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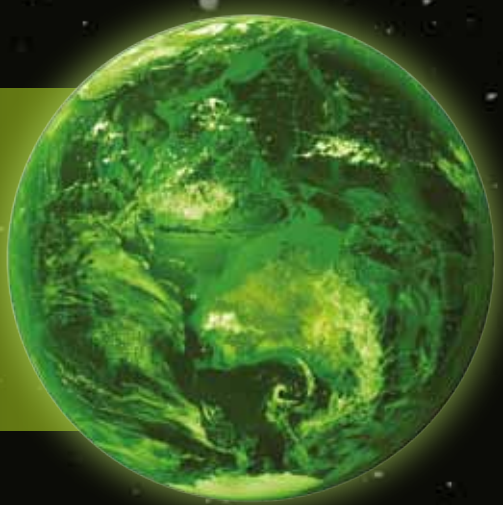

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INSIDE

FEATURES

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Insider

Public private partnership

A lot has changed since I last wrote my last editorial. We've seen the introduction of Australia's Notifiable Data Breaches (NDB) regulations and Europe's General Data Protection Regulation (GDPR). And we've seen the latest federal and state government Budgets, with numerous IT initiatives aimed at the ongoing transition to digital service delivery.

But for WF Media, the most exciting development is our new partnership with Public Sector Network, Australia's premier events management and research company dedicated to the needs of public sector technology leaders. PSN's incredibly informative series of IT conferences and exhibitions bring government employees together to discuss and share the latest thinking, philosophies and technologies in the public sector ICT space.

If you haven't yet attended one of PSN's many events, I urge you to get involved. Whether your interest is in security, digital transformation, contact centres, women in leadership, customer experience... there's a learning opportunity that's right for you. PSN also offers training workshops in government productivity, a topic that's always of great interest to everyone who works in the service of the public. We're thrilled to be working with PSN, and we're sure you will be pleased too with the mutual benefits the partnership will bring.

Jonathan Nally, Editor
jonathan@technologydecisions.com.au

When we launched Public Sector Network four years ago, we could never have imagined what a big impact it would have in such a short space of time. Charlie Hamer and I strongly believed that government representatives should not have to pay thousands of dollars to access public information, hear directly from their peers and learn from their valuable experiences. We were so committed to this idea that we were willing to invest our own time, money and expertise to disrupt an events delivery industry that had been profiting from the public purse for so long.

Since the launch of our first event — the Australian Security Summit — we have helped over 10,000 government executives to network, benchmark, identify best practice and meet with 250-plus vendors. As we have grown we have remained committed to working with federal, state and local stakeholders to give them access to the best information possible, at the lowest cost possible.

That's what makes our partnership with *GovTech Review* such an obvious fit — by building on each other's resources, content and audience, we are able to offer so much more. We hope you are as excited as we are at what we believe is an important moment for our industry and the public sector. As ever, we remain committed to serving you — as you do the Australian public.

Ross Ashman, Co-founder & Director, Public Sector Network
ross@publicsectornetwork.com.au

PUBLIC SECTOR NETWORK

Ph: +61 2 9008 7676 | info@publicsectornetwork.com.au

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A.B.N. 22 152 305 336
www.wfmedia.com.au
Head Office: Cnr Fox Valley Road & Kiogle Street
(Locked Bag 1289), Wahroonga 2076 Australia
Ph +61 2 9487 2700 Fax +61 2 9489 1265

EDITOR
Jonathan Nally
jnally@wfmedia.com.au

EDITORIAL ASSISTANT
Amy Steed

PUBLISHING DIRECTOR/MD
Geoff Hird

ART DIRECTOR/PRODUCTION MANAGER
Julie Wright

ART/PRODUCTION
Wendy Blume, Colleen Sam

CIRCULATION
Dianna Alberry, Sue Lavery
circulation@wfmedia.com.au

COPY CONTROL
Mitchie Mullins
copy@wfmedia.com.au

ADVERTISING SALES
Liz Wilson Ph 0403 528 558
lwilson@wfmedia.com.au

Caroline Oliveti Ph 0478 008 609
coliveti@wfmedia.com.au

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Headlines

City of Melbourne to tip $5.5m into IT upgrades

The City of Melbourne has allocated $5.5 million in its draft 2018–19 Budget to support IT upgrades aimed at providing residents with superior online services.

The draft Budget also includes a $5 million commitment towards switching nearly 16,000 street lights across the municipality to energy-efficient LEDs.

At $576 million, the draft Budget will be the city's largest ever. This spending also includes a $10.7 million investment to support the local economy, including initiatives to support small businesses and the retail sector.

Meanwhile, the Budget includes funding to explore the adoption of design competitions for significant proposed new projects, based on the model that has already been adopted in Sydney.

The draft Budget will be open for public comment until 13 June, and a final version will be considered by the council on 26 June.

"This Budget delivers on our vision for our city's growth, prosperity and livability," commented Deputy Lord Mayor Arron Wood, Chair of the Finance and Governance portfolio.

"It secures our competitive advantage as a top global city; as a premier location for business and knowledge sectors to expand and thrive. It increases expenditure on our core services and creates opportunities for our community."

NSW Govt developing data usage guidelines

The NSW Government is working on updating its digital.nsw digital government transformation portal with a suite of online resources aimed at helping agencies improve their data capability.

The new guidelines will be aimed at helping agencies find the data they need, and make it safe for others to access with anonymisation and other techniques.

In addition, the resources will help agencies navigate the government's data policy and legislation, and better understand how to effectively manage data.

The resources are being developed based on the more than 1000 responses to a data skills survey open to the state's public sector.

The survey found that 95% of respondents feel they would benefit from learning more about data as it applies to their roles. Respondents were most interested in topics including finding data, as well as using data to inform decision-making and improve services.

A beta version of the resources will be released shortly so the Department of Finance, Services and Innovation — the ministry responsible for the digital.nsw portal — can collect feedback to shape the final release.

Meanwhile, the Department of Education has developed a series of interactive online training modules based on developing content for the web that the department is making available to the digital.nsw community.

The three training modules respectively cover writing for the web, accessibility of online content and search engine optimisation (SEO).

The modules have been designed to reflect the fact that information is consumed differently online compared to in print, and web content should be tailored to consumption habits.

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LIVING LAB: NEWCASTLE'S SMART FUTURE

Jonathan Nally

ONCE A HEAVY INDUSTRY TOWN, NEWCASTLE HAS BEEN REINVENTED AS A MODERN CITY WITH SMART IDEAS FOR THE FUTURE.

Two hours' drive north of Sydney, Newcastle long ago threw off its image as solely a heavy industry and coal town. Today, it is a thriving and growing modern centre that is taking on the world with a plan to become a trailblazing smart city.

"It's been a long time since Newcastle has been really industrial," said Newcastle's Lord Mayor, Nuatali Nelmes. "It's a very good place to live and work; everyone's near the beach, there's not really any traffic congestion, plus there's a world-class university and good jobs."

Newcastle City Council's (NCC) smart city strategy aims to transform the city centre and suburban areas into hives of innovation and collaboration utilising 21st-century technology.

"The city of Newcastle is looking at the future and saying, 'We can't just rest on our laurels, we're not going to be able to rely on coal indefinitely,'" said Nelmes. "The nature of employment in heavy industry is changing, so this is very much about the long-term future of Newcastle and the region, and making sure we are grabbing hold of those opportunities."

NCC's smart city strategy, which spans the years 2017 to 2021, is a framework that builds towards the city's 2030 vision to:

- improve operational efficiency
- achieve higher levels of sustainability
- better service local community needs
- stimulate economic development activity
- increase community inclusion and participation
- position Newcastle as a smart city internationally.

That vision has seen NCC form partnerships with local industries, educational bodies such as the University of Newcastle and others in the community.

"It's been very purposeful and very much a collaborative effort," said Nelmes. "We took a long time to work with industry and the community at large to develop our smart city strategy."

According to Lord Mayor Nelmes, the plan is not only to use technology to solve everyday problems — it has a much broader remit.

"It's not just about technology," she said. "It is very holistic in terms of looking at how we create an environment where we have an innovative culture, which then attracts people with entrepreneurial skills... and attracting people who already live here to bring out their entrepreneurial skills, and think of solutions for whatever industry they're working in."

COLLABORATIVE INNOVATION

One of the first stages of the transformation is called the Hunter Innovation Project (HIP), a partnership between NCC, the University of Newcastle, the Newcastle NOW business association and the Hunter Digital Industry Growth & Innovation Taskforce. HIP has secured $9.8 million funding from the NSW state government's Hunter Infrastructure Investment Fund, plus NCC has contributed $2 million and the University of Newcastle $6 million, for a total of $17.8 million.

Under HIP, NCC has begun rolling out a carrier-grade long-range wide area network (LoRaWAN) to cover the main city centre and surrounds. The network, being installed by National Narrowband Network Co, will provide low-cost, low-power connectivity for millions of wireless IoT sensors and data collecting devices that will spread across the city in the coming years.

Newcastle's Lord Mayor, Nuatali Nelmes

>>

Artist's impression of trams running along Newcastle's main street. Crown visualisation.

Those sensors will be used to monitor everything from soil moisture levels on council sports fields, to sunlight levels for controlling solar power installations.

HIP also includes a free Wi-Fi network throughout the CBD, a high-speed fibre broadband network, smart streetlight poles that will double as sensor and communications platforms, smart parking systems and more.

LIVING LAB

As part of its strategy, NCC is converting the city centre into a 'Living Lab' where entrepreneurs and innovators can come and test their products. This could be anything from making use of the LoRaWAN and Wi-Fi networks to test sensor solutions, to trialling autonomous vehicle technologies. NCC is currently in discussion with the state government about the latter.

According to the Lord Mayor, the Living Lab is not going to solve every problem, but is intended to provide a platform that is publicly owned and on which a number of applications can be tested to see which are going to be the most successful.

"Newcastle has done a lot of work developing a strategy to provide that culture [where] people can actually go and innovate on that network for their own solutions," she said. "This is not about government finding a solution; it's about providing the right environment for entrepreneurship and innovation."

Although the Living Lab is initially being rolled out in the city centre, in the coming years Nelmes would like to see it expanded into the suburbs.

"We want to make sure we get it right with the testing, but in five years' time we should be able to have sensors on waste, more on-demand services, we should be able to have a fair bit of smart parking all through the city, we should be able to do a lot of paying on smartphones or online. It should be a much more streamlined, user-friendly process — not just for residents but also for businesses," she said.

SMART MOVE

In addition to HIP, NCC has also been successful in attracting funding for its transport and mobility plan, called Smart Move Newcastle (SMN).

SMN will be an integrated suite of projects to deliver a data-led, sustainable, multimodal mobility-as-a-service network with four foci:

- optimising intelligent mobility systems through data and connectivity
- prioritising sustainable transport modes such as electric vehicles and active travel
- embedding infrastructure to generate and share real-time data and city insights
- targeting investment to ensure a pipeline of future innovation and ongoing R&D program.

The total value of SMN is around $13.5 million, including a federal government contribution of $4.98 million, around $5 million from NCC and other cash and in-kind contributions from project partners. (Some of the funding is shared with the HIP project.)

The expected benefits of SMN will include:

- increased public transport use and reduced travel times
- reduced emissions
- more connected communities
- more jobs and businesses growth
- retention of tertiary graduates
- more cost-efficient use of infrastructure.

Artist's impression of smart poles in a Newcastle suburb.

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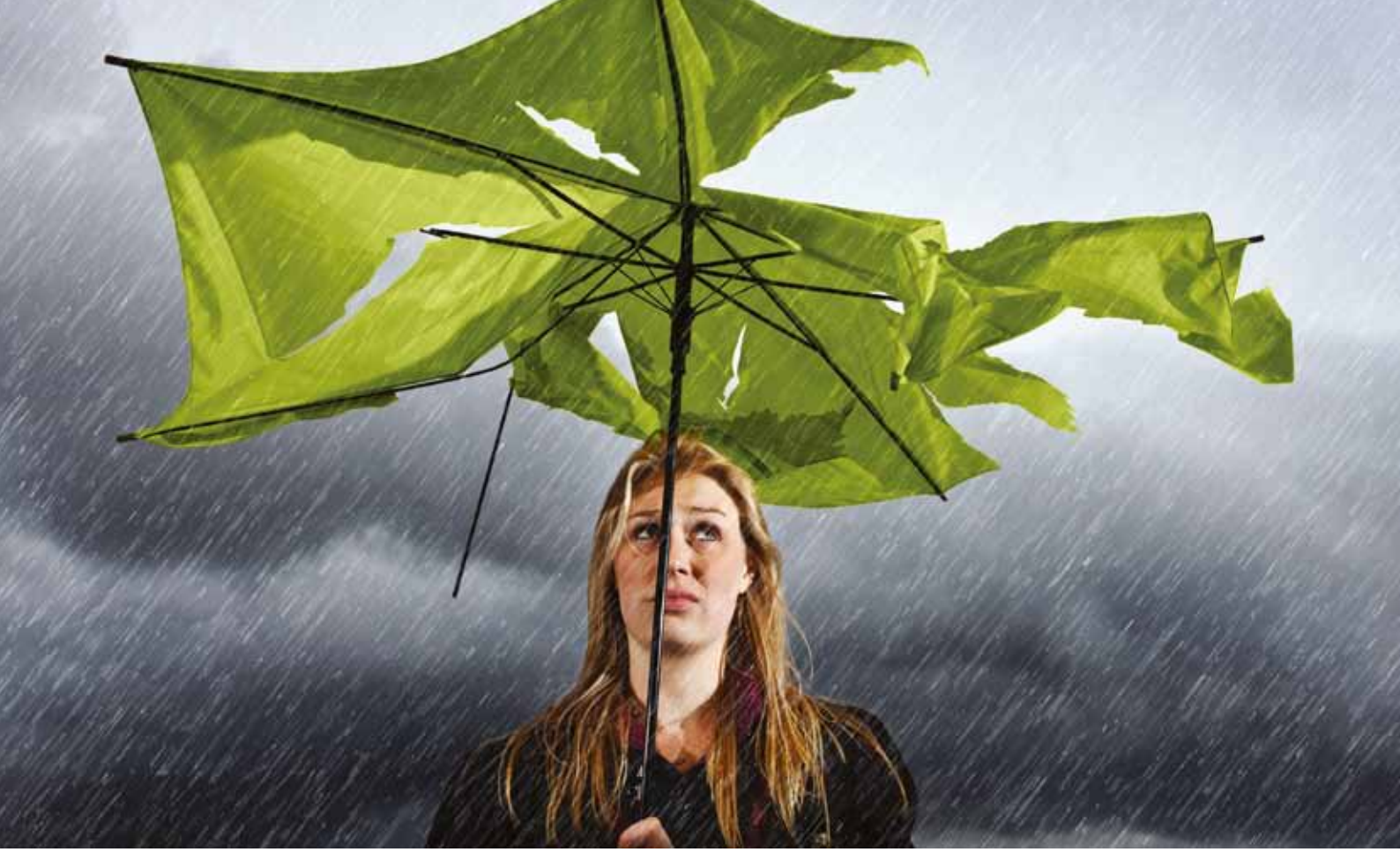

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SENSOR CITY

Over the coming years, smart streetlight poles and sensors will be found springing up all over Newcastle, producing a wealth of data that will be used to drive efficiencies in council operations and unlock knowledge about the workings of the city.

"We're trialling different kinds of sensors over a sporting precinct on the fringes of the CBD, and we're installing parking sensors, garbage bin sensors, water moisture sensors, water management sensors, electricity management sensors... a whole lot of things that we're going to trial just to see how they work. And we're trialling a number of different kinds of back-end systems as well," said James Vidler, from NCC's Smart City team.

"The thing that is setting Newcastle apart in all of this is the holistic nature of our approach," he added. "We really do take a broad view of what a smart city is, and we realise that technology is really a relatively small percentage of the whole challenge."

According to Vidler, it's about trying to get smart organisations and smart people talking to one another, creating a community of innovation, and about developing a pipeline of ideas. This includes working with universities on research challenges and then trying to line up those initiatives with innovators who can test and provide the services.

"So it's not only a service pipeline but also a talent pipeline," said Vidler. "NCC really is doing very significant activities in that space because we realise the technology is just where the outcome happens... it's not actually the engine room of it all. I think that's a radically different approach to what most other organisations are doing.

"By doing it that way, each of the elements amplify each other so you actually get more than the sum of the parts."

Vidler points out that the solutions found in the local government space are, by definition, repeatable hundreds of times, because every LGA will have similar but different challenges.

"The other interesting position that Newcastle takes on this, is that a lot of smart cities initiatives globally focus on the mega-cities," said Vidler. "They've got a particular kind of challenge different to that of a large regional centre.

"This is not about government finding a solution; it's about providing the right environment for entrepreneurship and innovation." — Newcastle Lord Mayor, Nuatali Nelmes

"There are thousands of cities around the world that are about the same size as Newcastle," he added. "If we can solve the problems at this scale, the IP that we generate out of all of this is actually very valuable and reusable. That also feeds into this idea of 'city as an experimental platform'."

SUCCESSFUL FORMULA

Nelmes said NCC is looking at how it can take its 2030 vision and leverage further planning and construction, particularly in the inner city area, having already attracted around $1.5 billion worth of development application approvals this year (on top of $1 billion last year).

She credits the success they've had in attracting both state and federal funding to NCC having done its homework and involving the wider community.

"What that actually says is, more clearly than ever, that these [smart city] projects are very high quality projects. They've got all the research, all the backing, have a full collaborative network behind them and have broad support," said Nelmes. "They're really hard for government not to fund because they are such good projects.

"It's really, really important to have three levels of government working together on these projects — you're always going to get a better outcome."

Coverage map of the first stage of Newcastle's LoRaWAN rollout.

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DATA MANAGEMENT: WHY IT'S SO ESSENTIAL

Unpolluted data is core to a successful business — particularly one that relies on analytics to survive.

But how difficult is it to manage unfiltered data and get it ready for analytics? Most data scientists spend 50–80% of their model development time on data preparation — they often know ahead of time what data they want to profile or visualise prior to preparing and modelling it. But what they don't know is which variables are best suited — with the highest predictive value — for the type of model being implemented and the variable being modelled.

Identifying and accessing the right data are crucial first steps. Before you can build an effective model, you'll need consistent, reliable data that's ready for analytics. For data scientists and business analysts who prepare data for analytics, data management technology can act like a data filter — providing a single platform that lets them access, cleanse, transform and structure data for any analytical purpose. As it removes the drudgery of routine data preparation, it reveals clean data and adds value along the way.

Here are five best practices that can help with data management analytics.

1. SIMPLIFY ACCESS TO TRADITIONAL AND EMERGING DATA

Accessing data is challenging — different data sources, formats and structures make it hard to bring the data together. And statistical analysis essentially only cares about two data types — character and numeric. Yet some data sources, like relational databases, have 10–20 different numeric data types.

A capable data management package should have a plethora of native data access capabilities that:

- Simplifies access to multiple data sources.
- Minimises data movement and improves governance by pushing data processing down to the data source.
- Provides self-service data preparation capabilities with intuitive user interfaces that make data accessible to more users, with less training. This, in turn, frees IT personnel from iterative data provisioning tasks so they can be more productive.
- Enables agile, secure techniques for managing data.

2. STRENGTHEN THE DATA SCIENTIST'S ARSENAL WITH ADVANCED ANALYTICS TECHNIQUES

Look for data management software that provides sophisticated statistical analysis capabilities:

- Frequency analysis that goes beyond simple counts to help identify outliers and missing values that can skew

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other measures like mean, average and median (measure of central tendency), as well as affects analyses like forecasting.
- Summary statistics that describe the data by providing several measures, including central tendency, variability, percentiles and cardinality. Cardinality shows how many unique values exist for a given variable.
- Correlation that can be used during the analytical model building process, when business analysts try to understand the data to determine which variables or combination of variables will be most useful based on predictive capability strength.

3. SCRUB DATA TO BUILD QUALITY INTO EXISTING PROCESSES

Up to 40% of all strategic processes fail because of poor data. Data cleansing begins with understanding the data through profiling, correcting data values (like typos and misspellings), adding missing data values (such as postcode), finding and dealing with duplicate data or customer records, and standardising data formats (dates, monetary values, units of measure). Cleaning data can also include automated selection of best records and cleaning data in multiple languages.

Look for a data quality platform that:

- Incorporates the cleansing capability into your data integration flow to make IT resources more productive.
- Puts data quality in database — that is, pushes this processing down to the database to improve performance.
- Removes invalid data from the dataset based on the analytical method you're using — such as outliers, missing data, redundant data or irrelevant data.
- Enriches data via a process called binning — which simply means grouping together data that was originally in smaller intervals. For example, the individual value of age alone may not have much relevance, but age groups could, such as "between 35 and 45".

4. SHAPE DATA USING FLEXIBLE MANIPULATION TECHNIQUES

Without flexible methods of manipulating data, it can be difficult to structure the final dataset. Typical analytical methods expect a "flattened" dataset, often called "one row per subject", which can be problematic because database systems are not designed with a single-row-per-customer data structure in mind. As a result, many database systems limit the number of columns a single table can have. Transaction systems record every transaction as it happens, resulting in a high volume of records for each customer. These transaction records need to be consolidated and transposed to be joined with the customer records pulled from the data warehouse.

Look for a solution that simplifies data transposition with intuitive, graphical interfaces for transformations. Other desired reshaping transformations include frequency analysis to reduce the number of categories of variables, appending data, partitioning and combining data, and a variety of summarisation techniques.

5. SHARE METADATA ACROSS DATA MANAGEMENT AND ANALYTICS DOMAINS

Look for a solution that provides a common metadata layer that allows data preparation processes to be consistently repeated. This promotes more efficient collaboration between those who initially prepare data and the business analysts and data scientists who ultimately complete the data preparation process and analytical model development.

A common metadata layer makes it easier to deploy models. As each model is registered in metadata and made available along with its data requirements, it becomes less of a challenge to adopt.

Applying metadata across the analytics life cycle delivers savings on multiple levels. When a common metadata layer serves as the foundation for the model development process, it eases the intensely iterative nature of data preparation, the burden of the model creation process and the challenge of deployment. Advantages include:

- Faster testing and increased productivity due to automated model development and scoring.
- Creation of more models with greater accuracy because of automated model management.
- Faster cycle times that increase profitability and result in more relevant and timely models.
- Less time spent on mundane data work and more focus on model development and evaluation.
- Knowledge that can be re-used across the enterprise after it's obtained during the data preparation process.
- Increased flexibility to accommodate changes because of better manageability and governance over the analytics life cycle.
- Auditable, transparent data that meets regulatory requirements.

Identifying and accessing the right data are crucial first steps. Before you can build an effective model, you'll need consistent, reliable data that's ready for analytics.

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IN SEARCH OF PRIVACY EXCELLENCE

Helaine Leggat

AUSTRALIA'S NARROW FOCUS ON COMPLIANCE IS DETRIMENTAL TO GLOBAL PRIVACY OBJECTIVES. WHAT'S NEEDED IS ETHICAL LEADERSHIP.

Against the backdrop of Australia's Notifiable Data Breaches scheme (NDB) and the preparation for the soon to be effective General Data Protection Regulation (GDPR), and at a time when many proffer advice on 'privacy', I am reminded of Australian businesses' slow uptake of interest in the subject.

I had been tracking changes regarding privacy and personal information (PI) since 2003 when I wrote in a 2014 article, "[T] here is no doubt in my mind that the value attached to personal information or data privacy is not properly understood. In my view, it is the most important category of information that there is today — it provides access to almost anything. Good and evil."

Despite increased risk to individuals, businesses and nations, resistance to change and lack of interest has persisted. Last month, the general counsel of a multinational organisation asked me why privacy was getting so much attention, and what, if anything, had changed? This, from a leader whose organisation would incur penalties of $200,000-plus under the GDPR regime.

Many years' experience tells me PI — information that could identify an individual — is the most important kind of information, on par with national security. The Facebook surveillance machine, Cambridge Analytica and the persistent psychographic targeting debacle supports this opinion.

So it was heartening that a Facebook cybersecurity executive urged transparency on (Russian) disinformation. It was reported that the security team had pushed for more disclosure about how nation states had misused Facebook, but the legal and policy teams generally prioritised business imperatives.

I have worked in cyber warfare for well over a decade. We have moved beyond debates about its existence to accepting it's real. Cyber warfare goes beyond outdated kinetic impact to ransomware hostilities such as those waged against the health sector. The result of monetising data in that sector (currently the highest attack vector) is that PI becomes a matter of life and death.

Forward-thinking organisations know that nation states are on the list of attackers they must consider and counter. They plan for a future where assessing director liability regarding care and diligence has ratcheted up. We are way beyond 'check lists' and 'top 10' action summaries — the question of global stability linked to the commercialisation and criminalisation of PI requires ethical leadership.

Australia's 30-year-late adoption of mandatory breach notification is symptomatic of other 'Lucky Country' behaviours. Why do we insist upon legislation as a pre-curser to action? While the business world looks to technology for the next financial boom, attackers are working on cyber weaponry. Organised criminals, terrorists, hacktivists and hackers will be harder to counter than before, their activities disregarding both physical and legal jurisdictions.

Privacy and PI are vital for stable world economies and foreign relations. The breakdown of legal structures that societies have relied upon for centuries, an increasingly punitive regulatory environment and inadequate security solutions have led to instability. Ethical business leadership involves alignment of business types and processes with the reasons for which law affords protection to PI.

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Privacy and PI is much more than a compliance issue; businesses must do more than the basics, they must strive for excellence.

The GDPR is designed to harmonise data privacy laws across Europe, to protect and empower EU citizens' (and non-citizens') 'data privacy' by better protecting PI and to reshape the way EU organisations approach data privacy. Petabytes of information have been produced on GDPR, but the issue is identifying quality resources and their proper application to the business sector via pragmatic and ethical responses.

Multi-jurisdictional businesses must emulate the GDPR objective of harmonising data privacy laws across Europe. This means businesses must set their bars to compliance and risk across all jurisdictions. In turn, this means understanding more than just the NDB Scheme and GDPR — security, data sovereignty and other laws must be in the compliance and risk mix. The most common mistake — and biggest waste of resources — is treating privacy as a standalone issue.

The situation in Australia is compounded by a statute unlike any in the world. Its terminology, concepts and content are inadequate in relation to the European Union (EU). As a result, Australian businesses are required to work harder to compete globally and win trust.

The concept of 'privacy' is related to PI, but different. Some privacy laws, like the *Australian Privacy Act (Cth) 1988*, are not concerned with privacy. Australia does not currently recognise the right to privacy (tort). In fact, *Giller v Procopets [2004] VSC 113* is the only Australian Appellate authority for the recovery of compensation of emotional distress in a breach of confidence action, not privacy.

The EU approach recognises the right to privacy and seeks to protect individuals whose PI is 'processed'. Importantly, it provides legal recourse to individuals whose rights have been infringed. The concept of 'controllers' of PI (who determine use) and processors (who process PI on behalf of controllers) is particularly useful for identifying responsibility and accountability regarding PI flow. Australian privacy law lacks this clarity. Sadly, it has also failed to adopt some of electronic model laws' most empowering provisions, and Australian business consequently must work harder to achieve international parity.

Existing mechanisms and standards that provide trust in global privacy are neither understood nor commonly used in Australia. Australia's trading relationship with the EU has not resulted in the Australian Government providing the assurances that the Unites States Government has in relation to the Privacy Shield, effectively ensuring individual rights of recourse.

Overall, the lack of consistent terminology and the use of and differences between contractual clauses and corporate binding rules (CBR) is neither well understood nor employed in Australia. The interaction between privacy and surveillance is rarely, if ever, mentioned in corporate policies, to say nothing of complex Australian federal telecommunications laws governing switched networks, and state laws governing internet protocol data surveillance.

Mistakes in the reading of statutory instruments abound, to say nothing of how some provisions might be interpreted. Of greatest concern is Australian businesses' failure to identify when the GDPR applies. Its ambit is wide and, admittedly, there are interpretation and application nuances. Time will tell how courts decide, but there is no excuse for dumbing-down possibilities.

Privacy and PI is much more than a compliance issue; businesses must do more than the basics, they must strive for excellence. If they do, I am confident of a return on their investment. One clue (by no means legal advice) is to engage a multidisciplinary team. Public pronouncements in the form of published privacy policies speak volumes. Make sure you do what you say you do.

I prefer not to be a 'doubting Thomas', but a report last week surprised me: "Nearly all (96%) Australian IT decision-makers feel confident that their employees are equipped to comply with both regulations". I sincerely hope I am wrong.

Helaine Leggat is a Principal Lawyer with Sladens, and one of a few lawyers in the world to hold the CISSP, CISM, CIPP and CIPP/IT credentials. She has specialised in policy, cyber law (information/TMT), cyber security, data privacy and governance since 2000, and has provided services to public and private sector organisations globally across all sectors. Her appointments include as a Member of the Expert Network for the Australian Department of Industry and Science, inclusion in the Ducere Global Faculty of thought leadership, and participation in an industry working group for the Prime Minister's Advisory Council on Cyber Security.

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CHALLENGES FOR GOVERNMENT

Adam O'Neill, Managing Director – Australia, Y Soft

THERE ARE FOUR KEY CHALLENGES ASSOCIATED WITH STORING, SHARING AND PROTECTING INFORMATION IN AN INCREASINGLY DIGITAL ENVIRONMENT.

Today's information landscape is marked by rapidly growing amounts of digital and printed information requiring organisations to find innovative ways to manage, store and access that information. As processes transform to become more digitalised, the need for physical storage areas is reduced but the requirement for effective, user-friendly document capture, storage and online access to information is increased.

At the same time, new privacy and security requirements have put additional pressure on agencies to keep citizen information safe. Protecting data effectively can be complicated by the fact that data takes many forms and is stored in a variety of ways. Despite an increased focus on digital data, Australian government agencies continue to rely on vast swathes of handwritten forms, all of which must be processed and stored safely and efficiently.

Government agencies are also looking to share information securely with each other, so that they can collaborate and meet common goals cost-effectively.

1. GOVERNANCE

Government agencies are highly visible and must set rigorous standards when it comes to complying with regulatory, legal, risk and operational requirements. Putting the right framework in place to manage governance and compliance issues is essential. Start by understanding and acknowledging the value of the information the agency holds. The same factors that make it valuable to the agency could also potentially make it highly lucrative for cybercriminals.

Next, understand what obligations the agency has regarding information governance. This includes complying with all relevant legislation as well as best practices. Develop an information management policy that sets out how to create, capture and manage information to satisfy all legal and stakeholder requirements. To achieve strong governance, agencies should agree on and then document the policies and frameworks that they will abide by. This can include commitments to keep information secure, accurate, updated, transparent, searchable and valued.

2. PRIVACY AND SECURITY

Agencies must have a plan in place to manage security of personal data processing workflows and how to manage data subject requests. The Australian Government created the Protective Security Policy Framework (PSPF) to help government agencies protect people, information and assets. Agencies must comply with a range of policies and frameworks when securing data, depending on the nature of the data in question. When it comes to working with the public, government agencies have a responsibility to minimise the risk of harm.

It can be helpful for government agencies to follow simple privacy principles when working with information including basic security precautions such as never leaving confidential documents on public printers, never clicking on links in unsolicited emails, never using USB drives to store sensitive information and password-protecting all devices.

Multifunction printers (MFPs) have long been considered a vulnerable endpoint in the IT infrastructure. MFPs provide welcome functionality and efficiency through internet connectivity and the ability to handle print, copy, fax, scan and email. However, MFPs monitor usage and collect data, making them an attractive target for malicious actors. Furthermore, MFPs are often located in easily accessible areas, making them even more vulnerable.

A security assessment is crucial in identifying vulnerabilities the organisation may not have found out about until after it was breached.

3. PRODUCTIVITY AND EFFICIENCY

Government agencies need to demonstrate efficiencies across the entire operation. This includes helping staff to be more efficient, which can be achieved through digitalising more documents so they can be inserted into workflows more effectively.

Using optical character recognition (OCR), agencies can scan documents, even handwritten forms, and turn them into searchable, editable content. These forms can be saved as PDFs, Microsoft Word or Excel documents. They can be secured using password protection and automatically sent to the right destination for the next step in their process. Scans are automatically stored in predefined, authorised locations and an email is sent to let the appropriate person know that the document is there. This process lets users enter metadata with the form, which makes it even easier to find the right information in context, every time.

By eliminating paper-based processes, or reducing them and automating where possible, agencies can achieve high cost and time savings. Having backed-up, digital versions of all the information an agency needs to store also reduces the chances of that information being lost or damaged in a fire, flood or other natural disaster. Unlike documents stored in a physical archive, digital documents can be easily and cheaply stored in multiple locations, building in redundancy.

4. DISCOVERABLE AND USABLE INFORMATION

Agency team members and citizens alike often waste significant amounts of time trying to find the documents they need. This can be because they weren't filed correctly, were saved on a team member's desktop or because the agency's file servers aren't intuitively organised. Agencies can save hours of productive time by automating document workflow to predefined destinations.

Also, using OCR technology to scan paper-based documents creates digitalised documents that are editable and searchable. This can save massive amounts of time when it comes to managing forms and other paper-based information within the agency, letting agencies focus on delivering services instead of shuffling papers.

High-quality metadata associated with the document is essential in making it easy to find, even if the person isn't already aware of its existence. It's also necessary to select appropriate formats to make the information usable. Open formats are preferred because they reduce the need for expensive software.

CONCLUSION

The workflow management challenges present today are unlikely to recede. In fact, the ongoing expansion of data and information suggests government agencies will only face more, and more complex, challenges as time goes by.

Implementing a strong workflow management governance approach that includes security and privacy management, delivers productivity and efficiency, and helps government agencies fulfil their legal, organisational and moral obligations will help position these agencies for a strong and successful future.

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- Cyber diversity, cyber resilien
- Cyber human factors - Why e
- Cyber engagement and awar
- How Israel became a world-l
- Closing the cyber security sk
- Policies and strategies imple

KEY SPEAKERS:

Jamie Norton
Chief Security Information Officer, **ATO**

Commander Davi McLean
Manager Cybercrin Operations, Organis Crime & Cyber, **Australian Federa Police**

Charlotte Wood
Manager of Cyber Security Engagement for the NSW Government Chief Information Security Officer, **Department of Finance, Services and Innovation**

Dr. Nalin Asanka Gamagedara Arachchilage
Lecturer in Cyber Security, **Australia Centre for Cyber Security**

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Dr Maria Milosavljevic
NSW Government Chief Information Security Officer (GCISO), **Department of Finance, Services and Innovation**

Amy Roberts
Cyber Security Adviser and Stakeholder Engagement, **Department of Home Affairs**

Rachael Falk
CEO, **Australian Strategic Policy Institute**

Adam Henry
Australian Co-Lead Cybersecurity Workforce Alliance, **UNSW Canberra**

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- Extending the digital ID across the Internet of Things (IoT)
- Mobile drivers' licences / ePassport functions and capabilities
- Security/identity challenges confronting the financial sector
- Open banking, the consumer data right and digital identity
- Self-sovereign identity and blockchain – future directions

KEY SPEAKERS:

David Birch
Author, Commentator and Advisor, **Digital Financial Services (UK)**

Adam Cooper
Technical Architect, Government Digital Service & Chief Architect, **Gov.UK Verify (UK)**

Ann Cavoukian
Three-term Commissioner, Information and Privacy Commissioner of Ontario **(CANADA)**

Victoria Richardson
Chief Strategy Officer, **Australian Payments Network**

Alan Bell
Director Digital Identity, **Department of Internal Affairs (NZ)**

Andre Boysen
Chief Identity Officer, **Securekey (CANADA)**

David Chadwick
Director, Passport Standards & Face Biometrics, Australian Passport Office, **Department of Foreign Affairs and Trade**

Cameron Gough
General Manager and Founder, Digital iD, **Australia Post**

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THERE'S NO PLACE LIKE HOME: LOCAL DATA HOSTING BENEFITS

Chris Lawley, VP Sales, Diligent

DATA IS INEXTRICABLY LINKED TO TRUST, BUT PUBLIC TRUST IN BUSINESS HAS ENTERED A DOWNWARD SPIRAL.

Despite this, the value of data to business has never been more important. It can help deliver streamlined services, unlock unprecedented customer insights and deliver competitive advantages. If poorly managed, it can also cause businesses to crash and burn.

Data security is therefore essential — but what does it take to keep data safe?

At one end of the spectrum, there's a common belief that strong passwords and antivirus software are enough protection. At the other end, tech supremo Elon Musk says Facebook "gives me the willies", while former FBI boss James Comey covers his webcam and advises the rest of us to do likewise.

There is no place for complacency in data security. However, fearfulness can hold businesses back from maximising the opportunities that technology and the online economy can provide.

Diligent has developed practical guidance on how to protect sensitive boardroom information to underpin trust across organisations and look at when a local data-hosting solution may be of benefit.

DATA SECURITY IN THE BOARDROOM

Directors and management need secure channels in which to ask questions, express opinions and share information beyond the boardroom. Some documents might contain messages that haven't yet been refined, plans that will change later or facts that are still unverified.

It is essential that people are comfortable to speak openly — robust discussion is a central part of every board. Yet, at many organisations, these exchanges regularly take place over email, by text message or via instant messaging apps. Those platforms lack the security to properly protect sensitive information, which can include multiple copies of messages ending up stored in public clouds.

Board reporting can often be at risk of falling outside standard organisational controls because of non-executive directors using external systems, software and hardware. That may include public email servers, unfamiliar USB drives, BYO devices and public wireless networks.

While the risks associated with public email providers are well documented, there has also been an increase in business emails being compromised, says the Australian Cyber Security Centre's 2017 Threat Report.

WHY DATA SECURITY IS GOOD CORPORATE GOVERNANCE

Protect company assets

Board reports provide sensitive information about a wide range of commercial, financial and operational issues. That can include strategic plans, performance updates, forecasts, risk analysis and details of significant transactions.

Reduce external threats

Even the data you don't believe is valuable externally can be attractive to cybercriminals — simply because it's valuable to you. Ransomware (encrypting your data and then charging a fee for its release) is a growing threat.

Trusting relationships

While the board's role is to challenge management and hold them accountable, a culture of trust and openness between directors and senior executives is imperative. Similarly, directors need to have the utmost confidence that boardroom business is confidential.

Continuous disclosure obligations
A loss of confidentiality over a significant matter could mean a business has to make further disclosures to the ASX or ASIC.

THERE'S MORE AT STAKE THAN DATA

Far from being a specialist IT issue, data security is now one of a range of issues that is part of an organisation's corporate culture and has a genuine effect on its reputation and public trust levels.

Some organisations face regulatory restrictions in their ability to use data centres and service providers beyond Australia. However, for others, the decision to host data locally is an individual choice. It's not a surprising one, given that more than nine out of 10 people don't want their data sent overseas, according to the Australian Community Attitudes to Privacy Survey 2017.

The implications of a data security breach are serious, and can include:

- operational and business continuity issues
- loss of business
- regulatory action and sanctions
- potential legal action
- reputational damage
- financial loss.

WHY HOST DATA IN AUSTRALIA?

For most organisations, having strong data security to prevent loss, misuse or theft is a lot more significant than where that data is physically located.

Regulations vary around the world, but reputable organisations in Australia or overseas should have the same quality infrastructure, security and processes to protect their clients.

Businesses should do their research before making a decision, and know the right questions to ask. Providers that can't clearly and proactively explain their security measures should immediately raise a red flag.

- **Financial services:** Entities regulated by APRA, including banks, insurers and superannuation funds, are subject to stringent requirements when outsourcing material business activities, particularly if they are outsourcing them to offshore providers. The prudential regulator can put a stop to arrangements if it is not satisfied with the risk management practices.
- **Government:** Public sector entities are strongly encouraged to adopt cloud-based solutions under the Australian Government's Secure Cloud Strategy. While the Strategy specifically notes that offshore data is not prohibited, many government agencies and departments at the state, territory and federal level follow a mandate of only using locally hosted data service providers.
- **Medical and healthcare:** Under the Privacy Act, information about people's health is subject to greater protection than other types of personal information. Providers need to take additional steps to satisfy themselves that sensitive information is properly protected.

HIGH STANDARDS APPLY OFFSHORE

Australia has a strong privacy and data security regime, but some jurisdictions have even more pervasive requirements.

When the European Union's General Data Protection Regulation (GDPR) takes effect in May 2018, it will impose some of the toughest privacy standards in the world. It will not only affect EU organisations, but any organisation with data on EU citizens. There is also no small business exemption, unlike in Australia.

Penalties under the GDPR can be severe — up to a maximum of EUR20 million or 4% of global revenue, whichever is higher.

Importantly, the new regime will also introduce changes to liability when third-party suppliers are used. No longer will the original owner of the data be solely liable for any breach that occurs. Liability will now be shared between the owner and the third-party provider. These changes are creating a ripple effect across the globe.

LATENCY IMPROVEMENTS

High-quality infrastructure can deliver outstanding performance no matter where it is located. However, onshore data storage can offer performance benefits for highly data-intensive organisations. That's because the further data needs to move, the longer it can take to arrive. While the difference may be a matter of milliseconds, with large packages of data, this can add up to lower latency levels. Keeping data closer to home can boost access speeds.

Australians feel strongly about data security[1]

69% Are more concerned about online privacy than they were five years ago.

94% Agree businesses should inform people if they are affected by a data breach.

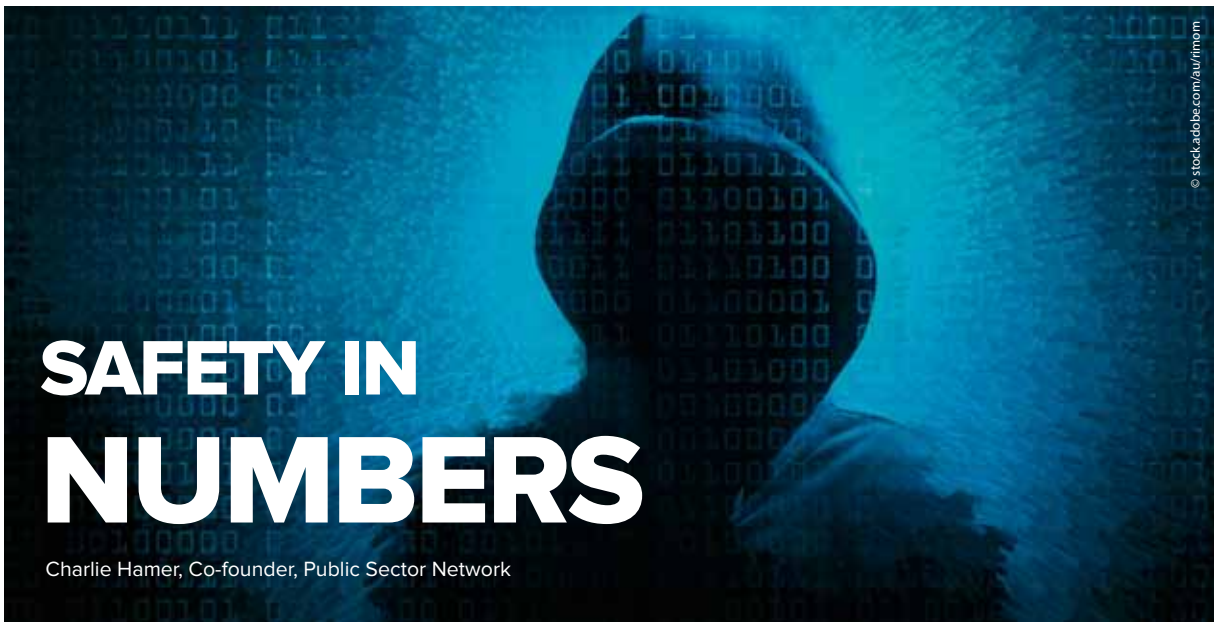
93% Don't want their data sent overseas.

79% Don't want their data shared with other organisations.

Organisations agree that they can do better

91% Say that they can be more transparent with consumers about how their information is used.[2]

Sources: 1. Australian Community Attitudes to Privacy Survey 2017 2. Deloitte Privacy Index 2017



SAFETY IN NUMBERS

Charlie Hamer, Co-founder, Public Sector Network

CYBERCRIMINALS NEVER SLEEP, SO GOVERNMENTS MUST WORK TOGETHER TO ACHIEVE SWIFT AND EFFECTIVE PREVENTION AND RESPONSE.

Shifting geopolitical alliances, concerns about foreign interference, violent extremism across our region and sophisticated cyber-enhanced tactics of trans-boundary criminal and terrorist operations... all these elements have combined to produce a complex, volatile contemporary threat environment. As these challenges continue to evolve, so too must the approaches to combating them. How can governments plan, prepare and respond to outpace the architects of malicious intent?

Articulating a rapid, coordinated and effective interagency response hinges on bridging the gaps between government, agencies and private enterprise for the sharing of intelligence, policy, tactics and capability. And in this, everyone has a role to play: officials and executives from national and state departments, agencies and commissions; local councils; emergency services; policymakers; research agencies and institutes; specialists from industry; and key infrastructure owners.

The challenge can be broken down into four key areas: border security, cybersecurity, safer communities and national security.

BORDER SECURITY

Rapid globalisation and ongoing migration bring border security issues to the fore for nations around the world. The continued safety and security of our country depends on the efforts of our law enforcement agencies to monitor the movement of people, cargo and modes of transport across land, water and air.

Border security experts, policymakers and industry representatives are working together to combat the illegal movement of weapons, drugs, goods and people, while promoting lawful entry and exit. This cooperation requires a sharing of information on global perspectives on the developing threats, and deployment of the latest technology to enhance border security.

From transnational crime to airport security, from bilateral security alliances to forensic security, it is clear that responses must be coordinated and become smarter, faster and more precise.

CYBERSECURITY

With the age of enhanced connectivity has come more potential attack vectors. Government and industry experts are trying to find answers to these cybersecurity challenges, and this requires a deep understanding of the changing relationships between the internet and the physical world, artificial intelligence, cyber threats, the digital economy, networks, standards, interoperability and the role of government.

In Australia, some examples of endeavours underway include:

- the New South Wales Government's development of a new cybersecurity strategy
- the Australian Cyber Security Centre's exploration of ways in which to protect critical infrastructure
- Westpac's development of countermeasures for the Darknet
- Austrac's efforts to detect financial crimes using confidential computing.

NATIONAL SECURITY

Comprehensive situation awareness enables decision superiority. While new technologies present exciting capabilities for protectors of our homeland, they can also produce new vulnerabilities that may be exploited by those who wish to compromise our national security.

It's for this reason that many are focusing their efforts on the latest in national security and intelligence, surveillance and reconnaissance (ISR) technologies to extract the benefits of new technologies while mitigating risk factors in the face of increasing complexity.

Australian authorities are working closely with their overseas counterparts, as well as transnational bodies such as Interpol, to share insights on the latest challenges to national security. And at home, the Australian Criminal Intelligence Commission is in charge of the National Criminal Intelligence System, while the new Department of Home Affairs is responsible (amongst other things) for protecting critical national infrastructure.

SAFER COMMUNITIES

As our communities grow larger and more complex, so too do our networks of critical infrastructure essential for the maintenance of everyday life, trade and businesses, sporting, cultural, community and political events. First responders, event organisers, venue and facilities operators, as well as managers of public spaces, need to identify threats and develop effective security and safety measures — such as predictive policing and camera surveillance — to ensure operational continuity of public venues, events and facilities.

Keeping the community safe in an increasing threat environment and an era of hybrid threat disruptions requires innovative approaches to managing, planning and delivering solutions. In this way, safety and security can be enhanced to create safer communities for all.

SECURITY IN FOCUS

The Public Sector Network's 4th annual Australian Security Summit, AuSec2018, will be held on 17 July 2018 at the QT Hotel, Canberra. Bringing together more than 300 individuals, the annual intelligence and security gathering will provide an opportunity for those at the helm of Australia's security initiatives to connect and share best practice guidance. The full list of speakers is available on the event website (https://events.publicsectornetwork.com.au/event/ausec-2018/), but here is a short selection of who will be there:

- Michael Pezzullo — Secretary, Department of Home Affairs
- Karin von Hippel — Director General, RUSI (UK)
- Patrick McGuinness — Former Deputy National Security Adviser for Security, Intelligence, and Resilience, UK Government
- Patrick Stewart — Assistant Chief, United States Border Patrol
- Alain LeFevre — Deputy Director, Federal Crisis Centre (Belgium)
- Tim Morris — Executive Director, INTERPOL
- Cameron Ashe — Deputy National Counter Foreign Interference Co-ordinator, Department of Home Affairs
- Dr Maria Milosavljevic — Chief Information Security Officer, NSW Government
- Dr Richard Davis — Chief Technology Officer, National Security, DST GROUP
- Damien White — Deputy Head of Assessments, Office of National Assessments
- Johanna Weaver — Director for Cyber Policy Section, DFAT
- Sharon Huey — Assistant Commissioner, Enforcement Command, Australian Border Force
- Dr Ken Radke — Acting Technical Director, Australian Cyber Security Centre
- Steve Gollschewski — Deputy Commissioner, Commonwealth Games, Queensland Police Service
- Prof Vijay Varadharajan — Global Innovation Chair & Director, Advanced Cyber Security Engineering Research Centre, University of Newcastle

GAME CHANGERS FOR CIOs

Scott Newman, Senior Director of Cloud Platform Technologies, Oracle ANZ

TECHNOLOGIES SUCH AS BLOCKCHAIN, CHATBOTS AND IoT WILL BEGIN TO COME OF AGE THIS YEAR, SO IT WILL PAY TO BE PREPARED.

It's no secret that cloud is a major game changer, acting as a catalyst for the arrival and adoption of a whole host of disruptive new emerging business technologies. Chatbots, artificial intelligence and blockchain promise new opportunities for businesses growth by driving personalised engagements, delivering new sources of revenue, and reducing service and infrastructure costs.

With so much change happening so rapidly, what do CIOs need to know about these key technologies as they seek to ensure they successfully support their businesses?

THE A.I. BOOST

Humans can't keep up. Organisations are struggling to make sense of the rapid proliferation of data — across finance, HR, sales or marketing systems, or in operations with systems management and security.

While AI promises a solution, serious implementations are currently few and far between. According to McKinsey, only 20% of AI-aware firms say they are currently adopters of the technology, and as Forrester says in its Predictions 2018: The Honeymoon For AI Is Over report, moving beyond the hype will require hard work around planning, deploying and governing it correctly.

As an alternative, companies should consider the 25% of enterprise applications and other cloud tools that we believe will include a custom AI-based capability by 2020. These will enable organisations to take advantage of all the benefits of AI, without having to develop the specialised skills to play with it.

AUTOMATION, EVERYWHERE

You can barely read about AI without it being twinned with another hot topic: automation. Forrester predicts this market will accelerate faster in 2018 as firms look to squeeze performance and insights out of previously commodity operations.

Automation will help organisations to spot performance irregularities and identify security risks in real time and, potentially, entirely remove human error; we conservatively expect operations currently experiencing 20,000 human-managed interventions per year to soon fall to just 20 such interventions each year, and more than half of all enterprise data will be managed autonomously in the cloud by 2020.

CHATBOTS FOR CUSTOMER SUPPORT

Chatbots have evolved to full conversational interfaces for accessing information and conducting business transactions, and are proving a fantastic tool for enhancing customer service and increasing productivity.

With increasingly sophisticated conversational platforms arriving, it is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expected that most customer support interactions will be handled by intelligent chatbots by 2020.

It is critical to get chatbots right, though; one small linguistic slip and the whole conversation can come crashing down. One poll saw nearly three-quarters of respondents saying they would not use a chatbot again following a negative experience.

BLOCKCHAIN IS MORE THAN FINANCE

Another disruptive technology force, blockchain, is transforming the global financial industry, among others. Already, more than 2500 new blockchain-related patents have been filed, and its financial impact is predicted to top US$176 billion by 2025.

It's still early days though. At the end of 2017, Deloitte reported that only 8% of 27,000 new blockchain projects that surfaced in the market in 2016 remained active.

Things are changing. Enterprise-class cloud services are arriving and 30% of blockchain proof-of-concepts are expected to get approval, showing it certainly has the potential to become the disruptive standard in multiparty and complex agreement commerce. Financial services and supply chains will lead the way, followed by healthcare, retail and the public sector.

IoT WILL FINALLY BE INTEGRATED

Gartner's technology predictions for 2018 predict the proliferation of intelligent things, driving a 'shift from stand-alone intelligent things to a swarm of collaborative intelligent things'.

While more than 50 billion connected devices are already in circulation today, only 1% of IoT data is currently analysed and utilised and the focus is on devices and connectivity — not business outcomes and action. This trend is quickly changing.

It is predicted that by 2020, 60% of unutilised IoT (Internet of Things) projects will be revalidated with a business outcome approach. IoT projects will then operate as holistic mobile and cloud platforms, enabling users and processes to act on information collected in real time.

SECURITY WILL MOVE TO JOB #1

Underpinning all these technologies is the need for strong security. The challenge is that organisations are not getting better at security; they are getting worse. They're also facing increasing pressure in this area from the arrival of new regulations, along with the associated penalties for failure.

Cloud, mobile and edge technologies such IoT are creating a 'borderless enterprise', and the increasing speed and sophistication of cybercrime has made it difficult for many organisations to detect and respond to modern cyber attacks. In fact, by 2020, it is predicted that operating on-premises environments will present the greatest risk to your data.

Companies need to revisit their security practices and take advantage of new, comprehensive cloud security management offerings that include AI and automation capabilities to help detect and fix vulnerabilities, encrypt data and conduct regular patches throughout the stack.

One poll saw nearly three-quarters of respondents saying they would not use a chatbot again following a negative experience.

CLOUD COMES OF AGE

The other foundational requirement for all of these emerging technologies is cloud. Interestingly, 2018 is likely to be the year when cloud really comes of age.

Last year's stats showed that 85% of enterprises around the globe had a multicloud strategy. While complex regulatory requirements have challenged public and private sector organisations migrating to public cloud environments, modern solutions, which deliver the scalability and extendibility, mean these challenges are being overcome. With these innovations, it is predicted that even regulated industries will shift 50% of their production workloads to the cloud by 2020.

Organisations aren't just shifting the old to the cloud, they are using it to create the new — and extend existing applications — by using the cloud for development. Over the next few years, industry analysts predict that enterprise applications will widely adopt cloud-native architectures.

In fact, businesses should be burning with excitement about the opportunities ahead in 2018, with products and tools around technologies such as blockchain, chatbots, server-less functions and machine learning becoming mature enough for real-world projects.

Managing cloud data risks — protected cloud certification

Derek Fittler

Commonwealth agencies are responsible for managing the risk associated with the loss of any information they hold.

All ICT systems used by federal government agencies in Australia are required to comply with common rules to ensure they are safe and secure. Agencies must certify that their systems, including cloud and protected cloud environments, meet these rules. The rules are set out in the Information Security Manual (ISM) produced by the Australian Signals Directorate (ASD).

Data is classified on a scale from unclassified to top secret, depending on the consequences of damage from unauthorised compromise or misuse of the information. The more sensitive the data, the more restrictive the controls to minimise the risk of unauthorised compromise or misuse.

Government departments and agencies are responsible for:

- Assessment of the suitability and implementation of security measures.
- Certification that the ISM security controls are implemented effectively and identifying any residual risk.
- Accreditation that any residual risk is recognised and mitigated, and this is accepted by the agency.

If the agency uses an external supplier, then the agency must satisfy itself that it has managed its risks with those elements of its ICT systems that it has outsourced.

Rules for the cloud

When it comes to cloud, the ASD provides additional guidance to help agencies understand how to meet their obligations. ASD has recently published a guide to the process for cloud certification, *Anatomy of a Cloud Certification* (PDF). The guide highlights the three-step process for accreditation:

> As government agencies increasingly adopt cloud services it is critical to ensure that the security risks are properly assessed, certified and accredited.

Macquarie Government strengthens cybersecurity capability with FireEye partnership

Macquarie Government has recently partnered with cybersecurity company FireEye to extend its suite of advanced cybersecurity solutions for government.

FireEye is an intelligence-led, NASDAQ-listed security company that helps government organisations globally protect nation-state secrets and critical infrastructure, and counter new and evolving cyber threats.

"We are delighted to leverage the economies of scale of our government cloud to offer affordable advanced-email security to all federal and state government customers," said Aidan Tudehope, Macquarie Government's Managing Director.

As part of the ASX-listed Macquarie Telecom Group, Macquarie Government provides cloud and security solutions to Australian government organisations. With data centres in Canberra and Sydney, Macquarie Government's cloud is certified by Australian Signals Directorate's (ASD) for classified (PROTECTED) workloads and has over 100 Australian Government cleared NV1 engineers and architects.

1. Independent Security Assessment — performed for a cloud services provider (CSP) by a registered InfoSec Registered Assessors Program (IRAP) assessor contracted by the CSP to review its own environment.
2. Certification by the agency formally recognising and accepting the security measures for a system, as implemented effectively and identifying the residual security risks.
3. Accreditation by the agency to accept the residual risks.

Agencies may rely on the independent security assessment of an IRAP assessor and use a cloud service not on the Certified Cloud Services List (CCSL). The IRAP assessor (as noted by ASD) is engaged by and paid for by the cloud provider. The IRAP assessor validates that it is satisfied the provider meets the relevant security controls in the ISM; or, for those parts that do not specifically comply, alternative controls to satisfactorily mitigate risk have been implemented.

The agency then needs to perform both the certification and accreditation roles as part of the sign-off.

The IRAP assessment might give the agency additional comfort, but the assessment is paid for by the provider; therefore the assessment process is not fully independent, and applies only to those parts of the service the provider has asked to be accessed. Ultimately the risk remains with the agency.

The CCSL 'gold standard'

The gold standard of certification is inclusion by the ASD on its CCSL. To support adoption of cloud services by government, ASD implemented an initiative under the ISM to certify cloud service providers that met the relevant security controls for a data classification. The CCSL lists ASD-certified cloud providers for Unclassified DLM and PROTECTED data classifications.

ASD examines the IRAP assessment and the provider's environment and makes an independent decision about whether the service complies with the ISM, or that it has sufficiently mitigated any risk not specifically compliant with the ISM. As *Anatomy of a Cloud Certification* makes clear, this is more than just ticking off a checklist:

"Inclusion on the Certified Cloud Services List demonstrates that ASD has certified the CSP. ASD certification of cloud services includes confirmation of physical, personnel and information security requirements as detailed in the Protective Security Policy Framework and ISM, including on-site inspections. It is not merely a compliance exercise.

"ASD also calls out that the duration of the CCSL certification process is highly variable, and in some cases may never be achieved if the service cannot meet the minimum required standards for protecting government information."

As government agencies increasingly adopt cloud services it is critical to ensure that the security risks are properly assessed, certified and accredited. The gold standard of the ASD CCSL, with its independent government assessment, will continue to be a key differentiator for agencies in managing their risk position and getting the best outcome for Australia.

Macquarie Government was the first Australian cloud certified by ASD, and is listed on the CCSL for Unclassified DLM and Protected cloud services — read more about its government protected cloud at https://macquariegovernment.com/secure-cloud/protected-cloud/.

Derek Fittler is National Director for Macquarie Government, and its local senior executive in Canberra. He has been with Macquarie Telecom Group for more than 16 years, serving in a range of roles from legal to sales to commercial. He owns strategy for Macquarie Government's engagement with the public sector, and has responsibility for all panel and head agreement commercial arrangements.

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INTEGRATED STRATEGIES FOR SMART CITIES

Kevin Noonan and Isabel Freire, Ovum

INTEGRATED PLANNING IS CRUCIAL FOR POSITIVE SMART CITY IoT OUTCOMES, AND FOR THAT YOU NEED AN OVERALL SMART STRATEGY.

Although smart city initiatives are important in the push for government transformation, limited budgets and fragmented approaches mean that cities often limit themselves to small, targeted initiatives covering only a single application or neighbourhood.

But there is only so much that can be achieved through point solutions and quick wins such as limited smart parking, connected rubbish bins and smart street-lighting deployments.

As digital initiatives gather momentum across government, there is growing pressure for smart city initiatives to be driven in a much more structured way.

A strategic plan is needed to guide successful initiatives. City authorities cannot afford to see such initiatives as just technical considerations, somehow separate from mainstream administration. Instead, smart city plans must become more closely integrated into the core of a city's ongoing strategic investment strategy.

AD HOC IS NOT THE ANSWER

Most countries around the world need to address the growing challenges brought about by rapid urbanisation. These include traffic congestion, economic and tourism development, citizen engagement, resilience, downtown renewal, ageing populations and public safety.

Although technology exists that provides new and innovative solutions, pressure to deliver quick outcomes can deliver unintended consequences. Ad hoc solutions may stall at the proof-of-concept stage, or technology initiatives that are successful at the beginning may in reality be hiding potential downstream problems.

Some of the challenges have been illustrated in Columbus, Ohio, the winner of the US Department of Transport's Smart Cities Challenge in 2016. A traffic collision prevention project using camera sensors on city buses to detect oncoming pedestrians and vehicles did not work at night, when most collisions occurred.

>>

In another example, an application for delivery truck drivers to reserve times for loading and unloading on streets could not be enforced without prohibiting the public from using those spaces. City authorities subsequently 'paused' deployments to allow time for more feedback and citizen consultation — which, as discussed below, is key to success.

SETTING STRATEGIES

To be successful, smart city initiatives need to have a well-thought-out vision, as a recent Ovum global government survey clearly shows (see Figure 1). The lack of an organisation-wide strategy was identified by respondents as one of the top-three inhibitors for digital government initiatives.

The other two major inhibitors were concerns about cybersecurity and insufficient funding for new programs; addressing these two factors should necessarily form part of any strategy.

Moving away from ad hoc solutions to an explicit strategy results in a strong foundation for success. There are certain steps that should be taken in order to address the factors that constitute the plan, including inclusion of stakeholders, partners and lessons learned from other jurisdictions.

Importantly, the plan must recognise that the first step needs to address what the challenges and drivers are for the city. The answers to these challenges will form the outcomes for the plan. They will also indicate what types of technologies and applications need to be pursued (see Figure 2).

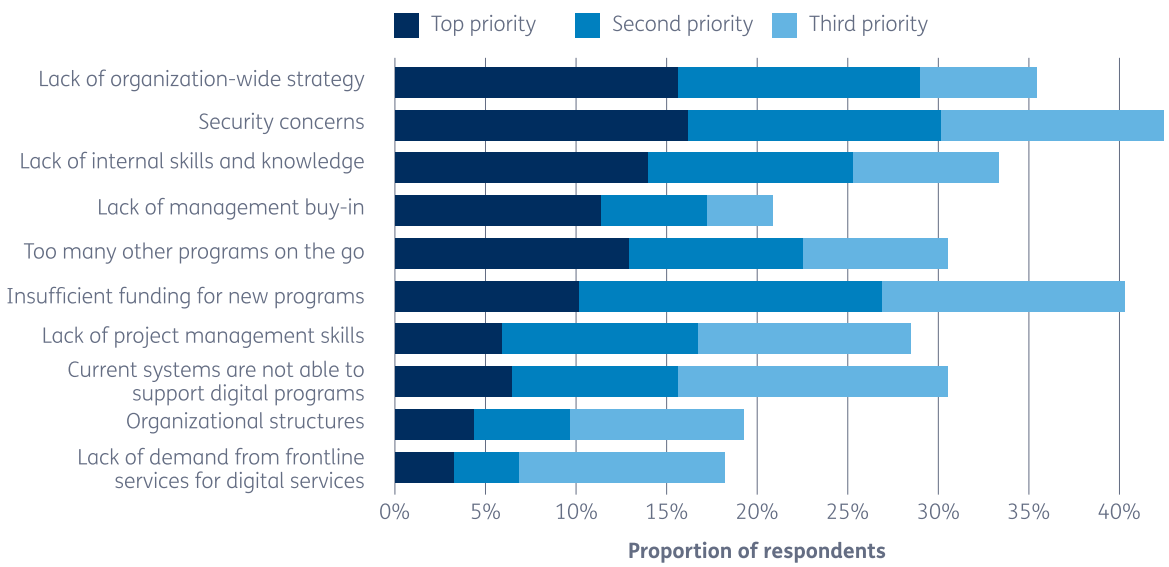
CITY-SPECIFIC DRIVERS

Smart cities are not new to IoT-based solutions. However, many cities continue to report challenges related to the lack of standards and packaged technology solutions. As a result, it is difficult for both cities and service providers to determine which IoT applications will deliver the best outcomes both now and as the city grows.

Of course, cities have the added challenge of political pressure to create something to show value to taxpayers and voters. As a result, there is often a focus on high-visibility, ad hoc point solutions. But if cities do not solicit citizen engagement or other stakeholder buy-in before solution execution, projects may fail to show the desired results, or to win budget renewal approval. A further risk is that the key champion fails to be re-elected.

Successful city authorities need to determine the most important drivers and challenges for their cities, and then seek solutions to address each. These tend to fall into common groups:

- Demographic sustainability: Population growth, urbanisation, inner city decline, ageing populations.
- Economic development: Attracting business investment, tourism, quality-of-life indices.
- Environmental: Pollution, waste and water management.
- Mobility: Transportation, ride sharing, multimodal transport, autonomous vehicles, fleet tracking and management.



Sample size: 186

Question: What are the top-three challenges holding back your organization from undertaking digital programs that support the transformation of services?

Vertical: Government. Government agencies: Community amenities and housing, environmental protection, public order and safety, social protection, and transportation/public works/ infrastructure. Country: All. Enterprise size: All.

Source: Ovum

Figure 1: Top challenges holding back digital government initiatives.

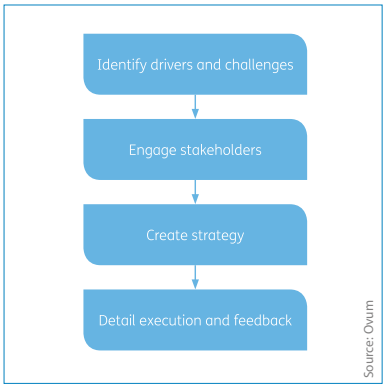


Figure 2: Smart City Planning: A four-step framework

- Financial/operations: Efficiencies, alternative financing, budgetary constraints.
- Resilience: Disaster preparation, cybersecurity.

This list is by no means comprehensive. The key is to determine which are the city's priority outcomes, and then work back to what needs to be done to enable them.

CREATE THE STRATEGY

Due to the nature of their services, city governments are often far more visible to taxpayers and voters than any other layer of government. If citizen/stakeholder engagement is not given sufficient attention upfront, key smart city initiatives can easily fail, despite their technical advantages.

To be successful, a smart city strategy must have stakeholder engagement as a core requirement. There is a potential role for the service provider to be actively involved in participating in citizen engagement, as well as in deployment.

Many cities have publicly available plans that detail their most pressing issues and what they wish to accomplish in the future. These plans can ultimately serve as both frameworks and playbooks for successful smart city deployments.

Choice of technology is crucial. Some cities have chosen to deploy connectivity backbones to support IoT smart city applications. This is a key issue for service providers to engage in, and their involvement does not necessarily need to stop just at network deployment level.

Vendors are already engaged with cities to create 'living labs' to pilot smart cities applications and services. Google is doing this with Toronto and Bosch with San Francisco, for example. And service providers are engaged in partner ecosystems with cities, as well as for their living labs, such as KPN with Amsterdam.

Citizens can also be engaged in testing smart city applications in working and living environments, to provide real-time crowdsourced data and collaboration. Ovum's research on government approaches to smart city projects in the Asia–Pacific region indicates widespread and increasing use of crowdsourcing as a key part of testing regimes.

IMPLEMENT LESSONS LEARNED

Cities cannot afford to be insular when looking at their challenges. They must acknowledge that urbanisation issues have no geographic barriers. A city in the US undergoing urbanisation can have similar demographic issues and use similar solutions to one in Australia. A Latin American city employing anti-seismic sensors and citizen notifications can utilise a similar solution to that used by governments in Asia to warn citizens of impending tsunamis.

Equally, a failure in implementing a parking solution can be a learning process for cities everywhere that face the difficult balance between driving revenues and creating intangible value through improved citizen experiences and public service provision.

Lessons from both success and failure can be learned and shared by cities and vendors, regardless of location. Being aware of these lessons, as well as regularly monitoring progress, will serve to create a strong feedback loop that serves to ameliorate smart city applications and plans as they are being implemented.

Kevin Noonan is a chief analyst and practice leader of Ovum's Public Sector team. Isabel Freire is a principal analyst with Ovum's IoT team.

SMART CITY STRATEGIES AT A GLANCE

Overall, Ovum's view on smart city initiatives is that:

- the lack of an organisation-wide strategy is one of the top inhibitors for digital government initiatives, as is the lack of citizen and other stakeholder engagement;
- smart cities are not a new concept, and IoT-based solutions are a core element. However, many cities continue to report challenges related to the lack of standards and packaged solutions, as well as the lack of business case, which results in the risk that projects stall at the proof-of-concept stage;
- there is little guidance on which solutions are appropriate, and little appetite to learn from other cities that superficially are deemed to be too different to one's own.

Therefore, it is recommended that cities and would-be solutions providers should:

- resist the temptation to adopt quick, ad hoc solutions that just focus on a single problem of short-term concern to a select constituency;
- ensure initiatives are built on the foundation of a vision, with a framework developed in a clear and methodical way through identifying drivers as the first step. Take care to involve stakeholders in each phase;
- embed business cases in any strategy, as well as looking at a proof-of-concept to demonstrate long-term value;
- investigate lessons learned from other cities. Service providers can also assist in facilitating introductions and engagement with other stakeholders or partners.

TRANSFORMING GREATER LAUNCESTON WITH A DIGITAL TWIN

DIGITAL CITY MODELS BUILT ON WORLD-CLASS ANALYTICAL DATA ARE ENABLING AREA ACTIVATION, EVIDENCE-INFORMED DECISION-MAKING AND ENHANCED COMMUNITY ENGAGEMENT.

Powerful 2D and 3D digital modelling, including new simulation capabilities, is providing strategic insight for the four local councils participating in the Greater Launceston Transformation Project (GLTP) — a collaborative endeavour of the Tasmanian State Government; the University of Tasmania; the cities of Launceston, Meander Valley, West Tamar and Georgetown; and industry partners.

The aim of the project is to reinvigorate the heart of the city to develop a vibrant and livable Greater Launceston region.

"Greater Launceston is embracing the future of strategic planning through its use of emerging data and 3D simulation technologies, generating insights that will also support the initiatives of the new regional innovation ecosystem," said Sara Bennett, co-owner and Managing Director of analytics firm Sensing Value.

Sensing Value was established in 2014 to provide businesses and governments with dynamic intelligence about how people use spaces.

During two years of project scoping, and now through implementation, the company is layering datasets and providing visual representations of entire land areas to help local councils tackle long-term issues concerning social equity, educational attainment and economic opportunity.

"We've been able to sit with strategic planners and hear about their issues and identify how analytical tools are going to help in the next generation of planning," said David McCloskey, Sensing Value's co-owner and Founding Director.

The digital city models will revolutionise regulatory development application processes by providing local councils with the ability to simulate how land use planning decisions affect the future functioning of the city.

It's a perfect example of how to go beyond static, standalone GIS images to create highly analysable, accurate data that can support productive and realistic decision-making.

At the heart of the solution is PSMA Australia's Geoscape product, which provides accessible location data for every address in Australia.

Before the arrival of Geoscape, reliable and accurate geospatial models of Australia's built environment were very expensive and difficult to efficiently produce for regional areas. Now, with the availability of Geoscape, geospatial data including building footprints and heights, tree coverage and surface cover can seamlessly combine with other data and technology to accurately represent regions such as those in the Greater Launceston area.

"Geoscape is one of our base layers of data — it's an accurate foundational dataset providing analytical capabilities for scenario modelling," said Bennett. "No other dataset offers that level of detail, particularly for regional or semirural areas."

The modelling for Greater Launceston is helping governments at all levels develop realistic and sustainable planning rules, land use criteria, transport and

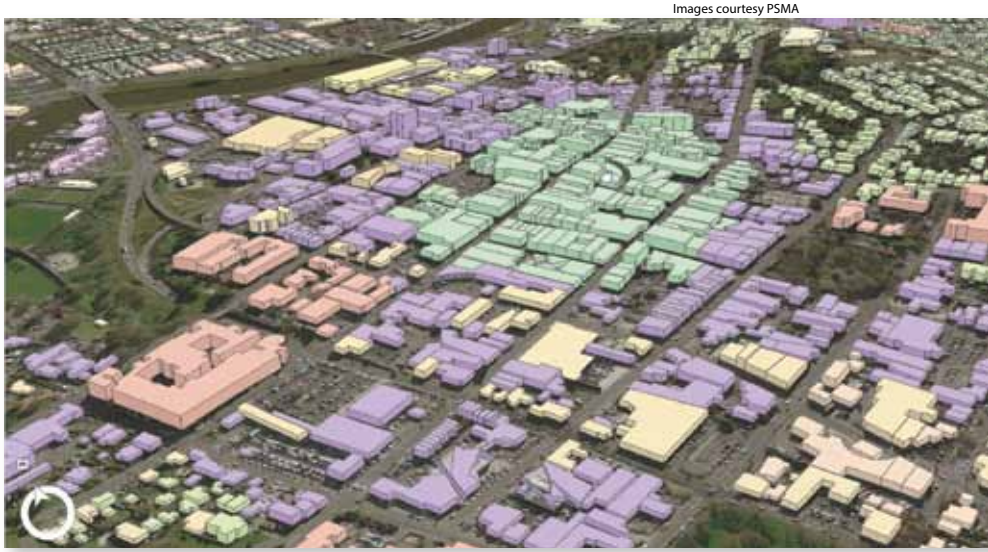
amenities. At a glance, simulations allow decisions to be made based on evidence.

"Geoscape is compatible with 3D building facade structure data, which enables a superior visual experience, providing an effective way of demonstrating concepts and engaging with the community," said Bennett.

While other cities have built 3D visualisations, the Greater Launceston Transformation Project is the first in Australia to offer a full regional virtualisation, dynamically modelled on a range of factors, including energy consumption, people movement, land use and the environment. Importantly, the 3D models enable interaction between the four local councils for better regional planning, perspective and resource sharing.

"Because Geoscape data is national in coverage and is regularly updated, the solution is far more cost effective to maintain and update compared to using customised LiDAR or aerial photography data for entire local government areas," said McCloskey.

Images courtesy PSMA



POWERING CITY DECISIONS

Sensing Value's 2D and 3D digital city models use both open source platforms and Esri ArcGIS Pro, together with CommunityViz. The models are powered with Geoscape and CyberCity 3D data, and other mobility data products.

"In addition to the great visuals that standard 3D techniques can deliver, Geoscape adds the ability to interrogate and analyse the 3D data on built form, land use and vegetation," said McCloskey.

For strategic land-use and urban planners, the digital models combine datasets and leading-edge analytics to support area activation and revitalisation, including:

- mobility patterns showing how people (residents, students, workers or visitors) use each part of the city at different times of the day and week
- areas of vibrancy and economic potential
- energy consumption by building and city block
- solar energy generation potential of current and projected built forms
- transport patterns and projections
- understanding equity of access to community infrastructure
- land-use optimisation (agricultural, residential, industrial or commercial) aligned to population growth forecasts
- environmental impacts of land-use planning decisions.

The rich data streams on the physical topography, built environment and patterns of usage have enabled new approaches to managing significant social and community challenges.

"This fast-track approach is being activated through a collaborative ecosystem involving a range of universities, leading industry players and all tiers of government," said McCloskey. "The knowledge being generated from the Greater Launceston Transformation Project, the first of its kind in Australia, is set to become a model and showcase for investments in smart cities and smart suburbs across Australasia."

DEVELOPING A CREATIVE COMMUNITY

David O'Loughlin, Mayor, City of Prospect*

THE CITY OF PROSPECT IS LEVERAGING ITS DIGITAL ADVANTAGES TO IMPROVE OPERATIONS, SERVICE DELIVERY AND THE VITALITY AND PROSPERITY OF THE COMMUNITY.

The City of Prospect is a smart and creative city, evidenced by the international Intelligent Community Forum awarding the council Top 21 Smart City status no less than five times. From a flatlined economy in the early 2000s, Prospect has become a leading example of how local government can drive reform and investment, and what a digital economy can do for local businesses and the community.

We were one of the first councils to recognise the importance of emerging technologies and the positive impact they could have on our community and its economy. This was driven by a desire to turn our lagging inner metropolitan economy into one that is a vibrant, flourishing and multidimensional, where businesses

can thrive and locals can access more services closer to home.

Our journey started with data. We analysed our local economic profile and, despite our above-average performance and spending capacity in other areas, realised we had low levels of broadband use. Seeking to turn this weakness into a strength, we developed a comprehensive Digital Economy Strategy in 2008 — which received national attention, an award from Economic Development Australia and widespread imitation.

At its core, our focus on adopting new technologies was, and continues to be, driven by our desire to dramatically improve the depth and breadth of our local economy and the investment and jobs that can flow from it.

We were successful in securing Stage 2 nbn rollout status because our Digital Economy Strategy focused not only on technology and infrastructure but on community engagement and training.

Our Digital Hub has delivered over 10,000 local training outcomes, making our 21,000-strong community one of the most digital savvy in the country. Council's Network Prospect initiative has attracted hundreds of businesses and regularly delivers business-specific training and networking opportunities focused on digital engagement, profile optimisation, online marketing and social media engagement. These training opportunities are embedded within a general program of business assistance and traditional business development advice, making digital the new normal in Prospect.

Now in its third generation, our economic strategy formalises the emerging Prospect Road Innovation Precinct and seeks to create an integrated approach between talent, skill, training, support, built form and digital capacity to stimulate innovation and creativity within the very desirable Village Heart precinct on Prospect Road.

At the centre of the cafe- and restaurant-rich precinct we have two co-working spaces — Little City Co-working Studio and Business Hub Serviced Offices. Both offer a range of accommodation types and tenures, and have stimulated dozens of start-ups and business elevations from out of the home and into the main street.

City of Prospect has collaborated with multiple local businesses and property owners to provide South Australia's and one of Australia's fastest free Wi-Fi networks, with 50 Mbps regularly available for uploads and downloads.

Research is showing that free Wi-Fi helps to boost local economies, with increased visitation by residents, shoppers, professionals and tourists to local businesses. Our broader objective is to encourage professionals and home-based businesses to treat the precinct as their 'open air, coffee on tap' workplace, facilitating the semi-formal interactions and networking opportunities so vital to the success of the Australian economy, and to growing businesses in particular.

Flowing from Prospect's Stage 2 nbn rollout status, we are the only council area in the state with fibre available to every premise as of right now. This FTTP status has proved very attractive and is one of the reasons businesses and families are buying into the area — and when they do they stay, with house sales volumes falling markedly in recent years as locals choose to stay and enjoy the benefits.

City of Prospect Mayor, David O'Loughlin.

Investor interest has also increased markedly and, in conjunction with our corridor zoning changes, has resulted in nearly 750 new apartments being constructed, under construction or approved for construction since 2014. The total value of dwellings under development exceeds $200 million.

Interest in the Village Heart precinct continues to surge, with record sale prices, multilevel development approvals and record off-the-plan apartment sales. The most recent apartment building to come to market sold out in less than three months, further validation of the market's confidence in our smart city credentials and high local amenity.

Artist's impression of the interior of the new Community Hub Library and Innovation Centre.

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Our Digital Hub has delivered over 10,000 local training outcomes, making our 21,000-strong community one of the most digital savvy in the country.

Artist's impression of City of Prospect's Community Hub Library and Innovation Centre.

DIGITAL ENGAGEMENT

Prospect's digital advantage has recently been enhanced by gaining access to the state government's GigCity Adelaide program, which offers 1 Gbps internet speeds to innovative business precincts and the ability to transfer files to other businesses on the GigCity network at up to 10 Gbps through the government's SABRENet fibre links. These speeds are 10 and 100 times faster than fibre-to-the-premises nbn technology, respectively, creating a draw for data-reliant businesses across the country, some of which are already attracted to Prospect's offering.

Our focus on digital advantage has moved beyond access to fibre and now embraces competitive tensions to stimulate an active, high-speed, high-capacity marketplace for local businesses. Prospect is now a hyperconnected city with fibre offerings from nbn and TPG, as well as the through the GigCity program. All the fibre is already in the ground, providing local businesses and investors with unparalleled and highly competitive access to a range of Australia's fastest data services.

Council is also developing a new $19 million Community Hub Library and Innovation Centre (CLIC), with completion scheduled for September 2019. The new library, art gallery and improved heritage Town Hall will include a number of meeting rooms, some with 24/7 access, to facilitate community activation and business training, and will be another key attractor to the precinct.

Our strong digital business engagement program has recently focused on marketing our core Prospect Road precinct. The Prospect Road Discover More campaign is primarily being delivered across digital platforms and features a suite of targeted videos custom-created for social media channels.

We are now using our public Wi-Fi network to monitor the people traffic on Prospect Road. Prospect Fast Wi-Fi system has seen an increase of over 100% in the number of devices (pedestrian traffic) travelling through the Village Heart this year to date. Tracking this data confirms the impact of council's investment in the public realm and digital platforms.

We are also getting international credit for our work. In response to the City of Prospect's commitment to using technology to improve our community, the US-based Intelligent Communities Forum have not only bestowed multiple awards on us, they recently invited us to join their international board. Council is gaining recognition well beyond its boundaries as a creative council, and continues to innovate and collaborate with business, government and education sectors in a range of fields, with our partnership with the University of Adelaide to form SA's Smart City Consortium just one example.

Our external focus is unrelenting but we haven't ignored our own systems, with many improvements over the years. We recently received Commonwealth partnership funding to develop an application for monitoring use and maintenance of our local parks network. With four council partners, we will use the tool to track visitation, rainfall, plant growth, waste management, lighting controls and many other aspects of park management. In time the tool will develop into an open access platform for vendors to make decisions regarding temporary food and beverage provision and for event planners to advertise their expertise — creating an income stream for participating councils.

We believe that we will continue to grow and prosper; we will continue to leverage our digital advantage to both improve council's operations and service delivery and, more importantly, to improve the health, vitality and prosperity of our local community.

**David O'Loughlin was elected to local government in 2003 as a councillor and has been the Mayor of City of Prospect since 2006. He has also served as a state board member and association president of, and now serves as National President of, the Australian Local Government Association.*

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Compliance with PSS PP v3.0 ensures peripheral sharing capabilities provide maximum user data security when switching port focus, preventing unauthorised data flows or leakage between connected sources. Key protections include isolation and unidirectional data flow, restricted peripheral connectivity and filtering, user data protection, configurable device filtering and management, and tamper-proof design, keeping sensitive assets isolated and providing advanced security and a user-friendly design for instantly secure deployment.

The switches support different customer demands, with options including 2-, 4- and 8-port models, and video interfaces including DisplayPort, HDMI and DVI. They provide the flexibility to connect single or dual displays, providing up to 4K UHD (3840 × 2160 at 30 Hz) video quality.

The product offers secure port switching, with port selection via push-button only to enhance security; data channel isolation to prevent data leakage between connected computers; restricted USB connectivity with non-authorised human interface devices or non-predefined CAC devices rejected/ignored; user data protection with keyboard/mouse data buffer automatically purged when switching KVM port focus; configurable device filtering to allow/reject whitelisted/blacklisted devices via admin logon function or Windows-based application; administrator configuration and event log functions that enables authorised administrators to audit critical KVM operation logs and perform switch configuration; and the switch becomes inoperable when physical tampering is detected.

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The Epson WorkForce Pro WF-C5290 and WF-C5790 inkjet printers are suitable for small workgroups that require hassle-free, low-maintenance and productivity-boosting printing.

The devices have been specifically designed to suit a range of vertical markets from schools to small business, to retail, motor vehicle, fitness and healthcare providers.

According to the company, the printers are low-power units that use fewer supplies and 96% less energy than comparable models, reducing environmental impact without compromising on output.

Users can print up to 10,000 pages in monochrome or 5000 in colour without needing to change supplies. The printers offer a 0 s warm-up time and a fast first page out time (FPOT) of less than 7 s from sleep mode, meaning a printout is usually delivered by the time a user has got up from their workstation to collect it.

The 4800 x 1200 dpi colour print quality offers the ability to print banners up to almost 4′ long.

The printers also provide a platform to keep a mobile workforce on the move by supporting Wi-Fi, Wi-Fi-Direct, Google Cloud Print and Apple AirPrint, as well as the Epson-connect app.

The company's Open Platform architecture, and its work with independent software vendors (ISVs), adds extra value by supporting cost recovery and follow-me solutions such as PaperCut print management software.

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