



## **The new digital revenue agency:**

An Australian perspective

September 2025

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01.

# Executive summary

“Public revenue agencies are already adopting nimble and adaptive mindsets that making digital investments engagement to recover debt efficiently and ethically allowing for re-investment into core government services.”

**Allan Mills**

Partner, Technology & Transformation, Deloitte

Revenue agencies around the world are at a pivotal juncture. As outlined in a recent Deloitte report, *The new digital revenue agency: seven keys to streamlined tax administration*<sup>1</sup>, the transformative power of digital platforms and artificial intelligence is upending traditional methods of tax administration.

External forces are creating massive pressure for change. Demand for new services is growing. Technology is rapidly shifting. Cyber threats are increasing. At the same time, new forms of currency and business practices are driving transformation. Amid this sea of change, revenue agencies must deliver higher levels of service as they re-engineer operations to address the tax debt-collection gap, reduce risks for taxpayers and maintain public trust.

This report is aimed at senior business, data and technology leaders across revenue agencies, as well as Treasury officials assessing the cost benefits of transformational investments. It is also relevant for public sector leaders facing similar challenges. This includes organisations that are required to issue and collect debt other than tax debt (e.g. environmental protection agencies, local governments and state-owned corporations).

Building on other Deloitte reports<sup>2</sup>, this commentary provides an Australian point of view as governments and revenue offices across the nation embark on major technology upgrades and modernisation strategies aimed at meeting myriad challenges.

To that end, this report outlines four drivers of reform for revenue agencies:



Rising levels of government debt



Growing customer expectations



Transitioning from legacy technology



Demands for productivity gains

Responding to these challenges, three areas of opportunity are explored, by posing the questions:



What if technology was scalable and flexible so that revenue agencies could quickly adapt to changing pressures?



What if data was used as a strategic asset so that limited resources were effectively and efficiently used?



What if compliance was easier and elevated the user experience so that the likelihood of debts being created in the first place was reduced?



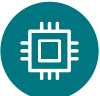
Approaches to transitioning from legacy technology

Many existing revenue technology platforms are inherently complex and nearing the end of their useful life. A good starting point for planning improvements is to establish a shared understanding of the business and technology capabilities needed in both current and future systems. We have prepared a reference architecture (see [page 21](#))

to support revenue agencies as they embark on their modernisation journey. It aims to provide a useful framework to support interstate and global dialogue and lessons learned.

Successfully navigating this journey involves making the right decisions about where to invest, *how* to invest and *when* to invest. Modernising legacy systems is not a one-size-fits-all dash to the finish line. In our view, revenue system modernisation can be delivered through four technology plays.

The four technology plays

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|  <div>Rebuild</div>                                                                                                                                                                                                                                                                                                                  |  <div>Maintain and contain</div>                                                                                                                                                                                                                                                                                                                           |  <div>Modernise</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  <div>Replace</div>                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>This approach is about rebuilding functions on a modern cloud platform-as-a-service (PaaS); gaining efficiency by not managing the underlying platform resources. This play should be considered if no cost-effective alternatives exist. It could also be relevant for high-value functions that have limited options in the software market, or when there is ready access to strong development capability.</p> | <p>This is about enabling legacy systems to operate alongside modern platforms while also increasing reliability and security. It usually involves putting a modernised cloud computing wrapper around what is still at its core a legacy application. Such an approach is an interim solution before more significant modernisation occurs. It is also appropriate for functions that are stable or may be facing future obsolescence.</p> | <p>This approach involves converting the legacy code to a modern code base. It will deliver reduced maintenance costs while also enabling more rapid enhancements and supporting faster, less complex integrations with other modern systems. Reliability and security should also be significantly improved. This approach is most appropriate for core, high-value components when there are limited practical options in the market from software vendors and/or where the extent of business change associated with replacement is considered too great a risk.</p> | <p>A replacement approach is valid if the market has established cloud software-as-a-service (SaaS) vendors that can support current needs and the investment road map is aligned to the future needs of the regulator. This approach is appropriate for core and high-value components and may deliver a relatively short return on investment when modernisation or rebuild costs are significant. Managing change, however, is significant and often underestimated in large system implementations.</p> |

See [page 23](#) for further details.

Next steps to modernise revenue regulatory systems

([Section 4](#) of this report examines these suggestions in more detail)

- 1

**Create a reference architecture for your revenue systems**

This architecture should align with future needs – leverage the indicative digital revenue agency reference architecture where appropriate. Such an architecture is a key foundation for strategy development and transformation program design to achieve policy and business objectives. With a common reference architecture in place, the big, complicated challenge is broken into bite-sized chunks that can support strategic analysis and decision-making.
- 2

**Consider the three future opportunities – technology, data and customer experience**

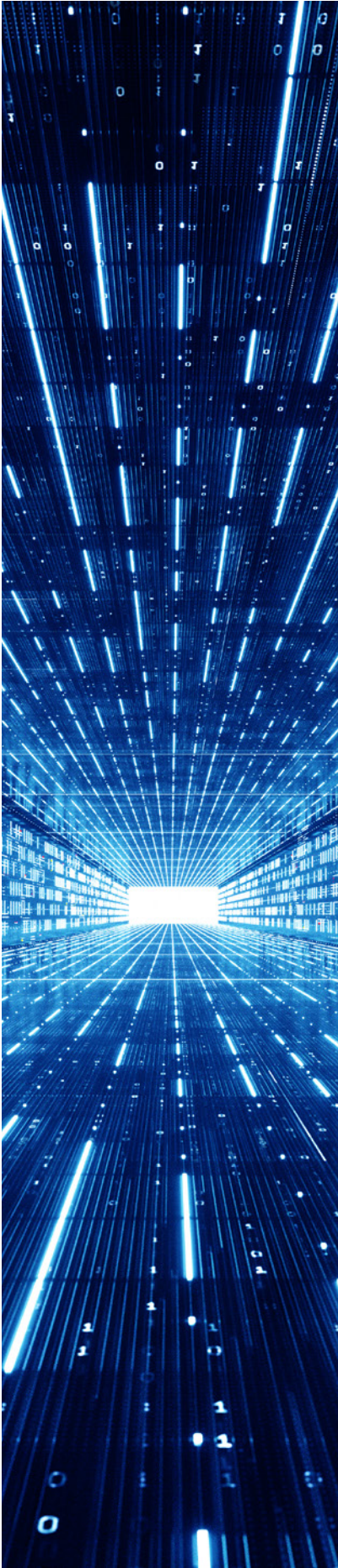
This is the chance to weigh up the challenges, developments and opportunities facing revenue agencies and related government organisations involved in revenue and debt collection. It provides an opportunity to assess how the components of the reference architecture will be affected. This will result in a strategic view of where and how future developments will play out that can be linked directly to business capabilities and technology components.
- 3

**Determine which plays make sense, where, and when**

With an understanding of the impact of future change (against the indicative reference architecture), it is time to systematically review the transformation choices considering the non-technology factors, including available workforce skills, the agency’s change capacity and culture. Consider each of the four plays against each of the components of the reference architecture. This will build a mosaic view of how to transform the technology.
- 4

**Construct a road map**

The revenue agency technology landscape is complex and multiple plays will occur at any point of the transformation. A road map can help coordinate how and when components are replaced, as well as gauging the impact on processes and value. Given the longer-term planning needed to support agency transformation, this should be accomplished by considering earlier phases that emphasise risk, cost and urgency, and later phases that focus on value, opportunity and transformation.





02.

# The case for change – debt management in Australia

They are crucial to Australia’s success, but revenue agencies are under stress.

Revenue agencies make a vital contribution to the economic and social wellbeing of Australia by collecting revenue to fund public expenditure at all levels of government.

## Fundamentally, this is achieved through three core functions:

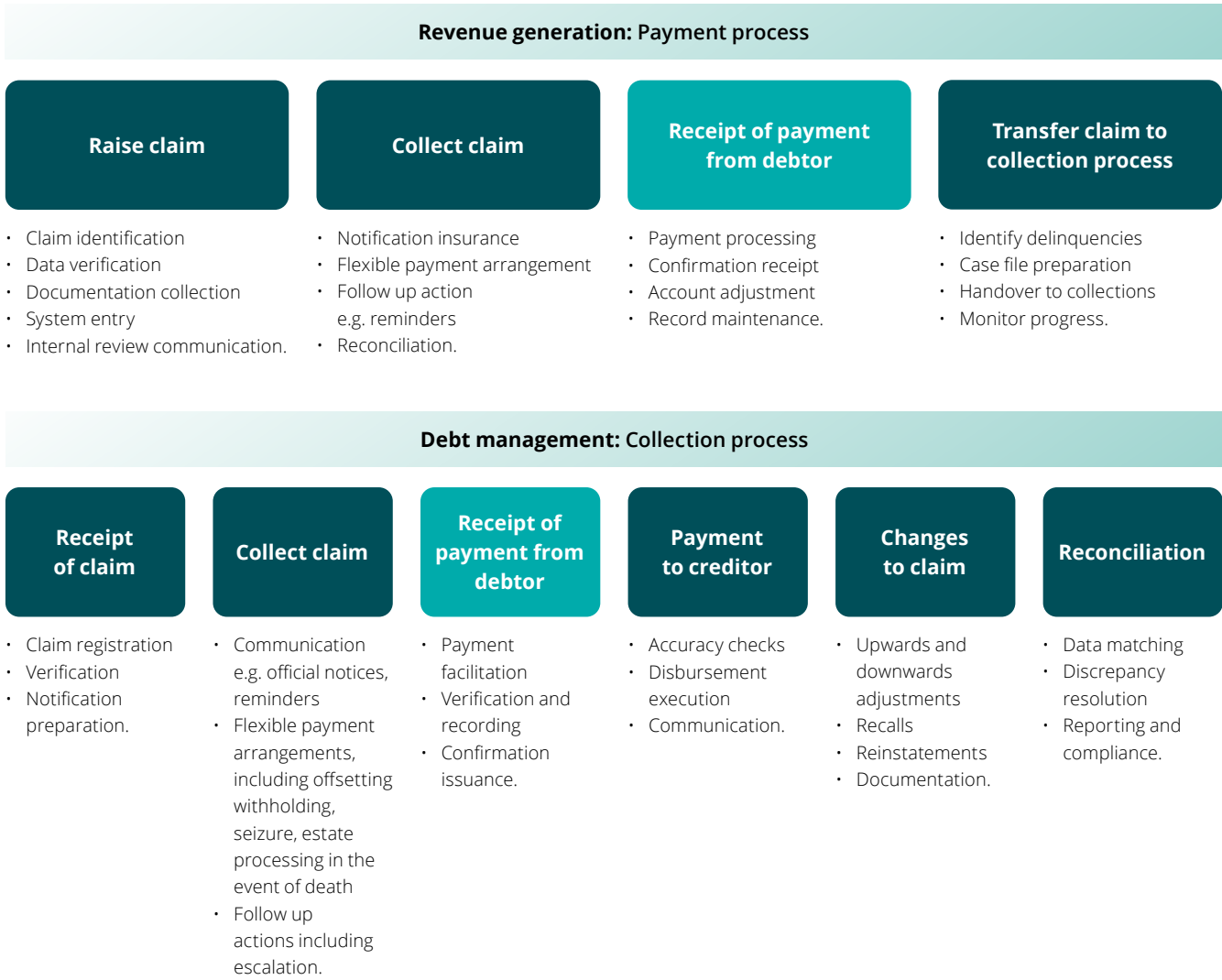
- Nurturing compliance with basic taxpayer obligations (e.g. registration, filing, reporting and payment) across all tax and product types
- Tackling non-compliance and protecting the integrity of the tax system
- Implementing government economic and social policies (e.g. grants or pandemic relief) through the tax system.

The ability to process payments efficiently and effectively – and collect debt – is clearly central to revenue agencies’

operating models. Payment-processing and debt-collection functions tend to operate in relative isolation because of historical processes. There are also constraints imposed by legacy architecture and technology that were never intended to meet today’s needs and expectations.

For Australian agencies, there is a tendency for payment processing to take place as part of the core tax administration processes. This involves reminders and ‘soft’ collection steps before remaining arrears are added to the debt books and passed to the collection function. The process is outlined as in Figure 1 below.

Figure 1. Typical core payment and collection process





The gap between processes, functions and systems can give rise to a range of issues. Most importantly, it limits the effective and efficient end-to-end management of debt from when claims arise to when they are paid or added to the debt book.

Revenue agencies can spend considerable resources on activities (e.g. audits of phoenix businesses, or long-gone fraudsters) giving rise to claims that are never paid. This can divert resources from potentially more productive activities. The ability to identify higher-risk debt and intervene early is critical, as the likelihood of recovery dramatically decreases over time, as illustrated by Figure 2.

Figure 2. Uncollectable debt formula



As such, it is ideal to avoid the debt arising in the first place – for example, by identifying and tackling compliance risks before they give rise to refunds or reduced tax bills – and to make sure that any debt is offset against payouts.

Revenue agencies can position themselves to enhance the administration of the collection of public debt by bringing together the processes illustrated in Figure 1. For example, in Denmark and Norway, governance reforms (in 2005 and 2019, respectively) assisted the respective agencies with their goal of better leveraging technology and integrating with core tax administration processes through initiatives such as withholding debt from salaried incomes as part of the Pay As You Go (PAYG) process when payment ability exists, but no payment plan is in place.

Drivers of change

Revenue agencies are under more pressure than ever, especially with governments running overall budget deficits, to reduce the growing inventory of debt owed at state and federal levels.

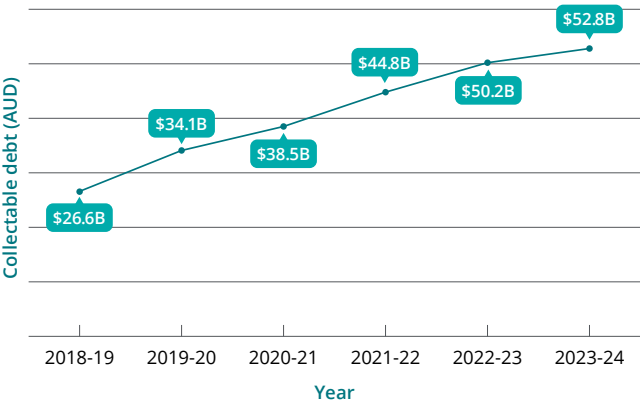
This task is becoming harder for agencies as they grapple with ongoing internal challenges driven by growing debt levels, evolving customer expectations, legacy technology and a constant drive for productivity gains.



Driver 1  
Rising levels of government debt

Collectable debt levels are increasing across Australia. One contributing factor was the response to the COVID-19 pandemic when agencies focused on providing economic stimulus. They gave more leeway to smaller businesses during those economically uncertain times and the subsequent period of rising inflation and higher interest rates. For instance, at a federal level, from 2019-24 the Australian Taxation Office (ATO) reported a near doubling of collectable debt, as shown in Figure 3 below.<sup>3</sup> Our analysis suggests that at a federal level collectable debt is unlikely to decrease in the next two to four years without significant intervention.

Figure 3. Increasing collectable debt reported by the ATO (annual reports 2019-24)



Further anecdotal evidence suggests the cost-of-living crisis has also made it more challenging, with individuals struggling to pay fines.

This is consistent with wider global trends relating to businesses. For instance, analysis of International Survey on Revenue Administration (ISORA) arrears data<sup>4</sup> shows that the largest upwards trend relates to arrears attributable to value-added tax (i.e. GST) and tax withheld by employers from employees (i.e. PAYG). A further high proportion of arrears is classified as non-collectable.

This trend of rising debt levels is in large part attributable to the unprecedented circumstances of the pandemic, which led many governments across the world to respond with deferral of payments<sup>5</sup> and more lenient collection efforts – rendering

a growing proportion of the debt uncollectable. While this suggests that much of the increase is due to circumstances outside of the control of revenue agencies, it still puts pressure on resources required to meet key objectives. The scale of the problem, its complexity and the national importance of finding solutions warrants a whole-of-government integrated response.



Driver 2  
Growing customer expectations

Across the varying taxpayer groups, members of which may later turn into 'debtors' (including individuals, small and medium enterprises, and large corporations) expectations are evolving as digital experiences improve across industries. These enhanced digital expectations are putting pressure on government leaders to forge the capacity and vision to deliver contemporary, if not leading, experiences enabled by data.

Taxpayers no longer have the patience for confusing forms, slow processing, the need to provide repetitive information, or long waits for service. They also want to be confident that they have been treated fairly, meaning that taxes should be more transparent and easily understood.

A fair and transparent tax system supports voluntary taxpayer compliance because it builds trust and reduces resistance. Transparency ensures that taxpayers understand how

their taxes are calculated, know where their money goes and see consistent application of tax laws.

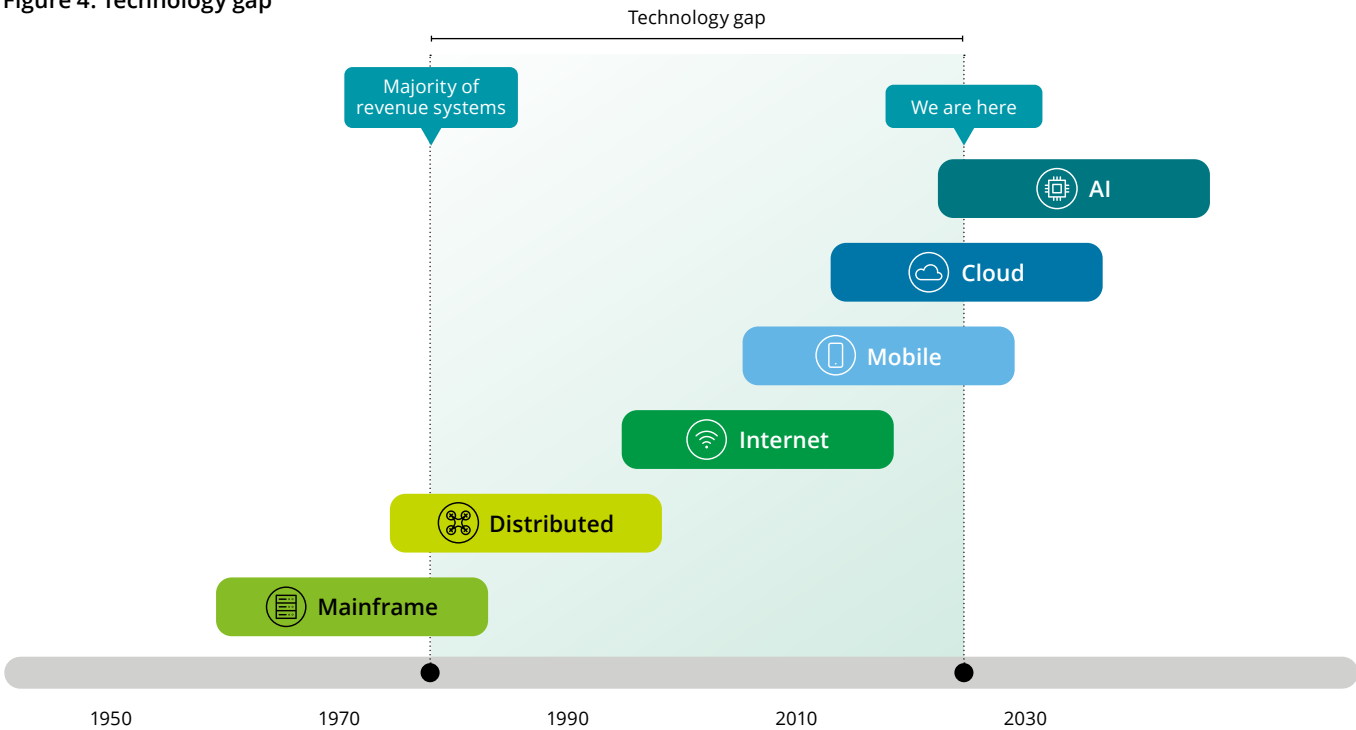
Research indicates that there is a link between customer satisfaction with government interactions and trust in government, as well as compliance with government processes. A 2022 survey by the Australian Public Service Commission found that 91% of people who trusted government services were also satisfied with them.<sup>6</sup>



Driver 3  
Transitioning from legacy technology

Currently, most revenue agencies across Australia operate using legacy IT systems. Most of these systems preceded the internet and mobile and cloud advances. Over time, the systems have been adapted and new components built in to keep up with changing debt-management needs. However, the core foundations do not incorporate key technology developments, including associated flexibility functions, that have occurred since the 2000s. This is creating substantial risks and challenges for agencies as they strive to meet existing regulatory requirements and pursue future ambitions.

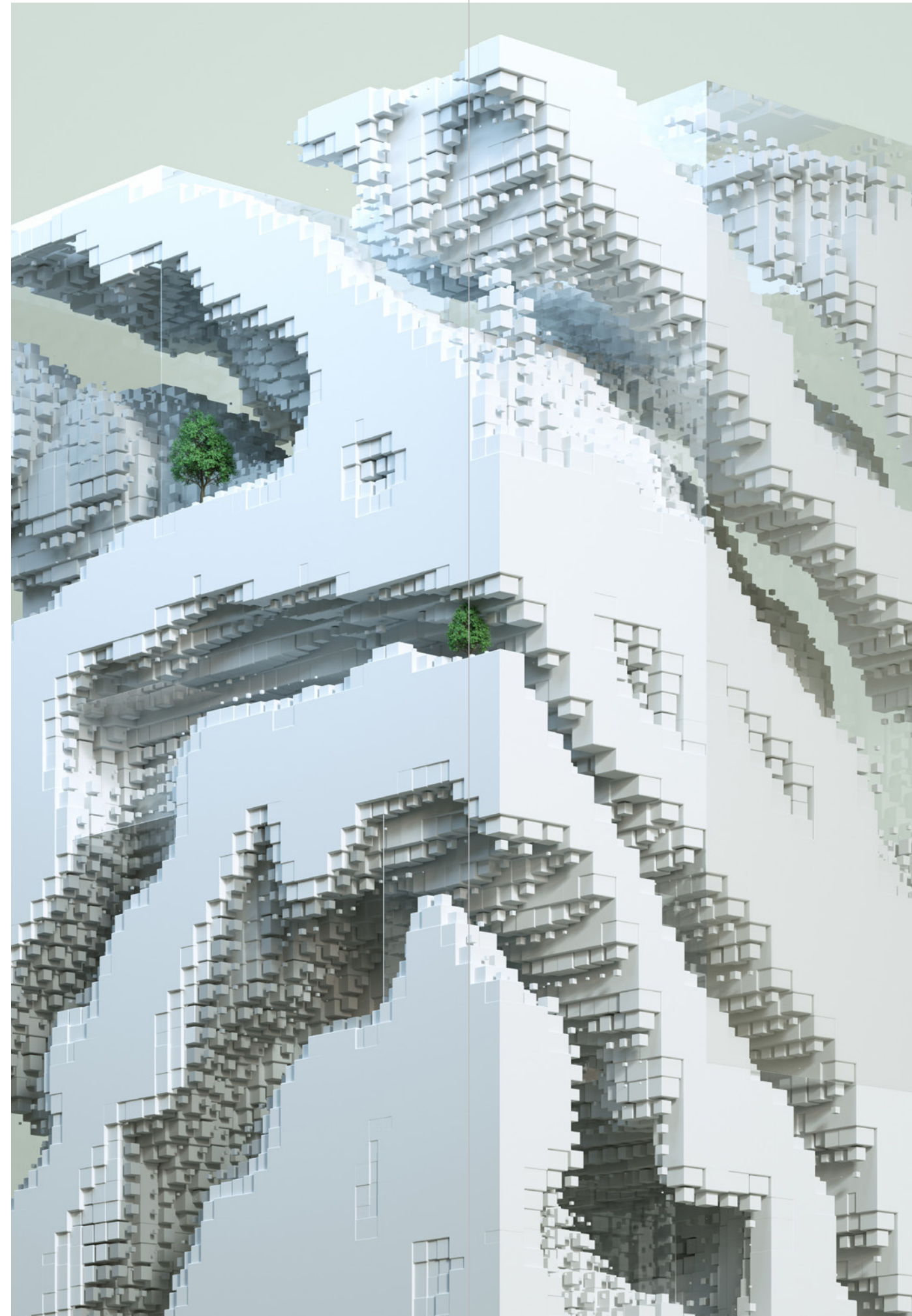
Figure 4. Technology gap





#### Consequences from these legacy systems include:

- **Complexity** – core debt-management systems based on monolithic architectures constrain revenue agencies due to complexity and rigidity, limited flexibility and limited ability to integrate with emerging technologies. This results in higher costs and risks.<sup>7</sup>
- **Interoperability challenges** – dated and fragmented debt-management platforms can limit the ability of agencies to enable integrated decision-making, workflows and digital experiences for customers.
- **Fragmented data** – inconsistent data formats hinder revenue agencies' ability to perform effective analytics and develop data fluency, making it harder to achieve efficiency gains. This includes delays in identifying trends and operational insights that could be unlocked through advanced analytics and AI.<sup>7</sup> This fragmentation, ed with duplication of effort across ecosystem players and high data extraction costs, impedes insights and decision-making. Extended use of advanced analytics and high-quality data is required to improve the effectiveness of debt-management strategies.
- **Cloud computing challenges** – outdated infrastructure and rigid transitions hinder cloud benefits realisation and can lead to higher costs and suboptimal performance, relative to effective cloud utilisation.
- **Security overheads** – the spaghetti ecosystem of many systems alongside varying levels of documentation, scarce skill-sets and high costs increases the challenge of maintaining adequate security levels and adapting to new requirements.



#### Driver 4

#### Demands for productivity gains

Like all public sector organisations, revenue agencies are looking for productivity gains in line with the Productivity Commission's focus on:

- Technical efficiency that requires goods and services to be produced at the lowest possible cost
- Allocative efficiency that requires the production of the set of goods and services that consumers value most, from a given set of resources
- Dynamic efficiency, which means that over time consumers are offered new and better products and existing products at lower cost.<sup>8</sup>

Agencies are being asked to drive innovation and streamline operations within constrained or shrinking budgets, while responding to rising demands and increasing complexity. That includes managing an increasingly complex tax system, diverse taxpayer scenarios and higher volumes of transactions.

On a positive note, advances in AI, including generative AI, provide an opportunity for a decade or more of deep productivity improvements in government, helping to overcome some of the associated challenges being faced by revenue agencies<sup>9</sup>, including approaches to modernise legacy technology.<sup>10</sup> The use of these tools must actively address and clearly communicate how standards relating to ethics, privacy, and automation are applied – including those governing the garnishing of funds from debtors. Agencies continue to be cognisant of public perception around anything related to data, automation and governments seeking to recoup funds from citizens in the aftermath of the Robodebt Royal Commission report findings in 2023.<sup>11</sup>



03.

## What if the future looked like...

When contemplating the necessary investments required for revenue agencies to navigate their way through key challenges, it is important to consider the target state.

Enabling agencies to be 'future fit' requires adaptable technology, sound data practices that treat data as a true asset, and the responsible use of AI to unlock a simple, connected experience for agencies, customers and businesses alike.

In this section, three potential opportunities are proposed to help bring to life what a target state could look like if Agencies:

- Were supported by scalable and flexible so that revenue agencies could quickly adapt to changing pressures
- Used data as a strategic asset so that limited resources were effectively and efficiently utilised
- Made compliance easier and elevated experience so that the likelihood of debts being created in the first place is reduced.



### Opportunity 1

#### Scalable and flexible technology backbone

*What if you had agile technology that was extendable and flexible so that you could quickly adapt to a changing regulatory environment, emerging threats and taxpayer needs?*

Being 'digital to the core' would enable revenue agencies to capture the benefits envisioned by the OECD in its report, Tax Administration 3.0: The Digital Transformation of Tax Administration.<sup>12</sup> Such benefits include enhanced compliance, risk management and fraud detection through whole-of-government data sharing.

Moreover, this approach would help agencies support broader social and economic goals by making it easier and cheaper for businesses and individuals to comply with tax rules. For example, integrating tax collection at the point of sale can ensure compliance automatically. It also provides greater certainty about tax obligations, helping with financial planning by removing delays in tax collection.

Being digital to the core means more than just using modern systems – it involves new digital tools and a different approach to tax administration, where compliance is built in by default to provide a level of seamless service that was not possible before.

For instance:

- **Modern core capabilities** – featuring modular architecture combining SaaS, PaaS and, where necessary, custom solutions across customer engagement, data integration and core processing layers. Cloud-native infrastructure ensures scalability, security and cost efficiency. Business rules that are visible and easy to change can complement ranging capabilities such as analytics, automation and AI, and privacy by design.
- **New model of tax administration** – allowing agencies to share data with grant-making agencies to ensure payments are not made to citizens with outstanding debts to other parts of government. Imagine, too, if eligibility for regulated roles, such as a company director registered with ASIC, was contingent on full payment of government charges, including vehicle registration and speeding fines.

- **New digital capabilities** – bringing to life the point above would rely on capabilities such as Digital ID and verifiable credentials,<sup>13</sup> digital payments, enhanced data-exchange systems, or enhanced inter-government integration (APIs), increasingly referred to as digital public infrastructure (DPI).<sup>14,15</sup>

Capitalising on these opportunities would give agencies the capacity to respond to emerging challenges with agility,<sup>16</sup> including:

- New mandates requiring agencies to dispense crisis relief (as seen during COVID-19). For instance, India through its Aadhaar biometric ID system enabled direct deposits of US\$3.9 billion to 318 million beneficiaries.<sup>17</sup>
- Large-scale fraud, such as the unsophisticated yet fast-moving GST refund fraud involving losses estimated at AUD\$2 billion,<sup>18</sup> or more sophisticated cyber threats leveraging generative AI or state-backed actors.
- Changing customer expectations as they increasingly desire fast digital processing.



In summary, being digital to the core enables revenue agencies to act quickly, catch problems early and deliver the services customers expect.

Section 3 of this report – How to get there – sets out a pathway for agencies seeking to shift from rigid legacy technology to flexible modern technology as they try to meet future challenges and opportunities head on.

 **Opportunity 2**  
**Data as a trusted strategic asset**

*What if you used data as a strategic asset to streamline revenue practices?*

Using data as a strategic asset means thinking about opportunities to deliver enhanced policy outcomes at lower cost and risk, as well as ensuring that strong and compliant data foundations are in place. The aim is for data to be reliable and secure while also being used to build, not diminish, community trust. Borrowing from the words of ATO Commissioner Jeremy Hirschorn, we should treat “data as uranium”<sup>19</sup> – meaning that it can be hugely powerful but also dangerous if not handled with care and strictly in accordance with the law.

When used strategically, data can reshape how revenue agencies deliver services, enforce compliance and inform decision-making. Rather than relying on retrospective audits or siloed systems, agencies can shift to proactive, intelligence-led models that reduce friction and cost. For example, the ATO’s use of Single Touch Payroll and real-time third-party data has enabled the automation of pre-filled tax returns, which improves accuracy and the client experience.

State-based revenue agencies have similar opportunities to integrate data from land titles, licensing, business activities and vehicle registrations to develop a richer view of citizens, enabling more targeted interventions, streamlined services and more accurate forecasting. Ultimately, this results in better policy execution, lower operational costs and reduced compliance risks through smarter early-detection and prevention strategies.

However, the opportunity must be built on a strong foundation of trust, compliance and security. Public confidence in how governments handle personal data is critical. Agencies should invest in robust data-governance frameworks, enforce strict access controls and adopt ethical data-use policies that comply with legislation and community expectations. This includes ensuring that data is not only accurate and timely, but also used transparently and proportionately. Embedding privacy-by-design, maintaining secure infrastructure and demonstrating clear public benefit from data use are essential to avoid reputational risk and build enduring trust. When these foundations are in place, data becomes a trusted enabler of better service, stronger compliance and more responsive public finance systems.

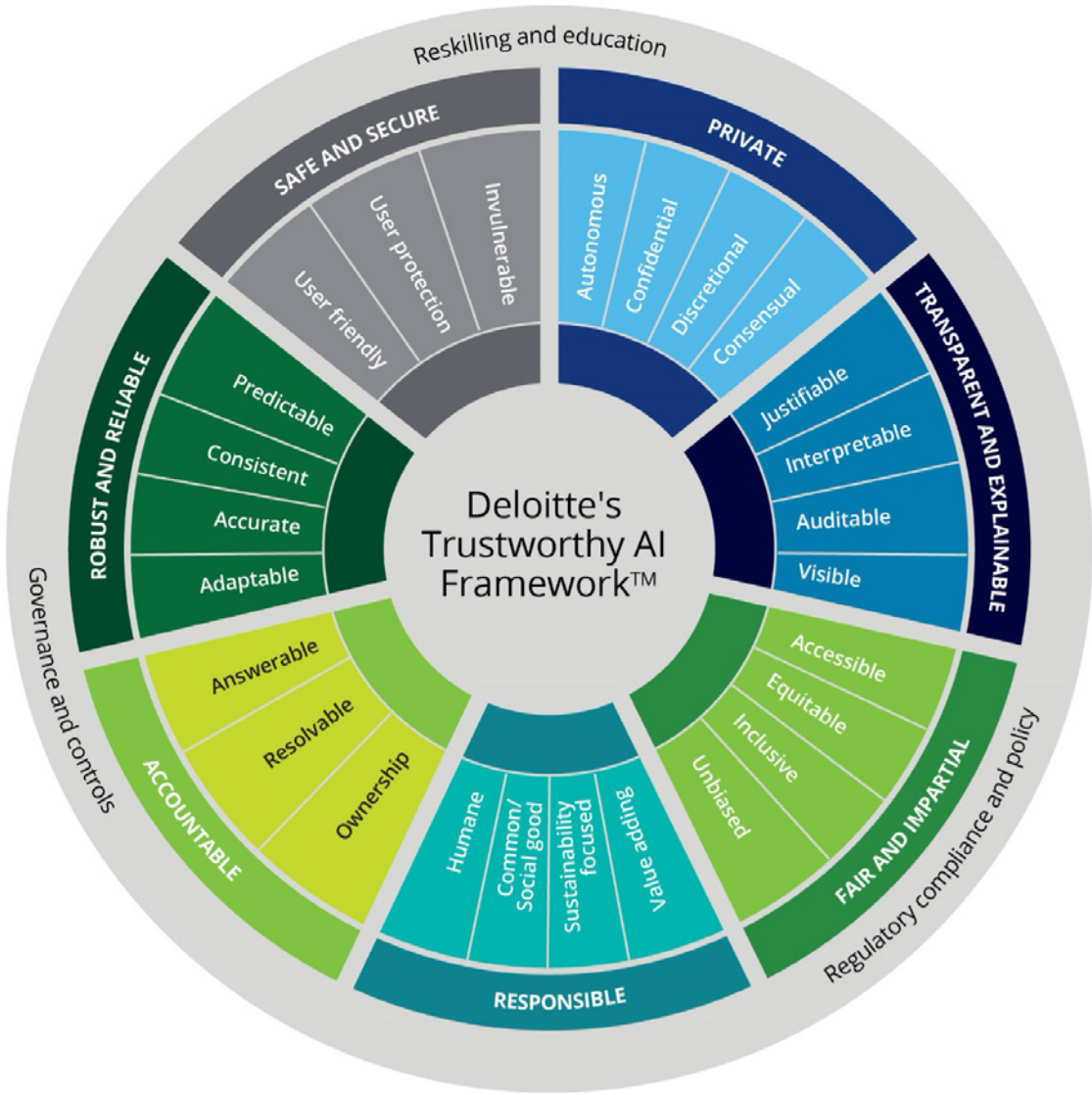
As revenue agencies collect exponentially more data, this information can serve as the ‘fuel’ for AI, enabling a comprehensive view of each citizen and supporting better compliance practices –such as predicting the likelihood of debt, assessing repayment capacity and identifying the most effective communication channels for individuals and businesses. The two case studies below offer two real-world applications of this.

Critically, as agencies start the journey to embed AI into their operations and citizen engagement – as is increasingly occurring in the commercial sector – the focus must stay on its ethical and legal use. Getting this right and proactively demonstrating strong governance controls will help build social licence.

Recent Deloitte analysis identifies key dividends from good AI governance, including greater trust in outputs from AI solutions, higher usage, improved reputation among customers and greater realisation of productivity benefits.<sup>20</sup> This is supported by findings that Australians expect government and public sector agencies to be ‘exemplars’ in safe and responsible use of AI.<sup>21</sup>

As shown in Figure 5 below, Deloitte has developed a Trustworthy AI Framework for leaders to consider. It outlines seven key elements that are necessary to build trust in AI solutions – 1) transparent and explainable, 2) fair and impartial, 3) robust and reliable, 4) respectful of privacy, 5) safe and secure, 6) responsible, and 7) accountable.

Figure 5. Deloitte’s Trustworthy AI Framework





#### Case study 1: National Tax Authority of Japan – AI-driven predictive models enhance tax-collection efforts

To improve tax compliance and revenue collection, the National Tax Authority (NTA) of Japan has been integrating AI and predictive models.

In 2023, the NTA developed predictive models to identify high-risk taxpayers by analysing various data sources to detect inconsistencies and trends. Doing so enables the NTA to focus on areas with higher compliance risks, thus improving the effectiveness of tax examinations and collection efforts.<sup>22</sup>

The NTA is also using AI to estimate the propensity of taxpayers to respond positively to phone calls as part of payment reminders. The payment rate for calls to taxpayers on the AI-generated call list was 31%, a significant improvement on the 21% baseline. The NTA is planning to use AI to further improve the timing and messaging of payment reminders.<sup>23</sup>

#### Case study 2: French Tax Authority – using an AI-enabled algorithm to detect unregistered swimming pools

In 2022, the French Tax Authority implemented an AI-enabled algorithm to comb through publicly available satellite images to identify homes with unregistered swimming pools. Once employees validated these images, they could register the pools and collect the appropriate unpaid taxes. This generated more than €9 million in revenue during the test period alone, a figure that was forecast to grow to €40 million given full implementation in 2023.

The integration of AI into the French Tax Authority's workflow demonstrates how technology can augment human oversight, leading to more accurate debt-management efforts.<sup>24</sup>



#### Opportunity 3 Enhance experience

*What if elevating the taxpayer experience could reduce the likelihood of debts being created in the first place?*

Improving compliance starts with designing systems that are simple, reliable and responsive. When citizens and businesses find it easy to understand their obligations and complete tasks quickly, they are more likely to comply. This reduces the need for manual intervention, follow-up and enforcement – lowering the cost to serve.

System reliability also plays a critical role in public trust. In Australia, OECD research has found that day-to-day service reliability influences trust in public institutions more than in most other OECD countries.<sup>25</sup> This is because faster processing, timely reminders and responsive support signals competence and fairness, which in turn improves willingness to engage and comply.

The ideal future is not just ease, but seamlessness. The OECD's Tax Administration 3.0 vision sets out a model through which tax compliance happens passively as people go about their lives. One example already in practice is pre-filled income tax returns that draw on verified third-party data. These returns reduce errors, improve timeliness and minimise the burden on individuals – designing compliance into the system by default.

The same principle can be extended across other areas of government. Frictionless systems reduce confusion, prevent inadvertent non-compliance and allow resources to be redirected to those who need targeted support.

At an individual level, agencies can now form a holistic understanding of the people they serve by drawing on integrated datasets and advanced analytics. Just as the private sector uses customer segmentation to understand needs and behaviours, agencies can identify early signals of hardship or disengagement.

Imagine, for instance, a person who can be identified as having an unpaid vehicle registration (e.g., VicRoads); fines for public transport fare evasion (e.g., Fines Victoria) and pharmacy debts following a hospital stay. These separate indicators, viewed in isolation, may not trigger intervention. Taken together, however, they form a composite picture of financial stress. Using this insight in real-time, agencies could proactively offer a consolidated payment plan – preventing debt escalation, legal action and long-term disengagement.

Agencies can begin unlocking this opportunity with targeted and lower-cost strategies such as:

- Customer segmentation to tailor communications and encourage self-service via lower-cost digital channels
- Behavioural nudges to prompt action at key decision points, as demonstrated by the ATO's Nearest Neighbour Analysis case study below.

By aligning system design with real-world behaviour and data insight, agencies can improve outcomes for citizens, reduce costs and achieve greater policy effectiveness – all while building trust in government.

#### Case study 3: Australian Taxation Office – Nearest Neighbour Analysis

The Australian Taxation Office has developed a model called Nearest Neighbour Analysis (NNA) for detecting high-risk filing. The model has notably been deployed in the filing interface for individuals, making it easier to comply and leading to an improved experience.

The AI-powered outlier detection model alerts taxpayers whose reporting is different from what would be expected based on a comparison with peers. In 2020, for instance, almost 340,000 taxpayers (or about 7.5% of MyTax users) received a pop-up message prompting them to review an entry – leading to adjustments with an estimated revenue impact of about AUD\$37 million. This has contributed to a dramatic reduction in claimed deductions for work-related expenses, which has been identified as the main contributor to the tax gap.

The model demonstrates the potential of interventions leveraging data and behavioural insights to tackle compliance risks as they manifest themselves, rather than relying on downstream interventions that may result in the accumulation of tax debts.<sup>26</sup>



04.

## How to get there

### Modernisation of legacy revenue systems requires smart planning and frameworks

Revenue agencies were not 'born digital' and typically struggle with outdated legacy systems and a piecemeal approach to digitisation, but there is a way forward.

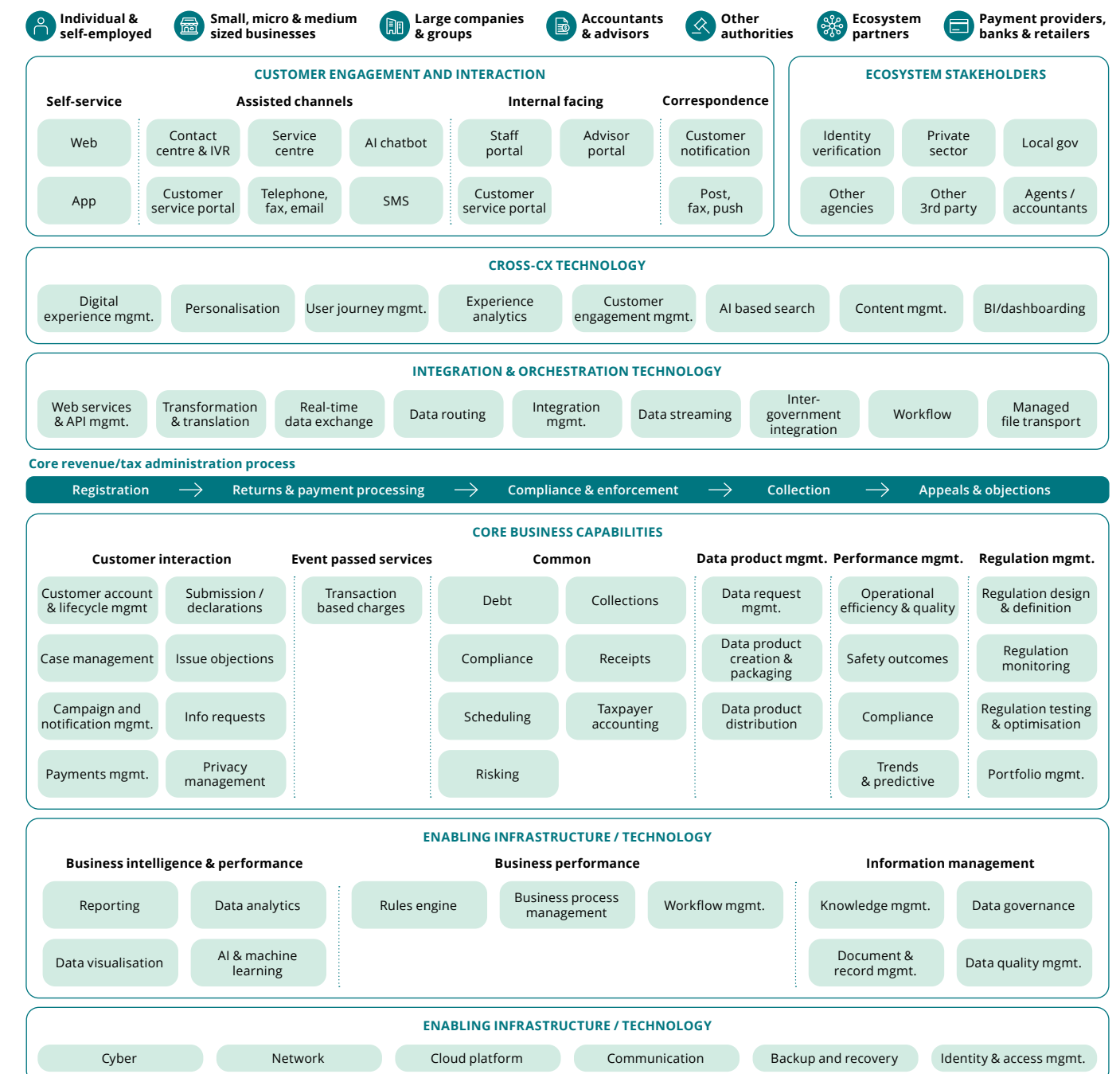
### Technology capabilities needed to underpin the digital revenue agency of the future

Addressing the challenges facing revenue agencies, while unlocking the available opportunities, requires modernisation of legacy revenue systems. However, because the path for modernisation is complex, having a bird's eye view of the

business functions and technology landscape is an essential tool for planning any future investment in the technology.

Based on our global experience in revenue agency and broader government transformations, we have prepared an Indicative Reference Architecture for revenue systems. As well as being a valuable tool to support transformation and modernisation strategies, it also acts as a common framework that can support inter-agency and cross-jurisdiction collaboration.

Figure 6. Indicative Reference Architecture for the digital revenue agency of the future





The Indicative Reference Architecture for the digital revenue agency of the future combines business functions and underlying technology to help strategic planning.

The core components of the framework are:

1. Customer engagement and interaction

The point of interaction is at the core of the revenue system, serving as the launchpad for user journeys. Built with human-centred design principles, this multi-channel hub fosters robust stakeholder engagement through website, social media and seamless integrations with other partners. From our global observations, many revenue platforms have transitioned to more modern software platforms in this space. Some of the key vendors include Adobe, Optimizely, Acquia, Sitecore and Bloomreach.

2. Integration and orchestration layer

The integration and orchestration layer is the ‘central nervous system’ of revenue systems. It operates as a high-performance data and process hub that efficiently processes massive data streams in real-time. This enables actionable insights using event-driven application programming interfaces (APIs) and intelligent reporting which, in turn, empowers data-driven decision-making and proactive issue resolution. The layer promotes seamless interoperability with internal and external stakeholders via bi-directional data exchange, which streamlines processes and improves communication.

Given the age and the organic growth of revenue systems, many environments lack a modern approach to integration and orchestration that works seamlessly across the system landscape. The obscure interfacing requirements of core legacy systems are often an impediment. These challenges can greatly affect the cost of maintaining and improving systems. Some of the leading vendors in this space include Informatica, Oracle, SAP, IBM, MuleSoft, Boomi and Workato, as well as the leading cloud-platform providers AWS, Azure and Google.<sup>27</sup>

3. Core business system layer

The business system layer is what is often thought of as ‘the system’, or, in some cases, ‘the mainframe’. This is the heart and soul of a revenue system and is typically ageing, heavily customised and built on outdated or obsolete coding languages. Documentation, or lack thereof, is a significant problem, compounded by limited access to people with the skills to interpret the underlying code. This has made modernisation costly and risky.

This is where the modernisation conversation is normally focused. We have observed many approaches to modernising this layer – ranging from containing the legacy system in cloud platforms through to full system replacement. There are many choices and many technology components that need to be considered in this layer, each with their own benefits, challenges and risks when it comes to modernisation.

One of the first steps to modernising the core system involves solving the documentation problem. This typically involves using modernisation platforms that can interpret the code and system architecture to create visibility and a deeper understanding of how the underlying components interact, and what functions they perform.

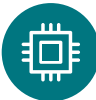
Jurisdictions that have taken a system-replacement path have favoured customer relationship management (CRM) and business process management (BPM) platforms as the central system to deliver core functionality. According to Gartner, some of the leading vendors in this space include Salesforce, Microsoft, Oracle, Pegasystems and ServiceNow.<sup>28</sup>

Approaches to transition away from legacy technology

Revenue agencies’ path to modernisation can be bumpy, while the change implications on internal stakeholders, customers and government and private-sector stakeholders are significant. No single solution or approach can meet all needs. Success requires effective planning and navigation of multiple paths, timelines and program phases.

Deloitte’s perspective is that revenue agency system modernisation can be delivered through four key technology plays. Recognising that the legacy systems are large and complex and have been built and extended over time, it is unlikely that a single approach (e.g. Replace) would apply to every component of the architecture. We think there are many strategic choices for each technology and functional component. These strategic choices can then be bundled together to form a series of phases that represent evolving stages of the technology transformation.

The four key plays that can be applied are:

| Four plays  |  <div>Rebuild</div> <div>A solution that could be considered if no cost-effective alternatives exist</div> |  <div>Maintain and contain</div> <div>An interim solution where there is limited return on investment from modernising or replacing</div>                                                                                                                                                                                                                    |  <div>Modernise</div> <div>An interim or longer-term solution that enables modern interactions</div>                                                                                                                                                                                                                                                                                                                                                                  |  <div>Replace</div> <div>A longer-term solution that is suitable for high- value, high-cost areas and where commercial off-the-shelf software exists</div>                                                                                                                                                                                                                                      |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Key actions | <ul style="list-style-type: none"><li>• Select a modern cloud platform-as-a-service (PaaS) and re-build functions on the platform.</li></ul>                                                  | <ul style="list-style-type: none"><li>• Transition to containerised cloud</li><li>• Secure support contracts for legacy code</li><li>• Focus on security.</li></ul>                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"><li>• Run code discovery</li><li>• Convert to a modern code base and legacy database (e.g. Java) leveraging modernisation platforms</li><li>• Deploy on modern cloud</li><li>• Selectively optimise application components.</li></ul>                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"><li>• Select an established market offering that provides a fully managed software-as-a-service (SaaS) platform, and align to a broader architecture vision</li><li>• Implement software components, configuration and integration into the ecosystem.</li></ul>                                                                                                                                                                                 |
| When to use | <ul style="list-style-type: none"><li>• High-value function with limited options in the software market</li><li>• Access to strong development capability.</li></ul>                          | <ul style="list-style-type: none"><li>• Future functional obsolescence and/or uncertainty around how it will be used in the future</li><li>• Future needs are unlikely to significantly change or impact the function</li><li>• Technical support/access to skills are widely available in the market for at least the short to mid-term for this function</li><li>• Costs to maintain are manageable compared with the alternatives.</li></ul> | <ul style="list-style-type: none"><li>• The function is not on a path to obsolescence and is likely to undergo change in the future</li><li>• Some uncertainty around how the function will be used in the future, requiring flexibility in the technology</li><li>• No clear software market offering available, and/or the cost to transition is too high</li><li>• Unknown level of complexity built into legacy system and lack of quality documentation</li><li>• High risks associated with business change in the short to medium-term.</li></ul> | <ul style="list-style-type: none"><li>• The function is not on a path to obsolescence and will require future enhancements that align with a market offering</li><li>• There is low uncertainty about how the function will be used, and/or the software market road map is aligned to this future</li><li>• Software market is well aligned to the need and supports an aligned future road map</li><li>• Ability to effectively manage change across the organisation.</li></ul> |

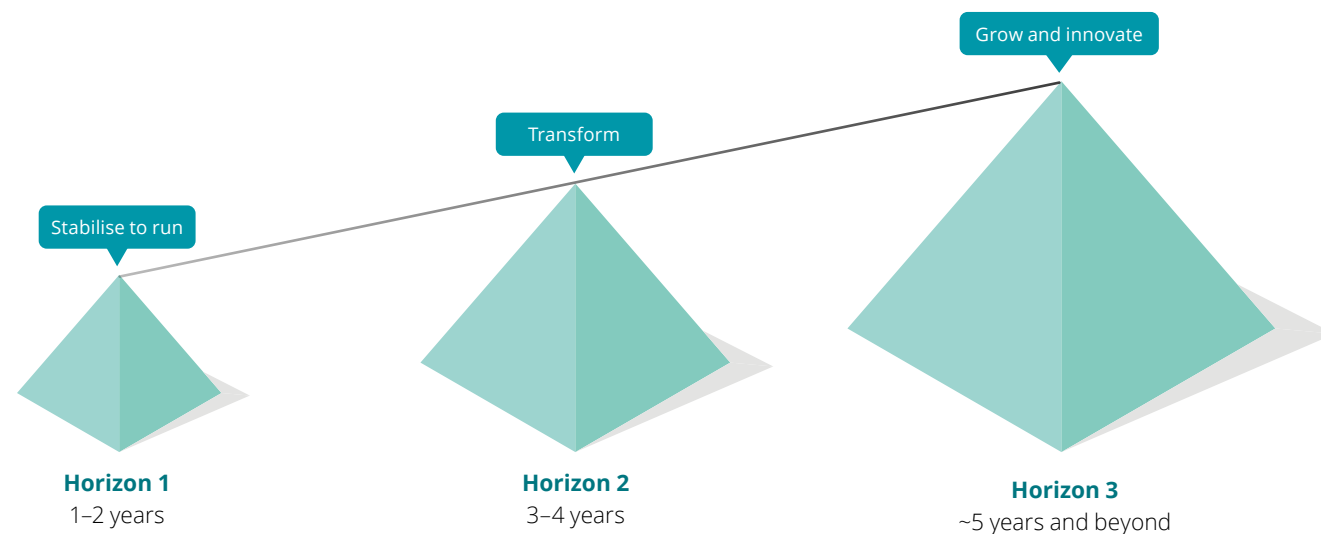


Each of these four plays can be applied to a range of components across the technology landscape in various stages and across varying timelines. This creates a mosaic across the reference architecture. Think of these options as a palette of colours that can be painted across the system architecture for a given point in time, or phase. In other words, any transformation program is aligned with more than one approach; there are always many options.

This should not, however, be interpreted as a confused mix of transformations happening at the same time. Instead, it is recommended to construct transformation phases that focus on a specific goal, to minimise change in low priority (or overly complex, costly and risky) areas at first, and to plan a series of phases that build upon the previous phase to drive more value and more significant and impactful change.

Figure 7 is an example of a transformation approach across these types of technology programs.

**Figure 7. Illustrative transformation approach that could be considered for agency technology programs**



**Solidify the core revenue and debt functions to enable a more stable, modernised platform to build on.**

- Legacy code discovery and business rule definition
- Modernise core licensing and registration systems and enable modern API layer to support future interactions and data exchange
- Apply security improvements across all components in a maintain-and-contain strategy.

**Transform the customer and employee experience and start data-analytics enhancements. Enable automation across internal processes to drive operational efficiency.**

- Implement and replace current data-analytics platform
- Implement and replace customer experience front-end
- Augment current modernised licensing and registration system with new technology to manage and maintain business rules/BOM/workflow capabilities
- Modify identity services to reflect the new approach to digital identity management.

**Continued user-experience optimisation while driving improvements to regulatory decision-making based on data, simulations and AI capabilities.**

- Implement AI capability to support monitoring of regulatory effectiveness and modelling of future regulation changes
- Adopt enhanced user-experience features.

This example is built around establishing a modernised core platform to enable future enhancements across the revenue management technology landscape without initially causing major disruptions to core business processes and customer experience channels. This can be likened to an 'inside-out' approach to transformation.

Other strategies could emerge that instead focus on the front-end first, and then work backwards into the centre (or 'outside-in'). Each approach has its merits and drawbacks. The inside-out approach illustrates how the reference architecture combined with the four plays can be applied to start building out a comprehensive transformation program. However, this is not a specific recommendation on how to run the transformation program in its entirety; each agency will have its own circumstances and trade-offs to consider.

This approach starts by modernising the core business capabilities that generate and maintain the customer and registration record in **Horizon 1**. All other components would be managed in a maintain-and-contain mode until after **Horizon 1**.

More impactful changes can be rolled out when a modernised and stabilised core system supported by modern system interfaces is in place. In **Horizon 2**, cumbersome business rules and workflows that are currently managed in the core system can be replaced with modern systems designed to drive business process improvement. Front-end user experiences can be enhanced with several best-of-breed digital platforms alongside a CRM system to support customer interaction, case management and notifications.

In **Horizon 3**, there is an opportunity to start delivering more advanced capabilities that enhance the design and effectiveness of regulatory changes, as well as the speed and responsibility of new regulation deployment. AI and data analytics will play a role in driving significant capability uplift in **Horizon 3**.

This approach is not a specific recommendation for revenue management transformation. It is one path – each regulator will need to consider its own challenges and demands.





05.

## Next steps to modernise regulatory systems

Armed with modern strategies and systems, the future is bright for revenue agencies.

“What future success will look like for revenue agencies will differ across countries, but one thing is clear – with the rise of AI they have the opportunity to completely reimagine how they achieve their objectives.”

**Eyal Genende**

Director, Technology & Transformation, Deloitte

### What should you do next?

1

#### Create a reference architecture for your revenue systems

We welcome the re-use of the Indicative Reference Architecture in this report, but note there could be some regional differences that may call for adjustments. Alternatively, government authorities may already have their own view and seek to develop their own reference architecture. It is important to start with a common point of reference and consider the future of revenue agencies and regulation more broadly – including factoring in capabilities that may be required and understanding how current capabilities are likely to change.

With a common reference architecture in place, the ‘big challenge’ is broken into ‘bite-sized chunks’ that can support strategic analysis and decision-making.

3

#### Determine which plays make sense, where and when

This will involve getting a better understanding of the current state of each component, including understanding what technology supports the component and the costs, risks and challenges to maintain the current component.

A more technical review will help to understand how the architecture in the underlying legacy systems is grouped together. This may be achievable using the organisation’s understanding and documentation of its systems but, in most cases, the ageing nature of the revenue agency systems makes this difficult. Where this is the case, undertaking a legacy code review using available modernisation platforms, or newer generative AI discovery tools, will analyse how the systems are constructed and the functions they perform.

This step also includes a review of market offerings to identify which components of the reference architecture are supported by enterprise software packages. This will help to determine where replacement strategies may be feasible versus areas that may continue to require customer development (technology improvements over time reducing the degree of customisation required).

The current state review indicates the costs, risks and challenges (including non-technology enablers such as culture, skills and change management), combined with a view of the technology landscape and market offerings, can now be contrasted against the future strategies to drive strategic decision-making around four plays.

2

#### Consider the three future opportunities – technology, data and customer experience

As we outlined in sections 1 and 2 of this report, it is crucial to weigh up the key future challenges, developments and opportunities facing your organisation and work through how this will affect components of the reference architecture. Ask:

- Will it be relevant (obsolete) in the future?
- Will it increase (decrease) in importance in the future?
- Will it be likely to change (remain stable) in the future?

This will result in a strategic view of where and how future developments will play out over time.

4

#### Construct a road map

A short-, medium-, and longer-term perspective can now be applied to the transformation. This should lead to the creation of distinct phases for the transformation. Early phases should typically emphasise constraints such as budget, changing customer and employee impacts, and burning platforms such as cyber. Later phases feature opportunities and focus on delivering bigger changes that take advantage of future trends.

The road map will help you to determine how the four plays can be run within each phase of the plan. As such, budget constraints and appetite for change may limit change to a transformation in earlier phases. A full replacement might make sense over the longer term. The strategy for investment and change can be tailored to meet key step changes over time.



06.

## Accelerating the journey

To aid agencies to deliver on the opportunities outlined in this paper Deloitte has built an asset that synthesise data to produce a single view of each citizen (and their network) to enable risk assessment and early intervention.

Please reach out if you are interested in seeing a demo of this solution.

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