

## MARS ROVER

# 'Landing like holing ace from Cape to Scotland'

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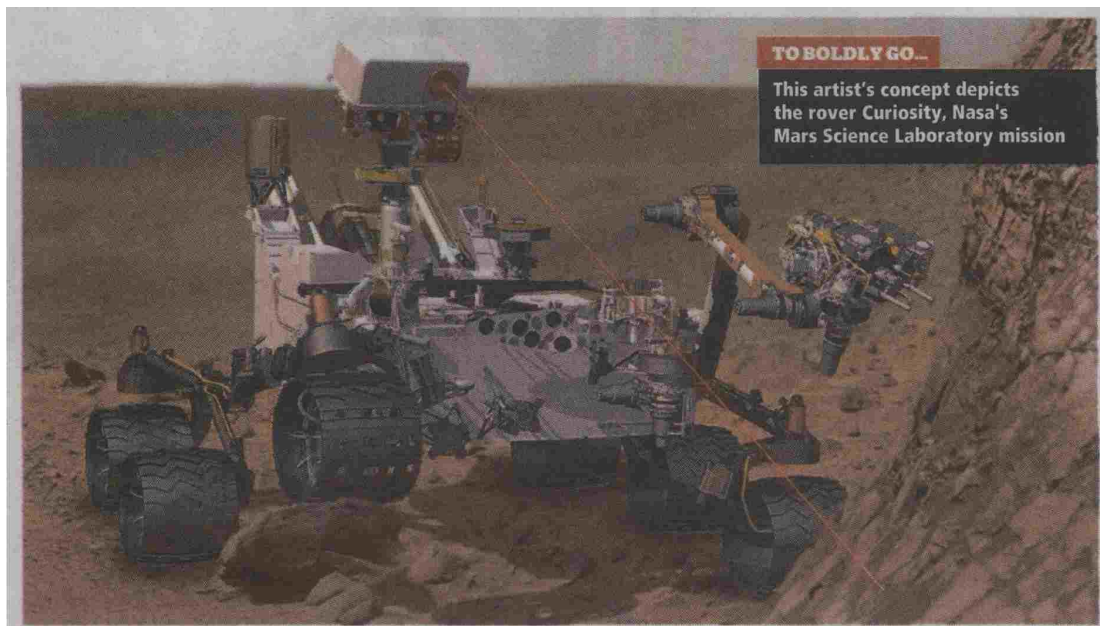
THE ACCURACY of the navigation required to guide the Mars Rover Curiosity to a precise landing site on the Red Planet is like asking Ernie Els to tee off in Cape Town and drive his golf ball directly into a cup on a St. Andrews green, says Japie van Zyl, one of the scientists involved in the project.

To make Ernie's task more difficult, the cup is moving at 100 000km/h and he doesn't know what the weather is like in Scotland, he says.

Van Zyl, a graduate of Stellenbosch University's engineering faculty and now an associate director at Nasa's Jet Propulsion Laboratory at Pasadena in California, was giving a public talk at the university yesterday.

Van Zyl is employed by the California Institute of Technology (Caltech), the world's top-rated university that manages the Jet Propulsion Laboratory for Nasa. He was not directly involved in the operational stage of the project that is formally called the Mars Science Laboratory.

But he helped in the initial design of the radar system used to land Curiosity on the planet on August 6 and has an important role in all Jet Propulsion Laboratory projects – it currently has 24 spacecraft and 10 instruments spread across, and now



even one beyond, the solar system.

"I concentrate on what we will do in the future – for example, future Mars projects and missions to Europa, one of Jupiter's moons."

Namibian-born Van Zyl, pictured, said it was "very, very difficult" to land successfully on Mars and there had been only a 30 percent success rate since the first landings in 1971.

The complete Mars Science Labo-

ratory spacecraft weighed three tons and entered the thin Martian atmosphere at a speed of 21 000km/h, with a kinetic energy equivalent to 18 000 Formula 1 racing cars driving at top speed.

Van Zyl pointed out engineers told Curiosity where to go on Mars, but not how to get there – it plotted the best route by itself.

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