly impacting your customers, citizens or patients, or even your ability to continue operating, there is no choice but to move through the phases at a much faster pace.

Classic innovation theory offers a lens on this change. The S-curve, developed by Foster, displays a pattern of growth or a speed of progress along particular technology or innovation trajectories. With the emergence of new technologies, there is often a 'waiting phase' early on, as buyers wait for signals that an innovation is the real deal.

"I think innovation has been expedited by what we all experienced during the COVID-19 pandemic. Before the onset of the pandemic, in the City of Brantford we were already on a path to creating more opportunities for citizens to easily access services online. During the pandemic, people who were initially reluctant to use online services started to access services online and they continue to do so today."

» Maria Visocchi, Director of Communications and Community Engagement, City of Brantford



[Richard Foster's S-Curve, 1986]

There is a desire to understand what it can do, who else is using it and what results they have seen. While this process of validation takes place, adoption in early stage markets can drag on.

In many of the industries in this research, 'waiting phase' behaviours like these can be prevalent, as organisations stand back, delay or struggle to take the new innovations seriously.

Such behaviours can be compounded by a lack of resources, limited budgets and tight margins in certain sectors, but organisations are more often constrained by the belief that current approaches are adequate. 'If it's not broke, don't fix it.' This mindset brings with it the risk of missing out on potentially seismic shifts in performance and outcomes.

The pandemic dramatically pushed organisations through this 'waiting phase' into 'take-off' – the critical point where adoption and performance accelerate. Many organisations have moved from a position of either not being ready, or not being willing to get ready, to simply having to take action because they had no other choice. Now they are beginning to see the benefits.

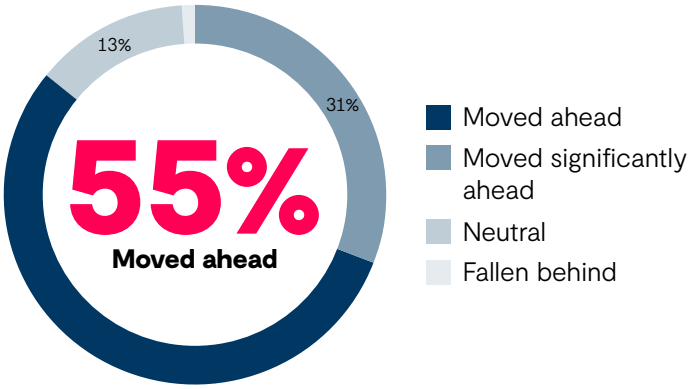
"Technology innovations have been there for a very, very long time but people haven't been using them, giving all kinds of excuses about why they don't want to. But come the pandemic, all these excuses went out the door."

» Kumar Parakala, President GHD Digital

This change of pace has improved many executives' confidence. Our research suggests that most believe that during the pandemic, they have moved significantly ahead of their competitors and peers with respect to digital innovation. Very few were willing to acknowledge they have fallen behind.

As the crisis phase of COVID-19 comes to an end, there is an opportunity to challenge 'waiting phase' behaviours and find ways to maintain pace and momentum. While jumping in head first is probably not the right approach, a willingness to progress without full preparation is positive, as is overcoming the natural risk-aversion and adherence to business as usual more common before the crisis.

Figure 10. When comparing your own organisation's digital innovation during the pandemic to those of your main competitors or industry peers, do you feel your organisation has moved ahead or fallen behind?



"Before COVID-19, automation projects were still predominantly assessed from the return on investment perspective. The pandemic made it abundantly clear that in addition to cost and productivity benefits, automation is necessary for the operational resilience of the process, and in turn, of the organisation. I'd say that the shift in mentality happened much quicker than it would have if COVID-19 wasn't part of the conversation."

» **Sukalp Sharma, Practice Director - Digital Experience APAC, GHD Digital**

03

Experimenting to build momentum

Organisations can shorten the innovation 'waiting phase' through active engagement with the market and their peers, to understand how innovation is working, what it looks like in action, and what benefits others have experienced – either within an organisation or across industries. Typically, the most powerful information tends to be experiential, and during the pandemic we saw a significant uplift in willingness to try and test new approaches.

COVID-19 and its related disruption have been catalysts for exploring new ways of working; not simply remote working, but also a move towards more agile methodologies in general. This newly agile approach appears well-suited to industry, where progress is often best made by focusing on specific use-cases and demonstrating value, rather than pursuing large, top-down, transformation-type projects. Offering a way of mitigating risk while continuing to progress.

"I do believe that many businesses are more likely to adopt an agile methodology of prototyping, testing or undergoing proof of concept, and are working in a more agile way simply because of the amount of uncertainty there is."

» Sylvain Emeric, Practice Director - D-Lab, Australia GHD Digital

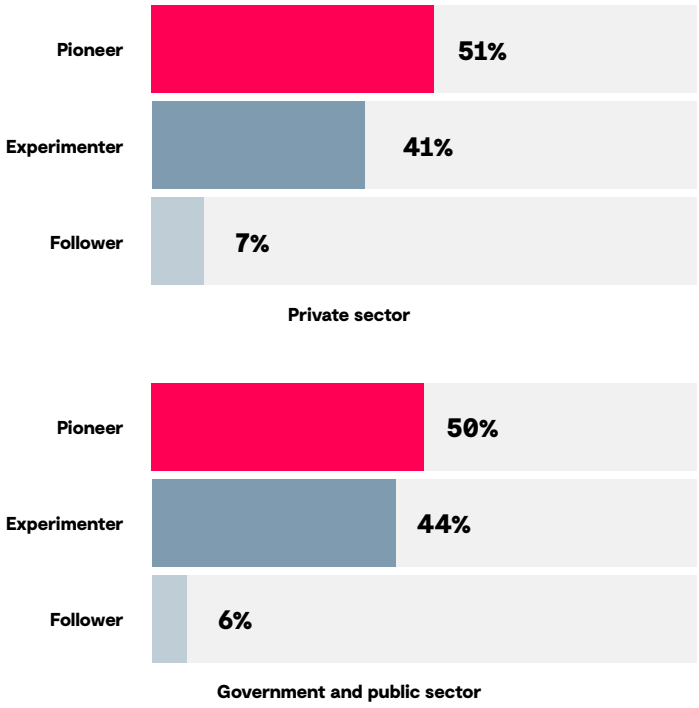
Shortening the 'waiting phase' and making faster progress along innovation trajectories builds momentum within an organisation. COVID-19 has created game-changing momentum, and maintaining this, going forward, will be critical.

In several interviews, we heard how early success with digital innovation quickly builds confidence and ambition, even in the most traditional organisations. Solving relatively simple problems can quickly escalate into a desire to take on bigger challenges – 'what can we do next?'

We asked executives to characterise their organisations in relation to technology adoption and innovation, asking whether they see themselves as a pioneer (a leader or driver of innovation and new technology), an experimenter (readily experimenting with new technologies), a follower (waiting for new technology to be developed and proven before testing and application), or a laggard (generally wanting nothing to do with new technology). Not one single executive in the sample of 777 respondents wanted to be a laggard, and very few wanted to be regarded as a follower.

While many leaders do not want their organisations to be seen as followers, inevitably most will be in some form. As we've seen with the S-curve, adoption for most is driven by a validation from others. Even with a compelling business case in hand, decision-makers may still have cold feet until they have the comfort of knowing their peers have proven the case. These results therefore, reflect more of a desired state than a true current state, and the extent of the capabilities and investment required to be a pioneer may be significantly underestimated.

Figure 11. Thinking about innovation and new technology, how would you characterise your organisation within your industry?



"The problems we are addressing are not new problems. It's the scale and the speed at which we're working that's requiring more innovative approaches. Things that have always been an issue, and we've just accepted it, can no longer be accepted if we are to continue to achieve our objectives."

» David Murphy, Director of Research and Innovation Level Crossing Removal Project (LXRP)

04

De-constructing the status quo

Our conversations with senior executives in these sectors repeatedly flagged one key outcome from the pandemic; namely, a much greater willingness to find new and more creative ways to do things that actively de-construct the status quo. This is a real change from a situation whereby, in parts of industry, the status quo tended to be seen as good enough and traditional, old-school processes were enough to get you by, even in the long-run. When the future is mapped out, with limited disruption, there is little impetus to change the way things are done.

Post-COVID, no matter where you are in the industry, you must prepare for a certain amount of uncertainty and build this into your planning and strategy. The status quo will not deal well with uncertainty, and forces organisations to be more innovative and to constantly explore new ways of doing things.

Consider Shell, the multinational oil and gas company. Significant innovation and investments are being focused on Shell's energy transition strategy, with the goal of being a net zero emissions energy business by 2050. But there is also innovation emerging in less likely parts of the business. The work of environmental teams on legacy site remediation is a highly regulated space, and the pace of change can be very slow.

But even here, the green shoots of innovation and fresh thinking are emerging, as Shell begins to look to data-driven approaches to manage large portfolios of remediation sites.

COVID-19 and related disruption has challenged standard protocols and showed that there are new and better ways. Moreover, as a number of technologies and digital innovations reach their own inflection points, something will need to give, as new models of value creation emerge.

“Most organisations adopt a ‘toe-dipping’ approach to automation. They often want to start small, but once they see the value, they want to scale both in terms of scope and moving up the curve to incorporate AI technologies such as ML, natural language processing, process mining and optical character recognition, among others. This is when automation takes the leap from being restricted to “simple, repetitive and rules-based” to processes comprising highly-complex, unstructured big data.”

» Sukalp Sharma, Practice Director - Digital Experience Digital Experience, GHD Digital

“I would say the regulatory environment is a constraint on innovation – because specifically in the two states I’m looking at, where we want to look at new, green ways of doing things, these states don’t want to expand into those areas.

That said, we believe that more innovative use of data and analytics will enable us to share and scale learnings across whole portfolios of legacy sites. And there could be a whole list of benefits to that innovation you know, it could be sustainability, it could be cost savings, it could be reduction of risk, or it could be reduction of exposure. It may not be a fast turnaround, but let’s put some things in place to try to change it over a period of time.”

» John Robbins, Environmental Engineer
Shell, USA

“One of the big surprises for me, coming from financial services to the AEC (architecture, engineering and construction) sector was that, within the banks, we were continuously trying to prove that our approach to data analytics was better than our competition. In AEC sectors however, the game is often convincing somebody that, instead of using a manual, traditional approach you should use ML, for example. So, it’s not about whether I’m better than my competitors, it’s more ‘why should we use it at all?’ That’s really changing now though.”

» Nipa Basu, Global Practice Director -
Digital Intelligence, GHD Digital

05

Re-thinking resource constraints

Academics and science fiction writers have long been fascinated by the possibility of humans working hand in hand with ever more capable systems, with each taking responsibility for the areas in which they respectively excel. Based on our research, this is happening now with increasing pace. Machine capability is augmenting human resources in fascinating ways, in a range of quite traditional industries.

Scarcity of talent is now a recurring driver for innovation. Already a chronic industry problem, COVID-19 exacerbated the shortage of front-line staff. The loss of dependable people, suddenly unable to attend in person due to restrictions, border closures, issues with technical infrastructure or because they contracted COVID-19, meant that organisations could no longer depend upon their workforces.

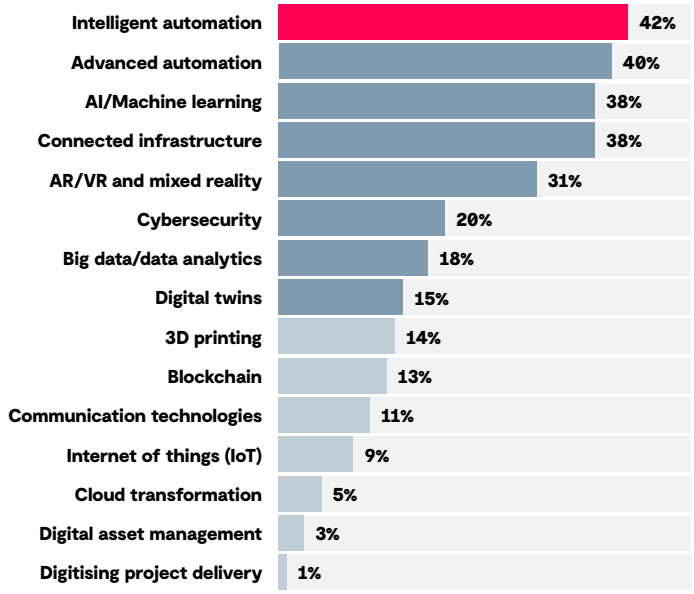
When the further de-stabilisation of labour markets is added into the mix, one of the main consequences of COVID-19 is the 'Great Resignation'. As a direct result of the pandemic, many people are re-evaluating the work they want or are willing to do.

In the context of wider disruptive challenges, many organisations have come to the realisation that business as usual is simply not an option. They can't keep up with fluctuations in demand and volume, and the other constraints and issues they're facing. With neither the talent nor funds available to address these market challenges, many have been forced to look for new, more technology-driven solutions.

Increasingly it appears that organisations' future success depends on mastering digital capabilities and harnessing data to combine the human and machine capabilities that deliver the best outcomes.

No surprise then, that when we asked executives which technologies will be most important to them over the next three years, intelligent automation and advanced automation were front of mind. Many have made a direct link between these capabilities and resourcing constraints. The stigma around bots taking jobs from humans is on the wane, and increasingly, automation is being regarded as critical functionality, especially in industries where costs are rising and margins progressively contract.

Figure 12. Which of these technologies are seen to be most important to your organisation's digital strategy over the next three years?



"Listen, we have 800 miles of water lines throughout our city. We can come up with a justification to replace every single one of them. 'Hey, shovel ready? Let's just start replacing lines.' We can do that, and we would be more than justified. But it's not going to work here, it's not going to solve the problems that have festered here in the City of Buffalo for far too long."

» Oluwole McFoy, General Manager Buffalo Water Authority, USA

“

COVID-19 certainly pushed the need for digital transformation into the spotlight and we made progress on issues that have been stalled for decades. From digitising city records, to providing online services to citizens, to embracing Geographic Information Systems (GIS), which goes beyond mapping for everyday navigation to solving complex issues such as planning and community development, natural resource management, and environmental impact and infrastructure resiliency analysis.”

» Suna Taymaz, Market Development Leader
GHD Digital

“

Successive Industrial Revolutions have shifted the man-machine equilibrium towards the machines. As AI powered machines get smarter, the divide between human and digital workers is narrowing. While this trend is impacting jobs on the one hand, a large number of jobs are also being created, making adult reskilling a key focus area.”

» Sukalp Sharma, Practice Director - Digital Experience APAC, GHD Digital

Automating through a crisis

During the height of the pandemic, employee and community safety was paramount, and organisations needed solutions to help them maintain operational efficiency and employee safety.

A custom Salesforce-based, COVID-19 Site Protective Readiness System was designed for LXRP to assist with managing COVID-19 across their construction sites within Melbourne, overall, reducing potential site closure impacts and accelerated contact tracing.

“A big driver of innovation is the huge well-being challenge within the sector. People are leaving the industry, and in the context of an upcoming resource shortage forecast to exceed 100,000. This challenge is partly driven by getting people to do tasks that are not high value and often primitively administrative, the result is a lot of volume of work issues and stress.

From an industry perspective, if we keep having people leave the sector, there is a risk we’re going to struggle to be able to do what we need to do without further innovation.”

» David Murphy, Director of Research and Innovation Level Crossing Removal Project (LXRP)

The automation-based solution enabled LXRP to assess over 5,000 daily visitors with appropriate safety measures and data, including site check-in times, COVID-19 status, and vaccination records across all sites. The unpredictability of COVID-19 was accounted for in the platform design through the flexible and adaptable infrastructure, built for ongoing future changes. New functionality or data capture requirements are implemented efficiently and can be used for many key clients.

06

Re-connecting with human-centered innovation

COVID-19 has created a humanising effect in the context of innovation. There has been a renewed recognition that, amidst all of this turbulent change, there are humans that have needs and 'jobs to be done', as Clayton Christensen, who developed the theory of "disruptive innovation", would say.

This was evident in the workplace as employers pivoted to enable people to work safely and effectively in a remote environment, and policies, processes and technologies evolved to make this work. By better connecting with these needs there have been innumerable examples of more human-centered approaches to innovation.

> **"If citizens couldn't find what they were looking for, the department responsible found out fast. Throughout the pandemic, our customer service team was still taking calls from residents every day, and those customers were educating us on what they could and couldn't do online, so any issues got funnelled up to the appropriate departments quickly. Anything that we needed to communicate to the public, anything that impacted health and welfare for example, became a priority."**
>
> **» Maria Visocchi, Director of Communications and Community Engagement, City of Brantford**

Businesses have dealt with dramatic changes in operations, adapting to changing customer needs and expectations, and the move to principally digital channels of service delivery. This came as a shock to already highly customer-centric, digital industries, like banking. Take MyState Limited, a small ASX listed retail bank and wealth management provider in Australia.

Even with its already strong focus on customer experience, MyState Limited was surprised by the impact the pandemic had on customer expectations and behaviours.

This has been mirrored in the public sector, where services to citizens can be broad, complex, and high-risk, especially when they impact health and welfare. The City of Brantford in Ontario is typical in Canada, in that citizens like to drive to City Hall to access a range of services in person, with only a gradual take-up of online services.

When City Hall had to close for six months, they had no choice but to use the City website. A lot of people had to quickly learn to use technology to access basic services, and in parallel, many departments had to learn how to deliver services online, creating a huge demand for IT services and training. The City had to be responsive to understand citizens' needs and the tasks they were trying to get done.

Notably, when we asked executives around the world where they see most potential for digital innovation in the next three years, customer experience and customer service was on top. In many sectors, such as construction, energy or engineering, the end customer is often quite removed, so the importance placed on customer service is striking. COVID-19 may well have precipitated a shift to putting customer needs first, and digital innovation is being adopted to better enable this.

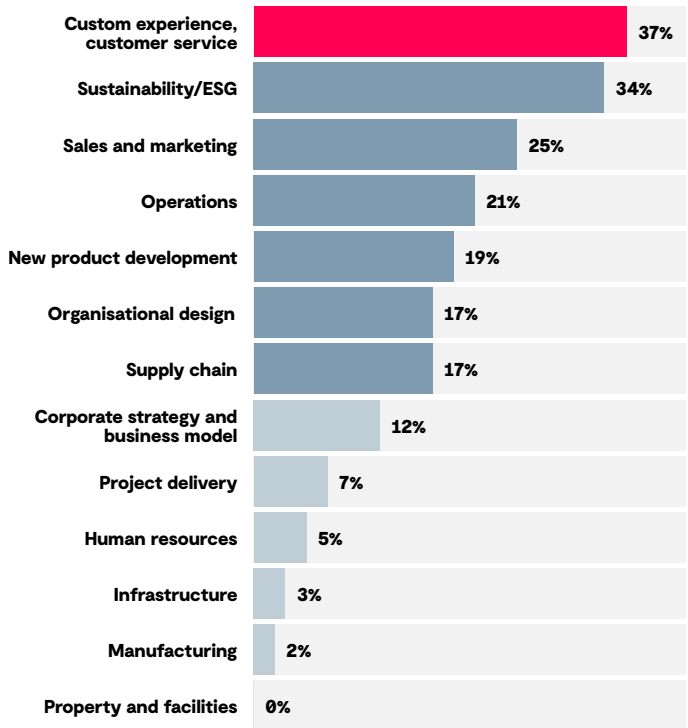
> **"As part of our business planning process we set our investment envelopes for the year, and our prioritisation and focus tends to be on the customer. 'How can we enhance the customer experience?' Arguably, our most significant project in flight is an upgrade of our mobile banking app, which is all about the customer experience. COVID-19 has really accelerated the way customers want to transact. It has accelerated hybrid, flexible working by five to ten years, driven by a similar change in the way customers want to transact now."**
>
> **» Gary Dickson, Chief Financial Officer MyState Limited**

If we take a broader view of human-centred innovation, we can see that COVID-19 has amplified gaps that already existed in terms of inequality. Focusing innovation on ways to address the needs of underserved communities will be critical. These problems are typically highly complex, multi-dimensional and demand a broader, more holistic perspective to find the right solutions. For example, challenges in the transportation sector are typically linked to infrastructure, climate change, equity and social justice. Similar to the Buffalo Water Authority, innovation is the key to solving these problems and addressing community needs.

“The pandemic forced municipalities to react rapidly at all levels of public service. In addition to managing public health, and daily communication updates and announcements, they had to quickly adapt to converting their physical customer service counter to a 24/7 virtual city hall. Troubled by antiquated technology and rigid processes and polices, the pandemic has catapulted municipalities’ digital transformation and digital services into the new era, and they are finally at a place where majority of services can be done online.”

» **Ali Carden, Global Practice Director - Products and Platforms, GHD Digital**

Figure 13. Where within your organisation do you see the most potential for digital innovation in the three years?



“

In terms of our engagement with communities, expectations have grown in parallel with expectations of technology. People want information they can understand, often on demand and they want to feel empowered – people just won’t accept the leaflet in the letter box anymore explaining the project.”

» David Murphy, Director of Research and Innovation Level Crossing Removal Project (LXRP)

“

Public transportation agencies saw their ridership drop dramatically during COVID-19, and they recognised the need to address the problem of social parity. No one is talking about public transport, other than in those communities with high inequalities and lower income, where the impact was notable. COVID-19 has changed the priorities on who needs to be supported, and brought up the reality that you can’t isolate a vulnerable population and not prioritise their needs.”

» Hind El Aoufi, Practice Director – D-Lab EMEA, GHD Digital

Section 1 2 3

How can organisations respond to the innovation imperative?

The signs are good, immense progress has been made, and opportunities abound. Looking forward, what do organisations need to put in place to deliver on the innovation imperative? Based on our research, we believe there are five critical enabling capabilities that need to be considered to set the stage for a more innovative future.

01

Bold and visionary leadership that inspires people

One of the most difficult challenges for leadership is striking the balance between considering the needs of today's organisation along with the demands of tomorrow's.

Or as O'Reilly and Tushman referred to it, the need to be an 'ambidextrous organisation'; one in which leadership manages to both 'exploit' the current business, with a sharp focus on today's metrics and KPIs, while simultaneously building the capabilities to look ahead and 'explore' the more disruptive opportunities and revenue streams of the future.

"We have to do much better than the status quo. We have to be smart. I have a sticky note sitting up here that just says, 'Do better', because that's what we try to do here at Buffalo Water; we try to do better. And for us, it's about the data and it's about being innovative in everything that we do. This is how we're going to do better."

» Oluwole McFoy, General Manager Buffalo Water Authority

Almost all sectors in this study should be asking the question: 'What does our future look like?' Energy and natural resources, including mining, are exploring how they can continue to remain in business, deliver on climate change outcomes and stay competitive. The water sector seeks to transform how water resources are delivered to customers. These sectors are going through technological and digital disruption, and to do so, must explore new business opportunities aligned with social and community objectives. When things are going well, the time is ripe for leadership to use funds, resources and profits to future-proof their organisations.

"I would say a supportive senior leadership team is key to a progressive and innovative work environment - leadership that supports innovation and encourages a culture driven by new ideas. We are fortunate to have a Chief Administrative Officer who is very passionate about innovation. He's open to new ways of doing things and always pushes the envelope, often reminding staff not to do things the way they've always been done but rather to consider what the best approach is today."

» Maria Visocchi, Director, Communications and Community Engagement, City of Brantford

In our research, executives from around the world appeared confident that their organisations were striking a good balance, in terms of strategic focus on today's business relative to future business. And in a similar vein, executives felt that innovation investment was well-balanced between more disruptive or discontinuous innovation, that potentially create new value or new markets, and those smaller, more incremental improvements or upgrades in current operations.

“

COVID-19 has prompted many innovative, future-focused leaders within these sectors to pause and engage with more existential questions. ‘What business are we in? How do we create value going forward? Do we need to re-engineer our value chain? What adjacent or non-traditional businesses might we have the capabilities to enter?’ These are the questions that are being increasingly asked in these sectors.”

» Kumar Parakala, President, GHD Digital

Figure 14. What is the balance of strategic focus in your organisation between today’s business (current customers, business models, and operational performance) and tomorrow’s business (exploring new products, new business models, and revenue strategic?)

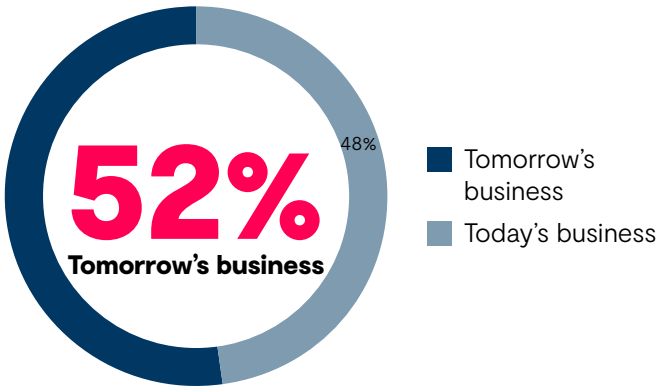
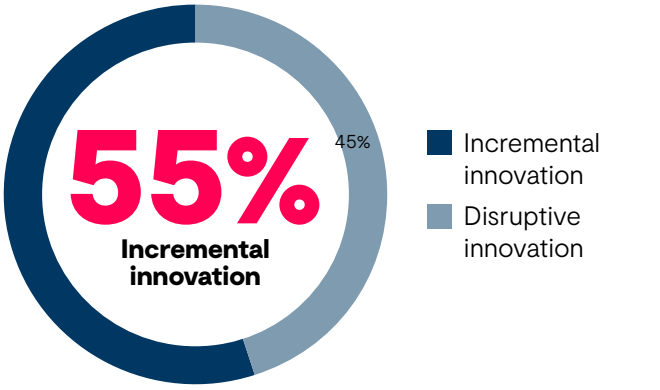


Figure 15. Which of these types of innovation receives the most investment in your organisation?



“

We are joining innovation and improvement together. Innovation for me at the start would have been more about breakthroughs and step changes, but in an industry like rail construction, that is starting from behind, there is a lot of foundational work that needs to be done. So, innovation becomes more about finding new and improved ways of doing things, which encompasses both breakthrough and more incremental work. This also has an advantage of being a more inclusive approach for a sector that is earlier in its innovation journey.”

» David Murphy, Director of Research and Innovation Level Crossing Removal Project (LXRP)

02

Fostering an innovation mindset

We noted that many of the innovative organisations we spoke to across the sectors mentioned the critical need for the right mindset to spread throughout the organisation. This starts with the tone at the top, but an innovation mindset needs to exist at every level, in every function and in every business unit.

Executives talked about the need for openness to new ideas, for curiosity, for a willingness to challenge how things are done, and for a risk-driven, experimental approach. These qualities have been much more evident during COVID-19, and they closely mirror the 'discovery skills' of the most creative executives, identified by Clayton Christensen in his book, 'The Innovator's DNA', namely: associating, questioning, observing, experimenting and networking.

"A critical element to consider, when leaders focus on digital innovation, is that organisations don't innovate – people do. So rather than focus only on digital tools or technologies, one must build and support a culture that allows innovation to thrive. This means creating a place that encourages staff to stay curious; allows innovators and intrapreneurs to experiment, and a place that feels psychologically safe when testing new ways that might fail first time."

» Jacyl Shaw, Global Practice Director - D-Lab GHD Digital

Our research suggests that most executives around the world hold a very positive view of the extent of innovation mindsets in their organisations today, with just over a third believing that 80 percent or more of their colleagues have an innovation mindset.

While innovation mindsets can be trained in a more formal sense, they perhaps become best embedded through inspirational role models in the organisation, to the point that their signature behaviours and actions become part of the cultural fabric.

The other effective model, which helps make the shift to more innovative mindsets, is to change the profile of talent brought into the organisation. In many organisations with very stable workforces, it can be challenging for fresh thinking to filter through the organisation.

At Buffalo Water Authority, the changing demographic profile of the workforce has had a positive impact on the extent of the innovative mindset.

In organisations with increasingly digital operations and offerings to market, there will be a fundamental need for digital-first mindsets to fully infiltrate the organisation, mindsets which assume that a digital solution to a business challenge is likely to be the right one. Executives also appeared positive on this dimension, with four in ten believing that 80 percent or more of their colleagues have a digital-first mindset.

Figure 16. An innovation mindset is one that is open to seeing new possibilities and opportunities, is forward looking, collaborative and willing to try (and fail). In your opinion, what proportion of your workforce has an innovation mindset today?

70%

A larger number of respondents believe 70% of their workforce has an **innovation mindset**

Figure 17. To have a digital-first mindset means you decide that you will do everything digitally first and have to justify staying with the status quo. In your opinion, what proportion on your workforce has a digital-first mindset today?

70%

A larger number of respondents believe 70% of their workforce has a **digital-first mindset**

"When we work on a project, we try to: a) bring people from the different teams that demonstrate these innovative mindsets and that are amazing at these skill sets and b) second people from these teams onto clients' premises, so they're able to apply their capabilities."

» Sylvain Emeric, Practice Director - D-Lab, Australia, GHD Digital

03

Tracking technology and market trajectories

Our research repeatedly highlighted how those organisations that had already invested in their core IT and digital platforms, improving the skills and capabilities of their people, were far better placed when COVID-19 struck. But getting to a baseline level of IT and digital capability within your industry is only table stakes. To mitigate vulnerability from digital disruption, and to be best positioned to take advantage of new opportunities, will require different capabilities within the organisation.

In more conservative or status quo industries, the extent of potential disruption from technology is often understated. A form of myopia can be created, due to the effectiveness of current practices, and also the perceived shortcomings of early-stage innovations hitting the market.

> **"Because of the age of our employees, what we've seen over the past few years is that many are seeking retirement. And what this has allowed us to do is start to bring in people who have an innovative mindset — all they know are their phones, tablets and metrics because that's what they've grown up with. So we're able to cherry-pick, to get those people on board, and then set them loose and say, 'Hey, this is the culture we're trying to create here. We're really trying to create a data-centric culture.' We're changing the guard."**
>
> **» Oluwole McFoy, General Manager Buffalo Water Authority**

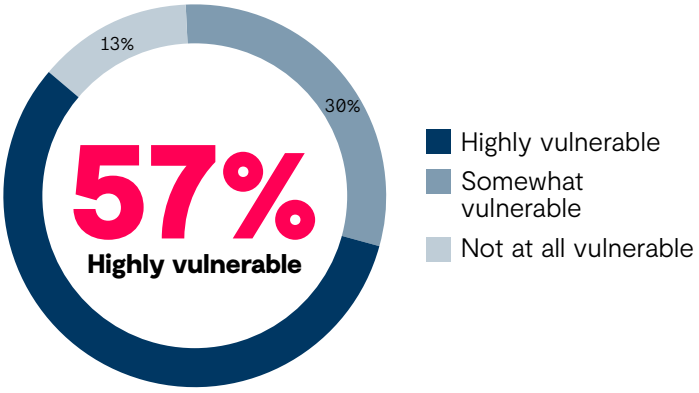
Blockbuster, Encyclopedia Britannica, Borders Bookstores, MySpace and Nokia are some examples of once-thriving organisations with global brands and markets that became vulnerable, and in some cases, fell victim to, game-changing disruption in their industry.

There is a strong correlation between an organisation's resilience against disruption and organisational culture that fosters innovative thinking. The more leaders can help teams build and strengthen digital enabled, human anchored innovation mindsets - the less vulnerable they are to disruption. This makes organisations more agile and alert to how they can identify opportunities within the disruption to create new value.

Characteristics evident in leaders and colleagues within high performing innovation organisations are grounded in many cases by a curiosity for knowledge. In addition to new information that helps challenge current held assumptions, but tests 'white spaces'; the creation of space - both psychologically safe but space in time, resources and location to understand the nuances of disruption and assess ways to respond.

Highly innovative leaders are also aware of the many biases that make an organisation vulnerable to disruption. These include behaviours such as "one team" and "bias towards action." These can be excellent and productive ways of working, but equally can be barriers to innovation because may encourage group thinking or a bias to not celebrating diversity of thinking as well as rewarding progress and quick decision making that might make teams susceptible to disruption as missed critical insights or innovative responses.

Figure 18. How vulnerable is your industry to disruption from digital innovation?



Organisations will need insight and intelligence capabilities to measure how different market and technology trajectories are developing. In fact, our research highlighted this as the number one enabling capability that organisations will need.

In less familiar and more complex spaces, it is critical to better understand a set of probable futures in terms of applications, use cases and competitors. The most innovative organisations will be proactive rather than reactive in assessing how things may develop, to help inform future propositions, gaps and opportunities.

Every year, we invite all of our key strategic suppliers to come in and talk to all of our key stakeholders. We don't really structure it, we just let them talk and we listen to their views on where things are going and what they think we should be doing. It's 20 suppliers from Microsoft right down to the guy around the corner that does our cabling. This has driven quite a bit of innovation."

» **James Hunter-Jackson, IT Director**
NEC Group

The game changing benefits of 5G

When you think of 5G, you probably think about faster data speeds and more capacity on your phones. The reality though is much bigger and better.

5G is the fifth-generation cellular network. Previous generations - 1G through to 4G - were hardware based and only available through licensed telecommunications carriers. In contrast, 5G is cloud-enabled, software-based technology that enables a much greater connectivity between devices and enterprise applications. 5G allows enterprises to have private 5G networks that can run alongside public networks, operated by licensed communications operators.

5G is a great enabler for connectivity. It allows for greater aggregation of data and security. It brings a whole range of benefits in areas such as supply chain, agriculture, manufacturing and utilities and smart buildings, helping create better efficiencies in terms of decarbonisation, running pumping and piping systems in cities.

5G opens up the opportunity for better access to critical services such as medicine and education in rural communities. However, 5G signals travel much shorter distances, creating a need for significantly more cell towers and more support infrastructure. To truly reap the benefits of 5G, governments will need to ensure that cities and rural areas alike have the infrastructure in place.

Governments and businesses also need to recognise that, with widespread concerns about environmental, health and data privacy, they need to build public confidence in 5G.

5G provides a chance for all organisations to reimagine their business. The user of smart sensors and 5G networks will allow them to think differently and solve problems in a way that could not have been done before. As they embark on the journey, they need to consider the risks and opportunities, with the future end-state in mind."

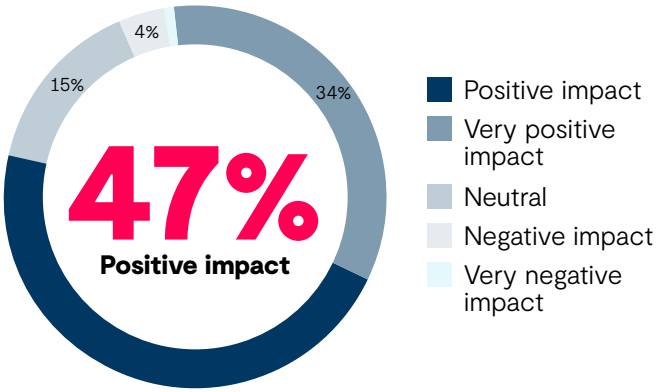
» **Richard Fechner, Global Leader**
GHD Advisory

04

Pursuing more radical forms of collaboration

Many still regard new forms of virtual collaboration less effective for creativity than traditional face-to-face approaches. They are working hard to adapt hybrid working policies, which enable opportunities for people to come together in person to ideate. But the tools, capabilities and behaviours around innovation collaboration have taken a giant leap forward. Our research suggested that most saw hybrid working as beneficial to digital innovation, rather than a hindrance. Executives particularly acknowledged its ability to bring together the smartest people, with the right subject matter expertise, regardless of location.

Figure 19. How has the shift to remote or hybrid working impacted your digital innovation efforts?



COVID-19 reminds us of the power generated by people coming together to tackle problems, and how collaboration can achieve great things. But going forward, organisations will need to pursue even greater progressive and radical forms of collaboration to keep pace. This will drive many organisations to embrace more open innovation models, drawing in new thinking, capabilities and technologies from external sources.

In the more digitally advanced financial services sector, competition is high and customer experience is a critical differentiator. As a smaller Australian bank, MyState Limited must compete with an array of competitors, including the four major players, typically referred to as the 'big four banks'.

One recent example is the collaboration between MyState Limited and Personetics, an Israeli-based technology company, to create a financial well-being tool for their mobile app. While one of the big four banks built a similar product in-house, MyState Limited pursued a different approach, encouraged by lowering technology costs.

Fluidly combining internal and external resources is one way to keep pace or to get ahead, and so the 'ecosystem' or value networks that a company creates may well become the competitive advantage of the future. In their work on the Value Net Model, Harvard and Yale professors Brandenburger and Nalebuff, argued that organisations

> **"The process of innovation has become much more widely accepted, as a result of the collaboration that we've all been undertaking in pursuit of solutions born out of necessity. The tools that we use for online collaboration, such as MURAL and digital whiteboards, are far more commonplace today. But it's the process and the people who practise innovation through those tools that have their moments to shine."**
>
> **» Craig Stockton, Digital Leader – EMEA GHD Digital**

would find it increasingly necessary to think differently and more expansively about organisational capabilities, including working co-operatively with competitors. While this may sound fanciful, it is happening today, in sectors which may surprise.

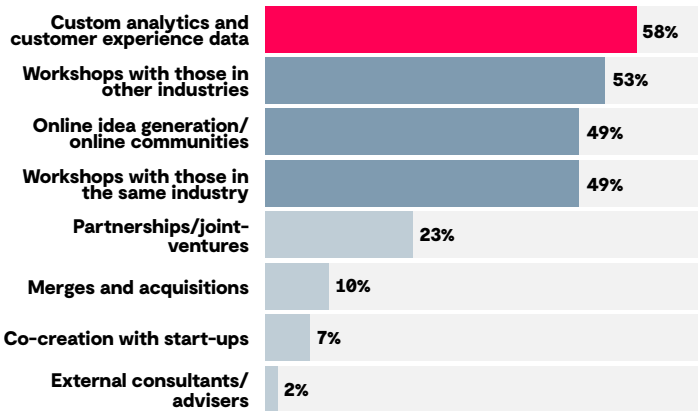
“We often get questions from investors, such as: ‘How will you guys, being small, compete with the major banks in this market, given their financial muscle and their ability to spend billions of dollars on new technology?’ Partnering with best of breed providers can certainly accelerate time to market, and if we don’t have the capability or expertise in-house, we’re always open to partnering.”

» Gary Dickson, Chief Financial Officer MyState Limited

Take the Charge on Innovation Challenge, which is a collaboration between giants of the mining sector – BHP, Rio Tinto and Vale, facilitated through GHD Digital. The three founding patrons start with a simple premise – ‘We cannot solve the decarbonisation challenge alone and are looking beyond the mining sector for a solution.’ The challenge is for technology innovators to help the mining companies develop new concepts for large-scale haul truck electrification, and to reduce diesel consumption and emissions. By bringing together their collective market power, mining companies are encouraging new entrants into the market, while challenging the major manufacturers to move faster.

In our research, executives highlighted a range of different ways in which they currently source digital innovation from beyond the boundaries of their organisations.

Figure 20. What are the main ways that your organisation sources digital innovation from the outside?



“I believe COVID-19 has accelerated the need for radical collaboration. And what we are starting to see is competitors that are willing to collaborate, to unlock capital for things that need to happen.”

» Sylvain Emeric, Practice Director - D-Lab, Australia GHD Digital

05

Establishing a strategic change management approach, top down and bottom up

So, who owns innovation anyway? Coming out of COVID-19, this is a tricky question. Organising for innovation can be challenging at the best of times. With such progress having been made in tools, capabilities and mindsets to embrace innovation, it feels more decentralised and democratised and closer to the front-line. To now say, 'innovation is the premise of that team over there' would be a huge retrograde step. It is different for every organisation of course, and many already have highly structured, effective and well-resourced R&D and innovation teams in place. In certain industries such as construction, that tend to organise themselves on a project-basis more so than an enterprise, the optimal model for innovation becomes even less clear.

Two distinct requirements co-exist. First, at a more grassroots level, it is the ability to create a culture of innovation so that everyone in the organisation feels empowered to pursue their ideas and opportunities for continuous improvement, and motivated to do so.

In this way, organisations continue to harvest the innovative outputs of highly functioning teams and intelligent people on the front-line. Second, there is an additional requirement to ensure that, at a strategic level, the most important challenges and opportunities for innovation are being properly pursued, with adequate funding, capabilities and accountability.

The interface between top-down and bottom-up approaches is critical. There is a need for avenues or pathways that can enable the transfer or scaling of an idea from a particular niche into the wider organisation, and this may involve the application of an innovation process to do so successfully.

"It's a balance. There needs to be a channel or a communication vehicle for everyone to be able to contribute ideas, or to ask for others' feedback and collaboration on an idea. Some of those things need to see the light of day, and I think that's where top-down organisations often miss out, because they haven't created an opportunity for those ideas. The disruption brought by COVID-19 has hopefully opened many people's eyes to the value of listening, and being open to new ideas."

» Kumar Parakala, President GHD Digital

Conclusion

Moving from surviving to thriving

There is no doubt that disruption is a constant force in our lives. The pandemic demonstrated the importance of digital innovation in surviving unexpected crises. Only those who are prepared to take risks, pivot, and try new approaches are likely to succeed in the long-term. The disruption from COVID-19 fostered an environment for executives to be bullish about the opportunities that digital transformation brings.

While no one wants to stay in a constant state of panic, it is imperative to maintain momentum to remain relevant and competitive.

By creating inspiring leadership and building a culture that nurtures innovation throughout the organisation, leaders will be more agile in responding to crises and unexpected challenges.

It is vital for businesses to embrace emerging technologies and become more aware of market dynamics to remain competitive and avoid being blindsided. A culture of innovation can be created in any organisation with the right strategy, mindset and investment.

Finally, leaders must be open to radical and new forms of collaboration – within their own industry, and with the broader community. Only then can organisations truly move from surviving disruption – to thriving.

→ Talk to us

For further information and to learn more about the findings of our report, please contact:

Natalie Cousens
Marketing and Communications Leader
GHD Digital
Natalie.Cousens@ghd.com
+1 416 884 2351

About GHD Digital

GHD Digital is a digital transformation business dedicated to helping clients unlock innovation, embrace the future and change communities for good. We are part of GHD, the global professional services company focused on solving the world's biggest challenges in the areas of water, energy and urbanisation.

Our geographic footprint spans across Australia, APAC, North America, the UK and the Middle East. We have a uniquely diverse and talented team of more than 600 people including data scientists, design thinkers, immersive digital consultants, project managers and innovators. And with the combined expertise of GHD's 10,000 engineering, construction and design experts, we help clients re-imagine their digital future.

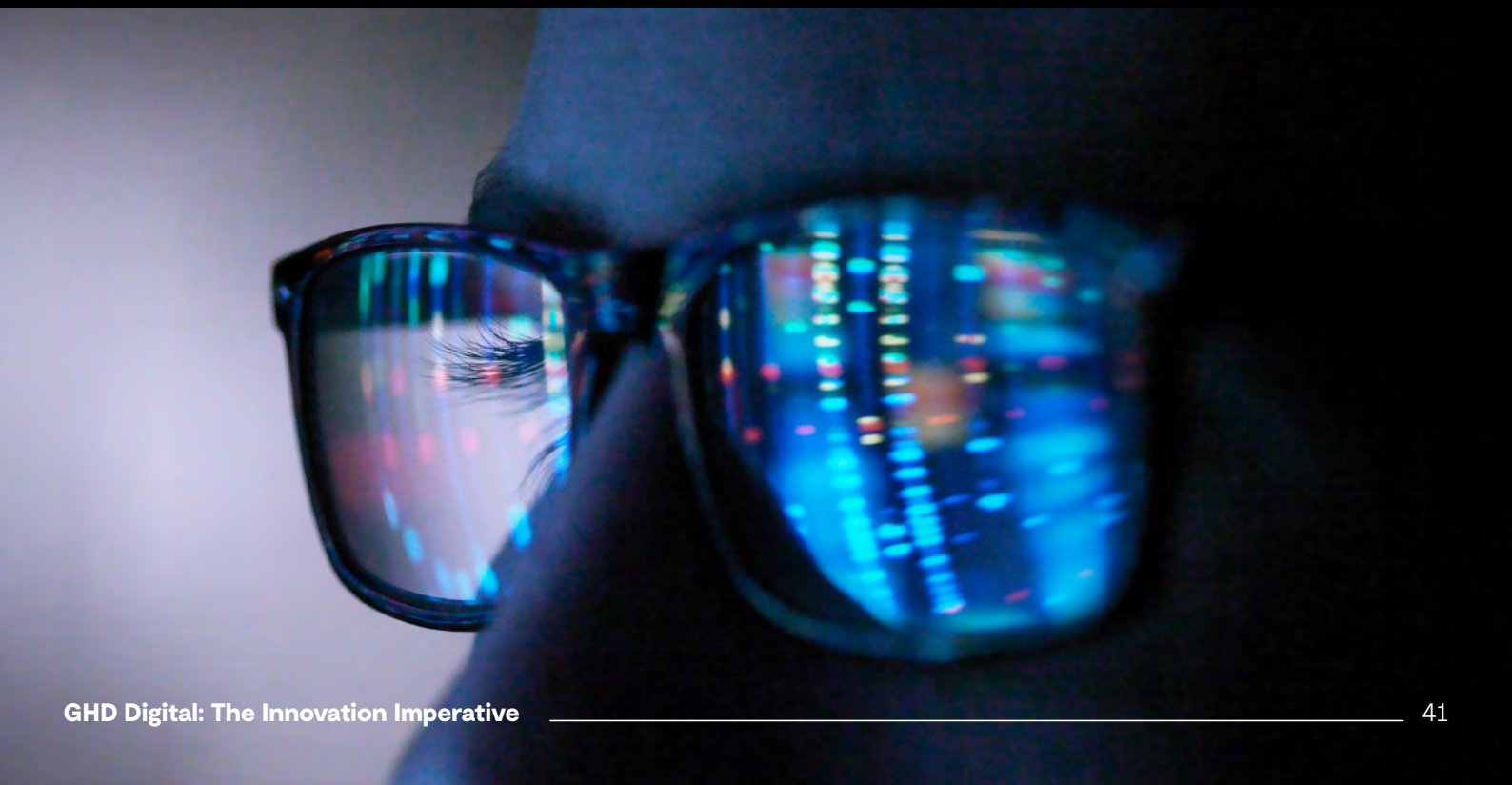
→ Discover more

We work together with our clients to break down silos, and take them on a journey to explore new ways of working to ensure they are equipped and empowered to achieve their business success.

Learn more at **www.ghd.com.**

Glossary

- ***Intelligent automation:*** referring to the combination of artificial intelligence and robotic process automation to streamline repetitive tasks by freeing up resources and improving operations. What is Intelligent Automation? | IBM
- ***Advanced automation*** utilising automated system processes to execute a program of instructions during a work cycle to increase efficiency.
  Boucher, T.O., Computer Automation in Manufacturing, Chapman & Hall, London, 1996 Advanced automation functions - Wikipedia
- ***AI/Machine learning:*** a range of technologies that leverages autonomously making decisions to carry out actions on behalf of a human being and predict future behaviour. The era of Intelligent Automation | LexisNexis
- ***Connected infrastructure:*** a way to provide virtual oversight of people, assets, and work, across multiple locations and multiple projects, using smart technology delivering data to a connected site, real-time insights enhance operational performance, improve safety and reduce operating costs. GHD Digital
- ***AR/VR and mixed reality:*** an interactive environment that is reality-based using computer generated displays, sounds, effects and text to generate a real-world experience for the user. What is Augmented Reality (AR)? - Definition from Techopedia
- ***Cybersecurity:*** any preventative measures designed to protect an enterprises information from being compromised, attacked or stolen. What is Cybersecurity? - Definition from Techopedia
- ***Big data/data analytics:*** the strategy of analysing a large amount of data and gleaning insights from the data. What is Big Data Analytics? - Definition from Techopedia
- ***Digital twin:*** a virtual representation of a building, system or entity that exists in the physical world. What is a Digital Twin? - Definition from Techopedia
- ***3D printing:*** enables the creation of physical 3 dimensional models of objects using a series of additive or layered development framework. What is 3D Printing? - Definition from Techopedia
- ***Blockchain:*** a tamper-resistant distributed ledger designed to validate and store digital transactional records. What is Blockchain (Distributed Ledger)? - Definition from Techopedia
- ***Communication technologies:*** the convergence of digital and physical resources to hold, gather, process, generate and transmit information. What is Information and Communications Technology (ICT)? - Definition from Techopedia
- ***Internet of Things (IoT):*** a concept used in computing that describes the idea that all physical objects are connected to the internet and can be identified with other devices and can send and receive data. What is the Internet of Things (IoT)? - Definition from Techopedia
- ***Cloud transformation:*** the process of migrating data, apps, software programs and/or IT infrastructure from local servers to cloud based servers. What Is Cloud Transformation and Why Is It Important? - Alert Logic
- ***Digital asset management:*** a content management system that manages and stores all digital files that are created by an enterprise, allowing for control and a centralised management system for all digital content within an oganisation. What is Digital Asset Management (DAM)? - Definition from Techopedia
- ***Digitising project delivery:*** leveraging digital technology and project management to plan, lead, organise and optimise the deliver or projects.

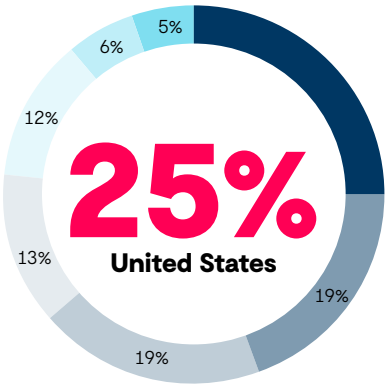


Methodology

During March 2022, GHD and Source Global Research surveyed 777 senior executives from Australia, Canada, New Zealand, Saudi Arabia and the UAE, UK and US. The focus of the study was to understand whether innovation had changed as a result of COVID-19 and other disruptive forces. Executives were drawn from a range of sectors, including infrastructure, construction, transportation, energy and natural resources, and within those sectors, respondents came from privately-owned companies, publicly-listed companies, government bodies and public-private entities. In May 2022, the survey was followed up with in-depth interviews with additional senior executives from industry and GHD experts, to further understand the themes emerging from the survey data.

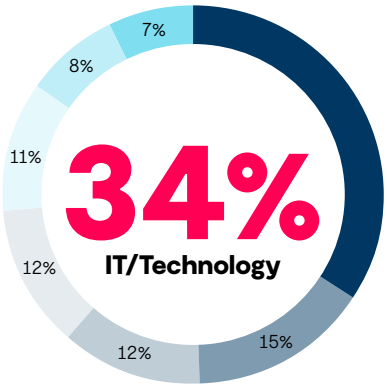
Survey respondents

Methodology: Region



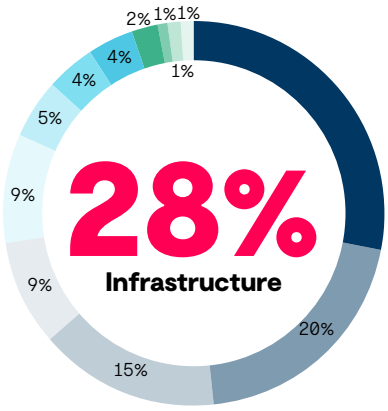
- United States
- Canada
- UK
- Australia
- UAE
- New Zealand
- Saudi Arabia

Methodology: Functional role



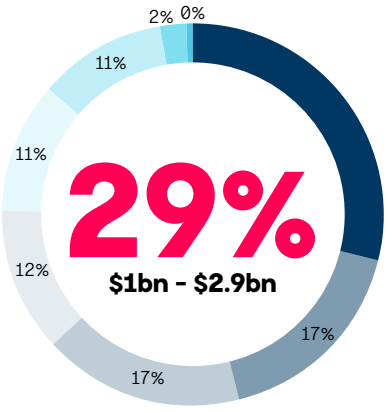
- IT/Technology
- Operations
- Environment, EHS and sustainability/ ESG
- General management
- Strategy
- Innovation
- Digital

Methodology: Subsector



- Infrastructure
- Renewables
- Construction
- Transportation
- Engineering
- Oil
- Mining
- Electricity
- Gas
- Public sector/state-owned organisation
- Nuclear
- Water

Methodology: Revenue



- $1bn - $2.9bn
- $500bn - $749bn
- $750bn - $999bn
- $3bn - $4.9bn
- $5bn - $9.9bn
- $10bn +
- $250bn - $499bn
- Not applicable, we're not a renevue-generating organisation

Contributors

We'd like to extend our thanks to all of the contributors who took the time to talk to us and share their insights.

- **Ali Carden**
  Global Practice Director - Products and Platforms, GHD Digital
- **Nipa Basu**
  Global Practice Director - Digital Intelligence, GHD Digital
- **Hind El Aoufi**
  Practice Director – D-Lab, EMEA, GHD Digital
- **Sylvain Emeric**
  Practice Director - D-Lab, Australia, GHD Digital
- **Richard Fechner**
  Executive General Manager, GHD Advisory
- **Steve Lennon**
  Practice Director - Australia, GHD Digital
- **Tej Gidda**
  Global Leader, Future Energy
- **Kumar Parakala**
  President, GHD Digital
- **Brett Roberts**
  Global Market Leader - Environment, GHD Digital
- **Sukalp Sharma**
  Practice Director - Digital Experience, APAC, GHD Digital
- **Jacyl Shaw**
  Global Practice Director - D-Lab, GHD Digital
- **Craig Stockton**
  Digital Leader - EMEA, GHD Digital
- **Suna Taymaz**
  Market Development Leader, GHD Digital
- **Robert Bowell**
  Lead IT Business Partner, NEC Group
- **Gary Dickson**
  Chief Financial Officer, MyState Limited
- **Paul English (Author)**
  Director, Source Global Research
- **James Hunter-Jackson**
  IT Director, NEC Group
- **Joanna Marsh**
  General Manager, Innovation and Advanced Analytics, Investa Property Group
- **Oluwole McFoy**
  General Manager, Buffalo Water Authority
- **David Murphy**
  Director of Research and Innovation, Level Crossing Removal Project (LXRP)
- **John Robbins**
  Environmental Engineer, Shell
- **Marty Robinson**
  CIO, City of Medicine Hat
- **Maria Visocchi**
  Director of Communications and Community Engagement, City of Brantford

References

Asimov, I. (1990). Robot visions. New York, N.Y., U.S.A: Penguin Books.

Brandenburger, A.M & Nalebuff, B.J. (1996) Co-opetition. Currency Doubleday.

Brynjolfsson, E. & McAfee, A. (2014) The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company.

Christensen, C. & Hall, T. & Dillon, K. & Duncan, D. (2016) Know Your Customers' "Jobs to Be Done". Harvard Business Review, September 2016.

Christensen, C. (1997) The Innovator's Dilemma. Harvard Business Review Press.

Foster, R.N. (2016) Working The S-Curve: Assessing Technological Threats. Journal of Research Management, Volume 29, 1986 – Issue 4.

Geroski. P.A. (2003) The Evolution of New Markets, Oxford: Oxford University Press.

O'Reilly, C.A. & Tushman, M.L. (2016) Lead and Disrupt: How to Solve the Innovator's Dilemma, Stanford, CA: Stanford University Press.

Schwab, K. (2016) The Fourth Industrial Revolution. New York: Crown Business.