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The economic impact of Software as a Service in the Asset Intensive sector.

It's too big to ignore.

Insight Economics
Public Policy Corporate Strategy

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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 governments 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 the asset intensive sector 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 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, businesses in the asset intensive sector 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 businesses within the asset intensive sector of the realistic organisational impacts of moving to cloud, as well as quantifying the wider economic benefits for the asset intensive sector 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.

Luke Fleming
Industry General Manager, Asset Intensive
TechnologyOne

The direct economic impacts of Software as a Service in the Asset Intensive sector

SaaS 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 businesses in the asset intensive sector 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

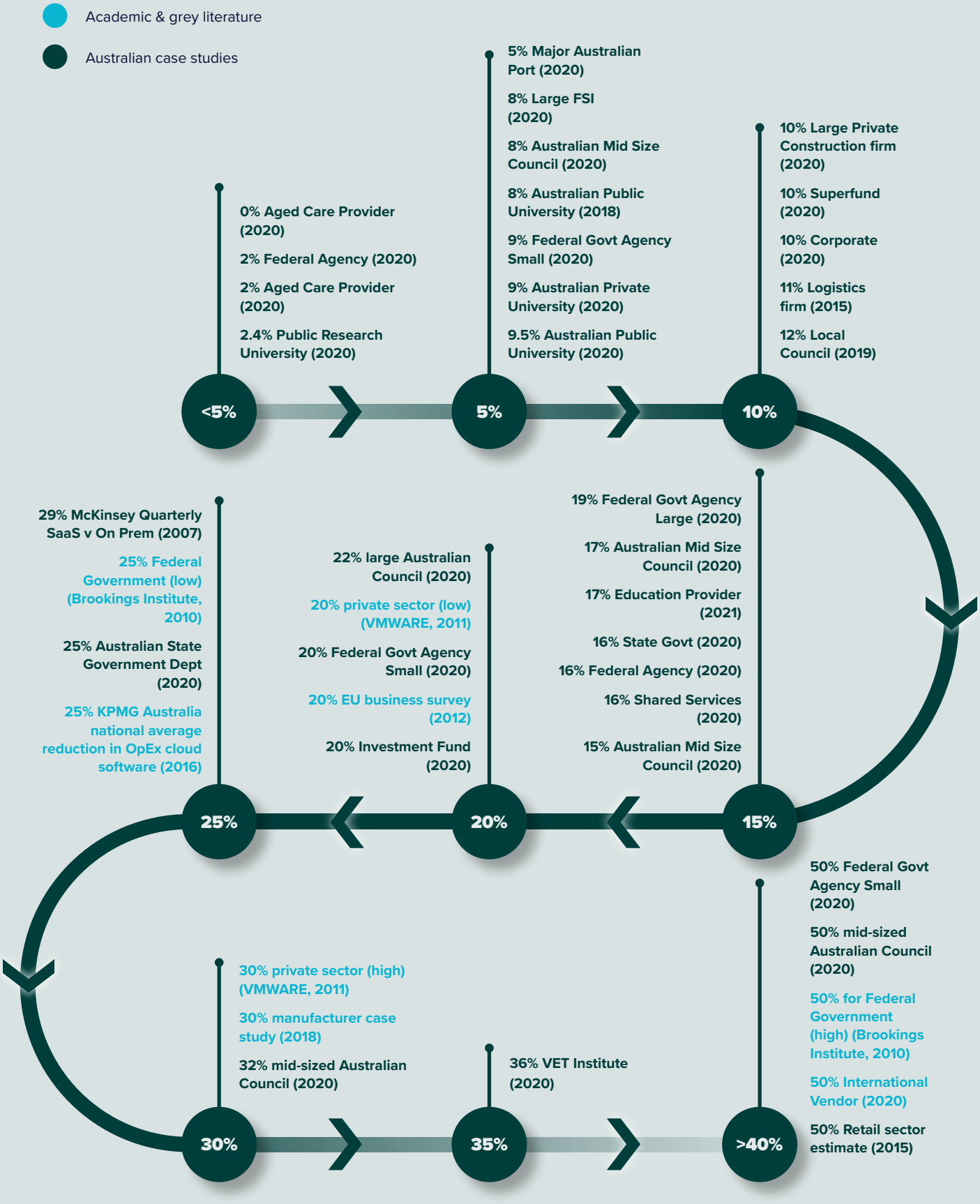
This section provides an overview of the literature and key data developed through case studies undertaken for this report. The following section provides a detailed discussion of impacts observed in the asset intensive sector.

Changes in the total cost of operations (TCO) 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



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 the Asset Intensive sector

Current business context and key considerations for migration to SaaS by the Asset Intensive sector: Australian case study insights

The asset and project intensive sector includes construction, ports and developers that own and manage large property assets. These organisations are difficult to generalise. There is a great deal of diversity in how they deploy technology, their technology investment and their priorities. While some organisations have a strategy to draw out investments in on-premises legacy software, others are 100 per cent SaaS.

Many asset intensive organisations run on razor thin margins. The cost associated with migrating to new cloud-based solutions is seen as a short-term hurdle that ICT departments of these organisations cannot overcome. In addition, many of these organisations have a preference for capital expenditure, which does not fit with a cloud first strategy. The challenge here is less technical as it is financial. Investment patterns needed to migrate to the cloud requires near-term, upfront investment for longer term, sustained productivity benefits and cost savings. As a result, one of the key challenges for organisations resisting cloud, is a decision around at what point will senior executive approve the investment required, versus how long the decision can be put off.

The situation has fuelled enterprise shadow IT. Enterprise SaaS solutions are being procured by specific departments - most commonly field force and human capital management groups - using departmental budgets and with minimal IT governance. A previous study by IBRS revealed that HR departments now outspend the IT group with regards to human capital management software investments. The result is an unplanned adoption of SaaS (Mixed Stack).

Unfortunately, TCO modelling suggests this is a less cost-effective operation model when compared to SaaS (Native Integration). While there are benefits in terms of the speed of deploying new field capabilities to workers and contractors, there is little, longer-term cost savings, and the total cost of software is significantly higher over a 10-year period. On average, the total cost of ownership of this approach remains much the same as continuing with an on-premises legacy environment. At the other extreme, the study found asset-rich organisations fully adopted an ‘as-a-Service’ business model, not just for their IT but for all services within the organisation. Not only is the running of software relegated to cloud services, but so too are differential business functions such as payroll, collections and so forth. The focus of these organisations is very much on how to leverage technologies to automate and drive down the costs of asset maintenance and maximise revenue from existing assets. IoT (Internet of Things) is an area of strong interest for these organisations. These organisations are leveraging IaaS (including Platform-as-a-Service technologies from the key hyper-scale cloud vendors) to gain significant ICT operational efficiencies.

In terms of productivity gains, asset and project rich organisations tend to only measure the direct benefits within the organisation: administration, financial operations, labour inputs from full-time staff members. However, with investments going into workforce management solutions there are additional external labour productivity benefits from contractors that are not being counted.

In one example, a SaaS-based workforce management application was said to be saving contractors up to 30 minutes a day from work orders and required worksite inspection forms. In this instance, the organisation running the software explicitly did not count the contractors time-saving, stating that “the benefit was all there is, which means they can reduce their fees to us”.

Surprisingly, better asset management was almost completely overlooked by the asset-rich organisations interviewed for the study. While they recognise that better targeting of preventative maintenance can see significant returns in both labour savings, and extended asset life, none had measured these benefits. However, all are keen to use the emerging data analytics capabilities of SaaS products to identify where savings and improvements can be made in asset management. Unfortunately, the mixed stack approach to SaaS has hindered the ability of organisations to extract this level of reporting.

Figure 2.2: Total Cost of Operations by delivery model – Own, operate and maintain business

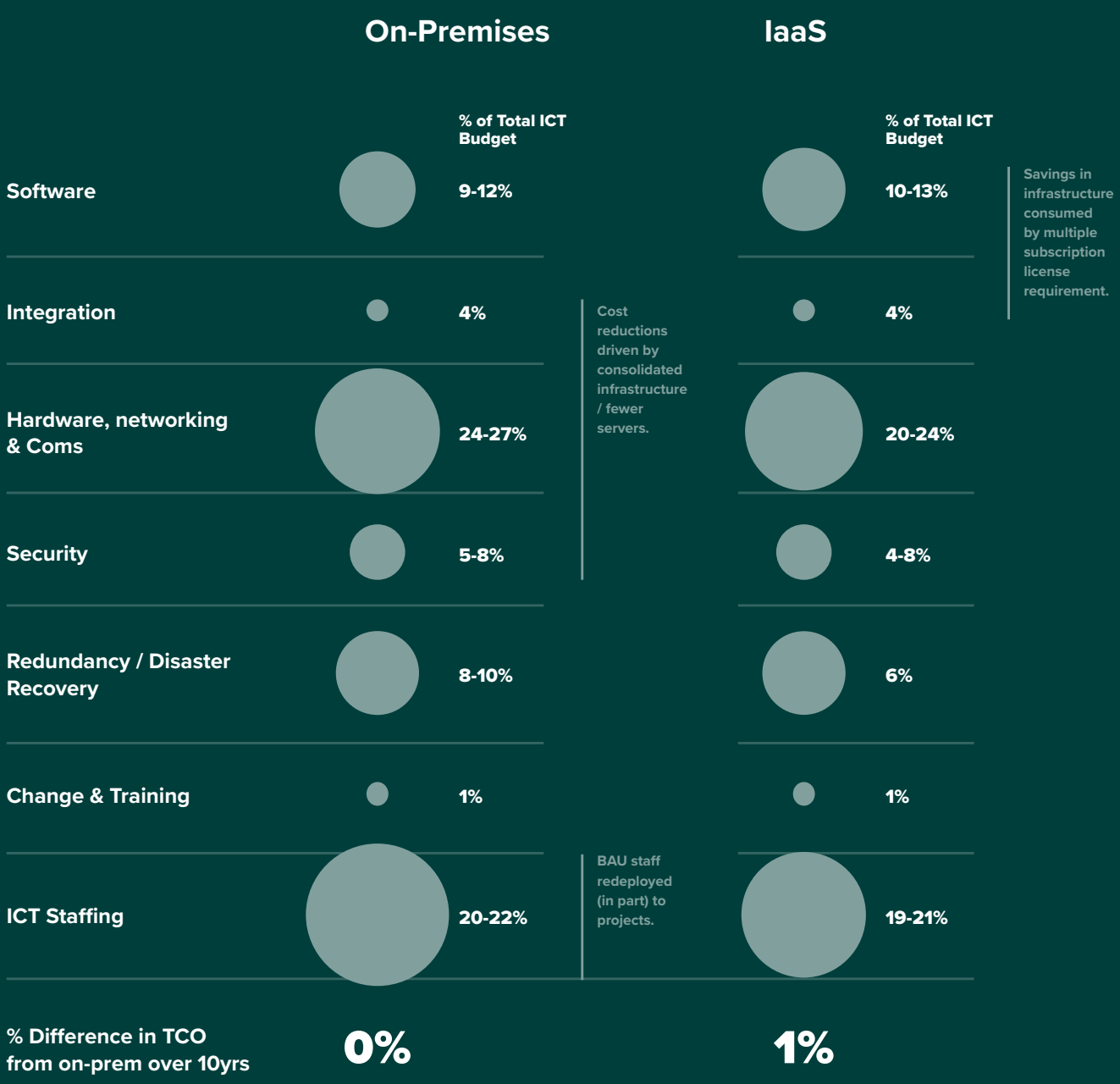


Figure 2.2: Total Cost of Operations by delivery model – Own, operate and maintain business (continued)

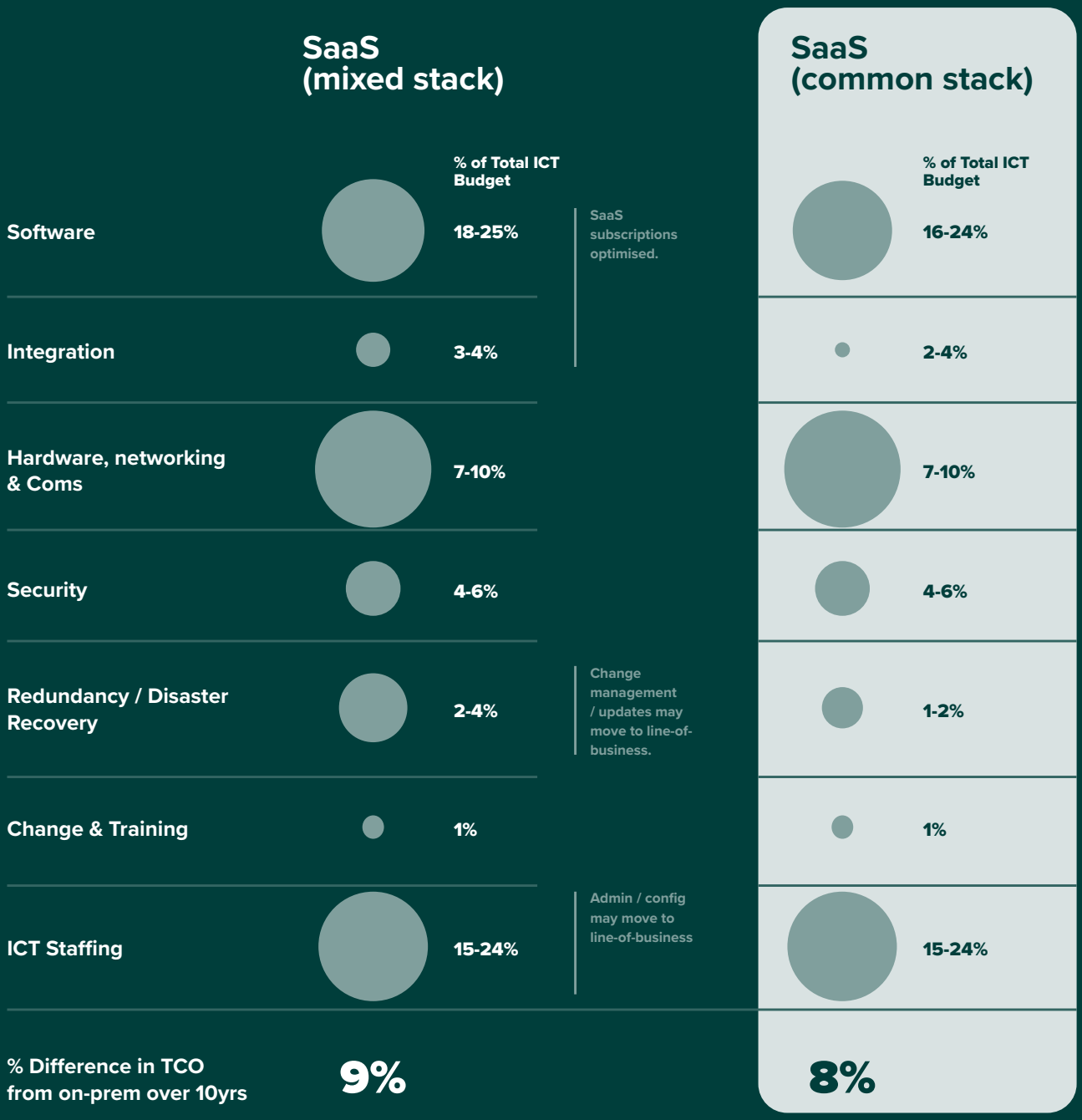
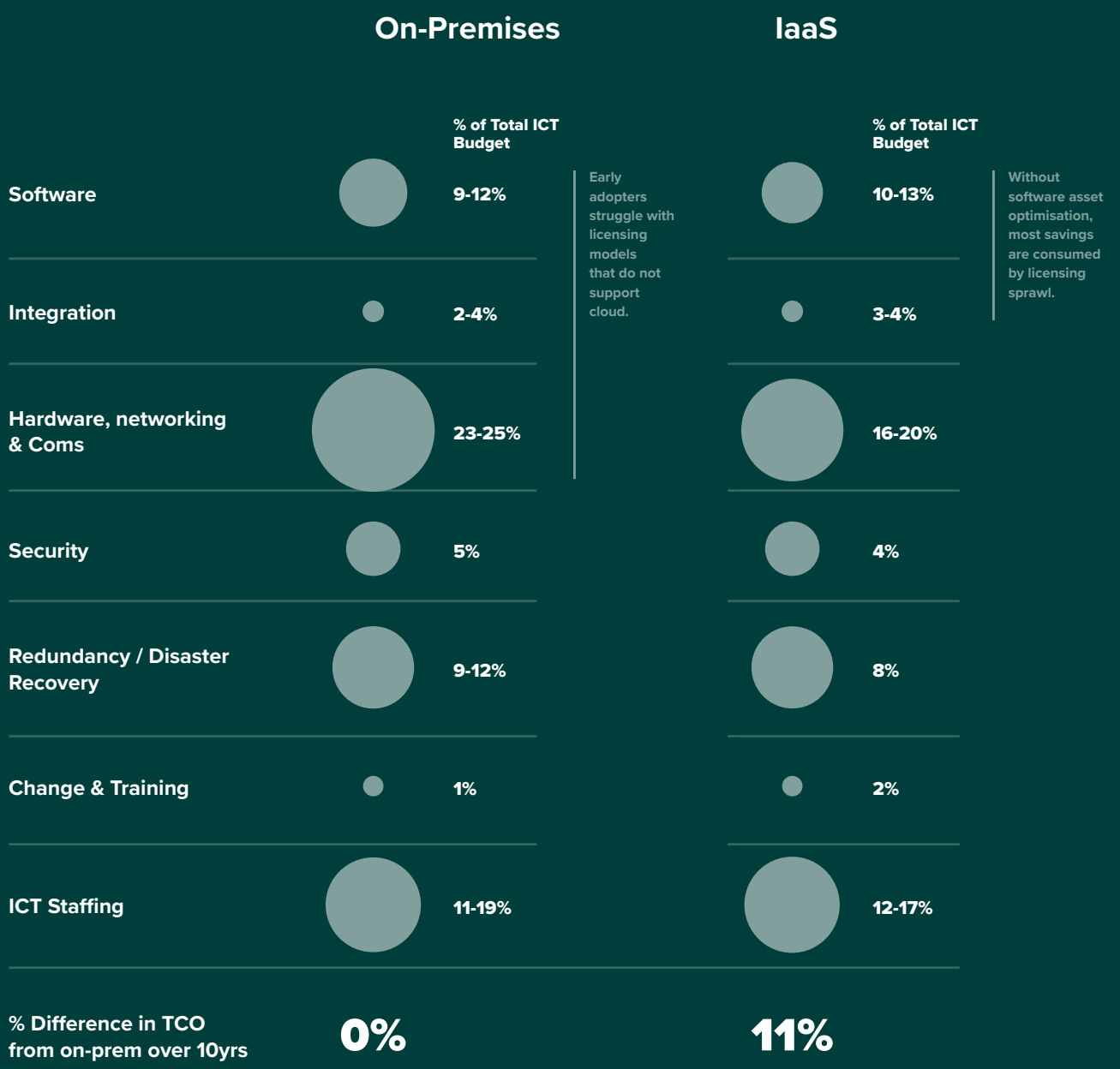


Figure 2.3:
Total Cost of Operations by delivery model – Design and build firms

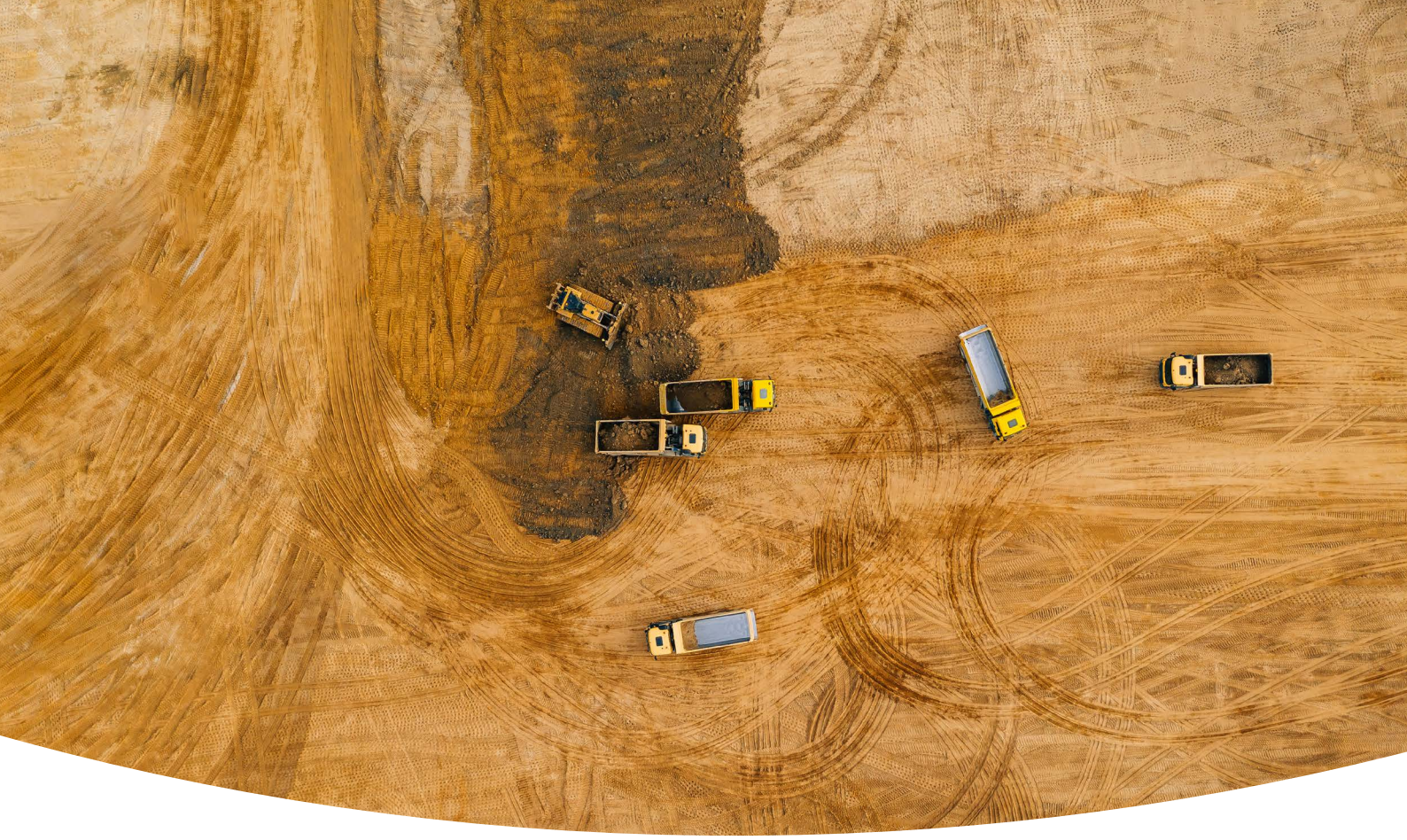


	SaaS (mixed stack)	SaaS (common stack)
	% of Total ICT Budget	% of Total ICT Budget
Software	25-35%	20-32%
Integration	3-5%	3-5%
Hardware, networking & Coms	8-11%	5-7%
Security	3-4%	3-4%
Redundancy / Disaster Recovery	5-7%	2-4%
Change & Training	1%	1%
ICT Staffing	12-17%	10-15%
% Difference in TCO from on-prem over 10yrs	0%	14%

Single stack platform brings contract, finance, workforce management efficiencies.

Better information management & reporting seen as key.

Source: IBRS based on commercial in confidence market data



Australian case study: Large construction firm experience in migration to SaaS

A large and fast-growing design and construction organisation with operations throughout Australia wished to bring disparate organisational units together and consolidate work processes. It has a variety of ageing on-premises solutions, some inherited from recent mergers and acquisitions.

A decision was made to migrate all core business solutions to SaaS, in part to reduce complexity of the current ICT environment, but also to help bring all divisions to a common set of work processes.

Benefits from adoption of SaaS for core business solutions included:

- Enabled the organisation to achieve a far more accurate level of reporting, leading to direct savings. As the organisation had a mandate to reduce operating costs by four per cent over five years, being able to track expenses and identify areas for improvement was critical. Over the 3 and a half years of the SaaS system being in place, the organisation has been able to reduce operating costs by close to 3.7 per cent as a result of right financial management, while still enabling the organisation to grow at almost twice the rate of its competitors.
- While the organisation did not measure direct productivity savings as a result of the SaaS environment, it did identify that it's contractors (over 5000 staff at any one time) benefit from improved rostering and digital forms. The organisation conservatively estimates contractors save 15min in manual processes each week, at a minimum saving of $2.50 for every work order, of which there are hundreds of thousands a year. Thus, the organisation's SaaS platform has significant productivity gains for external stakeholders.
- An unexpected benefit of adopting a common SaaS platform across the organisation is that it has far greater visibility of information when responding to tenders. In one instance that was cited, stakeholder information held in the SaaS platform identified that the organisation was extremely unlikely to win a pitch, thus avoiding over a million dollars and wasted time. In another example, information in the SaaS platform identified information from multiple groups across the organisations that helped secure a project worth multiple hundreds of millions.

Direct impacts expected for the Project and Asset Intensive sector

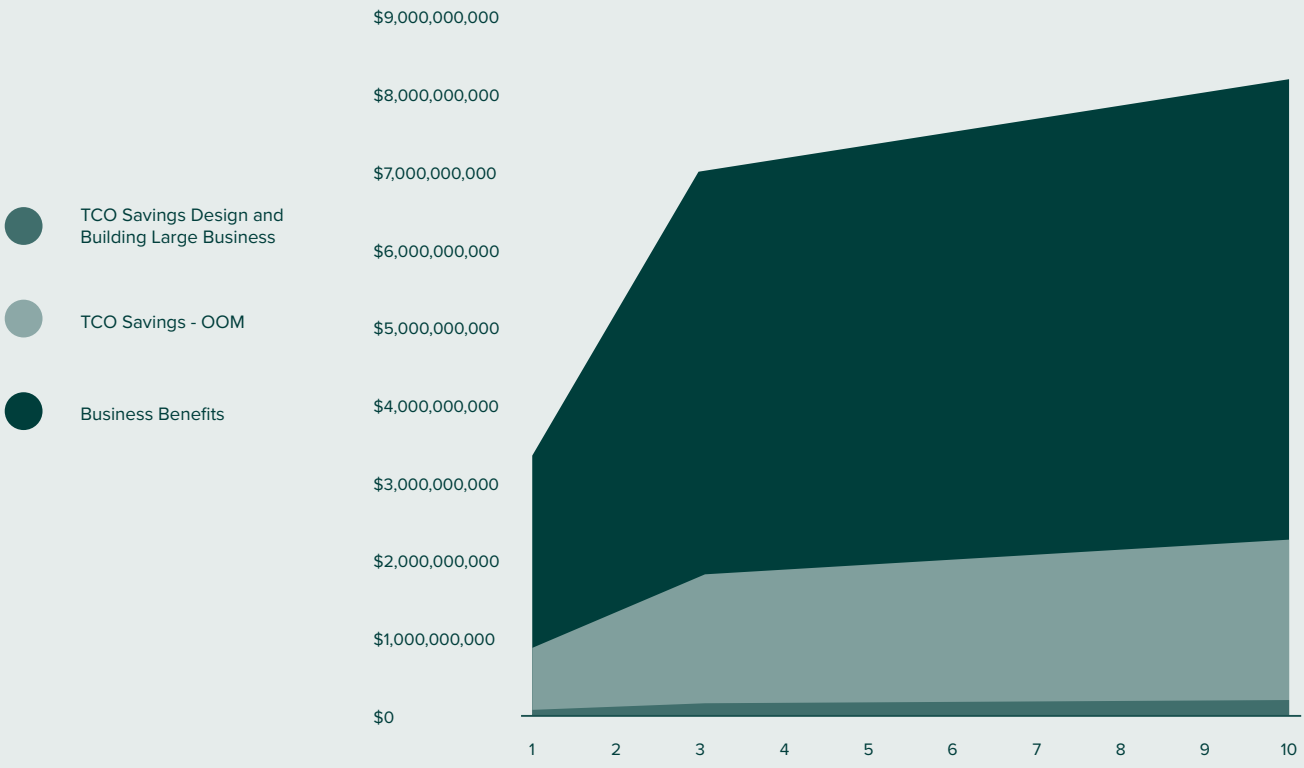
Based on desktop research, market data and interviews, it was estimated that across the project and asset intensive sector 50 per cent of organisations utilise an on-premises software model, with 20 per cent using an IaaS model, 20 per cent using a SaaS (Mixed Stack) and 10 per cent using a SaaS (Native Integration) model.

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

- TCO savings in the range of 14 per cent for large construction firms, three per cent for construction SMEs, and 16 per cent for organisations that own, operate and maintain major infrastructure assets
- Labour force productivity improvements of five per cent based on real world evidence from Australian case studies, which is in line with international case study lower bound expectations of five 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
- Reduced supply chain and inventory management costs of two per cent, which is the lower bound of analysis reported in the literature
- Smoothing capital expenditure investments by privately held own, operate and maintain organisations. Further details of the key assumptions and data sources are provided at the end of the report.
- 60 per cent of VET providers use an on-premises software model, with 25 per cent using IaaS, 10 per cent using a SaaS (Mixed Stack) and five per cent using a SaaS (Native Integration) model

The total direct benefits to asset and project-intensive organisations of moving to SaaS (Native Integration) from current capability solutions is expected to be $62 billion in NPV[2%] terms (Figure 2.4). Due to the capital-intensive nature of this sector, improvements in asset management translate into significant benefits for firms with the net improvement representing a four per cent improvement in expected maintenance costs per annum.

Figure 2.4: Opportunity costs in the Project and Asset Intensive sector



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**.

Conclusions

The direct impact analysis reveals that the organisational impact potential of SaaS technologies for Australian businesses in the project and asset intensive sector 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: Asset Intensive Sector

Variable	Assumption	Source
Design and build - large	107 private businesses	Market data
Design and build - SME	1594 private businesses	Market data
Own Operate Maintain, public	107 public organisations	Market data
Own Operate Maintain, private	338 private businesses	Market data
Annual repairs and maintenance, construction and private electricity, water, gas, waste collection and treatment	$2.576 billion	ATO, Tax statistics 2017-2018, Key items, by fine industry, 2009–10 to 2017–18 income years
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 (Low range of 8%-30%)
Reduction in reactive maintenance through asset management	8%	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
Labour force productivity, design and build	5%	OECD 2017, lower bound of range
Labour force productivity, OOM	1%	Interview data
Cost of purchases, construction and private electricity, water, gas, waste collection and treatment	$125 billion	ATO, Tax statistics 2017-2018, Key items, by fine industry, 2009–10 to 2017–18 income years
Reduction in supply chain and inventory costs	2.20%	Wharton School of Management, 2010 (lower bound of 2.2%-3.4%, with maximum of 13.8% observed)
Reduction in capital works – OOM	10%	Market data and interviews
Growth in value of other business and customer benefits	2%	Inflation, ABS CPI key categories 1%-2%
Additional business benefits – proportion of organisations realising additional benefit from SaaS	Labour force productivity, 65% Avoided reactive maintenance costs, 90% Supply chain improvements, inventory management, 50% Capital works 35% OOM only	Interviews and market data
Current software model uptake – Design and Build	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – OOM	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
TCO – Design and build large	Total cost of on-prem - legacy $14,326,144 Total cost of IaaS software $12,791,900 Total cost of SaaS (Mixed Stack)$14,388,000 Total cost of SaaS (Native Integration) $12,379,400	Interviews and market data
TCO – Design and build SME	Total cost of on-prem - legacy $307,000 Total cost of IaaS software $305,000 Total cost of SaaS (Mixed Stack)$306,400 Total cost of SaaS (Native Integration) $298,900	Interviews and market data
TCO – OOM	Total cost of on-prem - legacy $29,610,000 Total cost of IaaS software $26,300,000 Total cost of SaaS (Mixed Stack)$28,072,800 Total cost of SaaS (Native Integration) $24,775,200	Interviews and market data
Growth rate in TCO	3.10%	IBIS World

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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