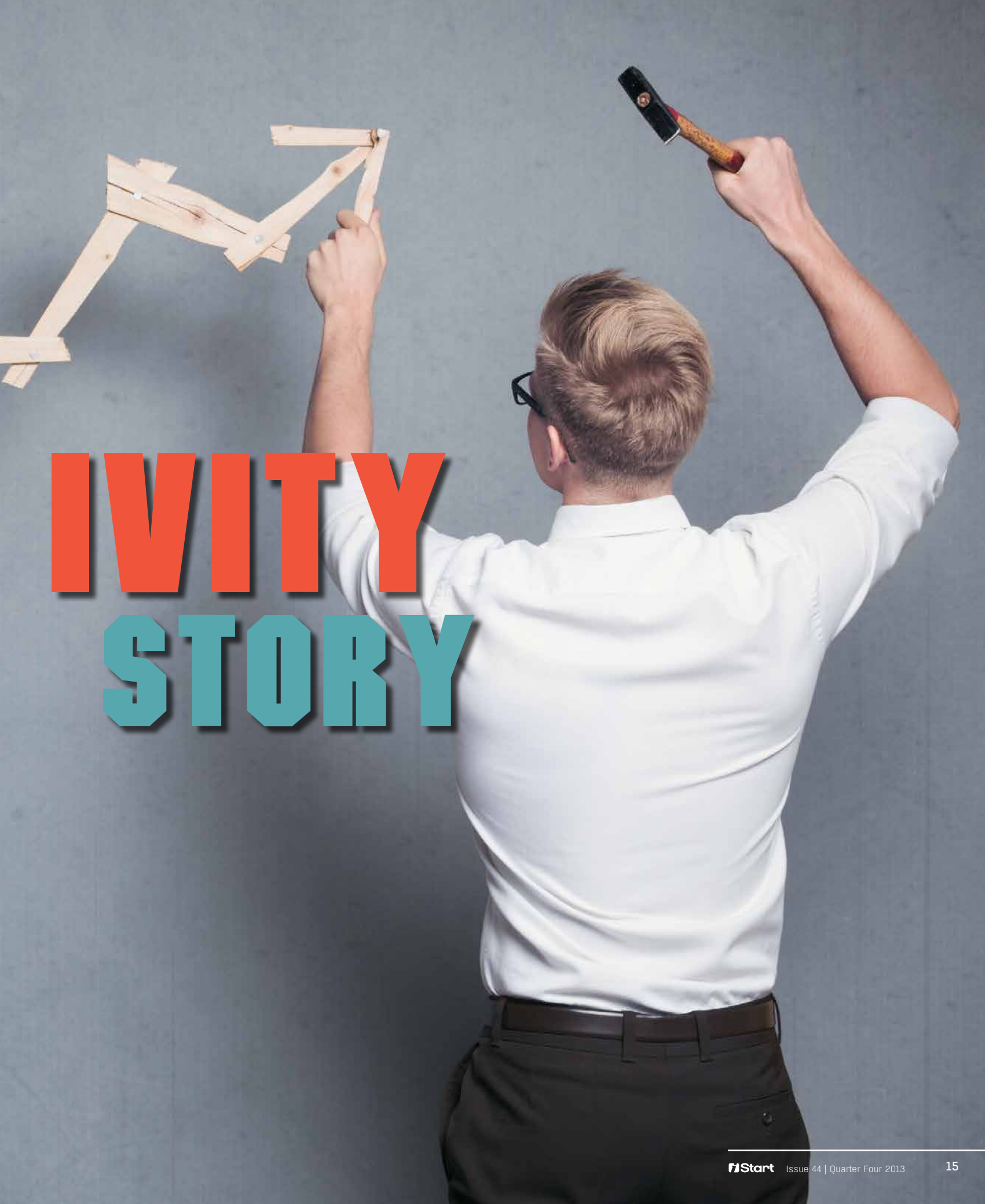


# MAN, MACHINE AND THE PRODUCT



**TECHNOLOGY HAS INCREASED PRODUCTIVITY AND EMANCIPATED HUMANKIND FROM DAY-TO-DAY TASKS, ENABLING AUTOMATION OVER DRUDGERY, HASN'T IT? AS THE MARCH OF THE MACHINE CONTINUES INTO THE DIGITAL AGE **CHRIS BELL** EXPLORES ECONOMIST ROBERT SOLOW'S FAMOUS QUIP THAT YOU CAN SEE THE COMPUTER AGE EVERYWHERE BUT IN THE PRODUCTIVITY STATISTICS...**



# IVITY STORY

It seems self-evident that information technology makes us more productive. However, academics and technology sceptics know all about the productivity paradox. It was popularised in a 1993 article by Professor Erik Brynjolfsson, who noted an apparent contradiction between advances in computing power and the slow growth of productivity.

Let's face it; technology's transformative effect on business isn't always apparent. Be brutally honest, even with all of your new devices and mobile working capabilities, how much more productive are you today than you were 10-15 years ago? Enough to justify every dollar you've spent on technology in the interim?

More likely your productivity is being spread more thinly over what was previously your leisure or commuting time. This is corroborated, in part at least, by responses to a Clarian Human Resources study completed in conjunction with Massey University this year, the *Great New Zealand Employment Survey 2013* (a nationwide online survey based on 334 responses). For example, one comment read: "Constantly accessible. People expect faster responses. Too easy to keep checking in on emails at home and on leave". Respondents cited "excess workload" as a barrier to performance and nearly two-thirds of respondents felt IT led to spending *more* time on work.

It's partly a perceptual problem, of course; just because you're at work doesn't mean you're working. As the *Economist's* contributor Buttonwood wryly noted, the ability to watch funny cat videos doesn't count as increased productivity, and the same publication has been saying new technologies don't automatically lift productivity since at least 2003: "Firms need to work out how to reorganise their business to make best use of any important new technologies before they can reap the full rewards."

Back in 2000 Professor Robert Gordon at Northwestern University in the US wrote a paper (*Interpreting the 'One Big Wave' in US Long Term Productivity Growth*) in which he asked whether the computer and internet revolutions are as important as the first industrial (steam) and second industrial (electrical and internal combustion) revolutions. He contended many of the inventions that initially led to the deployment of computers occurred in the 1970s and 1980s and since then the majority of notable developments had been in communications and entertainment.

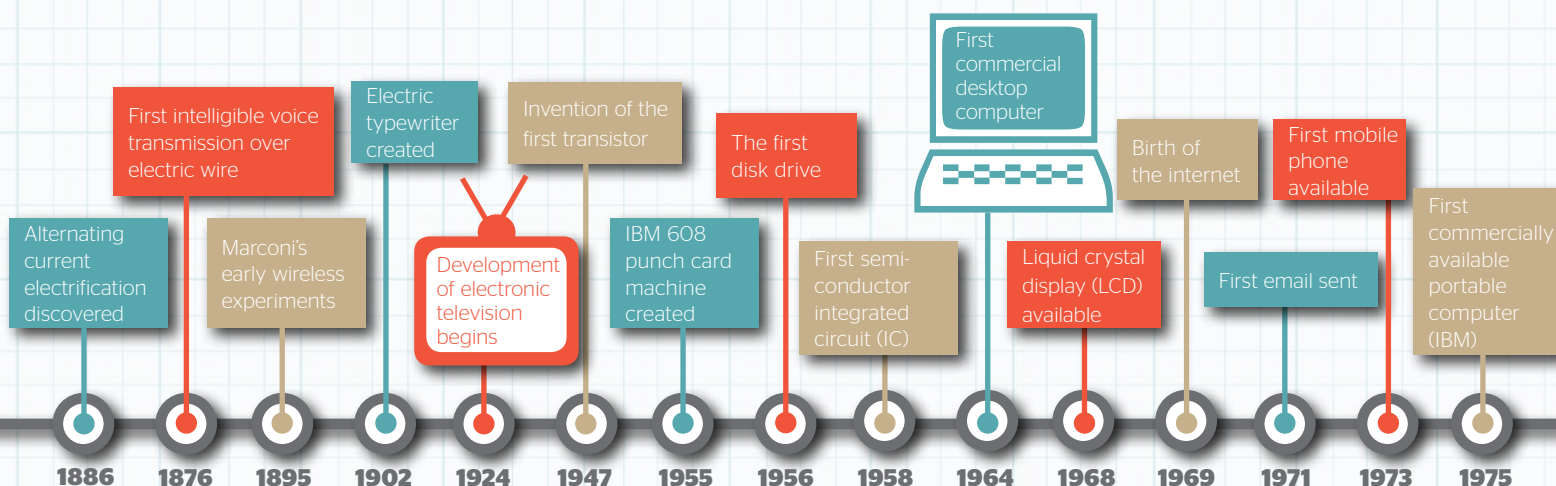
"But that was before the effects of the internet," you reasonably respond. "Now we have the cloud, cheap storage, reliable web search and robust, free email!" So why aren't these innovations unambiguously reflected in our productivity figures? Well, for one thing, says Oxford University

economist Paul David, by comparison there was no notable productivity growth until at least 40 years after the introduction of electric power. It took until around 1920 for US machinery to be connected and for organisations to re-engineer themselves for the benefits of electricity. David also calculates that a technology only begins to significantly affect productivity when it has reached a 50 percent penetration rate. US computer use, for example, only reached this mark in around 2000.

## MORE INPUT, LESS OUTPUT

The Australian government's Productivity Commission is studying the problem of manufacturing's contribution to the decline in productivity growth and undertaking work to identify its causes. Its findings aren't expected until after this edition goes to print. But in its June 2013 *National CEO Survey*, the Australian Industry Group says the fact Australian businesses have been keen technology adopters over the past two decades has had a positive impact on productivity at a company level. To maintain this momentum, it concludes, significant new policy initiatives are required, including the development of a national workforce skills strategy for the digital economy.

Meanwhile, a September 2012 paper by the New Zealand Productivity Commission, *Productivity*



INDUSTRIAL AGE →





by the numbers: *The New Zealand experience*, finds New Zealanders working more hours but producing less than workers in other countries: "New Zealanders work about 15 percent longer than the OECD average to produce about 20 percent less output per person," the paper says. New Zealand's labour productivity has been falling behind other OECD countries for decades, it seems. Productivity commissioner Murray Sherwin has also said that even though the country has invested heavily in ICT technology, many organisations have failed to turn their investment into meaningful productivity growth.

### HEALTHY SCEPTICISM

Some digital commentators are sceptical about the metrics traditionally used to measure productivity. Geof Heydon is director of business development for the information sciences group at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Sydney. "If you take something that's been happening for 100 years and try and work out how much it's improved, there's a fairly good chance that you won't find massive improvement," Heydon cautions.

However, he is dubious about research findings suggesting technology isn't increasing productivity. "More often than not those research programmes are run by various big consulting

companies, and quite often the outcomes are very much dependent on who's funding the research. The research required to get proper answers on these things is extensive and mathematically complex."

Underscoring the difficulty of measuring productivity in the digital age, Heydon says it's challenging to analyse an entire economy and understand what's happening to it from a computing perspective. "It's easy to miss critical aspects of what's digital and hard to be completely thorough and detailed about it."

### TECHNOLOGY TIMELINE

Pinpointing the source of productivity gains when new forms of power were introduced was relatively straightforward but seems to have become more elusive with each progressive innovation. For example, from the mid-1880s, electrification dramatically increased the productivity of factories. Also, the centralisation of electricity generation meant more businesses could afford electricity because they paid only for the power they used.

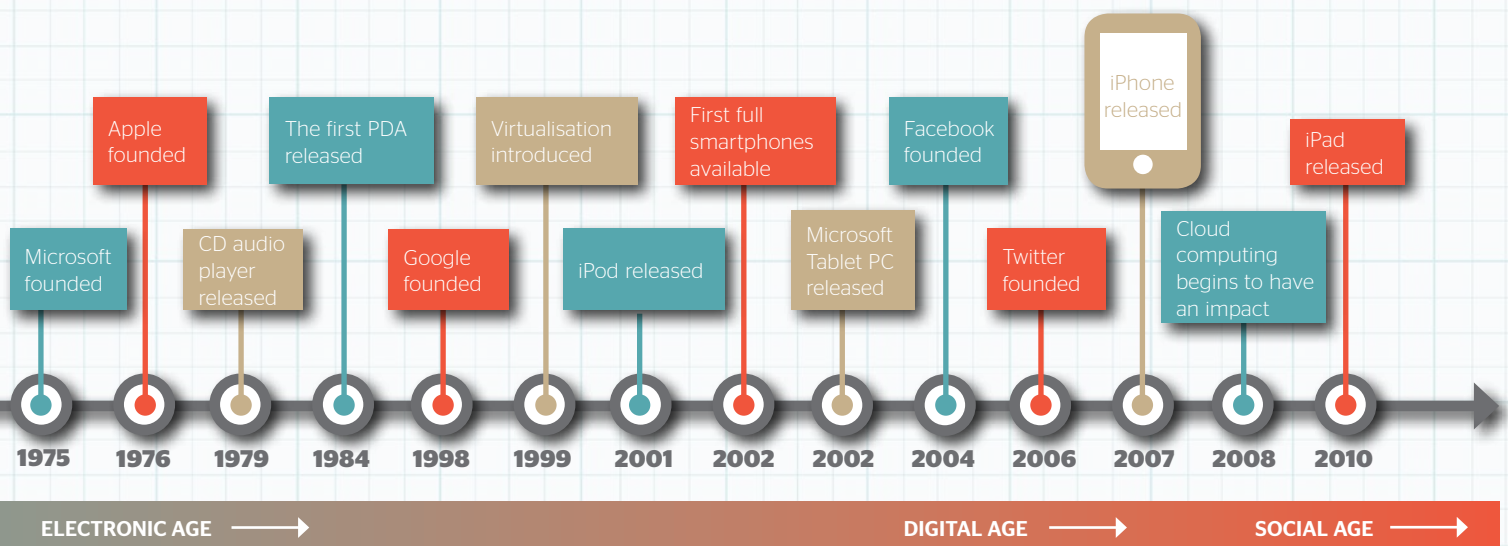
The earliest information technology hardware took the form of adding machines and unit recording equipment, which processed data by running punched cards through tabulating machines. Comparable human calculations

**"IF YOU TAKE SOMETHING THAT'S BEEN HAPPENING FOR 100 YEARS AND TRY AND WORK OUT HOW MUCH IT'S IMPROVED, THERE'S A FAIRLY GOOD CHANCE THAT YOU WON'T FIND MASSIVE IMPROVEMENT."**

GEOF HEYDON, DIRECTOR OF BUSINESS DEVELOPMENT, INFORMATION SCIENCES GROUP, CSIRO

required more manpower and were subject to greater levels of human error. The first completely transistorised calculator dates back to 1955 when IBM introduced its 608 machine (those punched cards weren't fully superseded until the 1980s).

The lack of portability of early electric typewriters in the early 1900s is one reason why they took time to realise sizable productivity gains and they didn't wholly supplant manual machines before the very first word processors began to sweep both typewriter variants aside in the late 1970s and early 1980s.





## “THE LOSSES HAVE REACHED THEIR PEAK AND NOW THE PRODUCTIVITY GAINS THROUGH SMART TOOLS AND AUTOMATION SHOULD START TO KICK IN.”

BEN KEPES, TECHNOLOGY EVANGELIST  
AND CLOUD COMPUTING CONSULTANT

Author and inventor Ray Kurzweil identified silicon transistors as “the fifth paradigm” of computing power, following computers based on punch cards, relays, vacuum tubes and transistors. Although the introduction of low-cost integrated circuits beginning in the late 1950s would eventually make them integral to almost all electronic equipment, thereby revolutionising the world of electronics, measuring productivity gains directly from the silicon chip is complicated. And while the most popular early software, such as word processing applications from the late 1970s, automated tasks like physical cutting and pasting, it had little verifiable impact on overall productivity.

However, some commentators – Charlie Orosz of Boston University for one – argue that one reason why the predicted productivity gains weren’t realised is that computer users are not adequately trained to harness computers’ power. “Even if we had already reached the limits of silicon,” said Orosz, “computers could continue to boost productivity because people today are using only a fraction of their available computing power.”

But even commentators such as Professor Brynjolfsson were beginning to note by the late 1990s that IT was improving workplace productivity; especially in US organisations as their investments in technology increased. A significant positive relationship between IT investments

and productivity was found – especially where IT investments accompanied changes to their business processes.

The first portable (heavy and hardly mobile by today’s standards) phone handset appeared in 1973. But now some critics see the ubiquitous mobile phone as a productivity inhibitor rather than a productivity tool. Phil Frost, managing partner of New York internet marketing firm Main Street ROI, says when work email is checked on a non-work device employees tend to send fast, suboptimal replies or reread the email at work – clearly counter-productive. A recent article on Open Forum even lists ‘7 ways cell phones are destroying your business productivity’.

Although fast internet access is widely regarded as productivity enhancing, there’s a shortage of conclusive research to quantify the benefits to organisations from various forms of internet connectivity. A 2009 working paper by New Zealand non-profit research institute Motu Economic and Public Policy Research said although broadband adoption was found to boost productivity, its researchers found no productivity differences between one broadband type and another.

In 2012 McKinsey Global Institute found skilled office workers spent more than a quarter of each working day writing and responding to email. However, anecdotally at least, the sheer volume of email received by many workers, as well as a tsunami of junk mail, makes it a far less effective communications medium than it initially was.

Google’s search algorithms may help you find what you’re looking for faster than you could find it 10 years ago – many will remember the frustrations of the hit-and-miss search engines that preceded it – but again, converting such an efficiency boost into productivity terms isn’t easy.

Which leads us to cloud computing: the Australian government consulted New Zealand cloud accounting software business Xero when the former was writing the early drafts of its *National Cloud Computing Strategy*, and it’s easy to summarise that government’s enthusiasm for the cloud: “Australians will create and use world-class cloud services to boost innovation and productivity across the digital economy,” the

strategy document trumpets. According to the document a 2011 study conducted by Microsoft, which surveyed more than 3000 SMEs across 16 countries, found organisations using cloud services had 40 percent more revenue growth per year compared with those that didn’t.

### NOT-SO-SIMPLE CHOICES

Douglas Rushkoff is a US blogger and documentary-maker (*Merchants of Cool*, *The Persuaders*) and author (*Cyberia*, *Media Virus*, *Playing the Future*), as well as a commentator on trends, culture and the wired world. Rushkoff told *iStart* it’s not a simple choice of technology either being to blame for the productivity paradox or not. “Technology can replace human labour, and reduce the total number of hours humans need to work in order to accomplish certain tasks,” he says. “The economy hasn’t caught up with the simple fact that we don’t all need to be working so many hours.”

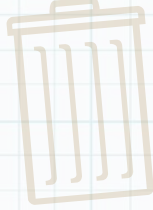
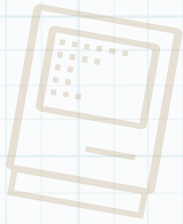
Rushkoff certainly has nothing against increased productivity: “The more ‘zen’ you get about certain tasks, the more efficiently you might perform them – or the more efficient the systems you design. As long as it makes your product better, there’s no problem with increasing productivity.”

Rushkoff asserts that the productivity and efficiency gains from technology are real and have already changed the employment landscape, but that organisations have so far failed to exploit this. “The problem is that the business landscape is not adjusting to the increases in productivity,” he says. “They’re having problems increasing shareholder value, even with greater efficiency.”

### CONFLATING CAUSE AND EFFECT?

Ben Kepes is a self-described technology evangelist and “cautious optimist” and, like Rushkoff, is somewhat sceptical about the findings of the New Zealand Productivity Commission. “We need to make sure we’re not conflating cause and effect,” he says. “Clearly we live in a much more highly regulated environment than we ever did before, and at the same time there’s been this increase in the adoption of technology. So the only way to assess the two would be to have a control





where you have technology without compliance, and vice versa, to see the impact.”

Although he acknowledges technology's contribution to productivity, at the same time Kepes concurs with Nicholas G. Carr, author of the article *Is Google Making Us Stupid? What The Internet Is Doing To Our Brains*, that our attention spans are shortening. “We’re distracted, there’s a barrage of different sensory inputs all the time.” And he isn’t immune to the symptoms himself. “I love reading and used to read a huge amount of fiction. [Now] I find it hard to keep my attention on it. ‘Brain rewiring’ sounds a bit emotive and melodramatic, but there’s definitely something going on.”

Kepes regards technological progress as a one-

way street, though. “One could conceptualise about ‘what if’, but clearly technology is in our lives 24x7.

I don’t think we’re on a race to zero and we’re all going to turn into a vegetative state, but if I had to predict anything, I’d say the losses have reached their peak and now the productivity gains through smart tools and automation should start to kick in.”

He is also doubtful about some of the Productivity Commission’s findings. “We’re probably not working more in terms of actual hours,” he says. “We’re probably mixing up work and all the other stuff that isn’t productive.”

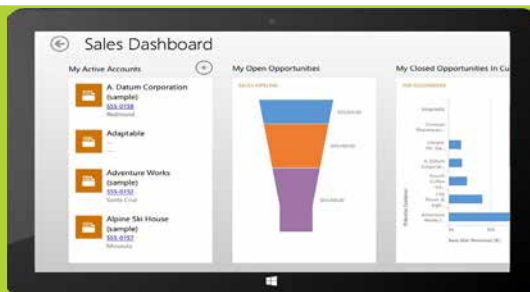
It’s perhaps worth mentioning that none of *iStart’s* interviewees had any time for the potential productivity gains presented by gadgets such as

Google Glass – the wearable computer with optical head-mounted display – in spite of the marketing spiel from other vendors about integrating their apps and web services with it.

Forty-three percent of respondents to the Clarion/Massey survey suggested increased communication and employee involvement would lead to increased productivity in their organisation – they don’t cite increased technology deployment. After all, companies aren’t just rooms filled with people in front of PC screens. Technology is only one factor in increasing productivity. “Corporations are programs themselves, using technology as they always have to minimise the extent to which profits depend on human actors,” says Rushkoff. ■

[www.adaptable.co.nz](http://www.adaptable.co.nz)

## Microsoft Dynamics CRM 2013



REMASTERED  
USER EXPERIENCE



PROCESS EXCELLENCE &  
AGILITY



CRM  
ON THE GO



ENTERPRISE  
COLLABORATION



PLATFORM  
ENHANCEMENTS

With a mobile CRM solution from **Adaptable Solutions**, you have the right partner to help increase the performance of your sales team.

For more information contact Alan Parker:  
+64 9 555 7716 or [a.parker@adaptable.co.nz](mailto:a.parker@adaptable.co.nz)

 Microsoft Dynamics CRM

  
**Microsoft Partner**  
Gold Customer Relationship Management  
Gold Enterprise Resource Planning

**Microsoft Dynamics CRM 2013** offers mobile applications to keep your people connected to data, colleagues and customers. With access to your CRM solution on your Windows 8 tablet or iPad as well as your mobile phone, you have the tools you need to not only look smarter, but also to be smarter.

 **ADAPTABLE SOLUTIONS**  
people+solutions: working together, delivering success