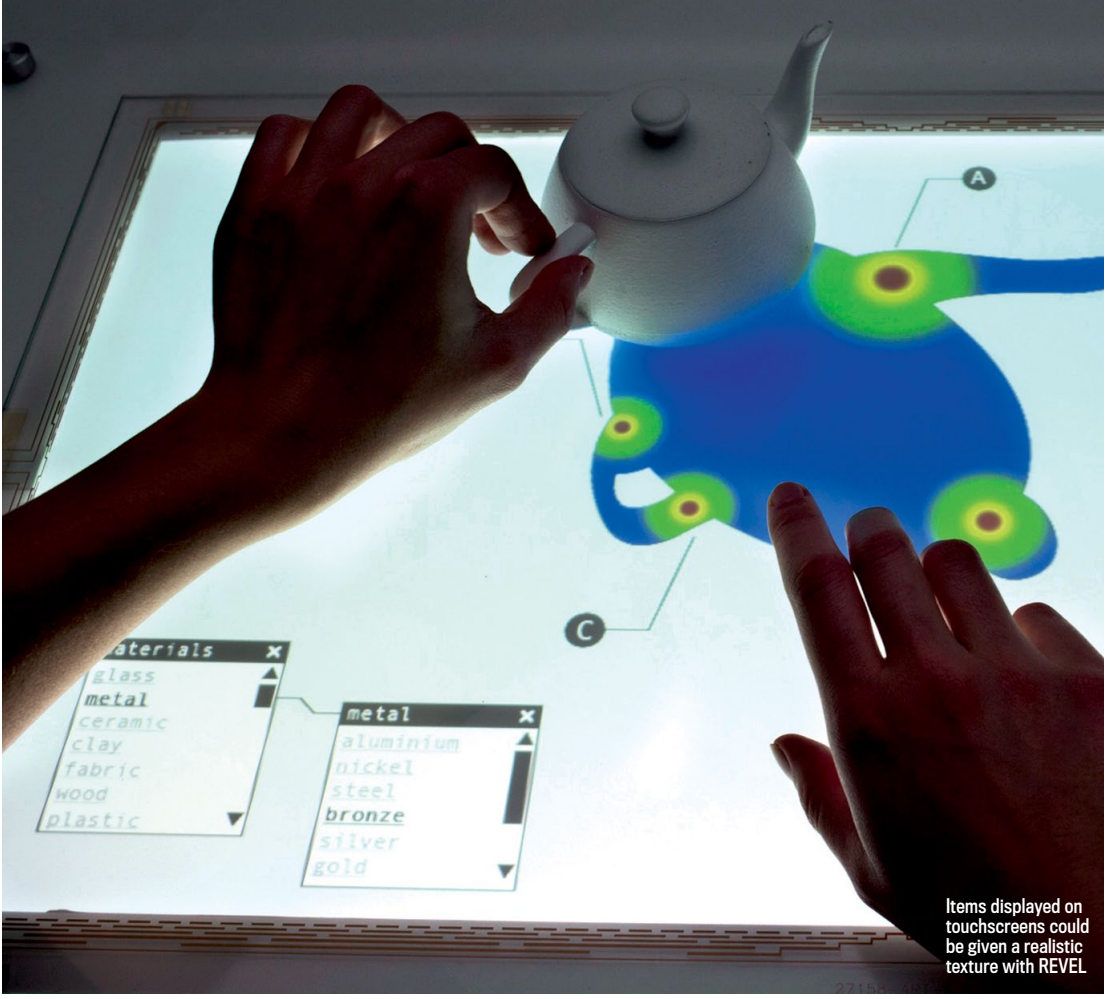

Items displayed on touchscreens could be given a realistic texture with REVEL

Physics

Touchy-feely technology

Imagine running your finger across the picture of a dog on your tablet computer's screen and being able to feel its fur, or feeling the smooth contours of a car on a poster. These are possibilities raised by new technology that allows people to experience textures that aren't really there.

The idea of 'augmenting reality' with artificial tactile sensations isn't new. But existing systems involve fitting objects with actuators to physically alter them, or the user wearing gloves that produce artificial sensations. Now scientists at Disney Research, the R&D wing of The Walt Disney Company, have found a way to produce sensations without such paraphernalia.

Disney's REVEL technology requires just a tiny signal generator that could be attached to the sole of a shoe, or even the seat of a chair. This applies an imperceptible electrical signal to the user's body. When they touch certain objects, an electrostatic force is created which alters the friction between the finger and the surface. By varying the electrical signal, different textures can be simulated.

"REVEL can add tactile feedback to walls, tables, wooden and plastic objects, or even human skin," says Dr Olivier Bau at Disney Research in Pittsburgh.

This 'reverse electrovibration' technique does have its limitations – sensations can only be produced when someone slides their finger over an object. But it is a promising step.

JAMES LLOYD

1 MINUTE EXPERT

Monster stars

What are monster stars?
Stars that are about 300 times more massive than our Sun, making them the largest ever found. Four were discovered in 2010 in the Large Magellanic Cloud, about 160,000 light years away. This puzzled astronomers because, in theory, stars as big as this just shouldn't exist.

Why shouldn't they exist?
Until 2010, astronomers had seen stars up to 150 times the Sun's mass, and they could all be explained by the same formation process. But this process could not explain the monster stars.

How did they get so big?
That's been the big question since they were spotted, but astronomers now think they've solved the puzzle. By simulating how their group of stars evolved, astronomers at the University of Bonn found that the four monster stars could have been formed by collisions between two smaller stars that were once in orbit around each other.

Will the stars always be ultramassive?
Probably not. In about two million years, these stars' winds will cause them to lose about half their mass.

Are there any more monster stars?
So far, no. But astronomers will be keeping their eyes peeled.

WHO'S IN THE NEWS

Colin Pillinger

Principle investigator for the British Mars lander, Beagle 2

What did he say?
Writing in *The Sun* after NASA's Curiosity rover landed on Mars, he vented his frustration that it's not Beagle 2 looking for signs of life. Beagle was lost on landing on Christmas Day, 2003. "Am I disappointed to see NASA doing the experiments we hoped to do?" he wrote. "About as disappointed as an Olympic athlete who gets to London 2012, only to pull up with a hamstring injury at the first hurdle."

Did he vent his frustration in any particular direction?
Yes, towards the European Space Agency (ESA). He said that what really annoyed him was seeing the hundreds of NASA Mission Control staff monitoring Curiosity's progress. "We had four people trying to receive a signal from Beagle 2, and ESA would not even turn their antenna towards us."

Did this cause a stir?
Pillinger's quotes received plenty of press attention, but ESA didn't react.