

Of inventors and innovators: South Africa's pioneering entrepreneurs

Here are some well-known and visionary South African inventors and entrepreneurs, whose pioneering work has received international recognition, and contributed to many improvements in our world.

The CAT scan



South African physicist Allan Cormack and British electrical engineer Godfrey Hounsfield of EMI invented the X-ray computed tomography (CT) scanner, as a combined effort. This achievement secured them the 1979 Nobel Prize in Medicine.

Cormack provided the mathematical technique for the CAT scan, in which an X-ray source and electronic detectors are rotated about the body and the resulting data is analysed by a computer to produce a sharp map of the tissues within a cross-section of the body. Hounsfield developed a method of his own for computerised tomography and constructed the first practical scanner, which was designed to examine the head.

The two men worked separately on the development of the invention and the only time they ever met was at the Nobel Prize Award Ceremony in Oslo in 1979.

Dolosse



Dolosse are large, strangely shaped concrete blocks weighing up to 20 tons, which are used to protect harbour walls from the erosive forces of ocean waves. South African Eric Mowbray Merrifield invented these large concrete blocks in 1963. These structures are designed to break up wave action and were first installed in East London harbour, and are now used to protect harbour walls and coastal installations all over the world.

Kreepy Krauly



South Africa's Ferdinand Chauvier is credited with the invention of the Kreepy Krauly swimming pool vacuum cleaner in

1974. Chauvier was a hydraulics engineer who came to South Africa from the Belgian Congo in 1951. He realised that there was a gap in the market for finding a more convenient way to clean swimming pools, and went about inventing a machine that would do the job automatically and efficiently, powered by the operation of the pool's filter.

The first Kreepy Krauly was born in Chauvier's Springs home in 1974, and it has gone on to become an international success story.

Mark Shuttleworth - software entrepreneur and the first African in space



South African entrepreneur Mark Shuttleworth is best known as the founder of Ubuntu, the free software operating system, as well as for being the first African in space.

Shuttleworth was a student at the University of Cape Town, and in 1995, he founded Thawte, a company that specialised in digital certificates and Internet security. He sold Thawte to US-based company VeriSign in December 1999, earning R3.5bn. In 2001, he formed the Shuttleworth Foundation, a non-profit organisation dedicated to social innovation, which funds educational, free, and open source software projects.

In 2001, and at a personal cost of US\$20m, Shuttleworth bought a seat on a Russian spacecraft and began the 'First African in Space' project. After almost a year of intensive training, on 25 April 2002, Shuttleworth lifted off on Soyuz TM-34 with two cosmonauts, commander Yuri Gidzenko of Russia and flight engineer Roberto Vittori of Italy, from the Baikonur Cosmodrome in Kazakhstan and docked two days later at the International Space Station. They spent eight days aboard the space station, and returned to Earth aboard Soyuz TM-33 on 5 May 2002.

Upon his return to Earth, Shuttleworth travelled widely and spoke about spaceflight to school children around the world. He returned to his work in technology and in 2004 founded Ubuntu, a project that created desktop and operating system software for free distribution to computer users, with a special focus on expanding personal computer access in developing countries.

In March 2004 he formed Canonical Ltd., for the promotion and commercial support of free software projects, especially the Ubuntu operating system and as of 2013, he provides leadership for the Ubuntu operating system.

Elon Musk - creator of PayPal, SpaceX and the Tesla electric car



Elon Musk, the son of a South African engineer and a Canadian-born mother, was born in Pretoria in 1971. Musk was an avid fan of computers, and by the age of 12, had written the code for his own video game, a space game called Blaster.

Musk attended Queen's University in Kingston, Ontario, Canada, and transferred to the University of Pennsylvania, where he earned two bachelor's degrees in economics and physics. He was admitted to Stanford University in California with the intention of earning a PhD in energy physics.

In 1995, at the age of 24, Musk dropped out of Stanford University after just two days of classes, to start his first company called Zip2 Corporation. Zip2 Corporation was an online city guide that provided content for the new online versions of the New York Times and the Chicago Tribune newspapers. He struggled to keep his new business afloat, and eventually sold majority control of Zip2 to venture capitalists in exchange for a US\$3.6m investment.

In 1999, the Compaq Computer Corporation bought Zip2 for US\$307m, which earned Musk a share of US\$22m. In 1999, he started his next company, called X.com, with US\$10m from the sale of Zip2.

X.com was an online bank, and Musk is credited with inventing a method of securely transferring money using a recipient's email address.

In 2000, X.com bought a company called Confinity, which had started an Internet money-transfer process called PayPal. Musk renamed X.com/Confinity PayPal and dropped the company's online banking focus to concentrate on becoming a global payment transfer provider. In 2002, eBay bought PayPal for US\$1.5bn and Musk made US\$165m in eBay stock from the deal.

In 2002, he started SpaceX, a company working on inexpensive space flight and rocket technology to make private space flight possible. Two years later, Musk started Tesla Motors to build electric vehicles. The Tesla Roadster is a battery electric vehicle sports car, and the first highway-capable all-electric vehicle in serial production for sale in the US.

In his most recent revelation, Elon Musk has taken the world by storm by announcing a proposed [near-supersonic "Hyperloop" transport concept](#). Musk's proposed "Hyperloop" system would link Los Angeles and San Francisco, using magnets and fans to shoot capsules floating on a cushion of air through a long tube. If the Hyperloop is ever built, a trip on it between the two California cities would take about 30 minutes.

Pratley Putty



George Pratley, a South African engineer who developed innovative products for the mining sector, invented Pratley Putty in the early 1960s.

After the death of his father, George Montague "Monty" Pratley used his inheritance to study at Rugby College of Technology and Arts in England. On his return to South Africa in 1948, he started the Pratley Manufacturing and Engineering Company, working from a rented garage.

Pratley invented Pratley Putty in the early 1960s while trying to develop a glue and insulator that would hold components together in an electrical box. As time went by, many other uses were found for his mouldable epoxy putty, which at the time was regarded as a "space age" product.

In 1967, NASA chose Pratley Putty as one of the adhesives to be used on the Ranger Moon Module Project, which earned it the distinction of being the only South African invention to have travelled to the Moon. Other notable uses of Pratley Putty include it being used to repair a crack in one of the main supports of San Francisco's Golden Gate Bridge, and to repair holes in two ships that had sunk off the South African coast.

Today, the company bearing his name employs over 250 people and manufactures more than 800 products.

Some interesting fast facts:

- South African entrepreneur Mark Shuttleworth became the first South African in space in 2002
- The invention of the X-ray computed tomography (CT) scanner was a combined effort by South African physicist Allan Cormack and British electrical engineer, Godfrey Hounsfield
- Pratley Putty is reputed to be the only South African invention to have travelled to the Moon
- Large concrete blocks known as dolosse which are used to protect harbour walls were invented by South African Eric Mowbray Merrifield in 1963
- Technology entrepreneur Elon Musk inspired Robert Downey Jr's performance as the industrialist Tony Stark in the movie versions of Marvel Comics' Iron Man

QUOTES FROM ELON MUSK:

“ I think that's the single best piece of advice: constantly think about how you could be doing things better and questioning yourself.
You want to have a future where you're expecting things to be better, not one where you're expecting things to be worse. ”

QUOTES FROM MARK SHUTTLEWORTH:

“ A computer is not a device anymore. It is an extension of your mind and your gateway to other people. ”

QUOTES FROM PRATLEY:

“ To do what we do, better than any competitor on the world market and to do it honestly.
– Pratley Group Mission Statement.
George 'Monty' Pratley was a man with tremendous faith in his ability to succeed; failure was not part of his vocabulary. ”

YouTube videos:

Pratley Putty - to demonstrate the strength of his product, a 13 ton bulldozer was suspended above MD Ken Pratley's head using a Pratley bonded joint.

Mark Shuttleworth, the first African in space, answers questions from school children in a live crossing from the International Space Station.

In a TED Talks interview, entrepreneur Elon Musk, founder of PayPal, Tesla Motors and SpaceX shares some of the details about his visionary projects.