

# The robot century

Serious money is being invested in a few robotics companies, but not until cash-rich engineering groups and banks come on-board will we see real action, says **Rob Buckingham**

THE EARTH holds at least one thing in common with the Man-made field of robotics: regular dawns. But that is where the similarity ends. Whereas the new day on Earth reliably leads to noon, it seems that robotics can't get past half past eight in the morning without running out of energy and collapsing back into sleep.

So only the foolish or brave make claims for robotics. But why not make some outrageous claims and see whether they stand up to any inspection?

Here's one. This is the century of the robot. I'm no Einstein, but this claim is a lead cert. Can you possibly imagine a scenario in which technology will not have made the necessary leaps to create machines that give the appearance of human intelligence and have the agility to avoid 'us' walking down the high street or in the office?

The tricky follow-on question (one actuaries and investors should be asking) is: 'when in the next 94 years?'

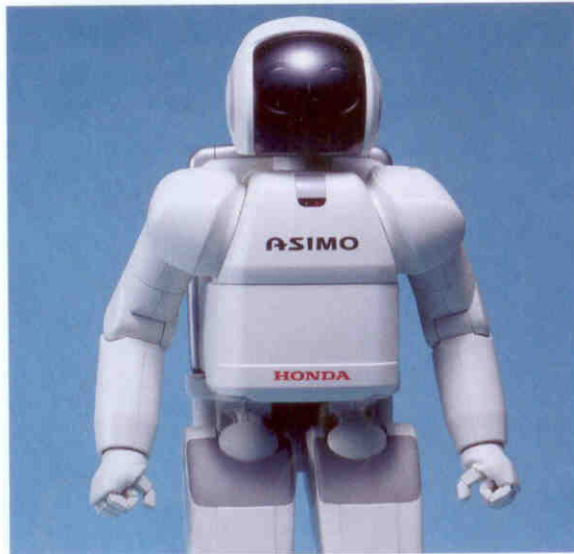
You are probably starting to think about *I, Robot* and the ethical conundrums of creating life and giving it intelligence. Certainly there are people who are working to achieve this. When a Sony or a Microsoft or an Intel create a chip/firmware/software that is 'man-walking-down-the-street' intelligent, then everything changes.

But this chip is not going to just appear on 25 June 2064. It will be possible to look back and identify when certain products were launched, and assess how Mankind adapted to the new technology and integrated it into their lives.

So if we look back can we recognise any milestones? Karel Capek's *RUR*, Isaac Asimov, Joseph Engelberger, Unimation.

Into the 1980s the picture becomes quite indistinct — much research but no breakthrough products. But if you look at the last few years the signs become quite obvious: Aibo, Roomba, Asimo, Robo-sapiens. More significant is the amount of investment in these products.

There is now serious money being invested in robotics — even though the technology is still heavily in the red,



Well, apart from Intuitive Surgical, that is. ISRG, to give it its NASDAQ name, had a market capitalisation of \$3.8bn (£2.2bn) in December 2005, up a cool \$1bn in just four months between August and November. ISRG sold — just — 125 of its da Vinci units in 2005, but these are not just any old robotic system.

Da Vinci does heart surgery. Or rather, surgeons drive da Vinci to perform intricate, minimally invasive, keyhole heart surgery, plus a variety of other procedures.

Surgery is perhaps the most advanced global robotics market, but ISRG is the only company to have really made the jump to the big league. Of course there are other contenders, including Armstrong Healthcare, Neoguide Systems and Hansen Medical.

But ISRG's market cap is not because of the robots. The valuation is because of what they offer — namely tremor-free intricate tool motion and short hospital stays due to reduced 'collateral damage'.

Both are very good news for patients. One may be very good news for the taxpayer. Both are very good news for ISRG's investors.

This is perhaps the key issue for robotics. It's not about the technology,

but all about whether someone wants to pay for it.

The military will. It is the stated objective of the US Defence Department to have 15 per cent unmanned operations by 2015. (This is plausible depending on the scope of 'operations').

Will we pay for robots in our homes? The answer is bound to be yes. For instance, over one million Roombas have now been sold. That doesn't compare with a billion bicycles or 1.4 billion TVs or a trillion baked beans, but it is still a healthy number. And robotics is starting to figure in events such as the Consumer Electronics Show, which attracted more than 140,000 visitors in 2005.

We will pay for robots in our homes when our bodies falter before our minds — when such machines enable us to live independently for an extra six months or 10 years.

We will probably be 'driving' around in voice-controlled, semi-autonomous cars, so we will be used to telling machines what to do.

Here's another robotics observation. Most robotics developments will not come from roboticists. They will come from mobile phone and home appliance companies. And anyway, a semi-autonomous car fulfils most definitions of a robot, so only the purists will deny the dawn.

So where are we in 2006? There are very few robotics companies in the world, and most of these are small. There are a number of big companies — ABB, Kuka and Comau, plus a handful of Japanese giants — but these seem to be concentrating on the established robotics markets.

In contrast, there are many cash-rich engineering groups and banks. A real sign of a robot dawn will be when more than \$1bn is invested in robotics companies around the world. Then we might see some action.

*Dr Rob Buckingham is founder and managing director of OC Robotics, the UK developer of snake-arm robots. [www.ocrobotics.com](http://www.ocrobotics.com)*