GRID RESEARCHER

DR RAJKUMAR BUYYA, MELBOURNE UNIVERSITY

It was a frenetic year for Melbourne researcher Dr Rajkumar Buyya, 34, who confirmed in his place as one of the world's leading grid computing researchers.

He wrote two computer science textbooks, edited a two-volume book on cluster computing used in universities worldwide, co-authored 120 research papers and technical documents, started a new masters course at Melbourne University and chaired an international conference.

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As the director of the Grid Computing and Distributed Systems Laboratory at the University of Melbourne's Department of Computer Science and Software Engineering, he oversees the research and development of next-generation distributed system technologies for grid computing. Grids offer scientists and corporations new ways to access a diverse array of computing resources. They allow unprecedented access to storage and processing capacity on an as-needed basis.

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Examples of industrial use include: biometrics and security management applications by Indian IT outsourcing company Satyam; CSIRO uses it to run environmental simulation models;

German company Stochastix for investment risk management applications; and the Friedrich Miescher Institute in Switzerland for medical research and analysis.

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Being surrounded by a talented team is vital to Dr Bayya's success, he says.

"Education and research is a team effort, it is not possible for one person to do all this."
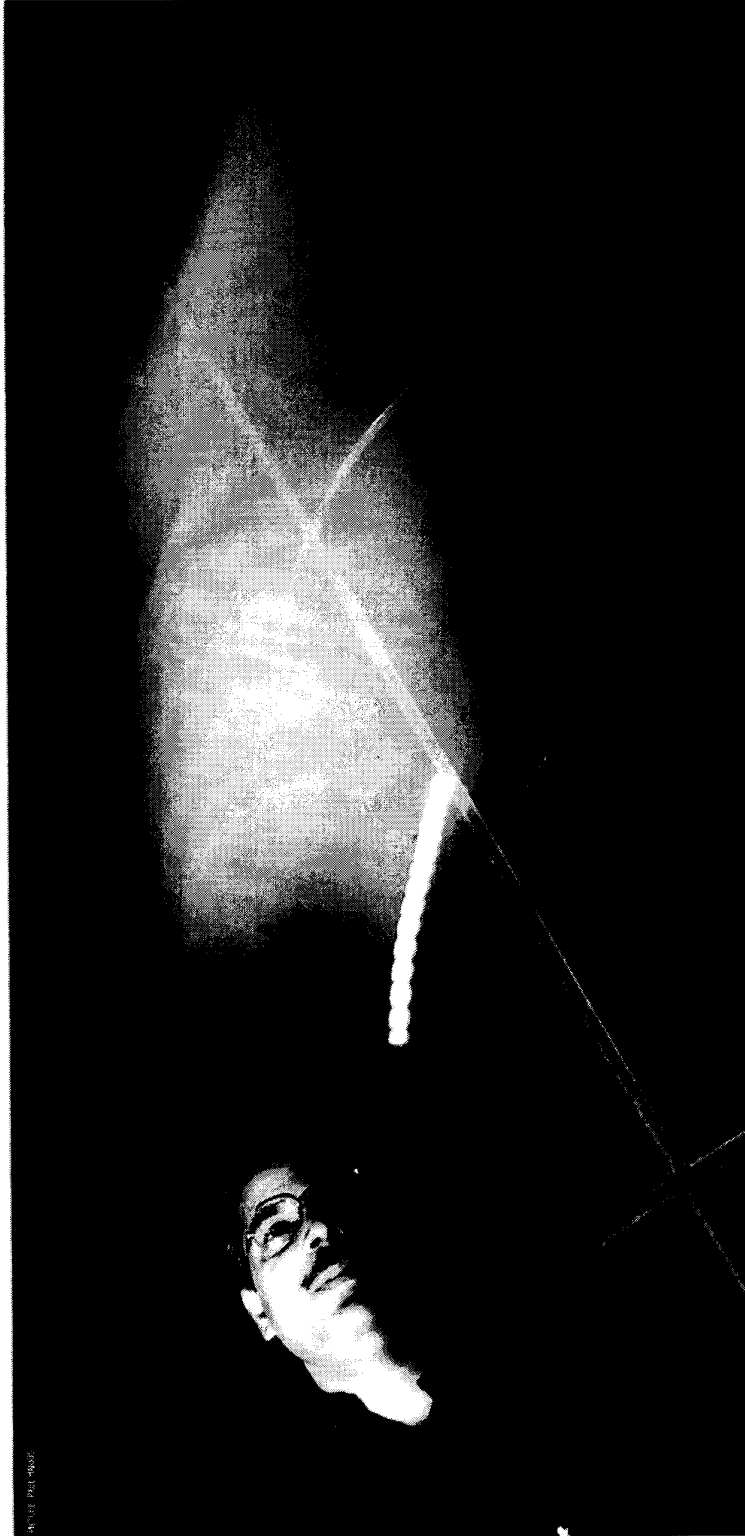
CYNTHIA KARENA

LINKS
Homepage buyya.com
GRIDS Lab gridbus.org
E-Science 2005 gridbus.org/escience
IEEE Technical Committee for Scalable Computing ieeetcsc.org

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MEDIA MONITORS
INCISIVE INSIGHT

WATCH THESE FACES

Australia's foremost banking chief information officer, world-leading computing researchers and the man who rattled Telstra tell us what they plan for 2006. PAGE 4

"We're not working on having the best technology, we're working on having the best use of technology."
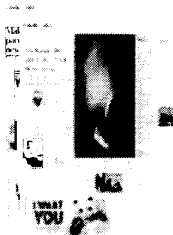MICHELLE TREDENICK, National Australia Bank
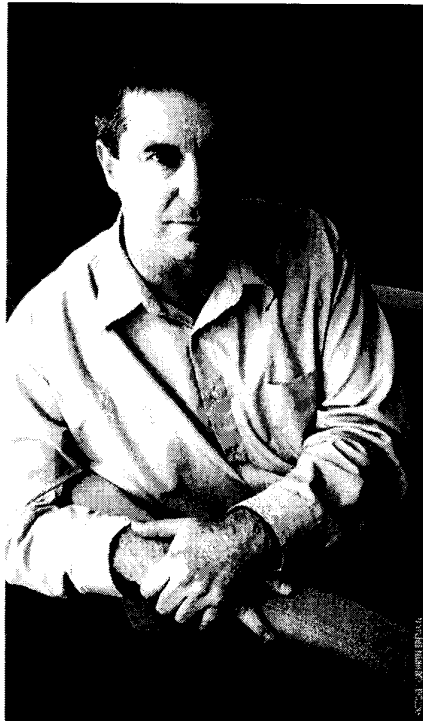
"If you can optimise production processes and generate a 1 per cent improvement, that can represent tens of millions of dollars savings."
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Making the pace in a hot new year

A leading computing researcher, bank CIO and internet entrepreneur tell of the exciting challenges that lie ahead for them.

COMPLEXITY RESEARCHER

PROFESSOR DAVID GREEN, MONASH UNIVERSITY

WHEN McGraw-Hill went looking for an expert to write a chapter on complexity theory, the choice was simple. The scientific textbook publisher turned to David Green, 56, one of the field's evangelists, who forged strong interdisciplinary links in Australia and overseas.

The professor of IT research at Monash University in Melbourne, and a chief investigator with the Australian Research Council's Centre for Complex Systems, recently also wrote on complexity in landscape ecology, a book published by Springer.

Although considered to be basic research with commercialisation years away, complex computing holds answers to real-life problems, says Professor Green, and promises to lead to new classes of computer systems.

An example of how complex computing techniques could become everyday applications is in the analysis of ecological and social networks. For instance, a swarm analysis project identified how social interaction affected social order; another explored fragmented landscapes — developing computer models to demonstrate the ecological effect of breaking up rainforests or clearing land for agriculture. With his colleague Dr Suzanne Sadedin, Professor Green also co-authored *Complexity in Landscape Ecology*, slated for publication at the end of the year, which demonstrates how complex computing techniques can underpin better agricultural and environmental policy initiatives.

Professor Green's campaign to demystify complex computing, and encourage other disciplines to adopt it when tackling complex real-world problems, was kicked along by the release of his popular book *The Serendipity Machine*. Among his other recent achievements, he:

■ Developed a law-and-order model that tries to explain crime rates.
■ Leads a project that determines the role of peer networking in maintaining social discipline.
■ Explored complexity and stability in food webs.
■ Applied complex IT techniques to bioinformatics problems, including gene profile analysis in hereditary breast cancer.
■ Studied emergent order in complex networks with IT research group at Monash.

It's this determination to demonstrate how complex computing has real benefits that drives a potentially high-profile project planned for this year in which Professor Green and Ms Sadedin will make computer models to predict how genes from genetically modified crops infect other crops.

Although his work is "probably one step removed from commercialisation", he says we are "learning about real systems and possible computational methods which will lead" to realising its potential.

"If you can optimise production processes and generate a 1 per cent improvement, that can

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represent tens of millions of dollars savings," he says.

The benefits to Australia could be greater — but he confesses frustration at the scant interest shown in Australian scientists' work. He says too often bureaucrats seek overseas scientists' input when grappling with difficult problems.

"I would like to increase the international impact of what Australia is doing in this field. Australia needs to take more pride in what we do," he says.

BEVERLEY HEAD

THE CIO

MICHELLE TREDENICK, NATIONAL AUSTRALIA BANK

Michelle Tredenick begins the year hunting for people with the skills to overhaul National Australia Bank's antique software. That's a shift from last year, when stability was her chief concern

Assuming the reins as NAB's chief information officer in the middle of a massive consolidation of three divisions would have been challenge enough, but the integration of NAB's funds management, wealth management and retail banking operations also resulted in a $409 million write-down in software assets. The very public collapse of the $200 million integrated systems implementation was what led to the CIO seat becoming vacant. Ms Tredenick's predecessor, Ian Crouch, was ousted as the bank sought to get back to basics and return to profitability.

It became evident early on that the tech division needed to restore its credibility with the business, says Ms Tredenick.

A new leadership team of 12 was put in place, roughly a third of them outsiders and four drawn from what was previously the MLC wealth management business. "We've moved the technology organisation closer and more decentralised towards our business units," says Ms Tredenick, who manages a $915 million annual budget for computing and communications technology.

Next on Ms Tredenick's agenda was an extensive review tackling three key areas: what NAB's competitors were doing domestically and overseas, where computing trends were headed and what NAB's road map looked like three years out. The review unearthed as a priority the construction of an enterprise architecture to service the business holistically rather than having pockets of technology scattered throughout.

The bank determined to gradually re-engineer its ageing software applications into modules rather than replace them in sweeping overhauls. Two components of this work kicked off in November around building a horizontal view of all the bank's products for customers and staff, and product packaging for high-end customers.

After 15 years running financial service IT shops, Ms Tredenick is quick to point out there is no competitive advantage in technology itself.

"We're not working on having the best technology, we're working on having the best use of technology. To me that is harder but less risky and results in a much more sustainable competitive advantage," she says.

NAB's technology partners have also been put on notice, with Ms Tredenick indicating that some functions may be brought in-house or given to other contractors. She would not say which areas are up for review but she will tighten the screws on IBM and Telstra during the bank's massive desktop replacement program in March.

"We need to optimise sourcing arrangements, whether that be delivering services internally, with a partner or offshore. The right arrangement is a function of a number of things, including value, how strategic the particular service

is to the bank and also whether you've got the skills and capabilities internally," she says.

It is believed that much of the $1.8 billion allocated by chief executive Ahmed Fahour to revive the bank's fortunes will be spent on IT.

AGNES KING

ENTREPRENEUR

ILKKA TALES, ENGIN

One of the the first companies to bring next-generation voice communications to Australian consumers over the past year is a small but growing publicly listed company called engin. Formerly called Mobile Innovations, engin, led by chief executive officer Ilkka Tales, specialises in providing voice over internet protocol (VoIP) services to the domestic consumer and small business markets, and is taking business away from traditional voice telephony providers Telstra and SingTel Optus.

When we spoke to Mr Tales 12 months ago, Mobile Innovations, originally a direct marketing company acquiring customers for Vodafone, had recently finalised a drawn-out contractual dispute with the mobile carrier. Mr Tales, knowing that the company's Vodafone business was soon to be no more, told us then that the newly launched engin venture was a make-or-break business exercise.

Proving that Mr Tales read the emerging VoIP market space correctly, engin, which now has more than 10,000 customers, many of whom have switched off their PSTN services, has done more than survive. "We're now heading towards profitability. When a business is under pressure like we were, one of the positives that we had going for us was that we had developed our product and didn't have to rely on a carrier," he says.

Mr Tales will expand the focus on VoIP technology, a path taken about three years after considering a range of broadband service options, including wireless, video on demand and other broadband content models. "We decided to focus on VoIP because we had all

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the right skill sets and core competencies in our team to be able develop and launch a product into the mass market," he says.

There were few overseas prototypes on which to model the new Australian business. "There were two small startups, Toledo in Norway, which started just before us, and one in the US called Bonage, which had about 30,000 customers," Mr Tales says. "When we came across the companies we had already made our technology decisions."

He says engin was able to commercialise its product and service because the company had the support of its board and shareholders. "We have some very experienced telecommunications people on our board and, once we had their support, we went back to our shareholders ... and asked them to fund our launch into the wider market, which they did," he said.

The first 10,000 customers signed up within the company's first year as a VoIP provider.

"To put that in perspective, the first year of mobile telephony in Australia in 1986 had about 2000 customers. The first year of broadband in 1997, had about 500 customers and by the fourth year there were 10,000 customers.

"So when you compare engin to the take-up rate of other new technologies, the rate has been extremely fast," Mr Tales says.

"Although we had always intended to target consumers, surprising to us is that 44 per cent of our customer base today is cost-conscious business," he says. So, we'll be focusing on the SME market in the new year." **STAN BEER**

GRID RESEARCHER

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