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Transforming business, making life simple

The economic impact of Software as a Service in State & Federal Government.



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Foreword

Enterprise Resource Planning (ERP) solutions are often considered the heart of an organisation's ICT investments, as they power and shape the work processes of an organisation's core business functions.

In the last two decades, the rise of cloud computing and Software as a Service (SaaS) in particular, has fundamentally changed perceptions of how, where and who delivers technology solutions to an organisation.

Several Australian government and businesses have been slow to adopt the cloud due to the complexity of decommissioning legacy, ageing software solutions, while others are adopting hybrid strategies that involve keeping both on premise and adopting the cloud.

At the same time, however, there are still significant segments of both the public and private sector that have evaluated the potential for improved capability and cost efficiencies from ICT strategies that preference the cloud.

Much has been written about the benefits of the cloud to Australian organisations, but few rigorous studies have been conducted to explore both direct savings, productivity impact and broader national interests.

To better understand the potential net benefits of cloud technologies, and the cumulative economic benefit to Australian communities of unlocking these efficiencies, TechnologyOne commissioned IBRS and Insight Economics to undertake research into the economic impact of SaaS.

Evidence from this study suggests cloud technologies, in particular SaaS, have the potential to deliver substantial cost savings to government as well as other business benefits, including:

- Increased productivity
- Increased workflow efficiencies
- Enhanced customer experience
- Improved workforce collaboration
- Reduced cybersecurity risks
- Improved disaster recovery

These cost savings and productivity benefits can in turn enable scarce public funds to go towards higher, better uses than they otherwise would have, or increase organisational output compared to what would otherwise have occurred.

To realise these benefits, however, state and federal government must successfully navigate potential transition costs and risks. While these benefits can be understood at a conceptual level, little data is available for the quantification of these benefits in Australia today.

This report is intended to be used to inform government of the realistic organisational impacts of moving to cloud, as well as quantifying the wider economic benefits for state and federal government and the Australian economy. It takes a conservative approach to evaluating the direct savings and productivity gains, factoring both the costs of change and the direct operational savings.

For more information on the wider economic effects and direct impact on other industries, you can download the full report [here](#).

David Forman

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The direct economic impacts of Software as a Service in State & Federal Government

Software as a Service can have a range of direct impacts on an organisation, be it a public sector organisation or a private firm; these impacts can include changes in the total cost of operations for ICT, changes in wider business workflow process efficiencies, improvements in labour force productivity, improvements in asset and supply chain management, improvements in workforce collaboration and sales revenue through field force effects, as well as time and cost savings to customers through online and more effective services delivery.

To realise these benefits, the organisation may also need to undertake change management and training activities to support the transition to a new ICT operating environment.

Based on case study interviews as well as desktop research, this report identifies which different ICT architecture solutions can impact a council depending on their business size.

For more information on the wider, multiplier economic effects, download the full report [here](#).

Overview

Both academic and grey literature, as well as real world Australian case studies indicate that public and private organisations alike are expected to observe a number of changes in organisational outcomes as a result of the transition to a cloud-based software solution compared to a traditional on-premise model. These impacts fall into three major categories:

- Changes in the total cost of operations (TCO) for ICT
- Changes in wider business output potential and input efficiencies
- Changes in consumer costs and experience

This section provides an overview of the literature and key data developed through case studies undertaken for this report. The following section provides a detailed discussion of impacts observed in state and federal government.

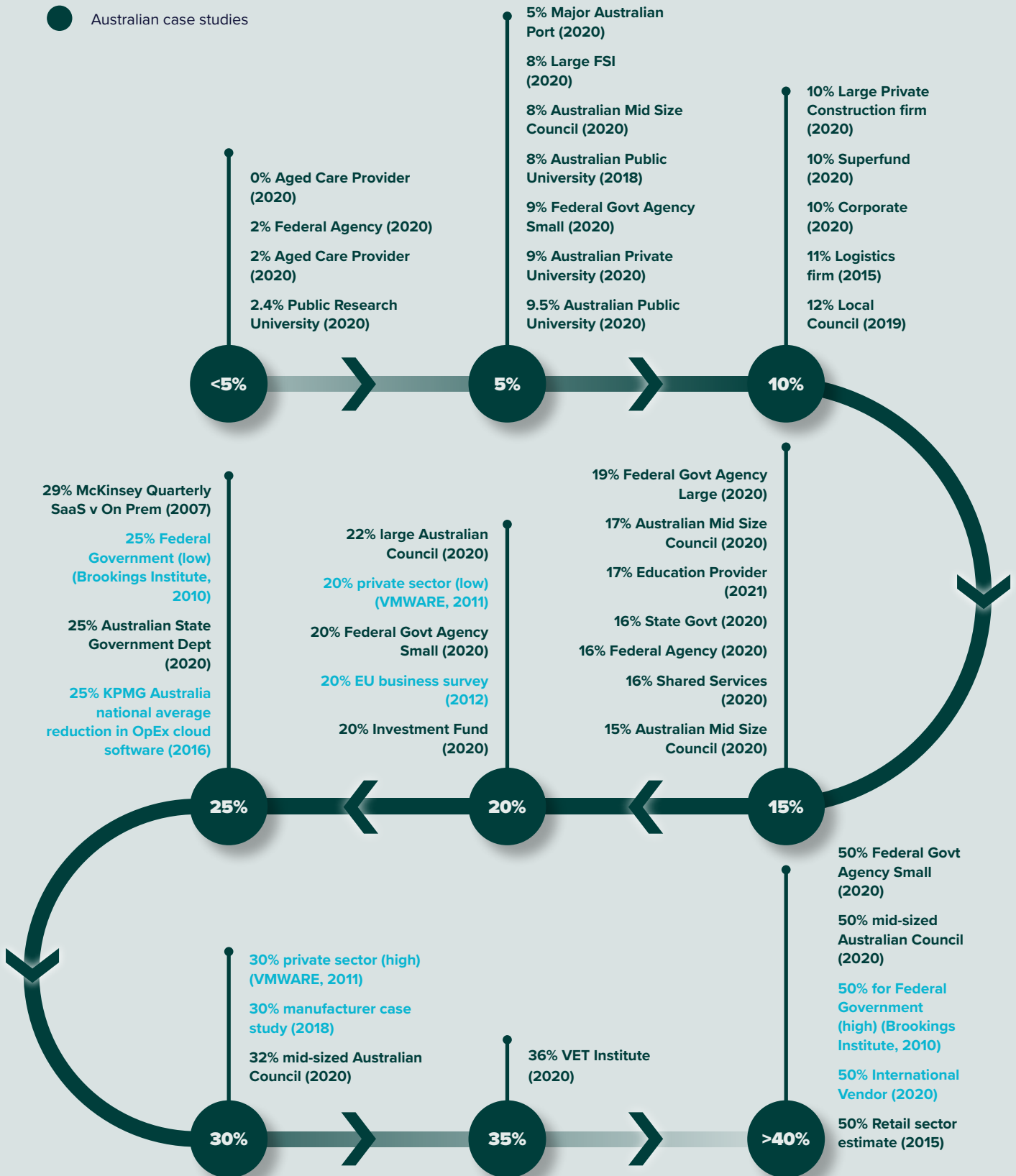
Impacts on the Total Cost of Operations for ICT

Academic literature and international case studies developed over the past decade point to very substantial savings in ICT costs accruing from organisations that have transitioned from a traditional on-premises software strategy to a SaaS solution. Globally, TCO savings are routinely estimated to be in the range of 20 to 50 per cent (Figure 2.1).

Figure 2.1: Total Cost of Operations (TCO) Savings - Research & Case Studies

Source: IBRS and Insight Economics

- Academic & grey literature
- Australian case studies





Closer to home, the case study interviews undertaken for this report suggest that the realisation of TCO savings has been significant for local firms, but has varied substantially by sector, firm size and organisational structure.

Some government agencies in particular, have reported deep savings realisation in their transition to a SaaS model, with reductions in TCO of 25 per cent to 50 per cent.

In other sectors, the impacts have been more muted, particularly in sectors that may have underinvested in ICT historically, such as the residential aged care sector.

Critically, however, as these businesses are investing in new software solutions, they may not observe a significant change in the costs of ICT but they may report very significant step-changes in wider business capabilities.

Impacts on wider business outcomes and consumer experience

In addition to potential efficiencies in the costs of ICT, the migration from traditional on-premise solutions to SaaS solutions can also enable a range of wider business and customer benefits. Both the literature and the Australian case studies highlight a range of potential wider business benefits realisation:

- Wider labour force productivity improvements
- Improved collaboration and sales
- Workflow efficiencies and cost savings in supply chain and inventory management
- Improved asset maintenance
- Improved cybersecurity and disaster recovery
- Impacts on energy usage and carbon footprint

Direct impacts of Software as a Service for State & Federal Government

Current business context and key considerations for migration to SaaS by Federal and State Government: case study insights

While most government agencies interviewed articulated 'cloud first' strategies, interviews revealed something of a two-speed approach, which is further complicated by the role shared services play.

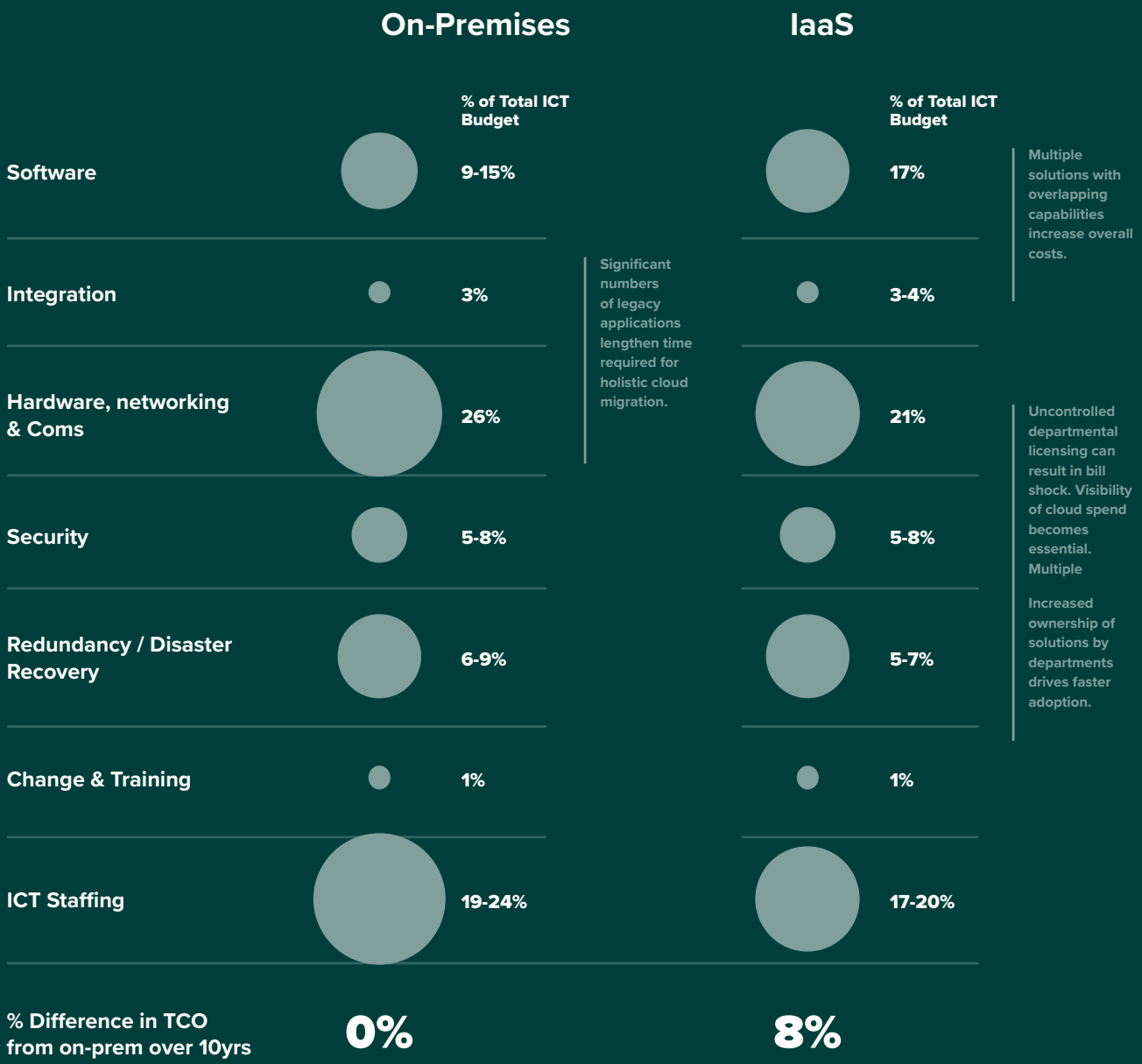
While larger agencies have all adopted cloud for some aspects of their ICT, the majority appear to be hindered in their cloud migration journeys. When larger agencies look at costing their cloud migration strategies, the TCO modelling returns marginal savings because of the need to continue supporting a large number of niche on-premises applications that cannot be easily migrated to cloud infrastructure due to licensing, compliance or technical factors. Given this complexity, it is not uncommon for larger agencies to see minimal, if any, TCO savings by moving to SaaS. Where there are many different SaaS solutions to consider (i.e. mixed stack SaaS), it can actually appear to be up to 13 per cent more costly than retaining legacy on-premises solutions. As a result, such agencies find themselves unable to draw upon the human capital savings cloud services deliver, and retain a need to continue running extensive on-premise infrastructure and disaster recovery.

Because of the above, and the focus on 'cloudifying' existing applications, IaaS is the approach taken by larger agencies ICT groups for moving to the cloud. SaaS does come into planning considerations when core enterprise systems are up for replacement, though since most large agencies have sunk investments (in licensing, customisation, integration, skills and processes) in core systems, the SaaS options are often more vendor-driven than a pure cost decision.

However, this study also found that some divisional units are by-passing aspects of ICT governance and procuring SaaS solutions directly, or at a higher agility than normally afforded by traditional ICT procurement practices. The focus from these groups is less on the TCO as it is on the additional capabilities and agility promised by SaaS solutions. In this respect, this study saw the emergence of a 'two-speed' approach to adopting and taking advantage of SaaS.

Mid-sized and smaller agencies, or greenfield agencies are less impacted by the above issues. They are more constrained when it comes to technical staff and generally have less technical debt. As a result, cloud services, in particular SaaS, are front and centre of future ICT planning. These agencies report up to 14 per cent total cost of operating savings when moving to SaaS (Native Integration).

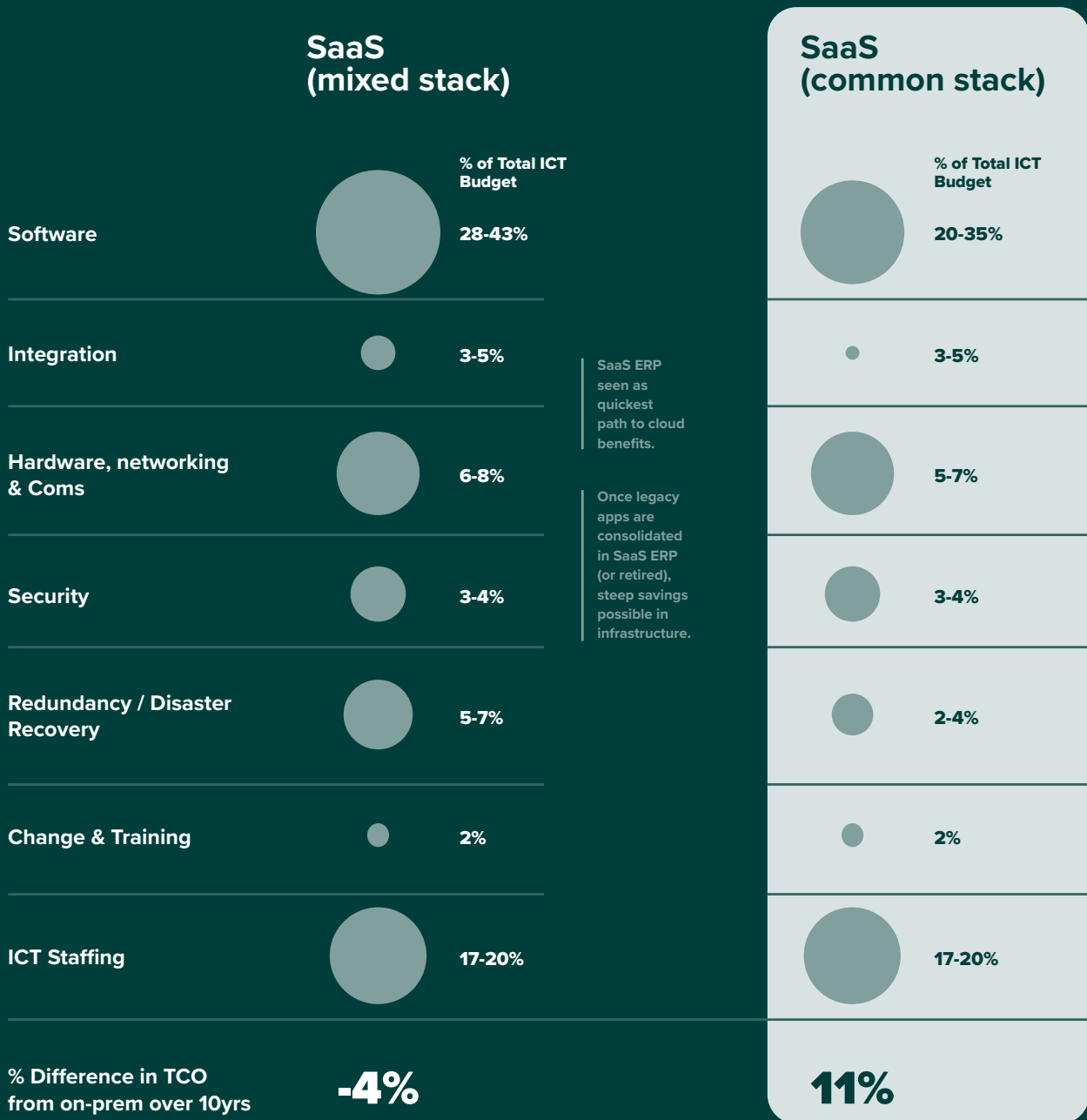
Figure 2.2:
Total cost of operations by delivery model - large government agency



Larger agencies tended to only explore productivity gains for external facing services: that is, the speed and capacity to service citizens and the business community. In most cases, these agencies are not considering internal efficiencies unless they are directly addressing service delivery.

One area such efficiencies are being tracked is call centres, with public-facing self-service processes significantly freeing up call centre staff to focus on 'more complex issues'. This is a trend also seen in the corporate sector.

Figure 2.3:
Total cost of operations by delivery model - large government agency (cont)

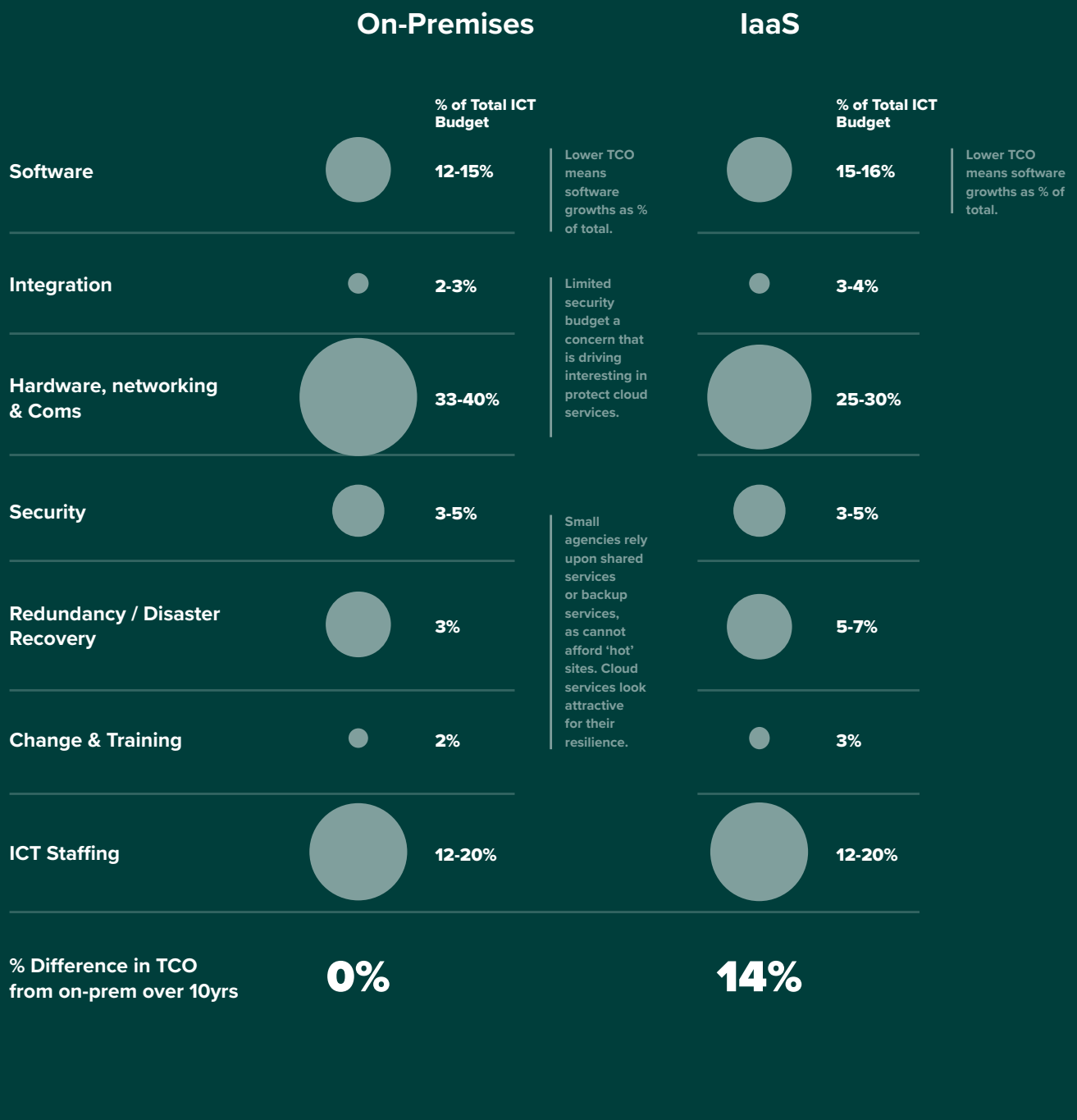


Source: IBRS based on commercial in confidence market data

In addition to service delivery efficiency, this study found significant productivity improvements in finance areas, especially where automation is applied to high-volume billing and invoicing. While optical character recognition has been available for

some years both on-prem and in the cloud, recent improvements in accuracy due to cloud-based machine learning algorithms are reducing errors and the need for manual intervention.

Figure 2.3:
Total cost of operations by delivery model - small to mid-sized agency

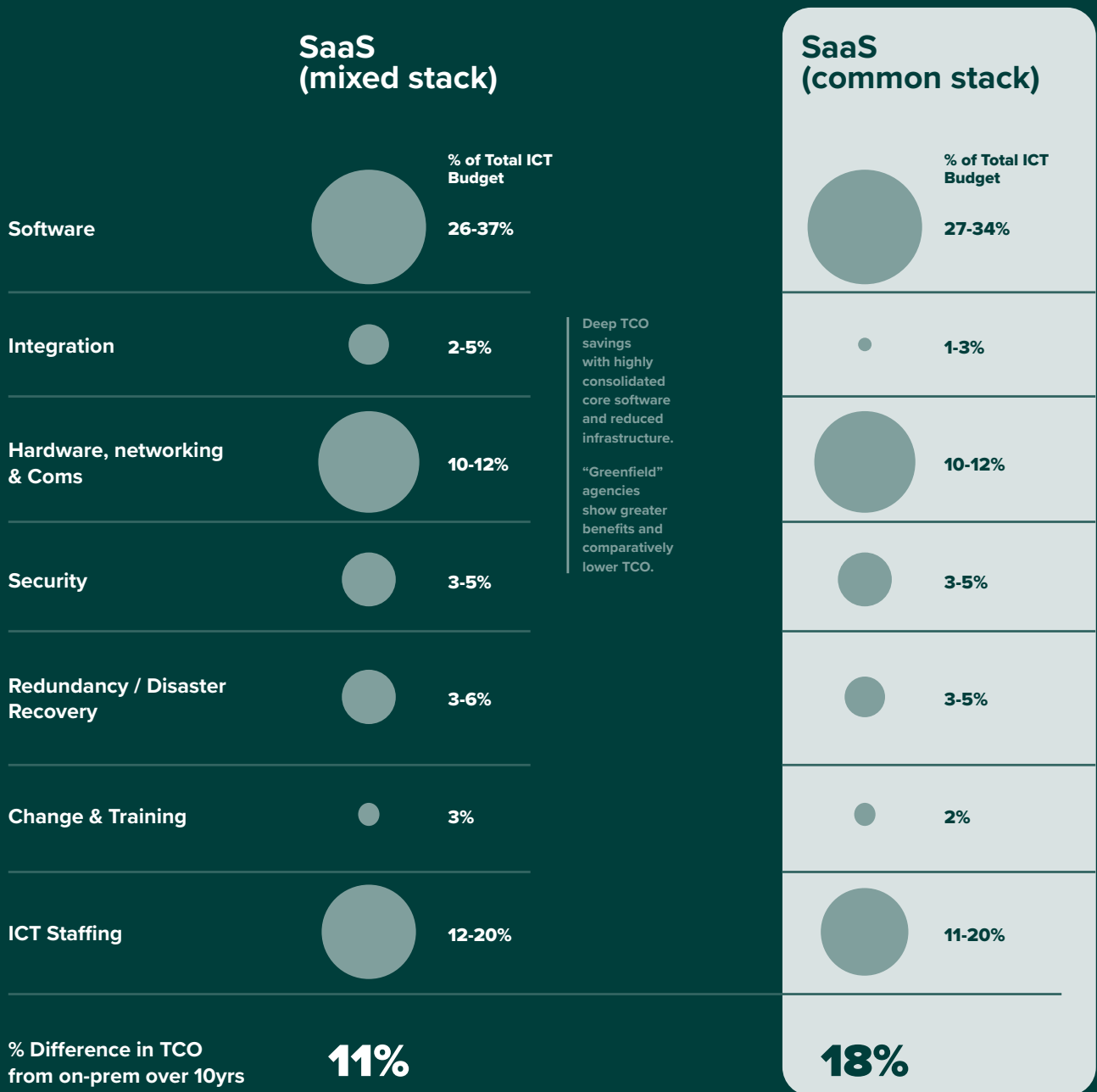


An unexpected productivity gain comes from better analytics and reporting. This gain was called out by agencies with SaaS (Native Integration) solutions. It stemmed from dramatically reducing the need for periodic, manual preparation of reports from different data sets and different solutions. Instead, reporting and visualisation of key information is fully automated, while also providing 'citizen analytics' capabilities. Agencies report that from one to four people can be redeployed as a result

of more efficient reporting processes. In addition, these agencies have also reported significant improvements in accuracy and currency of the reports generated.

Policy-setting agencies tend to be smaller than their service setting counterparts and are aggressively adopting SaaS core solutions. Cloud-based collaboration with their stakeholders is front and centre of their planning.

Figure 2.3:
Total cost of operations by delivery model - large government agency (cont)



Source: IBRS based on commercial in confidence market data

Policy-setting agencies tend to be smaller than their service setting counterparts and are aggressively adopting SaaS core solutions. Cloud-based collaboration with their stakeholders is front and centre of their planning.



Australian case study: Federal agency experience in migration to SaaS

A small, highly specialised agency was formed to provide services to multiple national stakeholders. Being a greenfield operation, the agency was given a \$5.8 million budget to deploy technology to support its operation. In addition to networking and end-user computing, the budget also needed to include a solution for financial services, billing and payments, stakeholder management, and sophisticated reporting.

The agency received quotes from a major on-premises enterprise solution vendor which was above the entire ICT budget, largely due to the infrastructure required to support the solutions. A well-known SaaS solution was then considered, and the SaaS approach was determined to be a cost-effective and fast way to deploy. However, the generic CRM solution would require extensive configuration and customisation to meet the agency's Australian-centric requirements. The agency then identified a locally developed solution that would not require the time or investment needed for extensive customisation and included all of the core enterprise requirements.

Furthermore, it could be deployed and operated at less than half of the cost of the previous SaaS environment.

The benefits of the investment included:

- The result of selecting the specialised Australian SaaS (Native Integration) was that the agency could deploy its core technologies at 40 per cent under the initial estimated budget
- Savings from the core software were then used to create self-service capabilities, deploy collaboration infrastructure to ensure the agency and stakeholders could work together, and develop training resources to better support its stakeholders
- The result has been significant productivity gains, in excess of 20 per cent for internal operations, which has enabled the agency to maintain a small headcount, while increasing the quality and speed of services and allow time for greater stakeholder engagement
- Within the agency there were labour force productivity gains of seven FTE in finance, two FTE in reporting and research, and five FTE in training and development
- For the stakeholders, it is estimated that productivity gains exceed 30 FTE annually, and sees up to 75 weeks of training and onboarding activities reduced to 225 hours (from prior manual processes)

Direct impacts expected for the State & Federal sector

40 per cent of policy departments use an on-premises software model, with 15 per cent using IaaS, 20 per cent using a SaaS (Mixed Stack) and 25 per cent using a SaaS (Native Integration) model.

50 per cent of service departments use an on-premises software model, with 20 per cent using IaaS, 20 per cent using a SaaS (Mixed Stack) and 10 per cent using a SaaS (Native Integration) model.

55 per cent of large agencies use an on-premises software model, with 25 per cent using IaaS, 15 per cent using a SaaS (Mixed Stack) and five per cent using a SaaS (Native Integration) model.

50 per cent of small to mid-sized agencies use an on-premises software model, with 20 per cent using IaaS, 20 per cent using a SaaS (Mixed Stack) and 10 per cent using a SaaS (Native Integration) model.

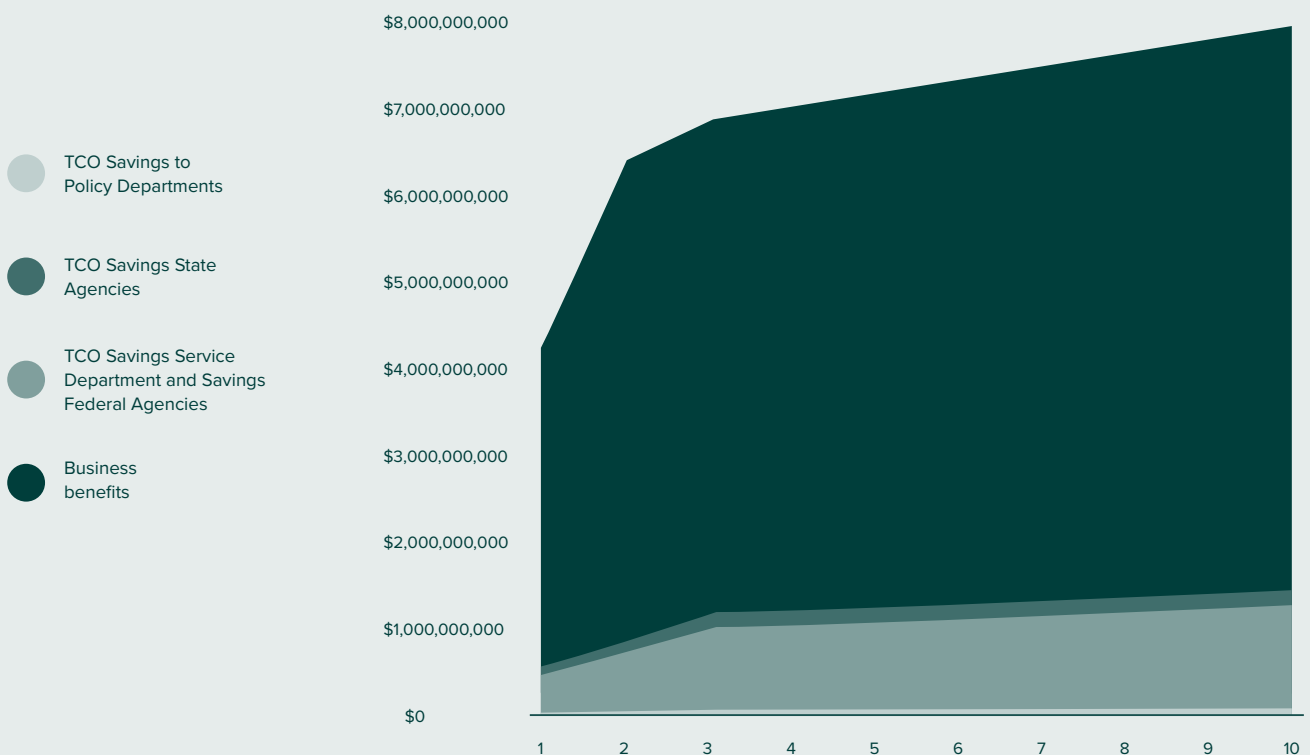
The organisational benefits potential for agencies was estimated based on a migration to a SaaS (Native Integration) solution by all agencies within three years; the sources of savings included:

- TCO savings in the range of 11 per cent to 20 per cent depending on organisational size and structure
- Labour force productivity improvements of seven per cent based on real world evidence from Australian case studies, which is in line with international case study expectations of five to 10 per cent productivity improvements
- Avoided financial auditing and consulting costs through improved financial reporting and management
- Reduced costs of maintenance as a result of reduced reactive maintenance, conservatively based on the lower bound improvement (eight per cent) estimated in the literature

Further details of the key assumptions and data sources are provided at the end of the report.

The total direct benefits to federal and state governments of moving to SaaS (Native Integration) from current capability solutions is expected to be \$62 billion in NPV^{2%} terms (Figure 2.4).

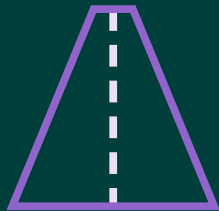
Figure 2.4:
Opportunity costs in State & Federal Government



Opportunity costs

Critically, these savings could be redirected to fund critical investment in new road transport infrastructure, hospital services, nurses, aged care places, and teachers in classrooms (Figure 2.5).

Figure 2.5: Opportunity costs in State & Federal Government



Fund more than 11,500 kms of new roads



Fund more than 4 new Sydney Harbour tunnels



Fund more than 11 million hospital services over ten years, a 16% expansion in public hospital services per annum



Fund 90,000 additional registered nurses per annum for the next 10 years, a 33% expansion in the supply of registered nurses



Fund more than 883,000 residential aged care places over ten years, a 41% uplift in services



Fund 87,000 new teachers per annum for the next 10 years, a 45% uplift in teachers in Australia

Source: IBRS and Insight Economics

Total direct impact to Australian economy

In aggregate across all sectors, the direct benefit potential of moving to a SaaS solution compared to Australia's current software capability would be expected to be in the order of \$252 billion over the next 10 years, allowing for a three-year ramp up of investment, or \$224 billion in NPV^{2%} terms.

For more information on the wider, multiplier economic effects to the Australian economy, [download the full report](#).

Conclusion

The direct impact analysis reveals that the organisational impact potential of SaaS technologies for Australian state and federal government is significant. Overall, the estimates based on Australian experience are more conservative than the benefits typically reported in the literature.

Key assumptions and data sources: State & Federal Government

Variable	Assumption	Source
Federal and state policy departments	64	Government registries
Federal and state service departments	46	Government registries
Federal agencies*	242	Government registries
State agencies (excluding utilities)*	613	Government registries
Number of FTE – Federal Government	246,000	ABS Employment and Earnings, Public Sector, Australia
Number of FTE – State Governments	1,609,100	ABS Employment and Earnings, Public Sector, Australia
Federal Govt salary costs – average	\$91,115	ABS Employment and Earnings, Public Sector, Australia
Federal Govt salary costs – average	\$85,871	ABS Employment and Earnings, Public Sector, Australia
Labour force productivity	7%	OECD, 2017, case studies and market data
Assets under management (buildings, equipment and infrastructure excluding specialised military equipment) – Federal	\$115 billion	Consolidated financial statement Australian Government
Assets under management (buildings, equipment and infrastructure)	\$964 billion	Consolidated financial statements 2020 for each State and Territory
Maintenance budget	4.8%	NSW Office of Local Government
Reactive maintenance	55%	US Department of Energy, Operations and Maintenance Best Practice, Schnieder Electric White Paper, Journal of Engineering Studies and Research 2012, University of London Condition Based Maintenance, + 3 case studies supporting
Reduction in reactive maintenance through asset management	8%	(Low range of 8%-30%)
Avoided costs financial and audit	\$20,000 per organisation	Interviews
Growth in value of other business and customer benefits	2%	Inflation, ABS CPI key categories 1%-2%
Current software model uptake – policy departments	40% on-prem, with paper-based systems 15% IaaS 20% SaaS Mixed Stack 25% SaaS (Native Integration)	Interviews & market data, Commonwealth's Digital Transformation Agency's Secure Cloud strategy, NSW's 2020 Government Cloud strategy

Key assumptions and data sources: State & Federal Government (continued)

Variable	Assumption	Source
Current software model uptake – service departments	50% on-prem, with paper-based systems 20% IaaS 20% SaaS Best of Breed 10% SaaS (Native Integration)	Interviews & market data, Commonwealth's Digital Transformation Agency's Secure Cloud strategy, NSW's 2020 Government Cloud strategy
Current software model uptake – federal agencies* (Large agency cost assumptions applied to this population at the moment, may revise by size)	55% on-prem, with paper-based systems 25% IaaS 15% SaaS Best of Breed 5% SaaS (Native Integration)	Interviews & market data, Commonwealth's Digital Transformation Agency's Secure Cloud strategy, NSW's 2020 Government Cloud strategy
Current software model uptake – state agencies* (small agency cost assumptions applied to this population at the moment, may revise by size)	50% on-prem with paper-based systems 20% IaaS 20% SaaS Best of Breed 10% SaaS (Native Integration)	Interviews & market data, Commonwealth's Digital Transformation Agency's Secure Cloud strategy, NSW's 2020 Government Cloud strategy
TCO policy departments	Total cost of on-prem - legacy \$7,142,000 Total cost of IaaS software \$6,455,280 Total cost of SaaS (Mixed Stack)\$6,963,660 Total cost of SaaS (Native Integration) \$5,675,764	Case studies and market data
TCO service departments	Total cost of on-prem - legacy \$2,252,421 Total cost of IaaS software \$1,792,500 Total cost of SaaS Best of Breed\$ 2,100,250 Total cost of SaaS (Native Integration) \$1,970,650	Case studies and market data
TCOs large agencies	Total cost of on-prem - legacy \$58,311,532 Total cost of IaaS software \$53,525,500 Total cost of SaaS (Mixed Stack)\$60,357,500 Total cost of SaaS (Native Integration) \$51,836,300	Case studies and market data
TCO small agencies	Total cost of on-prem - legacy \$2,141,087 Total cost of IaaS software \$1,832,500 Total cost of SaaS (Mixed Stack)\$1,910,000 Total cost of SaaS (Native Integration) \$1,756,650	Case studies and market data
Growth rate in TCO	3.1%	IBIS World
Average cost per episode of in-patient care	\$5,597 (growing at 2.2% per annum)	Independent Hospital Pricing Authority (IHPA), NHCDC, National Efficient Price Determination 2021-2022
Average cost per residential aged care place	\$70,700	AIHW, GEN Aged Care Data, 2020, Aged Care Service Information March 2021

About TechnologyOne.

TechnologyOne (ASX: TNE) is Australia's largest enterprise software company and one of Australia's top 150 ASX-listed companies, with locations across six countries. We provide a global SaaS ERP solution that transforms business and makes life simple for our customers. Our deeply integrated enterprise SaaS solution is available on any device, anywhere and any time and is incredibly easy to use.

Over 1,200 leading corporations, government agencies, local councils and universities are powered by our software. For more than 34 years, we have been providing our customers enterprise software that evolves and adapts to new and emerging technologies, allowing them to focus on their business and not technology.

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