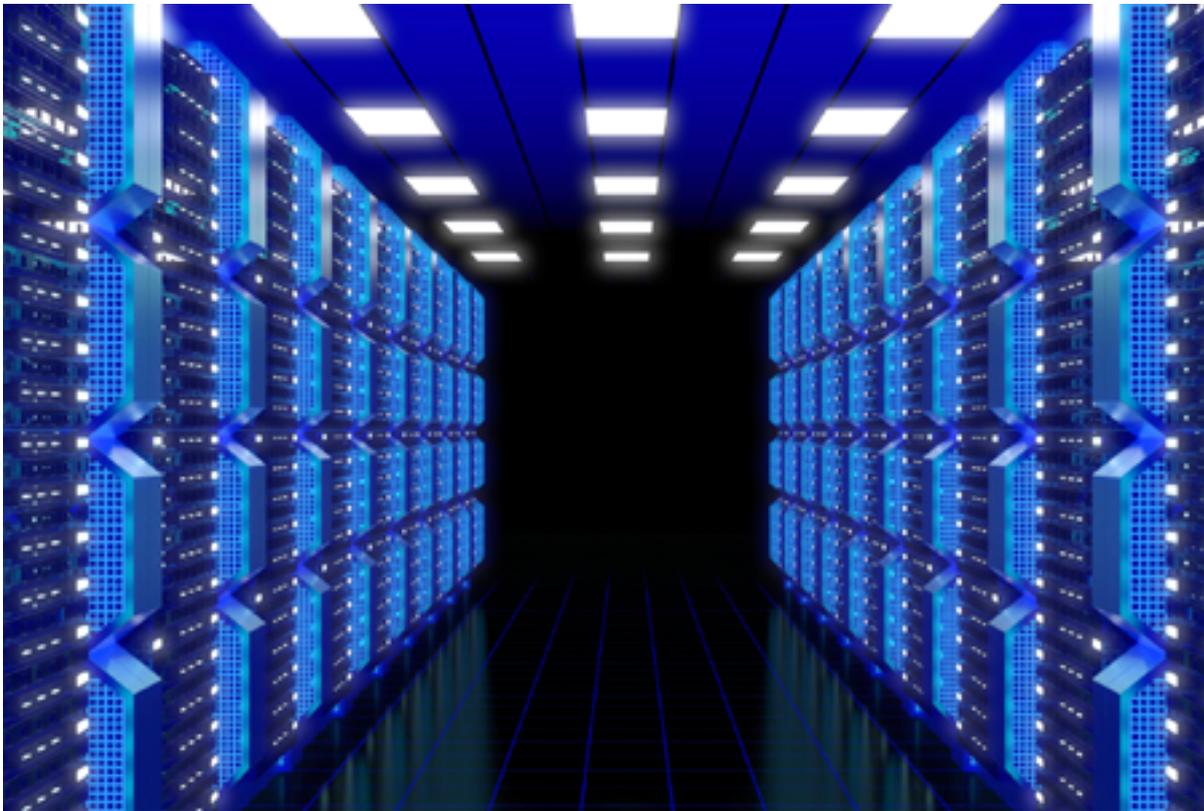


Big Data  
Tougher, smarter,  
stronger, faster





# Foreword

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## The business case for Big Data analytics is improving, despite public and private companies discovering data management weaknesses, uncovering skills gaps and encountering tough new regulatory challenges

### Where are we now?

Last year, we identified Big Data analytics as one of the key technology trends to watch<sup>1</sup>. It certainly has been hard to ignore. Yet for all the attention, local success stories are still few and far between.

So why are Australian businesses finding it so hard to create value amid the hype?

Our experience reveals that the reasons may be more structural than strategic. The resilience of the Australian economy has dampened pressure on local businesses to dig deeper for insights and to invest in more data-driven processes. At the same time, companies have become more cost-conscious, anticipating a reversal of our recent fortunes. Industry is becoming more wary of investments in new and unproven technologies.

The business case for Big Data analytics has suffered more than most. Almost certainly because its benefit has only been articulated as *better insight* proffered with trust that *better insight translates to business value*. In reality, businesses have thus far struggled to prove a definitive link between investments in Big Data systems and financial performance<sup>2</sup>.

Here's the rub - things are about to change in Australia. As our economy rebalances and restructures and competitive pressures intensify, it is vital for all industry and government leaders to ask more searching questions about strategy, markets, customers and operations<sup>3</sup>.

The business case for Big Data analytics is about to return to the investment agenda in a very big way.

Until now, a laggard approach to Big Data has been a mixed blessing. Technology shifts have left first movers with write downs on their early investments. Firms that have pushed the boundaries on personal data use and retention have found themselves increasingly under the burden of government scrutiny.

But as the tools mature, experience proliferates and accepted practices emerge, risks to adoption for individual firms will diminish. This can tip the balance for Big Data projects, particularly in cases where the business benefits are *clear* and quantifiable ahead of implementation.

The immediate focus for firms should be to invest in data management capabilities and to build data talent.

These critical success factors have too easily been shelved alongside fledgling Big Data projects. Investments in better data management and talent development offer a far better return than picking winning products. Not only is strong data management a necessary condition for success with any new data venture, but it is also transferable across point-in-time technologies. And while Big Data analytics continues to hold great potential, it is unlikely to yield any solutions that will reduce our dependence on human manipulation, insight and experience.

# Tougher regulation, policy and cost control

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For all companies interested in Big Data, it pays to be across new challenges appearing on the horizon. We've identified three key areas that we think will pose the biggest hurdles

## **Government Regulation and Privacy**

As firms strive to retain more data and share it more widely, they continue to be confronted by legislation and regulation. The Australian Government's own 'Big Data Strategy'<sup>4</sup> released last year, identified thirteen legislative and policy controls which it had to consider. Much of this regulation was drafted more than 20 years ago and can hardly be expected to keep pace with the requirements of modern corporate data use.

Yet the legislation cannot be ignored. From March 2014, the Australian Privacy Principles (APPs)<sup>5</sup> will replace the National Privacy Principles and Information Privacy Principles. This change will broaden the powers of the Office of the Australian Information Commissioner (OAIC) to investigate and publicise privacy breaches, including civil penalties of \$340,000 for individuals and \$1.7 million for businesses<sup>6</sup>.

Increased regulation will pose bigger barriers to adoption of Big Data analytics in some industries more than others – particularly those that are required to hold and process sensitive customer information as part of everyday operations. Conversely, industries such as mining, where data is typically sensor-based and rarely contains private customer details, will be freer to explore the Big Data opportunity.



### **Corporate Data Policy**

Firms are recognising that they need a centralised policy approach to extract value from data – big or otherwise. In response to increasingly complex data handling requirements across the organisation, Chief Data Officer (CDO) powers and responsibilities have become more prevalent in the executive suite.

Although data processing tools are still predominantly seen at the business unit level, larger organisations have begun forming parent data committees at the group level. For example, the Australian Government has adopted a whole-of-government approach to Big Data, establishing a multi-agency working group and a Data Analytics Centre of Excellence (DACoE) to focus on the development of capabilities.

A more centralised approach to governing data will pose new challenges for business units and agencies which crave autonomy and responsiveness. Data policy centralisation is of course well-intentioned (a typical focus being simply to improve the quality and availability of information). But where does business data ownership stop and corporate data ownership begin? Can corporate data control be effective without impeding front-line decision making? Such crunchy questions will only become more challenging as new and valuable data sources are discovered in all parts of the organisation.

### **Cost**

In most cases, the cost of Big Data analytics is much clearer than its benefits. And although the entry price for systems continues to drop, Big Data asset depreciation is still driven by obsolescence, not productive output. The faster the technology moves, the more costly it appears on financial statements. Big Data technology continues to evolve faster than most.

Big Data can also require investment in expansive, power-hungry infrastructure. At a time that data centre managers are trying to reduce energy footprints, Big Data distributed architectures are demanding ever more expansive physical processing power.

# Smarter technology solutions

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## The challenges are real, but Big Data products are countering these forces in new and innovative ways

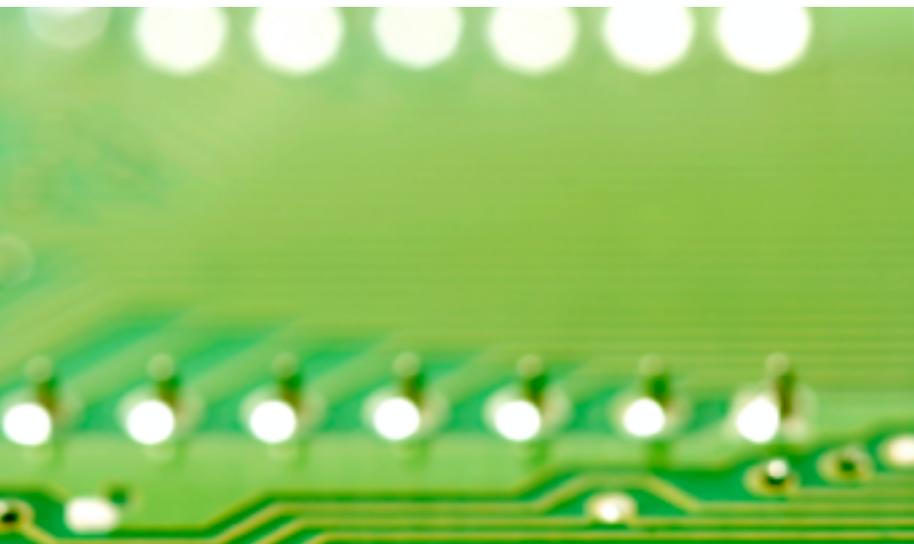
In response to excess demand for software developers experienced with new Big Data programming paradigms such as Map-Reduce, technology vendors are choosing to build bridges to more traditional tools, like SQL and R. This convergence reduces barriers to adoption, especially the burden of reskilling employees and hiring specialised labour.

Competitive forces are driving vendors to take these barriers lower still. With Big Data technology being commoditised faster than usual (in part due to base technologies like Hadoop being open source) vendors are no longer shielded from competition by their intellectual property alone.

Product suppliers are being forced to reposition and differentiate their offerings through leaner integration with existing technologies and by helping develop data talent with better training.

Managed Big Data solutions are offering an attractive alternative to owning physical systems. The necessary infrastructure can now be leased for as little as a dollar a day. Multiply these savings by the reduction in deployment and maintenance costs and the financials dramatically improve. Organisations increasingly want to look at options with Big Data solutions as an operating expense, reducing capital investment.

The cloud model presents its own unique challenges, however. Storing and processing confidential datasets on third party platforms creates a shared responsibility between customers and providers - but organisations should make no mistake as to which party is ultimately accountable. Processing data across borders can also give rise to complex multi-jurisdictional issues. Companies must ensure robust data governance controls are in place before migrating to the cloud.



# Stronger community engagement

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## The technology community continues to be captivated by the Big Data opportunity

Self-organised user groups are growing rapidly and have started attracting the attention of large industry vendors. One such group in Melbourne experienced 13% growth in attendance per meeting last year, and now boasts more than 700 total registered members.

This community plays a significant role in filling the skills gap left by under-investment in data management capabilities. It brings together practitioners from different (and sometimes disconnected) disciplines to create a rich network for self-learning and knowledge exchange.

For businesses, there is untapped potential in this community beyond a source of recruitment. By providing the right resources, goals and incentives, communities can be directed to solve real business problems. For example, GovHack, a competition which challenges participants to create meaningful visualisations from freely available government data, highlights the breadth of opportunity.

Without this type of open engagement, Australian industry risks an encounter with critical shortages in data skills. Australian universities are doing their part, but simply do not have the resources to meet the scale of the problem. Every company that is serious about using Big Data needs a plan to develop and access external data talent.



# Faster opportunities ahead

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## The business case for real-time operational insight is easy to make when minutes of downtime equate to millions in losses

Leading the local charge with Big Data will be the Australian mining industry. With the industry shift from investment to production, there is renewed drive to work existing assets even harder. Better operational intelligence and real time analytics will be fundamental to managing operational risks and streamlining mining processes including remote and autonomous operations.

Along with other data-intensive industries (such as telecommunications, health and financial services), mining has already tackled important parts of the Big Data analytics problem. For example, Australian mining companies are already comfortably in control of huge volumes of data within their enterprise historian databases. And unlike our besieged retailers, they won't need to learn how to interpret hoards of external, unstructured data such as social media sentiment to extract valuable insights.

With *volume* and *variety* tamed, the mining industry has one standout Big Data challenge: *velocity*. Mining will need to build 'speed of thought' analytical capabilities to be able to preserve precious production uptime, while pushing operations to the frontier of efficiency.

The business case for real-time operational insight is easy to make when minutes of downtime equate to millions in losses.

There is still much ground to cover. But mining can benefit from progress made by other industries, particularly investment banking. Such banks are notoriously intolerant of downtime. They face equally punitive consequences for operational failures. In response, they have pioneered the use of real-time architectures, such as Complex Event Processing (CEP), which help them achieve sub-second responses to a torrent of data inputs. Behind the responses sit complex predictive models, which optimise decision making using algorithms and mathematics.

The market for real-time intelligence has quietly been experiencing double digit growth. CEP products have also been joined by newer, faster, in-memory solutions and high performance architectures. For example, Cloudera released Impala last year which claims a 50-68x performance improvement over open source implementations of Hadoop. Such drastic advances should capture the attention of any industry where profits are measured in minutes and seconds.

For industries whose success depends more on customer insights than operational intelligence, it pays to maintain a sense of opportunity with Big Data. The data undoubtedly holds valuable clues to increasing share of wallet, optimising pricing and driving lifetime customer value. The need to unlock these insights is becoming more pressing too, as consumer preferences continue to shift and disruptive business models emerge.

However, when building a business case for Big Data customer intelligence, it is important to discount the potential benefits of any game-changing insight by the probability of actually finding it. This depends on many factors – among them data quality and availability of analytical talent.

# Summary

In the past year, Big Data has become tougher, smarter, stronger and faster. Greater regulation and increased financial penalties for mishandling data has made the business case tougher to prove for many industries.

But the technology is getting smarter. And it is increasingly supported by a stronger, more connected community which plays an important role in filling the gaps arising from under-investment in data management skills.

The Australian mining industry can demonstrate the business case for Big Data, but it is only a matter of time before the Australian economy shifts more broadly to data-driven decision making processes, unlocking a new generation of business intelligence.

The immediate focus for companies with Big Data aspirations should continue to be building a strong data management capability and collaborating more closely with the external data community.

All of industry stands to gain enormously from a more coordinated approach to building the next phase of our (big) data-driven economy.

# Contact us



**Tim Nugent**

*National Lead Partner*

Enterprise information management

Tel: +61 3 9671 6153

[tnugent@deloitte.com.au](mailto:tnugent@deloitte.com.au)



**Robert Hillard**

*Managing Partner*

Technology Agenda

Tel: +61 3 9671 7971

[rhillard@deloitte.com.au](mailto:rhillard@deloitte.com.au)

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1. See Deloitte (2013), 'Tech Trends 2013 – Elements of postdigital'
2. In one sample we took, 71% of respondents did not use customer analytics, citing cost and proven value as the biggest barriers
3. See the latest instalment in our 'Building the Lucky Country' series, 'Positioning for prosperity? Catching the next wave'.
4. Australian Government Information Management Office (AGIMO), Department of Finance and Deregulation, 'The Australian Public Service Big Data Strategy', Aug 2013
5. Office of the Australian Information Commissioner, 'Information Privacy Principles'
6. Timothy Pilgrim, 'Privacy Awareness Week 2013 Privacy Commissioner's Update', 29 April 2013

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