

Tech

ISSUE 2
2021

JOURNAL™



Welcome to the Digital
Jungle

IT's a Jungle Out There:
An IT 'Porter' Can Help You Through the Journey

04

 **Insight.**

Table of Contents

IT's a Jungle Out There: An IT 'Porter' Can Help You Through the Journey	4
The ABCs of Immersive Tech for Learning & Development	12
5 Security Risks Your Endpoints May Be Exposed to	18
Why Smart Cities Are Safer Cities, Thanks to Real-Time Data and AI	24
TAFE NSW responds to evolving industry needs, government regulations and a need to prepare business for the future	30
As a Service: Bringing Cloud Consumption to Your Data Centre	34
Customer Experience and Employee Experience Go Hand in Hand	38
MLOps: The Key to Unlocking AI Operationalisation	42
Perimeter Security and Zero Trust Securing a Moving Target	47
Catholic Diocese of Maitland-Newcastle relies on data lake and AI to explore drivers of student learning	50

Editorial

Editor-in-chief

Athena Thompson & Amy Protexter

Production managers

Megan Hayes Kayeene Asistio
Maria Mahanes Sil Suelto

Senior editor

Isabel Ticlo

Editors

Kellie Herson Jillian Viner
Heather Horn Heather Wagner
Krista Leland Athena Thompson
Jesse Millard Matt Garrod
Ashlee Thomason Paul Cina

Contributing writers

Amol Ajgaonkar Joyce Mullen
Vincent Casale Duane Pond
Kent Christensen Fred Ramirez
Anna Donnelly Ken Seier
Matt Fedorovich Sandeep Sinha
David Gaw Samantha Ward
Michael Moore

Design

Art director

Chris Reddoch

Art production managers

Charles Cruz Nicola Stamm
Rovi Sia

Creative designers

Chancel Gonzales Katherine Magpantay
Maia Hatch Emerson Marchan
Mervin Lorenzo Angelie Perez

Letter From the Editor

When our editorial team — which spans different cities and countries, the US and Australia — brainstormed this issue of the Tech Journal, we found ourselves musing over the vast complexity and exciting growth of the IT landscape today. The speed, the entanglement, the unseen threats and the help needed sometimes to navigate where you're going. Given the journey to put this publication together is also an adventure in remote working and collaboration, when someone jokingly sang the lyric, "Welcome to the jungle" we knew we'd found our theme. Plus, songs from the 80s are timeless, right?

Decisions about IT can feel daunting. Risky. Knowing which choices to make and feeling trepidation about starting the journey can leave you standing still and vulnerable. While the heroic solo traveller is the stuff of great movies and novels, travelling together with subject-matter experts can make both the journey and the destination a great one.

In this month's cover story by our Insight North America President Joyce Mullen, you'll hear [how a journey up Africa's highest mountain helped her appreciate the power of placing your trust in others to guide you](#) — because what's unknown to you is someone else's expertise.

We'll also travel from the digital jungle to the virtual concrete jungle and share how [smart cities are safe cities, and how data and AI are transforming public-safety focused agencies and the cities in which we all live](#). We also unpack the opportunity presented by immersive technologies, augmented, virtual and mixed reality; IDC projects that by 2024, the top two commercial use cases for immersive technology will be training (\$4.1 billion) and industrial maintenance (\$4.1 billion), and we also show you [the way to operationalising Artificial Intelligence \(AI\) with MLOps](#).

There's more to explore in this issue, including [guidance for evading cyber predators with perimeter security](#) and [end-point security](#). We also profile an incredible [digital transformation journey told by the team](#) at NSW TAFE. Previously operating as 11 separate education institutions with a myriad of platforms to manage students and their learning journey, this data-rich transformation program was navigated with our team here at Insight. It truly is an inspiring story.

The digital jungle is lush with opportunity — we're here to help you discover it. Enjoy this issue of the Tech Journal, and best wishes on your next IT adventure.



Athena

Athena Thompson

Director Marketing and Strategic Partnerships,
Insight APAC



IT's a Jungle Out There:

An IT 'Porter' Can Help You Through the Journey

Every day for probably the past five years, I've said to myself, "Today is the slowest day of change that we'll see for the rest of our lives."



We're living in a real moment of digital acceleration. The development process gets faster, the hardware gets better and the leverage we're getting out of data analytics is unparalleled. There are more processor choices than ever before, there's an app for everything and independent software vendors around the world are doing all sorts of interesting things. When you get down to it, it's a real digital jungle out there. And that's exciting — but it can also be overwhelming, especially if you're not steeped in the technology day in and day out.

Personally, I love the adventure. There's something new and unexpected around every corner. But you have to start with that kind of optimism in mind to see the unfamiliar terrain as enormous opportunity.

My family is very fortunate in that we've had opportunities to travel to really unusual places all over the world, including jungles in Panama, South and Central America, Guatemala, Honduras and India. At one point my kids asked, "Hey mom, can we please just go to Colorado for vacation?"

So we decided to do what any normal family would do and hike Mount Kilimanjaro.

Now, when you climb Kilimanjaro, you don't go alone. You have tons of porters. It's a ridiculous thing. We had seven or eight people in our group climbing Kilimanjaro and probably 40 porters. And that's because they carry everything. But more than just carrying everything, your porters know the way — not just the direction to go, but how to read the weather, how much water to bring based on where the water sources are and so much more. They're incredibly smart. You trust them. And because you have so much trust and confidence in them, you stop worrying about the journey. You relax, forget about the possible risks and take in the amazing world around you.

So we decided to do what any normal family would do and hike Mount Kilimanjaro.

My friend, Pat Gelsinger (he's now the CEO of Intel), also climbed Kilimanjaro and experienced the caravan of porters. Afterward, he aptly made the analogy that we, as IT partners, must be the porters for our clients on their IT journeys. The analogy stuck with me, especially today as I think about the pace of innovation and just how much our clients are trying to navigate. So if you find yourself standing at the fringe of the digital jungle — whether you're about to begin a cloud journey or embark on an Internet of Things (IoT) safari or something in between — here's my porter's wisdom to help you come out on top.



Modernise, modernise, modernise.

We've been telling organisations to modernise their infrastructure for years and that will probably never change. Modern infrastructure is the bridge to business transformation — it's what enables you to leverage emerging technologies such as Artificial Intelligence (AI), the IoT and the intelligent edge.

COVID-19 was a tremendous accelerator for IT modernisation because all of a sudden, organisations needed to be more flexible. That meant breaking down business process barriers that were always in the way, because they *had* to.

Telehealth is such a prime example of this. Things like HIPPA restrictions and healthcare regulations made widespread adoption of telehealth difficult — until it couldn't. Consulting with a doctor via telephone or a video call wasn't a new thing in 2020. But it's a new thing for insurance companies to pay for a virtual consultation and diagnosis. COVID-19, although devastating, really cleared the path for transformation.

Automate as much as you can for greater efficiency.

On the surface, automation is about eliminating tedious or repetitious tasks, minimising errors and creating greater efficiency. Automation frees up time for your team to work on the transformational elements of the business that matter most to your customers. What's more, automation gives you control over that "digital jungle." By creating touchless transactions, things happen exactly as you designed it and consistently with your policies. From infrastructure deployment to funneling order intake, the opportunities and use cases for automation are abundant.

Don't just collect data — make it work.

I have an important question to challenge every business and IT leader with: How are you



leveraging the data you collect today to really change your business, your business model, your customer experience or the risk profile of your company? And for some organisations, this isn't just a question of using the data you have, but also asking if you're using all the possible data available to you.

Here's an example: At Insight, we've had a long-standing relationship with a large grocery store chain where, for years, we've provided them with devices for their core business. Just in the last few years, we began helping them reimagine and modernise the customer experience in stores. They had several business goals: Enhance the customer experience, improve food and worker safety, and increase store efficiency and sustainability.

We helped implement IoT/intelligent edge solutions to look at everything from real-time pricing updates for products to monitoring energy usage in things like freezers and lighting within the hallways. We looked at customer buying patterns to improve stocking and staffing, and to better manage disruption.

Proof point: In the old model, grocers would typically only have Point-of-Sale (POS) data to learn from. Now, the grocery chain is generating data and processing at the edge to capture information from many different sources, providing a more comprehensive and dynamic view of the business from which to improve, innovate and evolve.

Success story: How a national grocer used data to optimise inventory and improve customer experiences.

The speed of innovation is determined by your leadership, not the size of your organisation.

Jason Jennings said it best: "It's not the big that eat the small, but the fast that eat the slow." Making bold moves can be hard if you're a public company — you don't want to disappoint shareholders. Accelerating innovation can feel challenging if you're a large company — there are so many pieces to move and stakeholders to involve. But at the end of the day, business transformation is dependent on leadership and a mindset of agility. It's a decision to be bold and be fast — to choose speed over perfection.

But at the end of the day, business transformation is dependent on leadership and a mindset of agility. It's a decision to be bold and be fast — to choose speed over perfection.



This might mean taking a little more risk to deliver a better customer experience as fast as possible versus waiting to make sure you don't lose ten cents on a deal or that you have the perfect contract agreement — there's just no time for that. That's not competitive.

And if you have doubts about that, consider how dramatically Amazon changed our perception of speed. Paying for shipping and waiting up to one week to receive an online order used to be pretty standard. But Amazon Prime completely changed that. Think about, too, how Uber changed our perception of convenience. Or how AirBnB changed our perception of hospitality.

I'll be the first to admit speed isn't without consequence. There are plenty of examples where a decision to move fast leads to things needing to be fixed. I learned this early on in my career while I was running tech support at my former company, almost 20 years ago. We made the decision to move all of our call centres for our corporate clients to India. We were convinced this was a really smart idea that was going to save the company tens of millions of dollars — and we believed we could do it very quickly. We chartered a six-month project plan to get the new call centres up and running. As we approached go-live, there were warning lights all over the place that we weren't ready, but we did it anyway. Needless to say, it didn't go well. The pain to our customers was significant and real.

But the great thing is that we moved fast, and we failed fast, and then we fixed fast. We also learned from it. In that example, we realised we needed to provide more training. Sometimes you're beholden to the speed at which your teams can come along with you. Leadership must provide the tools, time and frequent feedback loops to support change — especially at an accelerated pace.

But, all that said, our instinct was right. While we miscalculated the people-side of change, we were right to move fast on the decision. Today the call centre in India is very successful and provides great customer experience, which leads me to my next piece of advice.

Be adventurous enough to explore uncharted territory.

If you're not taking risks, you're probably not doing anything very interesting. This is a moment of great exploration and discovery — and that's not only amazing but incredibly rewarding and fun to be a part of.

If you're not taking risks, you're probably not doing anything very interesting.

Lately at Insight, we've been focused on helping clients leverage the intelligent edge. In the simplest of terms, edge computing enables real-time computing power by pushing data processing to edge devices. This means that workloads are placed closer to the source of data collection where an action needs to take place. It's a pretty wild space right now. There are no standards or best practices that are well established and accepted across verticals — it's all very much in the making. For all those reasons and more, I find the intelligent edge really exciting. As a former plant manager, the notion of being able to automate your manufacturing production activities, and manage the data in such a way that you can reduce downtime and scrap, is fantastic and very tangible.

The intelligent edge is also already being deployed to improve safety for workers in traditionally dangerous jobs. We worked with a railroad to deploy an intelligent edge solution that uses drones to survey approximately 32,000 miles of track. Prior to that, field workers were manually conducting railroad maintenance inspections. The intelligent edge solution consisted of IoT-connected solutions, such as Unmanned Aerial Vehicles (UAVs, otherwise known as drones), moving rail cars and intelligent switches, as well as a powerful analytics dashboard that our team deployed. The result was improved worker safety and faster maintenance — both of which are extremely material to the business and its workers. But when you take it even one



step further, the ultimate beneficiary of this is the railroad customer. Proactive and faster maintenance means greater uptime and more reliable service.

Another powerful, emerging trend is the use of advanced analytics and AI. Computer vision is a great example of this power. Manufacturing production lines have seen some of the earliest applications of computer vision.

My favourite example of this use case is with a client of ours, Clover Imaging Group. They wanted to use technology to automate product cycle counting, which was historically time-consuming and labour intensive. We used computer vision to capture a picture of a palette each time an item was restocked or picked for shipment. These images would then be uploaded and used to automate the cycle counting process with a 93% accuracy rate. The greatest part of this client work was that they wanted the solution to be highly accurate and scalable, yet simple and accessible enough to be used by staff members with disabilities — and we were able to help them achieve those goals.

Trust your porters — and your instincts.

Change is hard. There are always good reasons not to do something. The secret, I think, is to proceed with the right team around you. Because you can buy the hiking boots and backpack, the compass and the walking sticks — and these are all very helpful, if not essential tools for the journey — but acquiring the tools (or the technology) is often not enough. It's a complex terrain, and it's easy to get lost or tripped up along the way.

And this is where I think we, Insight, bring so much value — because we know the way. We've seen different technology deployments and projects across so many customers and industries. Like the Kilimanjaro porters, we know the reference points and benchmarks. We recognise the warning signs and can navigate the fastest course.

When it comes to technology, it's absolutely a jungle out there. But it's alright — trust your porters. We can show you the way through the digital jungle and help you use technology in ways that are going to deliver the outcomes that ensure you come out on top.

Business transformation is a journey. **Let Insight show you the way.**



About the author

Joyce Mullen

President,
Insight North America

The ABCs of Immersive Tech for Learning & Development

How augmented, virtual and mixed reality solutions are transforming on-the-job training and support — and how your business can start reaping the benefits

Immersive technology has lingered on the horizon of digital transformation for the past few years. But in 2020, the convergence of factors surrounding remote work, combined with the increased availability of immersive devices, created a significant turning point for adoption.

As occupancy and travel restrictions created new demands to support productivity, virtual collaboration and training from anywhere, organisations began to recognise the value of supplementing physical environments with digital access. Attitudes shifted from aspirational to practical.



(n12xE2)

STATOR

rotor

MT-42093

QpT-10-120

Winding F: 0.99

nc. 24

BE-1272

Trans Gear 13.25

rotor

M



Worldwide spending on augmented reality and virtual reality is forecast to accelerate out of the pandemic, growing from just over \$12 billion this year to more than \$72 billion in 2024.

Among those surveyed for Microsoft's 2020–2021 report on mixed reality, 75% of [healthcare](#) organisations, 80% of [manufacturers](#) and 81% of [retailers](#) are now using immersive solutions in some capacity. More than half of healthcare organisations estimate their average Return on Investment (ROI) at 40% or more, while manufacturing estimates average around 30%, and those in retail average 15% or more.

Now these businesses are exploring ways to further capitalise on investments in immersive tech by exploring new use cases. For many, this has meant extending capabilities to Learning & Development (L&D).

An overview of immersive solutions

Before diving into the potential applications for immersive tech, it's helpful to understand some of the terminology behind the technology. While

often bucketed into the same broad category of discussion, immersive tech typically refers to three different types of solutions.

Augmented Reality (AR) overlays digital information onto the physical world. Common examples include Heads-Up Displays (HUDs) like those built into vehicle dashboards or delivered through wearables, such as Google Glass and RealWear. Augmented reality also extends to the use of mobile devices which combine input from cameras with digital elements to provide an augmented window to the world. Finally, immersive rooms augmented by projectors or LED boards to simulate various environments are also considered a form of AR.

Mixed reality (MR), exemplified by holographic devices such as [Microsoft HoloLens 2](#) and Magic Leap, takes augmented reality a step further by giving digital representations a virtual position in physical space. This allows users to view and directly interact with digital elements as if they



were real, three-dimensional objects — while also maintaining the ability to see and engage with the real world.

Virtual Reality (VR), on the other hand, provides a fully immersive digital experience. Systems such as the Oculus Quest 2 or HTC VIVE Focus block out any external visual input and replace it with a virtual environment.

Each of these technologies offer a unique set of capabilities which lend themselves to various use cases.

Benefits of immersive tech for L&D

IDC projects that by 2024, the top two commercial use cases for immersive technology will be training (\$4.1 billion) and industrial maintenance (\$4.1 billion).

The reasons for this are clear. To be effective, training must be **accessible, relevant and engaging**. Immersive technology represents an opportunity to improve these factors by integrating digital information into environments where it might not otherwise be available.

Those of us whose jobs primarily involve working with a computer may take for granted the benefit of tools such as built-in tutorials, search functions and on-demand communications. Information is always at our fingertips. But for those that work on a production floor, in the field, or serving customers or patients, this is rarely the case. Training and support for these positions often rely on information packets or videos which not only yield lower engagement and reduced retention, but are also more difficult to access on the job.



Immersive technology represents an opportunity to improve training and development by integrating digital information into environments where it might not otherwise be available.



Augmented and mixed reality bridge this gap by allowing information to be delivered when and where it's needed. In training, users can interact directly with their environments while following along with instructions or visual aids through applications like Dynamics 365 Guides. This enables repair specialists to reference manuals without taking their hands off their work; production or lab technicians can review instructional guides on demand.

The same information can then be accessed on the job whenever questions arise. HoloLens 2 even provides the option to call for live, expert support using Remote Assist.



Immersive technology is one of the top 10 training trends for 2021 — and beyond.

Beyond augmented training and support, virtual reality provides the option to immerse workers in environments which could not otherwise be easily or safely reproduced. Just as flight simulations have long been used by pilots, others are now adopting this model, including organisations in healthcare, law enforcement, mining and energy, and heavy manufacturing.

Even outside these fields, there's a growing movement in corporate HR departments to use VR for training in soft skills such as customer service, compliance training, anti-harassment and conflict resolution.

Immersive tech provides a variety of tactics to support learning and development, improve time to competency and reduce on-the-job errors. Additionally, data from these solutions can be funneled back into learning management systems to further direct company training efforts. The integration of AR, VR and MR can even help to attract talent and improve retention as the increasingly tech-oriented Gen Z begins to enter the workforce.

Considerations for getting started

Whether your organisation is just getting started with immersive technology, or you're looking to extend applications into training and development, there are a few things to consider:



Hardware

Firstly, begin with the end in mind. Ensure that your intended application goes beyond the novelty of a device to deliver identifiable value to users and the business.

Depending on the intended use case, new hardware may or may not be necessary. Mobile applications that leverage [computer vision](#) may be a good way to get started with AR. Remote Assist for HoloLens is also available on mobile, providing the benefits of live expert support without the need to invest in new devices.

For those that have already invested in immersive devices, expanding to new use cases is as simple as adding some new content.

If you decide to procure new hardware, do your research to determine which devices are best suited for your goals and your environment. Various models are available for industrial applications or for use in clean rooms. You'll also need to consider functionality in context, including minimum battery life, storage and checkout systems, as well as options for sanitising shared devices regularly.



IT considerations

Regardless of the approach you choose, be sure to align with your IT team early. You'll need to have a clear understanding of the technical requirements, security considerations and approvals process for implementation.

Because some immersive devices may be ecosystem-specific, evaluating your infrastructure will be key to a smooth deployment. Assess your environment to

make sure your preferred devices can be easily integrated into your existing ecosystem. An experienced consultant or SI can help to support this process.



Developing content

Once you've determined the method of delivery, you'll need to develop the content for your immersive L&D program. Start by taking inventory of existing training materials; you may be able to leverage many of your existing lesson plans or visuals. Dynamics 365 Guides, for example, makes it easy to superimpose step-by-step instructions, videos or photos over a real-world environment.

Alternatively, if you're looking to develop a new learning program, you'll need to identify your learning objectives, storyboard lessons, contract and record videos, or design other visual components. An experienced consultant can also simplify or supplement this process.



Organisational change

The good news is, implementing immersive technology can be simple if done right. The key is to start small. Once you have the pieces in place, plan to launch a pilot program to demonstrate proof of value and begin building support among users and decision-makers. Communicate early and often about the rollout to drive excitement and encourage adoption.

Like any digital transformation, scaling immersive tech beyond the pilot phase will require a full lifecycle. You'll need to have a plan in place for training users on new devices and software, and an ongoing strategy for addressing questions or concerns. Understand the culture of your organisation — identify potential areas of resistance to change to help users or leadership understand how immersive tech will make life easier. Finally, capture lessons learned along the way and build success stories to encourage implementation elsewhere in your organisation.



Value beyond the screen

Whether applied to learning and development, maintenance and repair, collaboration or product design — immersive technology provides an opportunity to improve effectiveness by bringing digital information to the foreground of the real world.

In the next few years as technical capabilities consistently improve, AR, VR and MR solutions will continue to become smaller, faster, more powerful and less costly. This trend of democratisation will drive the potential for new use cases and greater business value.

Accelerate your journey to immersive learning and development with expert guidance and support.



About the authors

Matt Fedorovich

National Lead for Immersive Technology, Insight



David Gaw

Senior Performance Consultant for Change and Training, Insight



5

Security Risks Endpoints Be Exposed

As cybersecurity threats continue to evolve, how must your business's endpoints be protected?

isks Your May d to

ue to evolve, so too
t security strategy.

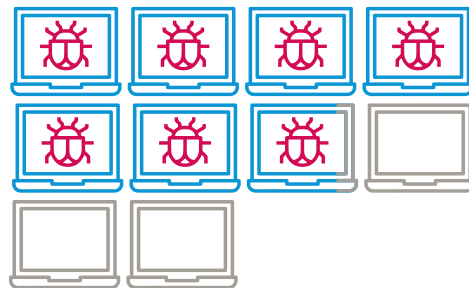




With the rapid shift to remote work, the need to keep endpoints protected has become even more challenging for both users and IT departments. According to a report by the [Information Systems Security Association](#), more than a third of IT cybersecurity professionals say that they feel the hybrid-work arrangement leaves their organisation more compromised and exposed to security threats.

This growing concern could be attributed to the fact that users and devices are now dispersed more than ever — and they’re likely to stay that way for a while. Some organisations found roadblocks in making the necessary adjustments to reduce endpoint security risk in the face of these new or unknown threats. In fact, [Ponemon Institute](#) surveyed 671 IT security professionals and found that 68% saw a noticeable increase in the frequency of attacks, with one or more successful endpoint attacks occurring in the past two years alone.

In this article, we’ll explore some of the leading reasons for why IT security must be more vigilant.



68% saw a noticeable increase in the frequency of attacks, with one or more successful endpoint attacks occurring in the past two years alone.

1 The workplace, and cyberthreats, are now decentralised.

It's been a little over a year since a majority of companies sent employees home; and now every industry is slowly starting to return, but with a hybrid twist. It's become clear that there's going to be a split in how businesses operate moving forward: Some may remain remote long term, some will have everyone back in the office once again and others will go for a middle ground approach.

[HP's Proprietary Research report](#) for 2020 found that at least 50% of employees are currently working from home and 98% of these workers would like to continue part-time remote work for the rest of their careers. Unfortunately, as a result of this shift, some IT pros have tracked as many as double the number of cybersecurity incidents at their organisations. Taking this into consideration, it's no surprise that this is the reason [57% of cybersecurity professionals](#) anticipate spending more on endpoint security in the near future.

57% of cybersecurity professionals anticipate spending more on endpoint security in the near future.

2 Cyberattackers are drawn to unwitting employees.

Technology plays a big role in the success of a company's cybersecurity strategy, but equally important is the awareness among employees. More than [99% of email messages](#) distributing malware require human intervention — such as clicking on links, opening attached documents and accepting pop-up warnings. Unfortunately, once a cyberpathogen gets into a business's IT, it can easily and quickly spread from one system to another. That's why educating workers about these threats and how to avoid them is critical.



3 Antivirus programs are no longer enough.

Every month, there are a reported [102 million new malware threats](#) — which breaks down to 360,000 attacks per day, or 4.2 attacks each second. After analysing the patterns behind these everyday attacks, [Ponemon Institute](#) determined that 80% were zero-day threats with 60% of them being missed by antivirus programs. Traditional antivirus software may not be adequate at detecting and preventing these more advanced threats. That's why a total of 85% of organisations say they prefer modern IT security products with features such as Artificial Intelligence (AI), machine learning, containerisation, microvirtualisation and behaviour monitoring.

Every month, there are a reported 102 million new malware threats — which breaks down to 360,000 attacks per day, or **4.2 attacks each second.**

4 It's impossible to fight a breach you can't see.

Without proper oversight of device security, it takes a while to know that you even have a problem. In general, organisations take an [average of 315 days](#) to identify and contain a breach caused by a malicious attack with only [97 of those days](#) being spent actually patching the weak spot. Having more people working from home could increase the time it takes for an organisation's IT cybersecurity team to identify and contain a data breach by days or even months.



5 Cybersecurity experts are in short supply.

Even though there's a growing request for cybersecurity experts, there isn't always enough people or resources to fulfill the need. In fact, about [85% of organisations](#) have experienced a shortfall of skilled IT security personnel; a staggering [3.5 million cybersecurity jobs](#) are expected to remain unfulfilled by the end of 2021. For those who have continued to work throughout the pandemic, they've reported an [increase in workload](#) (32%) and have found that their day-to-day activities were changed to non-security related IT duties to fill company gaps (47%). Stretched thin, IT teams are splitting their time between a myriad of tasks, taking them away from their main objective.

A staggering 3.5 million cybersecurity jobs are expected to remain unfulfilled by the end of 2021.

Make cybersecurity a priority.

With more than **half of the organisations** today reporting a lack of in-house expertise and resources around endpoint protection, there's never been a better time to revisit your current security strategy.

Reduce organisational risk,
maintain compliance and
make confident technology
decisions with our
comprehensive strategy
sessions and managed
security services.

¹ (ISC)² Cybersecurity Workforce Study, April 28, 2019

² The Impact of the COVID-19 Pandemic on Cybersecurity, ISSA, July 30, 2020

³ Ponemon Institute 2020 State of Endpoint Security Report sponsored by Morphisec, January 2020

⁴ HP Proprietary Research, May 2020

⁵ CyberEdge 2020 Cyberthreat Defense Report, March 2020

⁶ Proofpoint Human Factor Report 2019, September 2019

⁷ Mimecast The State of Email Security 2020, June 2020

⁸ AV-Test SECURITY REPORT 2019/2020, August 26, 2020

⁹ 15th Annual 2020 Cost of a Data Breach Study: Global Overview from IBM Security and Ponemon Institute, July 2020

¹⁰ Based on HP's internal analysis of isolation backed, deep learning endpoint security services including SaaS and managed services. Most advanced based on application isolation and deep learning endpoint protection on Windows 10 PCs as of July 2020.

¹¹ HP Security is now HP Wolf Security. Security features vary by platform, please see product data sheet for details.

¹² HP Wolf Pro Security Service is sold separately. For full system requirements, please visit <http://www.hpdaas.com/requirements>. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product. For full system requirements, please visit www.hpdaas.com/requirements.

¹³ HP Sure Click is available on select HP PCs and requires Windows 10. See https://bit.ly/2PrLT6A_SureClick for complete details.

¹⁴ HP Sure Sense is available on select HP PCs and is not available with Windows 10 Home.

¹⁵ Security Experts available in the Proactive Security Enhanced plan only.

An aerial view of a city with a highway and buildings. A computer vision detection grid is overlaid on the image, with red and yellow boxes highlighting a white van on the highway and a yellow box highlighting a building in the background. The text is overlaid on the image.

Why Smart Cities Are Safer Cities Thanks to Real-Time Data

Sandeep Sinha brings us the latest trends from the US and around the world



ities

ca and AI

When communities expand broadband access, they also lay a foundation for agencies to pursue digital transformation efforts that reshape how they serve the public. Smart city technologies improve communication, streamline routine processes and foster safer spaces — three objectives that law enforcement agencies are working hard to realise.

Reimagining public safety as a proactive effort to create healthier, stronger communities requires technologies and processes that enable flexibility. That flexibility is supported by faster, more accurate data analysis, powered by AI solutions. Intelligent technology helps public safety organisations gain a holistic understanding of their cities, deepen public confidence and strengthen community connections.

Intelligent technology helps public safety organisations gain a holistic understanding of their cities, deepen public confidence and strengthen community connections.

Smart city technology

At law enforcement offices in smart cities, the Real-Time Response Centre (RTRC) functions as a central hub for protecting the public. Companies such as Insight, Genetec, Intel and Microsoft are working together to build on existing public safety IT infrastructure, and develop cloud-based solutions. The RTRC is fed data from computer-aided dispatch and

records management systems, and aggregate intelligence is shown on large-screen video displays. This information is augmented by data from tools such as cameras, traffic sensors and gunshot detectors.

When a 911 call comes in, the system analyses it to ensure that it's immediately routed to the correct response team. At the same time, the dispatcher receives relevant data pulled in from on-the-ground resources and historical records, giving responding officers the exact information they need to make an informed decision. And, the system identifies the field resources closest to the caller's location to ensure a rapid response grounded in situational awareness.

Intelligent software can also enable immediate, automated responses to activity in a given area, even before a call reaches dispatch. In some smart cities, if sensors pick up the sound of a gunshot, lighting in the surrounding area will automatically become brighter, and staff resources in the vicinity will receive notifications.

Data and AI aren't just helpful in real-time response; they're also reshaping long-term public safety processes, including those related to paperwork. Field officers can file reports from anywhere, and that flexibility allows them to spend less time in the office and more time interacting with citizens and building a deeper understanding of their needs.

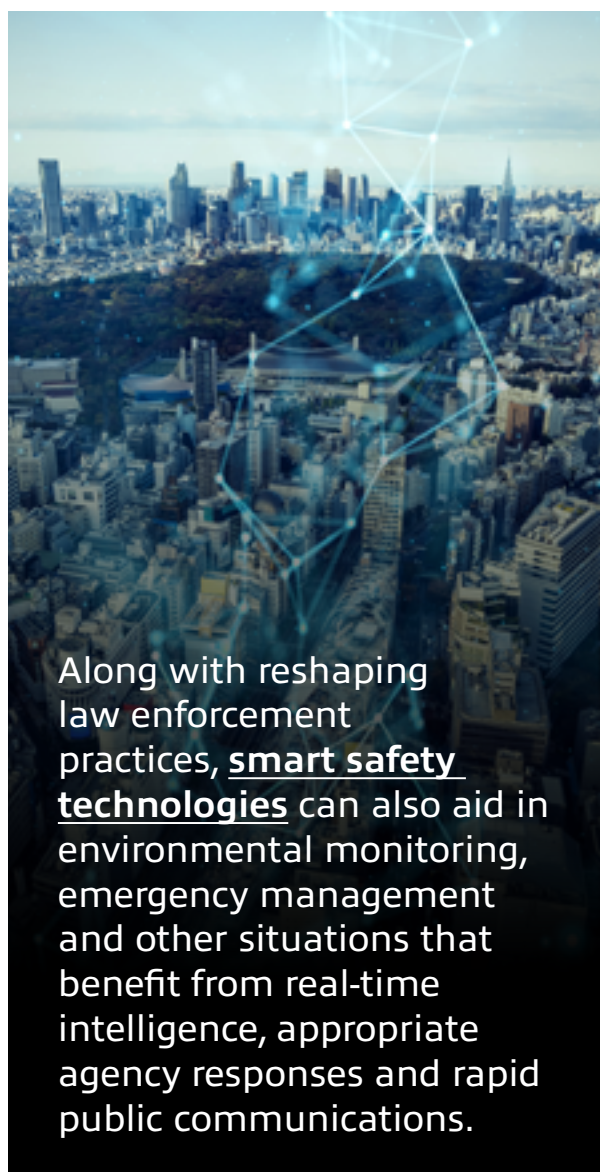
Data and AI aren't just helpful in real-time response; they're also reshaping longer-term public safety processes.

As Kirk Arthur, senior director for business development in worldwide public safety and justice at Microsoft, notes, these technological developments allow agencies to "reduce response times, obtain better actionable information before arriving on scene and limit the adverse impact of an incident."

Another example of long-term process shifts is crime analysis, which often depends on multiple,

complex databases. In the past, sifting through all this in-depth information could take a significant — but necessary — amount of time. Now, innovative analytics tools can draw in all the relevant data from those disparate streams. This allows analysts faster access to the information they need to draw accurate connections and reduce future risks to public safety.

And, it's not only public safety agency workers who benefit from greater visibility into incident data. The community also has much to gain when public safety agencies share intelligently collected information with them. Receiving direct, objective and rapid communications builds trust in public safety efforts and equips citizens with information that can inform how they navigate events, spaces and transit systems.



Along with reshaping law enforcement practices, **smart safety technologies** can also aid in environmental monitoring, emergency management and other situations that benefit from real-time intelligence, appropriate agency responses and rapid public communications.

Three key outcomes

Realising the full safety potential of smart cities requires innovative, scalable tools, but more importantly, it requires a community-first philosophy. Keep these three fundamental outcomes in mind:

1. Intelligence

Modern data solutions offer the capacity to collect large volumes of information from disparate sources in real time. From cameras to sensors to citizen reports, smart technology pulls in signals from a wide array of sources, located across cities that are growing in both spatial footprint and population size.



From cameras to sensors to citizen reports, smart technology pulls in signals from a wide array of sources, located across cities that are growing in both spatial footprint and population size.

But, in order to create a truly intelligent system, local agencies need the ability to transform this new wealth of data into actionable insights. AI accelerates the journey from information to action, equipping those who serve the public with the knowledge they need to understand the community's most urgent challenges, and react to them swiftly and appropriately. By not only accelerating response times but also ensuring that responses align to citizens' needs, smart cities make it easier to protect neighbourhoods and the people who live within them.

2. Transparency

While implementing the right technologies is key to creating safe, smart cities, ensuring the success of data and AI systems requires community trust. People often feel apprehensive about tools such as cameras and sensors being installed in their neighbourhoods. However, communications about what types of data local agencies plan to collect, what practices they'll use to collect it and how that information will drive decision-making provide a clear, open response to those concerns.

That means that agencies must have robust data policies and procedures in place before smart city technologies go live. Such protocols create a clear baseline that both agencies and citizens can operate from as they learn to engage with smart solutions. And, that fundamental transparency paves the way for improved communication down the line, especially as communities see the safety impact of these technologies.

3. Collaboration

Public safety isn't a top-down hierarchy; it's a collective effort that prioritises the needs of the community and depends on strong relationships. Smart technology supports those relationships by offering a fuller picture of the issues citizens face and the changes they'd like to see in their neighbourhoods.

Public safety isn't a top-down hierarchy; it's a collective effort that prioritises the needs of the community and depends on strong relationships.

Deeper, richer visibility provides unexpected insights that can provide a starting point for communities and law enforcement agencies to collaborate on creating successful enrichment efforts, such as outreach programs. It also simplifies collaboration between law enforcement and other areas of city government, including public health agencies, social services and school districts.

What's next for smart cities?

The role of law enforcement is shifting, and innovative technology helps make transformation possible through better data and streamlined processes. In the next several years, public safety technology in the United States is poised to make the largest seismic change since the adoption of 911 in 1968 — and those changes will spark an evolution in the way that public safety agencies serve and protect the public.

But, innovative technology will only go so far without a community-first philosophy. Technology adoption is important not for the sake of innovation, but because it allows agencies to meet citizens where they are in an increasingly digital world. By centering intelligence, transparency and collaboration in digital transformation efforts, local governments can create smart cities that are also safe cities, built on a foundation of trust and flexibility.



Realise the future of public safety. Smart city technology transforms your agency's ability to serve your community.



About the author

Sandeep Sinha

SLED Market Leader for Digital Innovation, Insight





2021 Partner of the Year Winner
Migration to Azure Award
Solution Assessment Award

Azure Advanced Specialisation Spotlight

As the 2021 Microsoft Worldwide Partner of the Year for Azure Migration and Solution Assessments, Insight is the leader in helping clients achieve a cohesive, single source of truth for data.

We have the expertise to help clients discover, assess, modernise, support, and optimise their data estates, and drive operational efficiencies and deliver profitability back to the business.

Advanced Specialisations = Expert Partnership

Insight's capabilities are demonstrated by our certification in 10 Advanced Specialisations across Microsoft Azure, Modern Work and Security.

TAFE NSW recently leveraged Insight's Solution Assessments' capabilities to respond to evolving industry needs, government regulations and the need to prepare business for the future.

Turn the page to read more!



TAFE NSW

Responds to evolving industry needs, government regulations and a need to prepare business for the future



TAFE NSW adopts Microsoft first strategy for 500,000 students, 140 campuses, and 900 courses, as it responds to evolving industry needs, government regulations and a need to prepare business for the future

TAFE NSW previously operated as 11 separate organisations with a myriad of platforms to manage students and their learning journey. As they further embarked on their transformation journey in 2020, they looked for a partner to support their Vision and Strategy for Data Services.

With little existing Azure footprint at TAFE, Insight was able to quickly integrate with TAFE to develop an overall plan on how TAFE could design and implement its TAFE Reporting & Insights Platform (TRIP) as the

backbone of the business, from regulatory and ministerial reporting to gaining insights to improve services.

TAFE NSW wanted to provide business users and executives with enterprise reporting based on accurate data but were struggling with:

- Reporting was done at many levels without standard processes and across siloed systems
- Not being able to meet government reporting requirements
- Inability to leverage data to focus on student outcomes and journeys
- Many different, legacy technologies that inhibited innovation, agility and key use-cases to drive business value



The TAFE NSW (Technical and Further Education New South Wales) is an Australian vocational education and training provider. Annually, the network trains over 500,000 students in campus, workplace, online, or distance education methods of education. TAFE NSW is the amalgamation of all the TAFEs in NSW which used to run separately, now operating around 140 campuses in NSW.

“In the past, not one report of the legacy data warehouse would have been shared with our executives. Now, we are able to share reports with qualified, trusted data with our executives that help provide insights and influence business decisions. With this level of impact and executive buy-in, we all have the confidence, and the excitement, to move forward on our journey and continue to build out new capabilities on journey.”

Colin Frewen, GM Strategy & Enterprise Architecture, TAFE NSW

What Insight Delivered

“Insight have done an outstanding job on the backend solution that has created the backbone for data consolidation and reporting across the organisation.” - David Backley, CIO, TAFE NSW

- Designed and built their Azure Foundations (Landing Zone) to Microsoft best-practices and DevOps capability from Feb 2020, allowing TAFE to quickly scale online services via Windows Virtual Desktop during COVID lockdown.
- A data estate assessment which led to the design and build of their TRIP platform, that leverages Insight’s Azure Data Services (ADS) foundation framework (datalake variant with Databricks), in 5 weeks, proving the ability for ingestion and data visualisation
- Migration of on-prem databases and reporting tools, including components from their financial and enrollment report systems, enabling the shut down of on-prem capability.
- Power BI services to migrate and refactor existing reports
- Power apps and Forms for Head Teacher to understand course offering details for strategic planning, reducing months of planning down to six weeks.
- Embedded within their Technology team to provide training, enablement and knowledge transfer, whilst TAFE looks to train around 10,000 staff on how to use Power BI.

Power App for Course Offering Survey

“It was an extremely innovative piece of work that we did using Power apps and the Azure app, the Azure platform, to deliver a capability to the organisation that we hadn’t had before”

Andrew Edwards, Head of Data Services, TAFE NSW



“So this environment we’ve built is the backbone for the data required to support teaching in this organisation. But it also is part of the backbone. Everything we’re doing is around the interconnectivity of the platform. So it’s important for us that collaboration and engagement works with reporting reports and works with all of the analytics”, says Collin.

The Journey Ahead

The TRIP platform is proving to be the single source of truth and TAFE is now looking at a roadmap for the next 18 months to ingest and migrate data from 10 core systems, including:

- Student Management and Learning platforms (22 Moodles)
- 5 CRMs
- Teachers Program Diary (in-house time recording system)
- SAP HR data (supporting 100K+ employees)
- Asset Management information on facilities, classrooms and AV

Reconciliation Program Initiative

“We’re working very, very closely with all of our first nations people that are employees in the organisation down a real pathway to move towards genuine reconciliation between everybody that is in the organisation. And they’ve come to us and asked for help to understand what’s actually in the organisation, like who is a first nation’s person in the organisation? And how we support specifically people from first nations, which are studying with us as well. And I must say personally, I have found it an absolutely wonderful journey to be part of.”

Andrew Edwards, Head of Data Services, TAFE NSW



“The actual way it was presented was really the success of that piece. We even had the minister logging into the app on his phone, looking at it”

Colin Frewen, GM Strategy & Enterprise Architecture, TAFE NSW



“So the next few years, we’ll replace 45 systems with around 12 big platforms, including ERP platforms, etc. And this platform is starting to clean the data and get ready for that migration. So as we move into our new student management system, and other ERP systems, that data will be provided by the TRIP platform.” says Colin.

Colin adds that TAFE IT has already recovered its investment, in terms of the benefits achieved to date, with a view that the program will exceed \$10 million in benefits back to the business.

As a Service

Bringing

Cloud

Consumption

to Your

Data Centre

Choosing between public cloud or on-premises infrastructure just got a lot easier.





dynamic

20

Within the past few years, As a Service models have gained traction among businesses of all sizes, across industries. Leaders are seeking solutions that not only support agility, but can also allow for transformation at whatever speed is needed — fast or more paced.

When explaining how As a Service works, it's helpful to use the analogy of building a house. Let's say you have found just the right plot of land. You'll need to find a good architect. With them, you'll plan out exactly what you want and will need for the future. The project will require a major capital investment and represent a major liability. You'll commit to maintaining it indefinitely. This is how most businesses approach data centre infrastructure.

On the other hand, there's the concept of cloud consumption. As a consumer, you don't need to plan long term or pay upfront. You pay for what you use and can freely scale up or down. Going with the house analogy, this would be more like renting month-to-month or at least being able to do major renovations at little to no cost.

As a Service provides a way to consume on-premises infrastructure that's like the public cloud; a best-of-both-worlds offering. It's not a lease, capital purchase or cloud contract. It's a way to use the latest technologies, with expert management, to the extent and capacity required.

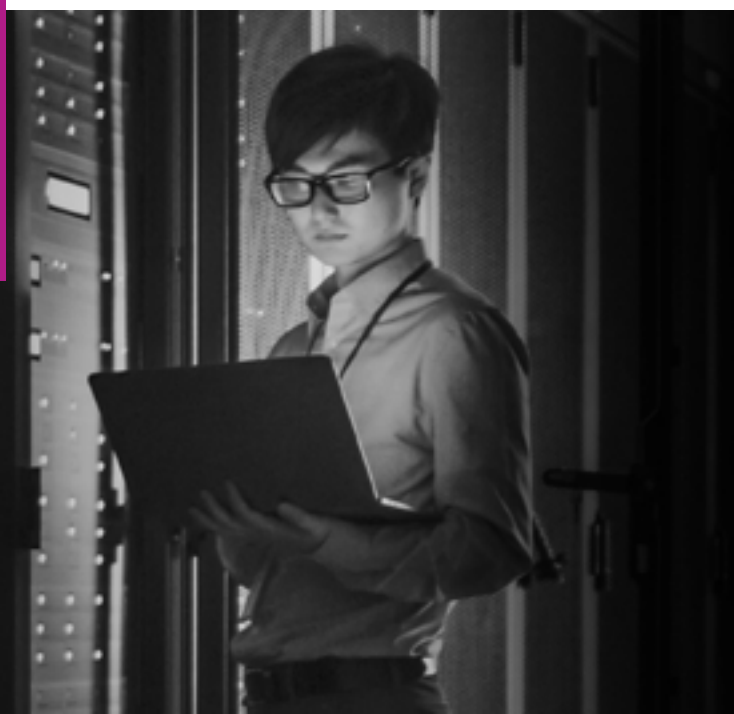
Leaders are seeking solutions that not only support agility but can also allow for transformation at whatever speed is needed — fast or more paced.

It's not a lease, capital purchase or cloud contract. It's a way to use the latest technologies, with expert management, to the extent and capacity required.

Fueling the fire

As a Service models started taking off at the very end of 2019. The momentum didn't slow in 2020, perhaps because the pandemic and its ripple effects caused organisations to avoid heavy capital investments (CapEx) in favor of cash preservation and lean approaches (OpEx).

More enduringly, however, organisations have evolving cloud strategies that benefit from the kind of flexibility As a Service offers. Acting as a bridge to the cloud, As a Service enables right-sized consumption of private infrastructure, requires little to no upfront costs, eliminates overpaying for unused resources and delivers excellent pricing transparency. These benefits are material for buyers seeking storage solutions, which are typically expensive in the public cloud and can cause a meaningful dent in the balance sheet in a traditional data centre setting.



Long-term planning is also more difficult than ever, as we've painfully come to realise over the past year or so. Knowing what a business and its customers will need over a three- or four-year period drives capital decisions and, ultimately, business agility. The less planning required, the more a business can stay responsive and nimble. This is one of the reasons why the public cloud is so appealing.

When corporate mandates order wholesale moves to the cloud, As a Service can be a sort of halfway point, delivering the outcomes the business needs without increasing risk or costs.

The reality, though, is that simply picking up workloads and moving them from on premises to the cloud — “lifting and shifting” — isn't that easy. In some cases, it's actually an impossible ask or one that would jeopardise the business in a tangible way (e.g., costing a fortune to store data in the public cloud). When corporate mandates order wholesale moves to the cloud, As a Service can be a halfway point, delivering the outcomes the business needs without increasing risk or cost. The business can either stay with As a Service beyond its transformation or use it as a steppingstone to a more permanent solution.

Types of As a Service, types of clients

The most mature As a Service offerings today are in the storage space. We've seen a huge adoption in the market, with leaders quickly realising the value of paying for a given number of terabytes, at a given performance level, without having to deal with egress charges, security concerns, capacity planning, upfront costs or maintenance.

Now, leaders are rightly asking service providers and OEMs what they can deliver in other areas (network, compute, data protection, etc.) through As a Service offerings. In time, we'll no doubt see the manifestation of these pressures, with a great variety of As a Service choices in the market.

At the end of the day, many business leaders don't want to change the way they operate, they just want to consume differently.

And it's not just C-level executives at large organisations who are drawn to As a Service offerings. Here at Insight, we're finding interest across our client base. As a Service is useful for large enterprises with public and hybrid cloud strategies, and for smaller companies with IT managers or teams who simply don't want to buy and maintain technology, worry about support contracts or overpay for cloud resources.

The bottom line

At the end of the day, many business leaders don't want to change the way they operate, they just want to consume differently — and run applications and the business without worrying about how or where everything is being hosted. They want to pay for what they use and that's it. And why shouldn't they?

As a Service is a way to align data centre and cloud strategies with organisational strategies to solve challenges, achieve objectives and secure benefits of both private infrastructure and the public cloud.



Insight has a full portfolio of As a Service offerings suited for a range of needs. Clients may choose from service-based or configuration-based pricing.

We partner with NetApp, Pure Storage and Cisco to deliver the best solutions possible. All offerings are built on our Managed Services, a practice with deep expertise, advanced tool sets and a honed model for continual optimisation.



About the author

Kent Christensen

Practice Director for Cloud + Data Centre Transformation, Insight

Customer Experience and Employee Experience Go Hand in Hand

Digital transformation impacts much more than just customer experience.

If you have anything to do with technology these days, digital transformation is a phrase with which you're almost painfully familiar. We've been hearing it for years now because of the rise of cloud technology and, while definitions of what it means vary by organisation, the expected outcome is always about how modernised technology will improve your bottom line.

At the heart of digital transformation is a focus on improving customer experience. Digital transformation and customer experience are inexorably linked with the purpose of building trusted brands and customer loyalty through technology and, ultimately, producing positive financial outcomes. Digital transformation, however, impacts much more than just customer experience.

The disruptive events of 2020 pushed customer experience and digital transformation into the background in favor of managing unprecedented change. Instead of asking,

"How do we improve our customer experience and our bottom line through modern technology?" leaders had to ask much more simplistic, but scary questions such as, "How do we use modern technology so that we can continue to do business?"

I don't need to tell you that the number one priority in the last year for leaders has been to keep the core of their business running. You lived it.

Some companies who previously thought that jobs could never be performed at home had to figure out how to move their on-premises workforce to remote operations. Others thought they were doing okay on the digital



transformation front because of innovative, modernised customer-facing technology, only to find that the back office was suffering because of outdated hardware, enterprise operations and productivity applications, limited support options and an over-worked IT staff.

Even more (dare I say, all) companies fell victim to a complete underestimation of the impacts that working remotely would have on their employees. In fact, the Forrester report, [Predictions 2021: Employee Experience](#), found that: "Some 48% of North American managers surveyed during the pandemic expect a permanently higher rate of full-time remote employees, even as 37% of U.S. employees say they want to work from home more often post pandemic."

As a result, leaders are now faced with questions about measuring work-life balance, keeping employees engaged and connected to others, providing seamless end-user experiences, connecting productivity to job satisfaction

and more. Answering these questions can be intimidating for those who have had their heads buried in ERP, CRM, digital marketing and client-facing apps, but I'm here to tell you not to be intimidated. All of these questions are about customer experience's internal-facing twin: employee experience (EX).

The intersection of customer and employee experience

We've been hearing about EX related to HR platforms for years, but now it's invaded the rest of the corporate landscape in response to the impact of remote work. Brands like Microsoft, Salesforce, ServiceNow and more are talking about how their platforms address EX like they invented it as an entirely new category in the last 12 months, but it's anything but new. Successful digital transformation and customer experience have always been dependent on enabling your employees.

—//

Once the pandemic hit, it became starkly clear that organisations that lacked the core elements of a mature EX strategy, and the technology to support it, were flying blind.

— Forrester Predictions 2021: Employee Experience

//—

Your employees make or break your business no matter how great your customer-facing app or the efficiency of your supply chain. Keeping employees happy is just as integral to the functioning of your business as keeping customers happy. Indeed, for service-based organisations, this is an especially critical concept because your employees are your product.

Whether you realise it or not, you're familiar with what employees want because it's the same thing that customers want: a great experience. That said, if you aren't providing employees with the experience they need, they'll do the same thing that unhappy customers do — disengage and leave you.

Think about the efforts and resources that your organisation puts into customer experience. Businesses want to know who their customers are and what they want, so they spend resources and time on market research, surveys and analytics, and then implement changes and updates based on data. EX platforms bring this kind of marketing approach to your internal organisations.

When HR organisations send out employee surveys, they're performing market research on their internal customers. Now, non-HR EX platforms are taking it a step further to also use passively gathered data that's already available to them about how employees are using their solutions to gain quantitative insights into their behaviour.

Finding the right tool

During this year's Microsoft Ignite (Microsoft's annual conference), Microsoft's CEO Satya Nadella introduced Microsoft Viva, a newly branded product suite that represents their move into EX. As an addition to Microsoft 365 within Teams, Microsoft Viva is not only what you would expect from a market research solution, but also an engaging employee experience. There are four applications included in the Viva suite that provide end users with an engaging, seamless experience: Viva Connections, Viva Topics, Viva Learning and Viva Insights.

Viva Connections

keeps employees engaged and informed.



Viva Topics

provides users with an enhanced search experience.



Viva Learning

makes it easy for employees to upskill.



Viva Insights

provides "market research" on employee behaviour.





These applications mimic the vision for technology's impact upon customer experience — the vision that great, functional apps drive satisfaction. A great user experience is further accomplished by the fact that these apps are found in one already familiar and easy-to-use place: Microsoft Teams.

Now, Viva is just one of the many tools businesses can leverage to gather data and allocate resources to better support high levels of employee engagement. Ultimately, the goal is to develop a greater understanding of EX and implement a tool that will help your company deliver meaningful experiences moving forward.

How employees collaborate has a significant influence on employee well-being, engagement, productivity, management effectiveness and customer relationships. With the right tool, you'll be able to gain insight into how remote and hybrid work is impacting your employees with metrics that address the effectiveness of meetings, after-hours work, internal networks and more. As a result, you can make decisions about where to act and how your actions are impacting the lives of your employees over time.

Understanding and embracing the impact of EX is even more important as businesses begin to open and the job market improves. Those dissatisfied with their employee experience will be in a strong position to

go elsewhere in a market flooded with organisations competing for talent.

Retaining resources in a post-pandemic world will require companies to reevaluate their approach to meeting the needs of their employees — and I'm not talking about things like platitudes, pool tables in the breakroom or gym memberships. I'm talking about real, measurable experiences that impact the lives of your employees and their opinion of their future at your company. EX platforms, paired with the appropriate action in response to data, are great tools to safeguard against employees mimicking the behaviour of dissatisfied customers.

**Turn your focus to EX.
Empower your teams
with the technology
they need to deliver
memorable experiences.**


About the author

Anna Donnelly

Services Product Manager for Digital Workplace,
Insight

MLOps

The Key to Unlocking AI Operationalisation



Realising the true value of Artificial Intelligence (AI) takes much more than simply building a model. So, how can modern organisations get from pilot to production?

Today, two-thirds of executives cite AI as vital to the future of their business, with plans to increase investments this year. As a result, IDC reports the global AI market is forecast to grow 16.4% year over year, reaching a value of \$327.5 billion in 2021 alone.

The reasons for this are clear. AI has moved beyond the realms of experimentation to provide demonstratable value for today's organisations, resulting in significant top- and bottom-line improvements. When these 1% improvements are multiplied by increasing the repeatability and scalability of AI solutions, greater process optimisation, cost savings and higher revenue follow.

But equal and opposite to the potential benefits of AI is the harsh reality that, according to Gartner, just 53% of AI Proof of Concepts (PoCs) are ever scaled to production. And fewer manage to deliver the intended, measurable business value.

So, why the disconnect?

The last-mile challenge

Given the proper data and compute resources, most data scientists have the skills to design an AI model fairly easily. But when it comes to deploying and managing AI in production — organisations often underestimate the difficulties of handing off a project to IT.

IT teams may not fully understand the complexity of implementing AI. If they do manage to platform a model as a microservice, nanoservice or a piece of software, they're often unprepared to support the unique deployment patterns associated with monitoring, back-testing, retraining, modifying or updating that model. Lack of upfront collaboration and high-level ownership throughout this process can further exacerbate extended timelines and build internal frustrations.

As a result, many projects fail to make it from PoC to production.

In data science, this phenomenon is known as the “last-mile challenge” — although it typically occurs just two-thirds of the way through the AI lifecycle. In fact, it’s often only the first major hurdle to fully operationalising a solution.

So, what sets today’s AI leaders apart from those organisations still struggling to get a pilot off the ground?

Navigating the AI lifecycle

The key to overcoming the “last-mile challenge” lies in the strategic management of the AI journey. [McKinsey reports](#) AI adopters with a proactive strategy achieve significantly higher profit margins — between 3% and 15% above the industry average. Rather than addressing operationalisation as an afterthought, organisations that successfully transform through AI are those that plan holistically beyond just the data science.

The Cross-Industry Standard Process for Data Mining (CRISP-DM) provides a model for conceptualising the ongoing AI lifecycle.



This cycle begins with the identification of measurable business value, as well as planning for how the solution will be maintained over time. With the end goal in mind, data scientists evaluate, collect and prepare data for training. Once a Machine Learning (ML) model has been trained and tested, they take the time to ensure it meets business acceptance criteria before deploying and monitoring in production. Post deployment, AI is integrated back into

business systems and processes in a way that successfully transforms the organisation. The cycle resumes with new understandings of the business in light of the transformation, identifying the need for new applications, new software and new AI to be developed in support of that evolution.

Successfully enabling this continuous lifecycle and ensuring the delivery of business value requires an effective strategy for AI operationalisation. This is where MLOps comes into play.

McKinsey reports AI adopters with a proactive strategy achieve significantly higher profit margins — between 3% and 15% above the industry average.

What is MLOps?

MLOps, or machine learning operations, refers to the process and tooling of consistently developing, deploying and maintaining reliable, [responsible AI](#). By applying the broad concepts and principles of DevOps to machine learning, MLOps help organisations understand, manage and scale the holistic data lifecycle through repeatable processes. Like DevOps, MLOps advocates for an emphasis on automation, collaboration and continuous feedback.

When organisations first begin developing AI, processes tend to be highly manual, complex and siloed between teams. This reduces the agility with which new iterations can be developed, retrained and released. Continuous Integration and Continuous Delivery (CI/CD) are rarely taken into consideration and models are infrequently monitored for performance degradation or behavioural drifts.

These challenges ultimately limit the potential value of AI, particularly as the number of models being developed and deployed continues to grow. Without the right approach, teams quickly find themselves mired in break fixes for custom ETL, leaving little time for ongoing innovation.

MLOps addresses these issues by providing a framework for orchestrating and automating the ML pipeline:

- 1 Continuous training enables rapid development and experimentation with new models.
- 2 Continuous integration is supported by automated testing and modularised pipeline components.
- 3 Improved collaboration and alignment between the development and production environments simplify handoffs, supporting continuous delivery.
- 4 Automated triggering accelerates the deployment of newly trained models.
- 5 Ongoing monitoring provides feedback on performance based on live data. This information can then be used to optimise and retrain models over time.

Layered into the broader CRISP-DM lifecycle, MLOps significantly improves the value of AI by providing greater scalability, improved maintenance and reduced risk.



Getting started with MLOps

By 2024, [Gartner projects](#) 75% of enterprises will shift from piloting to operationalising AI, driving a 5x increase in streaming data and analytics infrastructures. As the number of AI projects in production continues to rise, so will the need for a mature MLOps approach.



What's the difference between MLOps and AIOps?

While MLOps is the application of DevOps to improve the development of AI, AIOps is the application of artificial intelligence to improve IT operations.

The sooner your business identifies and adopts the right tools and processes to fit your needs, the better you'll be positioned to compete in the next few years.

So how do organisations get started?

For those that haven't begun deploying AI, discussions around MLOps should be included in the earliest stages of planning. Developing a preemptive strategy for operationalisation will enable your teams to start delivering business value faster. For those actively working to put AI into production, investing the time to optimise with MLOps will help to alleviate the obstacles to continuous integration and delivery.

In either case, the first step is to bring all impacted teams together (including data scientists and engineers, infrastructure and DevOps teams, software developers, business analysts, architects and IT leaders) to begin researching, developing and documenting a comprehensive MLOps strategy.

The goal of this documentation is to guide every process and decision throughout the AI lifecycle. While the specifics will vary based on the organisation, scope and skill set, the strategy should clearly define how an ML model will move from stage to stage, designating responsibility for each task along

By 2024, Gartner projects 75% of enterprises will shift from piloting to operationalising AI.

the way. If there are existing process flows in place, these can be used as a starting point to identify challenges and develop solutions.

The following questions can also help to guide conversations as you build your MLOps strategy:

What are your goals with AI? What performance metrics will be measured when developing models? What level of performance is acceptable to the business? How will you prioritise explainability, reproducibility and responsibility within your models?

Do you have the right people? Does your current workforce have the right skill sets to run ML securely, as well as to update and maintain the model and any related edge devices over time? Consider whether you may need to hire additional staff or work with an outside consultant.

Where will you test and execute your model? How will you create alignment between the development and production environments? How will data ultimately be ingested and stored? Depending on the source and complexity of the use case, there are varying benefits to running AI at the edge or in the cloud.

Who is responsible for each stage in the lifecycle? Who will build the MLOps pipeline? Who will oversee implementation? Who will be responsible for ongoing performance evaluation and maintenance? How can visibility, collaboration and handoffs be improved across these different roles?

[Learn more about what it takes to bring an AI to production in this on-demand webinar from Insight, Intel and Microsoft.](#)

How will models be monitored over time?

How frequently will models be audited? How will models be updated to account for deterioration or anomalous data? How will you gather feedback from users to improve results?

Building your MLOps strategy is also an opportunity to evaluate the need for MLOps tools. Although tooling options are not quite as extensive as those available for DevOps, there are still platforms that can help you manage the machine learning lifecycle. Prioritise your desired features, capabilities and compatibility with your existing data ecosystem to narrow down the best option for your organisation.

An ongoing journey

Once your documentation and toolsets are in place, the conversation around MLOps should continue to evolve over time. As needs change or process gaps are discovered, they must be addressed, documented and integrated back into the MLOps strategy.

Because MLOps requires new ways of thinking and working, all affected groups will need to be trained to understand and embrace the change in roles and processes. Organisational change management can be a valuable, complementary tool to accelerate and improve outcomes with MLOps.

There's no magic bullet to instantly perfect AI operationalisation. But investing the effort and resources upfront will be well worth the value of establishing a more repeatable, scalable AI lifecycle. By equipping your teams to consistently develop, deploy and maintain higher quality AI solutions, MLOps will ultimately help to position your business on the forefront of innovation for years to come.

About the authors



Amol Ajgaonkar
CTO of Intelligent Edge,
Insight



Ken Seier
National Practice Lead for Data & AI,
Insight

Perimeter Security and Zero Trust

Securing a Moving Target

At the end of the day, what types of policies do you have in place to ensure that you're able to mitigate risk quickly?

The past year has been pretty unique. Many businesses faced interesting challenges from the rush to implement work-from-home scenarios and the need to adopt new processes and tools, all while working in a new environment. Regardless of where you sit in your organisation, you've probably felt the impact.

Organisations have been walking a tightrope, trying to maintain connectivity and productivity while preserving network security. In the rapid shift to accelerate and expand remote connectivity it's not surprising that we've seen an increase in cybercrime. Malicious actors have seized the opportunity to exploit security gaps and deploy attacks in enterprise environments such as ransomware and other software.

Because of this, it's important to have security measures in place internally to identify and mitigate attacks not if, but when they inevitably occur. It's also just as critical to enforce tighter security at the perimeter to prevent these instances and protect your data at the start. And, with data living in a dispersed environment, and the network perimeter no longer fixed, this a vastly multifaceted challenge. That's where Zero Trust comes into play.

Why Zero Trust?

Perimeters were already changing, pre-COVID-19. Organisations were scaling dispersed IT environments as hybrid cloud gained popularity, and remote work has existed for decades now. For many, it's been some time since the network perimeter was centralised, easily defined and easily defended. But with the rapid evolution that came with the pandemic, nearly all organisations found their network perimeters exploding as they scrambled to enable and secure remote user devices, data centres and clouds. Enabling remote connectivity directly expands the network perimeter, and everywhere the perimeter expands, security risk follows. Resolving that risk means taking an approach that drives visibility and control across every layer of the network — exactly what the Zero Trust framework helps us do.

Enabling remote connectivity directly expands the network perimeter, and everywhere the perimeter expands, security risk follows.

Embracing Zero Trust is critical right now, not just to address the security gaps popping up in light of pandemic-related changes, but also to ensure that continued IT transformation delivers maximum benefit and minimum risk. With rapid growth in cloud applications, the intelligent edge, remote and hybrid workplaces, and other technologies enabling flexibility and advanced capabilities, the perimeter is only going to continue evolving. Finding a way to secure this moving target is necessary to keep transformation profitable. The multilayered safeguards in place informed by Zero Trust principles make reliably secure connectivity and data protection possible, even as the perimeter expands and evolves.

Security for your workforce, workloads and workplace

As you're thinking about Zero Trust and the architectures that support that framework, first, consider your workforce: endpoints, contractors, employees and vendors. Then, consider the devices in your network, where they connect from and how they're connecting. These are crucial elements that your Zero Trust architecture should be considering before providing access to your data and network. Multi-factor authentication is great for this, since it ties access to identity as the trust broker, ensuring only authorised devices, tied to authorised users, access your network.

It's critical to be able to identify and profile every device as it comes on the network before providing network access.

Next, consider workloads. How are your workloads positioned in your environment? Are they in the cloud, in the data centre or somewhere else? For effective security you need to have visibility into how your workloads, processes and backend connections are running for different applications. It's also important to know how users are connecting to them, regardless of where the workload resides.

Embracing Zero Trust

is critical right now, not just to address the security gaps popping up in light of pandemic-related changes, but also to ensure that continued IT transformation delivers maximum benefit and minimum risk.

A lot of technologies have machine learning and artificial intelligence enabled that can assist to baseline device behaviours and allow you to create policies from that information so that if a deviation is detected, it can be stopped in its tracks. At the end of the day, what types of policies do you have in place to ensure that you're able to mitigate risks quickly?

The multilayered safeguards in place informed by Zero Trust principles make reliably secure connectivity and data protection possible, even as the perimeter expands and evolves.

The last piece is your actual workplace. Think of everything inside your traditional security perimeter: wired connections, wireless and even VPN connectivity. You need to know how you're securing every connection within the corporate network, from users to Internet of Things (IoT) technologies. It's critical to be able to identify and profile every device as it comes on the network before providing network access, rapidly revoking access to compromised devices to limit threats from moving laterally within your environment. This is really challenging without a network access control solution that can handle that kind of network security directly from the edge of your network.

Evaluating Zero Trust solutions

To conclude, as you're going down the Zero Trust path and looking to implement architectures and solutions that will secure those areas, there are three considerations to prioritise.

1 First: Ensure visibility. Look for solutions that provide visibility across your entire enterprise environment. Without it, you're not going to be able to create the policies and control you need for comprehensive security infrastructure and strategy.

2 Second: Ensure your solutions never assume trust is binary. You need the ability to evaluate and authenticate connections dynamically, with the agility to modify trust when changes in the state of the device or user occurs.

3 Third: Remember your perimeter is everywhere you're making access control decisions. You need to be able to make access decisions based on identity and associate a level of trust at each connectivity point in your environment. When you can do that, your perimeter is protected, no matter how dispersed it is.

When you're ready to take control of your perimeter security, **[contact Insight](#)**. We'll identify technology solutions and strategies designed to help you implement a Zero Trust approach and protect your workforce workloads, and workplace — even as your perimeter keeps expanding.



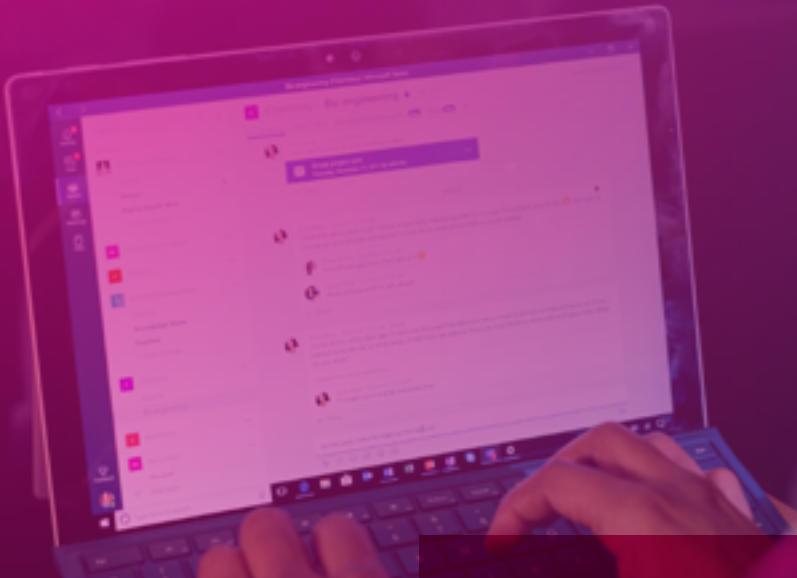
About the author

Michael Moore

Practice Development Manager,
Insight

Catholic Diocese of Maitland-Newcastle

relies on data lake and AI to explore drivers of student learning



Many of us recall that line on a school report that revealed to our parents that perhaps we had not been achieving all we were capable of.

It was based on the gut feel of the teacher at the time – but nevertheless almost always resulted in a parental lecture and the occasional reminder to ‘pull up your socks.’ Not very scientific, not very strategic.

But what if it was possible to use data to predict for a primary school child in Year 5 a defined range for possible achievement in Year 12 exams? How incredibly valuable this would be to motivate the child to aim for the top of the range.

What if gifted children were more easily identified and less at risk of falling through the cracks? What if data could identify a specific learning deficiency for a child, where this factor was the road block to further academic growth? A timely, targeted, evidence-based intervention could be life changing. Armed with such insight parents and teachers could focus their efforts more acutely, supporting all students to achieve much more of their potential.

The Catholic Diocese of Maitland-Newcastle is confident all of this is possible – and also believes data plays an important role in ensuring optimal outcomes across a slew of different areas. In response, it has undertaken

a significant digital transformation with data at its core, as well as working toward user directed analytics to ensure evidence-based insight drives action.

The Catholic Diocese of Maitland-Newcastle, serves a community of 150,000 Catholics in the mid north of NSW providing pastoral support, health care, social welfare and educational services. Just shy of 20,000 students attend its 58 schools spanning Newcastle as well as the Lake Macquarie, Hunter, Upper Hunter and Manning areas.

Chief executive Sean Scanlon explains that the decision to set up a data and analytics capability for the Diocese was born of a desire to improve educational outcomes for its students. "It needed to be something where we had evidence and rational data, and analyse that data to understand how we were performing, particularly in the education space so that we could target each and every child's education," he says.

Data was always collected about student performance, but it was often siloed, difficult to access and scattered through an array of disparate source systems and spreadsheets. It provided an incomplete picture of student performance and progress and as Scanlon notes; "Without measuring those things, you couldn't hold people accountable and we couldn't see what we were achieving, and we couldn't set targets for improvement."

The same held true for the Diocese's work in social services, supporting people in need or vulnerable. "How can we measure how we've improved their lives or done things that target the need, but also allow us to then go to the government and say, 'Look, here's the evidence. Here's the data that we've analysed and looked at, that shows that what we're doing works'"

Working with Microsoft partner Insight and under the leadership of Zanné Van Wyk, Head of Data and Analytics for the Diocese, the organisation has deployed Azure Data Service foundations. Data from individual schools has been ingested and Power BI for self-service

analytics has been rolled out, with access to data governed through Azure Active Directory.

Paul Greaves, assistant director of the Maitland-Newcastle Catholic Schools Office and project sponsor for the data and analytics student intelligence project says; "Maitland-Newcastle Catholic Schools system has set some specific targets around improving student academic achievement. The creation of a 'Leading Learning Collaborative,' which integrates the work of world-leading education researchers such as Lyn Sharratt and Michael Fullan, is the vehicle we have designed to carry this initiative and the fuel in the tank is data mixed with self-service analytics.

"The Student Intelligence Project is changing the way our system leaders, Principals and middle leaders interact with data and analytics as it addresses a number of pain-points we were previously experiencing. For example, ingesting and storing a multitude of data in a data lake from which we can draw specific dimensions for analysis means leaders no longer have to navigate a plethora of siloed data sources – each with its own usernames, passwords, formats, reports and often limited capacity to interact with data. Typically, if triangulation of data was the aim, it inevitably meant export into Excel and required time-intensive data manipulation and high-level technical skill.

"In Power BI we now have an environment where data sources are integrated and readily accessible. We have a consistent platform where educational decision makers can now focus on data as it relates to educational outcomes for students, rather than being limited by the aforementioned data processing tasks."

Single source of truth

The benefits were expected immediately because everyone in the organisation would have access to a single source of truth, one comprehensive data source to support decision making and drive efficiency.



Care has also been taken to incorporate as much context as possible into the multi-dimensional data model that is being built in Azure. This will help identify problems, find solutions and stage appropriate interventions.

Van Wyk says; “We believe that we will be able to predict for a primary school child in year five, how they will do in HSC in year 12, using the datasets that we have available. If we have that prediction online and we can see that someone is below what we feel they can achieve, we can then already in primary school start those targeted interventions to ensure we prepare that child for HSC and improve what we at this point are predicting as maybe lower than the norm.

“Also, what we’re working now is in-depth analysis about gifted education children. We know who the gifted education children are in the schools.

“Now that we’ve got a broader context around other tests, we realise there’s children being missed as gifted, just because their marks

don’t show it. The work that we’ve done just around having a better understanding of what defines a gifted child in the schools over the last six months was phenomenal, absolutely phenomenal.”

Greaves adds that;

“Our most impressive example we can cite thus far in our journey is that of our Gifted Education Leader at a system level. Weeks of downloading data from a variety of sources into spreadsheets, where further complicated matching and manipulation had to occur, would finally allow an educational lens to be applied to the data.”

The work of the Student Intelligence Project in creating the dimensional model now allows our Gifted Education Leader to readily surface the required data and engage in analytics which drive action in the form of targeted and appropriate interventions.

Van Wyk is expecting the data also to reveal some interesting patterns about the impact that remote learning has had on students as they navigate the COVID-19 pandemic. Similarly the data should help shed light on student progress despite the lack of NAPLAN testing in 2020.

Generally, NAPLAN tests provide a level-set for schools to see how their students are going, and whether they need extra help. This year no NAPLAN tests have been taken.

Van Wyk says however that the student data collected by the Diocese provides an alternative measure of student progress.

It means says Scanlon that: "You've got an opportunity to bring kids back on track if they're falling behind or if there are other issues. We've got more dimensions to this than NAPLAN has targeted, the wellbeing aspects and students missing school could be a dimension.

"This allows us to have greater insight and therefore to act more quickly to deal with any issues that might arise or to look at what's happening in the students' life and drill down to the individual student rather than looking at a class or even a school and seeing how it's performing. That's the expectation," he says

It will also help schools meet their obligation under the memorandum of understanding with the State Government that children achieve appropriate growth in their education. "That's the requirement, so we need to be able to measure and check that, and see that we're on track," adds Scanlon.

Schools are also required to report on student attendance – not an easy task when some children are in the classroom and others are remote learning. Van Wyk says that by pulling the Diocese's Office 365 data, including Teams use, into its data lake it was possible to see easily which children were attending lessons – even remotely.

Predictive analytics

The Diocese has developed a three-year strategy for its data and analytics transformation and is now at the mid-way mark.

Its goal is not to deliver predesigned dashboards and reports – rather to offer self service analytics and predictive analytics to ensure maximum impact,

"That's why we have a data scientist as part of the team," says Van Wyk. While she herself developed the strategy, she engaged Microsoft partner Insight to validate it, and help develop and deploy the Azure based solution.

That solution leverages Azure Data Factory, Azure Databricks, Keyvault, Storage account – Data Lake, Azure SQL DB, Azure Analytics Services, Logic Apps, Azure Data Catalogs, DevOps – Repos and Pipelines. The governance surrounding the system is critical with access to often sensitive data managed through Active Directory.

Working with Insight the Diocese is now refining its understanding of business processes across the organisation and building a multidimensional data model. From that new key performance indicators are emerging that will be used to steer the business.

Van Wyk's goal however is to make more use of predictive analytics. "Previously, for example, finance will come in and they will say, 'Let's put 10 per cent on this year's budget for next year.' We believe we can use predictive analytics to either seek targets, benchmarks, or baselines, for example, for KPIs or budgets and that can be productionised back into your dimensional model."

The predictive analytics approach can also be applied to learning. According to Khaled Auf, Data & AI Practice Lead, Insight; “They are extracting data collected across the learning lifecycle and applying it into the development of predictive models for targeted ‘interventions’ in time to make a difference, not months downstream of an issue.

“With Azure, they are looking to have a deep understanding of business problems; build trust of decision makers; effectively leverage data and analytics – explaining results in simple, powerful ways; and establishing a data and analytics governance framework”

The partnership with Insight has been exceptional, says Van Wyk, resulting in a solution that aligns with her goals, and came in on time, and in budget.

She says; “It’s about time, cost, and value. They got it. Within a week, we had an architecture. The consultants that they gave us were incredibly knowledgeable and they had a very practical plan on how to implement this, very organised and structured. We delivered this within the timeframe that we discussed, within the budget that we discussed and the business value that we discussed.”

Greaves says that; “Having education leaders spending a majority of their time collecting and manipulating data is never a good investment. We have recently developed a ‘Data Framework’ for our system where the application of ‘Data-Cycles’ in Professional Learning Teams (PLTs) is at the heart of activity to improve student academic outcomes. The Student Intelligence Project is critical in creating the conditions where integrated data is accessible in a platform which allows us to ask questions of the data

in a timely manner and thus allows our investment in educational leaders to be better realised.

“Our pressing leadership challenge at a system level is how do we now engender shared beliefs and understandings amongst our system and school leaders around data and the Power BI platform? Recently we have delivered Data Literacy Professional Development workshops to over 150 system leaders, Principals, Assistant Principals and data leaders in schools where our focus was to simply introduce them to the Power BI tool. The fact that so many volunteered to participate in the workshops indicates a clear desire to become more data literate. Our approach has certainly piqued interest and is driving a desire for many to further explore possibilities.

“Our approach in the workshops in the future will continue to be the presentation of actual examples of ‘Data-Cycles’ at work where student outcomes have been impacted in a positive manner. This is what will get our leaders onboard, rather than technical descriptions of how to use the software. If leaders think it matters, they will cause themselves to become familiar with these more technical aspects. Bringing about intrinsic self-actualisation in our leaders should be our own leadership focus.”





COVID complication

One complication that could not have been foreseen was the COVID-19 pandemic which forced a lot of the to-ing and fro-ing between Van Wyk's team and Insight to take place online rather than face-to-face.

At the same time she was also building the Diocese's new data and analytics team. "This is a team sport. You can't deliver it as an individual. You need to brainstorm and work things out and have a few fights because everyone has strong personalities. They've got their own experience. The data scientist is from Chile. I'm from South Africa. The BI specialist is from Venezuela and the data engineer from India."

She's also tapped expertise from across the diocese to inform the analytics models including from a 90-year-old nun and an 80-year-old professor.

It may appear to be a Tower of Babel – but the language everyone on the team shared was data and analytics along with a common mission to deliver insight and value for the Diocese.

More broadly as a result of COVID the organisation itself had to rethink the way it operated says Scanlon, and has embraced Office 365 and Teams to support remote working with no sacrifice of communications or connection. He acknowledges that ordinarily it might have taken 18 months to deploy the new digital way of working; the restrictions of the pandemic meant it was achieved much faster.

"We were forced to use a lot of this technology. People now, I think find it second nature and that creates a lot of flexibility around how people might work. I think that's going to be one of the most important things in certainly our administrative services."

The Diocese is also using its remote learning experience as the platform to rethink how it can support students who might in the future be off sick or away for other reasons.

And, thanks to the data and analytics platform – it will be clear how those student's learning has been impacted and whether further action is required to ensure they always achieve their full potential.



Tech

JOURNAL™