

rules typically set performance, not technology requirements. But stricter limits on head injuries and the new test procedure will make it all but impossible to meet the

Chris Tinto, Toyota's safety director, says the new federal rule will likely require changes beyond the installation of side curtains. "It will drive some different structural de-

met the industry's side-impact standards. Lund says all automakers have been making changes to improve their scores on IIHS' highly publicized tests.

How some midsize cars fared in side-impact crash tests

How some midsize cars scored in the Insurance Institute for Highway Safety's side-impact crash test:

Vehicle	Model years	Weight (lbs.)	Side protection	Evaluation
Honda Accord	2004	3,157	Torso air bag, side curtain	Good
Toyota Camry	2004	3,203	Torso air bag, side curtain	Good
Chevrolet Malibu	2004	3,250	Side curtain	Average
Mitsubishi Galant	2004	3,356	Torso air bag	Poor
Honda Accord	2003-2004	3,190	No side air bags	Poor
Nissan Altima	2005	3,095	Torso air bag, side curtain	Poor
Toyota Camry	2004	3,197	No side air bags	Poor
Hyundai Sonata	1994-2004	3,277	Combination torso/head air bag	Poor
Kia Optima	2001-2004	3,210	Side curtain	Poor
Saturn I Series	2001-2004	3,254	No side air bags	Poor
Chevrolet Malibu	2001-2004	3,126	Side curtain	Poor
Dodge Stratus	2001-2004	3,126	Side curtain	Poor
Chrysler Sebring	2003-2004	3,137	Torso air bag, side curtain	Poor
Mazda 6	2003-2004	3,137	Torso air bag, side curtain	Poor

1 - Manufacturer's February 7, 2004, manufacturer's brochure. 2005 NHTSA's side-impact test is intended to protect occupants' heads, side air bags. Manufacturer's brochure for Highway Safety.

Get chipped, then charge without plastic - you are the car

Technology
Every Wednesday

We are becoming 1974

Like, there's this inflation thing. Suddenly, inflation is a huge fear, and we apparently need to break out our Whip Inflation Now buttons from the cereal Ford days. Do you realize who came up with W.I.N. in 1974? Alan Greenspan! And you thought you were stuck in a going-nowhere job.

In 1974, Emerson Lake & Palmer released *Welcome Back My Friends to the Show that Never Ends*, a tone-deaf song that was resurrected last week on one of the Friends specials.

And in 1974, *The Six Million Dollar Man* made its debut. Not that anybody has built a bionic person who can run in slow motion to a strange clicking sound. But a number of things have been popping up that begin to meld humans and machines, blurring distinctions between the two.

For instance, there's the important and deeply scientific experiment being conducted among the barely clothed patients of Baja Beach Club in Barcelona. They're getting electronic credit cards implanted under their skin.

Beautiful club-goers have a problem. If you're going to wear a halter top and micro-skirt, there's not much of anywhere to put a wallet. And who wants to carry a purse when you're there to dance? Luckily, a company called VeriChip this year unveiled a solution based on radio-frequency identification (RFID) technology. It's a slender glass capsule about as long as a dime is wide. Inside sits a computer chip, which stores a unique code that can identify an individual - sort of an electronic Social Security number. The capsule also holds a tiny antenna, which can radio that code to a receiver many feet away.

At the Baja Beach Club, Tuesdays are VeriChip implantation days. Stop in and a nurse - the clubs word - uses a syringe to inject a VeriChip capsule under your skin. There don't seem to be any rules about where on the body it has to be placed. If you think this sounds like something you'd never do, then you're not

the kind of person who goes to clubs wearing your best nose ring.

Once implanted, you become your own credit card. Need to pay for a drink? Wave your implant near a reader, and you're done. VeriChip has dreams of going global with its "human implantable ID technology." Once implanted, you could wave a body part to pay for a burger at Wendy's, a beer at a baseball game, or whatever.

There are a few kinks to be worked out, like the fact that you can't turn the chip off. Privacy groups are going to dog-pile on that one.

Another company is taking the idea of implanted radio-enabled chips to a different level: Cyberkinetics of Foxborough, Mass., calls itself "a leader in the rapidly emerging field of brain computer interfaces." The company makes Brankate - which despite the 1974 analogies here, is not a reference to a scandal involving someone's brain.

When implanted in a person's brain, the device can allow that person to control a computer just by thinking. It is essentially a mouse moved by brain waves.

Last month, the company got federal approval to implant the chips in the paralyzed people as a test. While the first uses of Brankate would be to help the paralyzed, certainly such devices could eventually be implanted in healthy people. The military has visions of pilots flying planes by thought. Imagine what the porn industry - always on tech's cutting edge - could do with hands-free computing.

Another recent development suggests that people might someday be able to see in the dark. Earlier this year, Raytheon announced its Thermal-Eye 26000AS technology. This allows thermal-imaging cameras - the kind that lets people see at night or through smoke - to be small enough to be built into a firefighter's helmet. Instead of a bulky camera, thermal imaging can become almost a part of a firefighter. The company says the technology can keep getting



By Kevin Maney



Tubular air bag

Good: Tubular head air bags, on BMWs and other luxury cars, deploy from above the window and may be enough to meet the new rule.

PHOTO COURTESY OF VOLVO; COURTESY OF GM; COURTESY OF BMW; COURTESY OF GM

PHOTO COURTESY OF VOLVO; COURTESY OF GM; COURTESY OF BMW; COURTESY OF GM

The same plan can be used a cellphone because the car will simply patch the custom to his cell-equipped phone customer calls his home or press number. The gateway provides the cellphone number, provides a second dial tone can be used for calls over the network.

The company expects the use to be used largely for national calls because of the Verizon Wireless, for example, leading mobile phone charges 65 cents for calls in Europe and China. With a Sprint international plan, call 10 cents to London, 12 cent Paris and 17 cents to China.

However, cellphone users also could use the VoIP network call in the USA to avoid using their buckets of minutes and being added charges.

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Roboceptionist

Progress in bionics isn't just about putting electronics into humans. In some cases, it's about putting manness into electronics. Like when a group of researchers and drama students recently turned Valerie, who sits behind a desk at Carnegie Mellon University and has the title of "roboceptionist."

Valerie looks like a 21st century scatterbrain head is a flat computer screen that projects her marred face and head. The screen sits on top of a dustrial mobile robot that is always dressed in clothes - the kind you'd see on your typical corp receptionist. She is equipped with a laser scanner can detect and track people in the room.

All this is driven by a computer programmed by scientists at CMU's Robotics Institute and - it most interesting twist - by the school's drama department, which was charged with giving Valerie character.

To ask her a question, you have to type another board, but she'll answer in a computer-generated voice. If you take a seat in the waiting area, you'll Valerie talk on the phone to her friends or her "in ebored" about all her problems, including how hates to date vacuum cleaners.

It might seem whimsical, but Valerie pushes a boundary between machines and humans - a toward the Robot on *Lost* in space, the most ill character on the show.

There will be a lot more news about the merger machines and humans. University labs are doing search. Companies are being started.

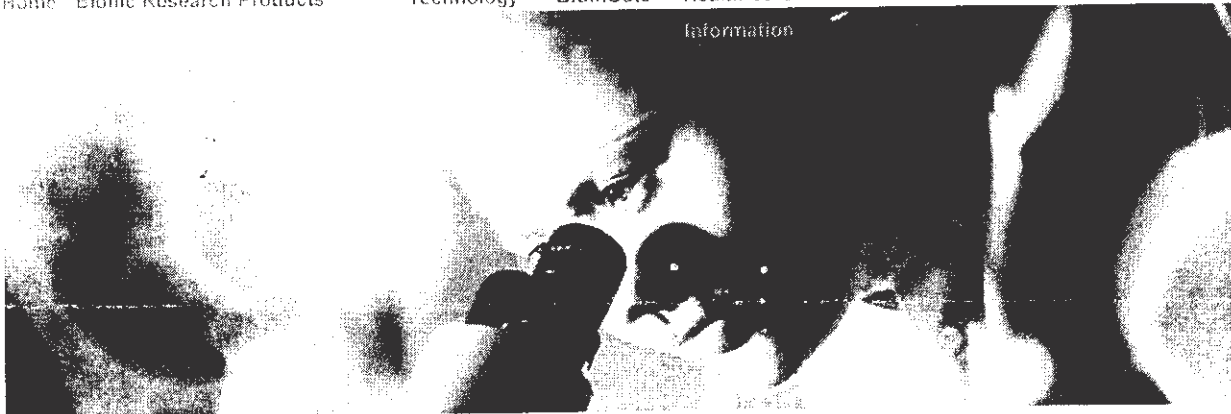
Meanwhile, hopefully 2004 in no other way than 1974. I really don't want to have to wear Brit and socks again.

Hi, I'm Valerie: Carnegie Mellon researchers and drama students crafted the roboceptionist. smaller and better. Someday perhaps it could make regular eyeglasses into night-vision glasses, or even about calling carrots might finally come true.

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Cyberkinetics (Foxborough, MA) is a leader in the rapidly emerging field of brain computer interfaces. Cyberkinetics' technology allows for the creation of direct, reliable and bi-directional interfaces among the brain, nervous system and a computer. The development of safe, robust implants for recording from, and/ or stimulating, the brain surface will open the potential to study other complex signals from the brain. Cyberkinetics' technology platform, called BrainGate™ System, may allow breakthrough applications which leverage the translation of thought into direct computer control. Such applications may include novel communications interfaces for people with motor impairment, as well as the monitoring and treatment of certain diseases which manifest themselves in patterns of brain activity, such as epilepsy and depression.

BrainGate™ Neural Interface System: First Clinical Trial Launched

Cyberkinetics' first clinical product is the BrainGate™ Neural Interface System. Based on more than ten years of development at Brown University, the BrainGate™ System is intended to provide severely disabled people with a permanent, direct and reliable interface to a personal computer. The Company has initiated a pilot (feasibility) clinical trial of the BrainGate™ System in up to five severely disabled people unable to use their hands. The implant is designed to allow signals from the motor cortex to be collected, processed and analyzed, eventually producing an interface with a personal computer. In this way, the BrainGate™ System has the potential to afford people the opportunity to use the computer as a gateway to communicate and control assistive devices in their environment.

Cyberkinetic's History

Cyberkinetics was established in 2001 to commercialize breakthroughs by Brown University scientists in the detection and interpretation of neural signals. Groundbreaking results of this work include one of the world's first reported uses of multi-electrode brain-computer interface technologies enabling monkeys to play computer games and control robotic devices - using their brain waves alone. (Instant neural control of a movement signal, *Nature*, March 14, 2002). The Company's technology platform will build on this scientific effort to develop implantable medical devices and products capable of both detecting and interpreting brain activity in real-time.

In late 2002, Cyberkinetics merged with Bionic Technologies, LLC, a leading manufacturer of neural recording, stimulation and signal processing equipment for neuroscience research. Through the merger, Cyberkinetics gained a world-class engineering team, manufacturing facilities and key intellectual property. The Company continues to manufacture and market the BIONIC® line of neural recording arrays and data acquisition systems to researchers. The Company's intellectual property portfolio includes exclusive licenses from Brown University,

Massachusetts Institute of Technology, Emory University and University of Utah.

Seed funding for Cyberkinetics was provided by the Slater Center for Biomedical Technology. The Company received \$9.3 million in Series A funding from Oxford Bioscience Partners; Global Life Science Ventures; George Hatsopoulos, Founder and Chairman Emeritus of Thermo Electron Corporation; and NeuroVentures, LLC.

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