



### **Maxum welcomes first-in-SA cashless public transport commuter payment and rewards solution**

Commuter Solutions, a national commuter services company, has introduced their innovative Commuter Card into incubation at the Hub's Maxum Business Incubator. The Commuter Card, a lifestyle card that provides commuters with a cashless public transportation and rewards system, is a first in South Africa.

Commuter Solutions also runs the Commuter Hotline for rail transport company SARCC. Commuter Hotline is operated from a call center with state-of-the-art infrastructure and provides a platform for commuters to lodge complaints, register queries, and report road accidents, drunk driving and other concerns relating to public transport services. Services also include information to commuters regarding late arrivals of trains, buses and scholar transport information.

Commuter Card is supported by world class Master Card technology, which allows Commuter Solutions to manage micro-transactions on behalf of the banks. This in turn saves the customer having to pay separately for each individual public transport transaction cost. "In addition, Commuter Card can be used in the inter-modal payment system, which means that consumers will not be limited to one particular bank and they could use the card to pay for various public transport modes at one go", says Commuter Solutions chief executive Isaack Lesole.

According to Lesole, Commuter Card is aimed at addressing some of the challenges that commuters on public transport face on a day to day basis. "For the first time in South Africa, any holder of this card will be notified should there be a service disruption for any mode of scheduled transport". Lesole says that this initiative is a response to calls by the Minister of Transport for people to utilise public transportation and that it will improve service levels.

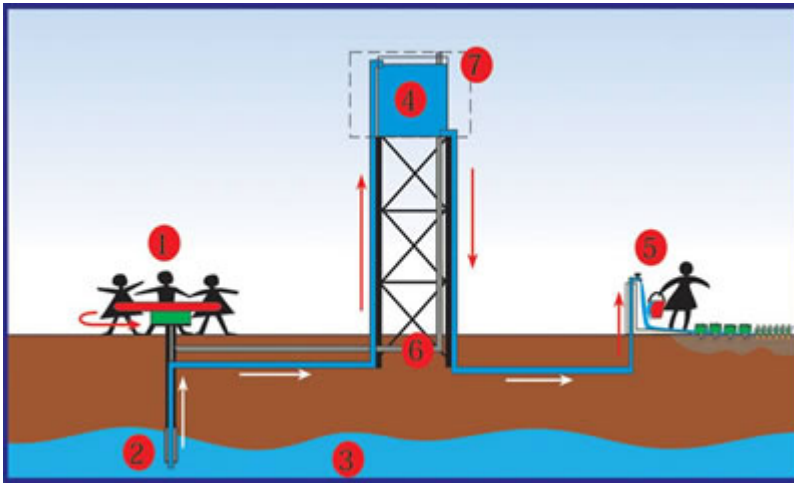
The loyalty and reward component of the card allows commuters to accumulate points which can be redeemed from commercial partners nationwide. "The aim is to show appreciation to South Africa's millions of commuters for the money they spend and show them the value of continuing to use public transport", adds Lesole.

For Commuter Solutions the vision is to expand into the rest of Africa and according to Lesole, the Hub is the perfect conduit to take them there. "The Innovation Hub gives one the opportunity to present your product from a professional and credible platform", he says. In addition to this, the access to experienced mentors and a wealth of expertise provided by Maxum is a definite "plus" for Commuter Card as a brand new concept which has never before been tested in this country.

Source: [innovation hub](#)

## The Playpumps solution

Playpumps is one of the brilliant solutions to the water shortages in the rural areas. PlayPumps International is a nonprofit collaborative that enables individuals, governments, foundations, and companies to donate PlayPump water systems to rural African communities and schools. Donors to PlayPumps International help improve the lives of children and their families by providing easy access to clean drinking water, enhancing public health, and offering play equipment to millions across Africa.



While children have fun spinning on the PlayPump (1), clean water is pumped (2) from underground (3) into a 2,500-liter tank (4), standing seven meters above the ground.

A simple tap (5) makes it easy for women and children to draw water. Excess water is diverted from the storage tank back down into the borehole (6).

The water storage tank (7) provides a rare opportunity to advertise in rural communities. All four sides of the tank are leased as billboards, with two sides for consumer advertising and the other two sides for health and educational messages. The revenue generated by this unique model pays for pump maintenance.

The design of the PlayPump makes it highly effective, easy to operate and very economical, keeping costs and maintenance to an absolute minimum.

Capable of producing up to 1,400 liters of water per hour at 16 rpm from a depth of 40 meters, it is effective up to a depth of 100 meters.

A typical hand pump installation cannot compete with PlayPumps' delivery rate, even with substantial effort.

Source: [Palypumps](#)

## AN INVENTOR BY ANY OTHER NAME

06 October 2006



**John Stegmann has** a day job - he's an architect and industrial designer. But this is to keep the roof over his head and fund his many other interests.

At heart he is an inventor with a passionate interest in cycling.

Stegmann has an impressive string of inventions to his credit. Some, he says, have been spectacular failures, while others are more successful.

His current project is the "Stretchchair", which was a winner at the recent SABS Design Institute Prototype awards.

It is a simple, lightweight and inexpensive folding chair used to transport infirm or injured people. It is more than a wheelchair, however. The difference is that this has a single, robust pneumatic wheel, or a close-set pair of wheels, enabling it to move on narrow and uneven tracks; it can be used as a stretcher; and, being light (8 kg), it is easy to carry when folded.

The idea arose in 1990 when Stegmann was given surplus moped wheels fitted with pneumatic rubber tyres by Bill Mylrae, a civil engineer and fellow ideas man. (The two are credited as the visionaries behind the Argus Cycle Tour.)

Stegmann then designed and assembled the conveyance, which was extensively tested by his mother-in-law, an invalid.

Stegmann provisionally patented the Stretchchair last year and is now considering commercialisation with the assistance that comes from the Prototype Awards programme.

He is a man with a million ideas - some nuts, some brilliant; say those who know him - and are constantly looking for ways to do things better.

For this reason he is an active supporter of the International Human Powered Vehicle Association.

Stegmann's own design of a supine recumbent bicycle (on which the rider leans back against a support) has in the past been the first bicycle to cross the finish line in the Argus.

Though not as technically sophisticated as his bicycle design, the Stretchchair, says Stegmann, is a more comfortable and dignified way to move people who are only other option might be a wheelbarrow.

Source: [Financial Mail](#)

## **Sasol: Coal and gas to fuel conversion**

As the world seeks alternatives and better ways to meet the demands of cleaner and reliable energy supply, Sasol's acumen and commercial experience in coal-to-liquids and gas-to-liquids technology is increasingly being recognised and sought after worldwide. Sasol is a global player in chemicals and fuels.

South African petrochemicals group Sasol is taking its synthetic fuel technology global. With gas-to-liquid ventures up and running in Qatar and approaching fruition in Nigeria, the company is pursuing major coal-to-fuel opportunities in China, India and the United States.

Sasol, the world's biggest producer of liquid fuel from coal, was the first company - way back in 1955 - to commercialise the Fischer-Tropsch method of converting coal to liquid fuel and chemicals. More recently, it started converting natural gas piped to South Africa from Mozambique, using a new technology based on the Fischer-Tropsch method.

Sasol's plant in Secunda, Mpumalanga produces around 150 000 barrels of synthetic fuel a day, providing about 28% of South Africa's annual fuel needs. It is the only commercial coal-to-liquid plant in the world - but that could change by as early as 2012.

### **Gas-to-liquid joint ventures**

The company's gas-to-liquid plant in Qatar - a joint venture with Chevron in partnership with Qatar Petroleum - started producing the world's first commercial supplies of gas-derived fuel outside South Africa in 2006.

According to Business Report, a second Sasol Chevron plant, in Nigeria - in partnership with the Nigerian National Petroleum Company - is expected to start operating in 2009, and the joint venture partners are also conducting a feasibility study for a gas-to-liquids facility in Western Australia.

### **Coal-to-liquid prospects**

On the coal-to-liquid front, according to Business Report, Sasol has started feasibility studies for two plants in China which would produce a combined 160 000 barrels of fuel a day and could be in operation by as early as 2012.

The group is also eyeing coal-to-liquid opportunities in the three US states of Montana, Illinois and Wyoming, the newspaper reported last week, and has identified coal deposits in India that could support a coal-to-liquid plant.

"All three countries are engaged in discussions with Sasol, at different stages of advancement, with a view to developing coal-to-liquid plants that will lessen their dependence on oil imports," Sasol chief executive Pat Davies said in the group's 2006 annual report, released in November.

Sasol's benchmark for an international coal-to-liquid plant, according to Business Report, is 80 000 barrels a day, requiring about 60 000 tons of coal a day and costing between US\$5-billion and \$7-billion to build.

With such high costs involved, Sasol is looking to the respective governments to provide suitable incentives, including loan guarantees, to make it possible for the company to secure finance for the plants.

Davies said in his annual report that Sasol was "very upbeat" about the prospects for the two planned plants in China.

He said the group foresaw "a rebirth in coal utilisation in some of the world's coal-rich regions. This case is particularly strong in those countries that have insufficient or no oil reserves, such as Australia, India, China and the US."

China, the US and India together hold a large part of the world's coal reserves. According to Business Report, China's reserves are estimated at one trillion tons, while Montana, Illinois and Wyoming together account for some 267-billion tons, about 56% of total US reserves.

Davies has said that processing just 10% of China's coal reserves could produce as much liquid fuel equivalent as that produced from the world's proven oil reserves.

And the world's gas reserves, he said in his 2006 report, were estimated to have an oil equivalent of at least a trillion barrels, which "could meet human needs for at least another 60 years."

Sources:

[Sasol](#)

[Energy in Africa](#)

[SouthAfrica.info](#)

**Tag & track**  
02 March 2007

By Sasha Planting



Powerful customers on five continents, partnerships with well-placed technology firms, and a venture listing on the Toronto Stock Exchange - with these, Ipico, a South African-born company, is building a reputation as the world's leading innovator in the competitive market for radio frequency identification (RFID).

Armed with Ipico's technology, UK retailer Marks & Spencer is attaching more than 100m RFID tags to individual items in its stores this year. It's the biggest project of its kind in the world, outstripping US retailer Wal-Mart's plans.

The Ipico solution enables a store to take stock and manage inventory in real-time. This can cut costs, improve efficiency and increase sales.

"Research shows that the vast majority of high-street purchase decisions are impulse buys," says Ipico COO Luther Erasmus. "When a store does not have the right item available in the right colour and size, it is a sale lost."

Because it believes this technology solution gives it a competitive advantage, Marks & Spencer has chosen to keep the project low-key over the past two to three years.

RFID technology enables goods to be scanned, identified and counted, even while packed in boxes and crates. The electronic identification systems consist of a reader or scanner and a tag that holds information on a microchip. In Ipico's case, the communication between the scanner and the tag is via ultra high-frequency radio waves, or in specific cases, a combination of low- and medium-frequency radio waves.

Its technology is gaining acceptance in a market fragmented by differing technologies and conflicting standards. That's because it has overcome several technical obstacles and excels at building reliable, low-cost chip and reader sets that can read up to 200 tags at the same time - even when the items are up to 7 m away and are travelling at up to 240 km/h. It is a technical feat not matched by many companies in the world.

"New generations of RFID technology are more complex than previously," says Erasmus. "But we have developed technologies and integrated them into single applications using a technology platform that we deliberately kept simple. In this way we have avoided problems and achieved performance levels that no-one else has."

As a result Ipico has customers in 30 countries, from Canada to Argentina to China.

One customer is Taiwanese company Ritek, the world's biggest supplier of prerecorded optical disks. With Ritek subsidiary RiRF Technologies, Ipico developed the world's first chip-on-disk system to identify and authenticate optical disks by embedding an RFID tag into a DVD or other disk. The disk, which can be tracked from factory to customer, acts as an antipiracy device. Another big customer is Mondi Europe, for whom Ipico developed an end-to-end solution to track the millions of paper reels produced by the corrugated paper industry each year. The project established Ipico as a serious contender in the RFID market.

"It was a complicated project that took 2½ years to develop," says Erasmus. "We had to filter out interfering radio frequency noise emitted by factory machines and compensate for the paper's high moisture content, which can absorb RFID signals."

By testing frequencies and changing reader and antenna configurations, Ipico developed a solution that has the potential to transform a huge and complex industry. There are about 3 000-4 000 corrugated paper plants around the world, producing about 400m paper reels annually.

The brains behind the Ipico technology, Hendrik van Eeden and Willie Hofmeyr, were at the core of the CSIR team that hit world headlines in 1994. In a televised demonstration, a shopper pushed a trolley loaded with 35 items past a scanning device. Instantly every item in the trolley was rung up.

The CSIR sold this technology to the UK-based British Technology Group (BTG). Nothing much happened after that, even when Van Eeden was contracted by BTG to design a second-generation UHF RFID chip in 1998. Disillusioned with the slow progress, Van Eeden, Hofmeyr and Bertus Pretorius, a colleague from their CSIR days, formed Pico Tagging Systems to take the BTG-sponsored chip set advances further. "It was difficult," recalls Van Eeden, who is Ipico's chief technology officer. "We were a small company, far from the market, developing a technology that was not accepted widely."

They received some funding from Inala, a local technology company which subsequently acquired Pico Tagging in 2000.

But it didn't take long for Inala to run out of patience and in 2001 management faced another choice: abandon their dream or take the plunge. So they bought themselves out of Inala and went on their own - again.

In an environment that was dominated by the likes of Philips and Texas Instruments, Ipico had to dance carefully to ensure it was not outmanoeuvred or trampled.

"We decided that we would always own our own intellectual property, but to penetrate markets we would form partnerships or revenue-sharing arrangements with companies with domain expertise and market dominance," says Erasmus.

The company's first move was to partner Swiss company EM-Microelectronic (part of the Swatch group) for the development of the microchips used in the tags. "There are fewer than five fabrication plants in the world with the processes to make these chips," says Erasmus.

Together, the two companies have produced the world's smallest ultra high-frequency RFID chip. The advantage is economic: the smaller the chip, the less silicon used, the lower the cost.

Other successful partnerships include several SA systems integrators, Syrmatech in India, Leader Inductive in China, Mondi Europe in Austria, Explotrack and Mercury Sports Group in the US and EJ Brooks in Singapore, the world's leading manufacturer of security seals and locking devices for the ship container industry.

Ipico survived financially, with the aid of a small Industrial Development Corp grant, during this development stage, but it needed funding to get to market. "We could not raise capital in SA," recalls Erasmus. "First, funders wanted us to prove the technology, and then prove there was a market; then they worried that we were too late to break into the market."



In 2003 the company got a break when Mondi Europe acquired a 30% stake in it for R10m. "Most of our competitors had already spent more than 10 times that amount on development," says Erasmus. "But we weren't complaining; this deal was significant - not only was it our first investment capital, but it gave us access to a leading packaging company in Europe."

At the time mega-retailers like Wal-Mart and Tesco were insisting that RFID-enabled packaging would play a critical role in their global supply chains of the future. This triggered a wild scramble into the market.

With Mondi behind it, Ipico kept calm and avoided the scramble. Instead it proved its technology in several large-scale pilots in Europe, Australia and Asia, where its smart labels and tags were used with various types of packaging materials, cases, pallets and containers.

It didn't take long to realise that the R10m would not go far. "We needed real capital to be big. We looked abroad for funding - to the Chinese, the Japanese, the French, the Germans and the English." Ultimately it was a group of Canadian entrepreneurs and investors who came through. They acquired the assets of Ipico in what Erasmus refers to as a "very complex transaction", and reversed it into a shell that was listed on the venture board of the Toronto Stock Exchange.

"We were negotiating with new shareholders, existing shareholders (Mondi) and the SA Reserve Bank. It took 18 months to conclude the arrangements." The transaction, which was concluded in March 2006, cost the Canadians about US\$12,5m. The head office moved to Toronto; Erasmus handed the reins over to the new president, Gordon Westwater, and took over responsibility for the global operations.

What hasn't changed, however, is the location of the R&D team. "Before it approved the sale of the intellectual property, the Reserve Bank insisted that the R&D remain in SA and that funding for this must come from the international company," says Erasmus. These arrangements were similar to the conditions laid upon the Canadian partners by Ipico's management. "We wanted to stay here," he says.

The company's energy is now concentrated on five key markets: electronic vehicle identification; container security; explosives tracking; sport time-keeping; and paper reel tracking.

The company expects turnover of C\$10m during 2007. "There isn't an RFID company in the world that is profitable," says Van Eeden. "You need to be selling hundreds of millions of tags to be profitable."

The market is still growing and is expected to reach a point where trillions of tags (which cost 10c to 20c each) are sold each year.

Meanwhile, Ipico has consolidated its development, marketing and sales efforts and is working on several multiyear contracts each worth several million dollars. "Our challenge is to understand how fast we can grow and to manage this process carefully - we are a small company of just 55 people," adds Erasmus.

Not much is denting Ipico's ambition. It aims to become the number one time-keeping technology supplier for large sporting events in the world; it will shortly announce a large commercial contract for the management of explosives in the US; and in Latin America and Asia it hopes to pull off several of the big electronic vehicle identification deals it has bid for.

Source: [Financial Mail](#)



## Lifesaving SA innovation

11 August 2005

A South African device originally designed to detect the theft of diamonds by mineworkers is saving the lives of critically injured patients around the world.

Taking just 13 seconds to provide a full-body x-ray, the Lodox Statscan saves time during the vital "golden hour."

"It is an innovation designed in South Africa, for South Africa," says Lodox product manager Rodney Sandwith.

Sandwith received the Chairperson's Award for the Statscan at the SABS Disa Design Institute Awards in May - the most recent in a succession of awards since the product was first unveiled in 2003.

The Statscan is able to provide scans of both bone and soft tissue, useful in the diagnosis of a wide range of traumatic injuries. The full body overview means injuries can be quickly identified.

"We can use it to make high quality x-rays of the entire body or just a hand. It represents the safest choice for doctors before deciding to use expensive high-dose CT or other scans," says Sandwith.

This versatility gives the scanner an edge over many other imaging technologies. The open design of the device also means that medical personnel have access to critically injured patients at all times during scanning.

The images are digital, so they can be transferred across the hospital's computer network, rotated and manipulated without any loss of quality. There is also no need for x-ray film or cartridges, dramatically reducing operating costs.

A study conducted at the trauma unit at Groote Schuur Hospital in Cape Town over more than two years found that the Statscan offered significant improvements in patient handling, reducing the time required to complete a diagnostic examination from 48 to five minutes.

The same study also showed that both patients and medical staff were exposed to significantly lower radiation doses compared to conventional x-ray devices.

The technology at the core of the Statscan was developed for security purposes for De Beers' diamond mines. When the humanitarian possibilities of the scanner became apparent, De Beers became one of the primary investors in the Lodox consortium.

The other primary backers are the Industrial Development Corporation and emergency services provider Netcare.

The company has recently been awarded a contract to supply the Sudanese government with four Statscans at a total cost of US\$1.2-million.

The Statscan is already in use in 10 US hospitals, and has received full approval from the US Food and Drug Administration.

"It is a state-of-the-art, lifesaving medical system," says Sandwith. "A technology all South Africans can be proud of."

Source: [SA Info](#)



## **MAGICIAN OF SCIENCE**

06 April 2007

**Housed in what used** to be the Electric Warehouse in Newtown is "probably the world's largest propaganda machine for maths and science", says David Kramer, acting CEO of the Sci-Bono Discovery Centre.

The centre, which was set up by the Gauteng education department and the local private sector, has the aim of improving the delivery of quality science and maths education to the province. The centre specifically wants to encourage more African learners to take maths and science for matric, but not through long, boring talks about Newton's laws of motion. Sci-Bono (bono is the Venda word for vision) is all about interactivity.

"It is not static like a museum, where you walk around with your hands in your pockets," says Kramer, who exhibits a rare passion for his work. The centre is made up of interactive science and maths exhibits aimed at grade 4-12 learners.

Maths and science have battled to attract learners, many of whom prefer to take the "safer" route of biology, which is considered easier to pass. The problem is poorly resourced schools which lack even the most basic educational requirements, let alone well-stocked laboratories. The Sci-Bono centre addresses this through encouraging schools to visit and, when transport is a problem, taking its mobile physics laboratory to the schools.

Kramer says many problems stem from learners' perceptions of the sciences. Learners are not choosing to study maths and science in school because they are intimidated by it, or their schools lack qualified teachers. Many teachers went to colleges rather than university, but some of the concepts now taught at school were only part of university degrees and not college diplomas.

He himself has had 20-odd years in maths and science education, specifically in nongovernmental organisations, so he is well equipped to discuss the merits of SA's education system. And it is heartening to hear how positively he talks about it. "We have one of the finest education systems in the world. We have learnt from our mistakes and from the mistakes of others," he says. But the biggest stumbling block is the shortage of well-qualified teachers, which he says will take time to rectify.

Most of the science graduates who work as floor hosts at the centre have majored in zoology or botany rather than physics or chemistry. Degrees in the arts and business studies are more popular. There is a note of despair in Kramer's voice when he says "too many people are doing generalised degrees".

But a visit to the Sci-Bono centre could spark interest in a child and set him or her on the path to a career in the sciences. "Hundreds of children come through the centre every morning," says Kramer. He has a surprise in store for them - the imminent arrival of the Science Tunnel.

This is "the holy grail of science exhibits" and will be visiting SA for nine weeks between May and July this year. "This is a major coup for us," says Kramer, who suggests that SA has President Thabo Mbeki's diplomacy to thank for it.

The tunnel was built by the Max Planck Institute in Germany and chronicles, through interactive exhibits, the great breakthroughs of modern science. It's a giant thing, covering about 1 000 m<sup>2</sup> and containing 12 themes ranging from nanotechnology to cosmology.

Kramer, who seems to have energy in abundance - he gets up at 4 am to go to gym - hopes the Science Tunnel will attract many visitors. Like the centre itself, the emphasis in the tunnel is on learning through having fun.

Sometimes Kramer takes his science into the kitchen. "I like to cook but hate recipes, so I experiment a lot, sadly with a success rate of less than 50%."

But hopefully his passion for his job should boost the chances of the Sci-Bono centre achieving its aim of improving maths and science education. "We must not forget that there are miracles that have been worked."

Source: [financial mail](#)