

Bright ideas for a new generation

From surveillance to mobile phones, the innovations of the future get their due, writes Keeli Cambourne.

REGIONAL COMMUNITIES PRESIDENT'S AWARD

Blackmans Swamp Creek stormwater harvesting scheme

Orange City Council and Geolyse

WHEN Orange's water supply fell to about 25 per cent – enough to last for about a year – the council knew it needed to act fast.

Storms weren't filling the dams because the rain was soaking into the parched earth, not running into the water catchment. But council engineers realised there was a plethora of untapped water that could go straight to where they needed it, with just a hint of reconfiguration and a lot of community support.

"Basically what we do is pick up the stormwater from Orange," says the director of technical services for the council, Chris Devitt. "There is a creek system that drains 70 per cent of the urban area of Orange, which then comes to a central point downstream of the city.

"What we have done is put in a small weir structure there and a pump so we can extract that water and put it into the main water supply for the city. We only take water after the creek reaches a certain flow level, about 450 litres a second, which happens only in large flood events.

"The water is pumped to a large holding dam and then undergoes preliminary treatment before being transferred into two settling ponds in which it is held while we carry out microbiology tests. Once it is cleared as safe it is transferred over to our main dam."

The project is the first large-scale stormwater harvesting scheme in Australia specifically intended for drinking water supplies. The

innovative solution is capable of providing up to 35 per cent of the city's annual water requirements.

The first harvested water was transferred to the primary supply reservoir about six months ago.

"There were some concerns from downstream residents about the water flow but 80 per cent of the time the creek carries on as normal," Devitt says.

"While the community was on side we also had to change the mindset that stormwater is not to drink, so we had to have good hard data to say that the quality of the water is no worse than what is in the dam already."

The Sydney division president of Engineers Australia, Peter Hitchiner, said the scheme received the President's Award because of its "defining contribution to the community and provides a real contribution to sustainability".

SMALL BUSINESS VENTURES

Dynamic intelligent surveillance

iOmniscient

Big brother may be watching us but until now he could only do it one person at a time.

Despite the advent of closed-circuit TV, hi-tech surveillance equipment that can measure body temperature and weight and x-ray scanners that see through walls, there has always been a gap in the system – human error.

But that gap has been narrowed by iOmniscient and its dynamic intelligent surveillance.

Founded in 2001, iOmniscient is considered the world leader in automated surveillance software technology. Intelligent surveillance is the newest segment of the industry

and iOmniscient's ground-breaking patented technology has already won many international awards. Its customers include airports, railways and traffic systems.

"The need for intelligent surveillance arises because humans cannot be expected to watch larger numbers of monitors displaying video from hundreds of cameras," says the managing director of iOmniscient, Ivy Li.

"The iOmniscient system advises the operator what to look for, helping to prevent incidents rather than just be available after the event for a post mortem."

The company's latest technology breakthrough is the ability to automatically detect suspicious behaviour and automatically identify the people or vehicles involved using a single camera.

iOmniscient systems are capable of detecting a person loitering in a car park, a crowd gathering, a person falling over or even an unattended bag. The technology is also capable of identifying faces, licence plate registration and differentiating between humans and animals and trucks and cars.

"What makes our technology different is that it can do most of these things in a crowded environment. The system is able to detect and raise an alarm on an abandoned bag

even if it is significantly obscured by large numbers of passersby," Li says.

INNOVATIONS and INVENTIONS

Gemmological digital analyser

Opal Producers Australia Limited, CSIRO and Applied Robotics

Australia's opals are world renowned for their quality and beauty. But until now, there was no consistent way for the stones to be graded for the international market.

The grading system relied on the subjective analysis by opal dealers and jewellers.

"There had never really been any grading procedures in place for the opal industry ... and that significantly disadvantaged us in the marketplace," says the chairman of Opal Producers Australia Limited (OPAL), Graham Hornabrook.

OPAL approached the CSIRO and work started on building a device that could consistently and objectively grade the precious stones.

The result, the gemmological digital analyser, is an automated vision system that assesses, quantifies and reports the colour characteristics of cut and polished opal.

"The GDA works on imaging. It takes hundreds of images of each

opal, which are then analysed by the computer using mathematics and algorithms," Hornabrook says.

"It then produces an in-house gemscore which is graded as to where it ranks."

Hornabrook says thousands of pieces of information about opals had to be converted into data that could be processed by the analyser.

ENVIRONMENT and HERITAGE

Liverpool weir remediation

Chipping Norton Lake Authority and Antoun Civil Engineering

The old saying "things used to be built to last" was certainly true for the Liverpool weir. But even the most hardy piece of infrastructure needs a little facelift.

The weir was built in 1836 by convicts to provide a water supply and a crossing of the Georges River to Heathcote Road. It was constructed using sandstone blocks, timber piling and clay. The surface was originally sandstone, later replaced with concrete blocks and patches when repairs were carried out.

During the past 173 years the weir has been subjected to droughts and floods and along with a schedule of maintenance, records show it was also extended in 1851 and 1860.



Eye on the prize ... iOmniscient's dynamic intelligent surveillance took out the Small Business Venture award.