Smarter Planet Backgrounder

The world is at a critical inflection point. The meltdown of our financial markets is just the latest in a series of wake up calls about the realities and dangers of highly complex global systems. Global climate change, environmental issues surrounding energy and water and challenges in our traffic and transport systems are highlighting, more than ever, that we are all now connected – economically, technically and socially.

Opportunely, the digital and physical infrastructures of the world are also converging. With so much technology and networking abundantly available at such low cost, the possibilities for solving these problems are real and endless.

To seize this opportunity and prepare Australia's economy for the 21st century, IBM is calling for a transformation of the world's infrastructure. Three factors are making this possible:

- **Our world is becoming instrumented**: By 2010, there will be a billion transistors per human. Within the next two years, 30 billion Radio Frequency Identification tags will be produced globally. And sensors are being embedded across entire ecosystems – supply-chains, healthcare networks, cities, even natural systems like rivers.
- **Our world is becoming interconnected**: We know we are all now connected – economically, technically and socially. In fact, by 2011, an estimated 2 billion people will be on the Web and connected to devices in an unprecedented way. And in our instrumented world, systems and objects can now "speak" to one another.
- **It's time to make things intelligent:** The amount of information produced by the interaction of all those things will be unprecedented. This means we must infuse intelligence into our systems and ways of working. New computing models have made the power of supercomputers accessible to organisations of all sizes meaning we can turn mountains of data into intelligence and action. We now have the opportunity to make our systems, processes and infrastructures more efficient, more productive and responsive – in a word, smarter.

Smarter Transport

- In Australia, the length of congested road is forecast to treble within the next 20 years, and by 2015 the congestion costs of freight alone will increase from $13 billion to almost $30 billion a year. [Business Council of Australia].
- Brisbane drivers spend an average of 258 hours a year stuck in traffic. The city's peak-hour traffic jams means travelling takes 85 percent longer, costs each motorist an extra $400 a year in petrol and increases greenhouse emissions by 30 percent [RACQ Study 2008].

- This is why IBM is working with Queensland Motorways on a smart system to allow free-flow tolling to replace its 47 tollbooths on motorways around Brisbane. Vehicles will be assessed and charged as they pass underneath a control point on the motorway or Gateway Bridge.
- The new system, which is due for completion by mid-2009, will use traffic management and business intelligence technologies to give drivers multiple billing options. In addition, QML will be able to consider varied time-of-day tolling which has been used successfully to control inner-city traffic congestion in Stockholm.

Smarter Water

- Last year in Melbourne, 50 billion litres of water was wasted through leaks and burst pipes – enough to supply the city for more than one month. Surprisingly this represents only a tiny part of our water system as irrigated agriculture accounts for 70% of Australia's freshwater uses.
- Currently, the Murray Goulburn irrigation system loses more water than Melbourne uses in a year.
- IBM is working with the University of Melbourne to improve the efficiency of our irrigation networks. The University has demonstrated that smart sensor networks can allow just the right amount of water to be delivered to crops when it is needed, where it is needed – resulting in improved productivity and significant water savings.

Smarter Power

- With limited intelligence to monitor network behaviour, the world's power utilities lose enough electricity annually to power India, Germany and Canada for an entire year.
- To improve efficiency, increase the level of network observability and control, and manage future demand for renewable energy, Country Energy has joined the Intelligent Utility Network Coalition, a global group of companies working with IBM to accelerate the adoption of 'smart grid' technologies and business solutions.
- An Intelligent Utility Network is a digital, open standards-based network of sensors, metering, communications, computer processors and analytics which will connect Country Energy from power plant to plug. The utility will be able to gather near real-time data and information on its grid infrastructure. Insights gathered from this data will allow Country Energy to manage its network second by second, providing a holistic picture of the power system.
- Country Energy is transforming its network to capably respond and interact with the expected changes that will occur with the wider penetration of small renewable generators – in homes, schools and businesses – by allowing renewable energy to be shared, distributed and stored locally. Through the adoption of 'smart grid' technology it will be able to better manage the grid infrastructure, enabling fewer and shorter power interruptions, improved customer service and the ability to source and deliver renewable power more efficiently.

"IBM's vision for a smarter planet is to bring a new level of intelligence to how the world works – how every person, business, organisation, government, natural and man-made system interacts. Each interaction represents a chance to do something better, more efficiently, more productively. But more than that, as the systems of the planet become smarter, we have a chance to open up meaningful new possibilities for Australia's progress."

– Glen Boreham, Managing Director, IBM Australia & New Zealand