

If the tech fits, wear it

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The digital domain is creeping off our desktops and onto our bodies, from music players that match your tunes to your heart beat to mood sweaters that change color depending on your emotional state.

There are even fitness bracelets, anklets and necklaces to track your calorie burning.

At Chaotic Moon Studios, an Austin, Texas, mobile software firm, developers and engineers are working on a competitive product to Google's upcoming Google Glass - eyewear that can log onto the

Internet. And they're designing other wearable projects for several other customers, from applications to full-blown products.

Chaotic Moon co-founder William "Whurley" Hurley said wearable technology will have as much of an impact as the smartphone revolution did a few years ago.

"I think we're about to enter a whole new phase in the next 12 months ... 16 months probably on the outside," Hurley said. "There's going to be a whole new phase. It's just like when the iPhone came out and there was this mad gold rush. It's gonna be the same thing."

Another Austin mobile developer, Mutual Mobile, is working on Google Glass applications for a variety of clients. They include doctors who might use the glasses to pull up patient information, and warehouse employees who could use them to look at real-time inventory or scan bar codes.

"People are starting to get into it," said Sam Gaddis, the company's chief marketing officer.

Gaddis says connected devices of all types are the future - because sensors that can measure a variety of data are becoming so cheap.

Mutual Mobile has hosted "hackathons" to encourage its developers to see what they can invent.

After one recent event, its developers created a football with a sensor that can detect the quality of the throw, and a boxing game that measures how much you've hit the target.

Adding sensors to everyday objects "is just adding this new layer of data that didn't exist before," Gaddis said.

Experts say that wearables are the next big thing in tech.

"Everyone agrees the race is just beginning, and I think we're going to see some very, very big leaps in just the next year," tech entrepreneur Manish Chandra said at a wearable technology conference and fashion show in San Francisco that was buzzing with hundreds of developers, engineers and designers.

Wearable technologies have long been a sideshow to mainstream laptop and smartphones, but this year Google's glasses and rumors of Apple's iWatch are popularizing the field. Analysts forecast swift growth. Last year the market for wearable technology - encompassing everything from hearing aids to wristband pedometers - totaled almost \$9 billion. That should climb to \$30 billion by 2018, said analyst Shane Walker at IHS Global Insights.

Hurley said Google's public relations campaign for its glasses sparked an influx of venture capital into wearables.

"And that's what's been missing for the last 20 years in this area, is people actually funding these projects," he said. "So now we're getting all these clients because there's all this injection of funding."

Other areas like gaming will also be affected, thanks to products like the Oculus Rift, a virtual reality headset that enables 3-D gaming.

At Austin's recent Captivate tech conference, Robin Arnott was showing off a program he'd created for the Rift. After users strap on the headset, the program uses their vocal tones to display a series of tunnelling images, creating fantastical visual effects.

Arnott called it a "meditation experience" that he hopes to release with the device in another year or so.

"It's like you chase yourself down the rabbit hole," he said of the program.

Arnott described devices like Google's glasses, which overlay the Internet on top of the real world as "augmented reality."

Wearables "extend your abilities as a human, just as your phone does," he said.

"I really feel like this is an extra organ," he said, grabbing his smartphone.

As wearable technologies proliferate, humans will need to adapt, said Georgia Institute of Technology professor Thad Starner. He advises Google on its glasses, which are lightweight frames equipped with a hidden camera and tiny display that responds to voice commands. Starner has worn his for several years.

"We're talking about paradigm-changing devices," said Starner. "Capabilities that people haven't thought of before."

He said that, unlike computers and tablets that people engage with, wearable computers are designed to be in the background, secondary to the wearer's attention.

"It seems like a paradox, but when you pull the technology closer to your body, there's a seamless interaction, it's more an extension of yourself," he said.

But there are sure to be cultural and social issues. Google Glass - and some emerging competitors - have raised concerns of people who don't want to be surreptitiously videoed or photographed. And what about interacting?

"Do you really want a touch screen on the front of your T-shirt? Is it socially acceptable to be poked all over your body for somebody to use your wearable computer?" asked Genevieve Dion, who directs a fashion and technology lab at Drexel University.

The answer, for some, is no.

In a newly released survey from Cornerstone OnDemand, 42 percent of workers said they would not be willing to strap on wearable tech for their jobs, with older and more traditional employees more reluctant than their counterparts. The survey polled 1,029 Americans aged 18 and over in August, and had a 3.1 percent margin of error.

And then there's an issue of bandwidth, said Ritch Blasi, a consultant with Comunicano who researches the wearable technology market. At this point, there simply isn't enough network service to support universal and constant wireless use, he said. But that too will catch up.

"It almost makes you think everyone is going to turn into a cyborg," he said, referring to a fictional, prosthetic-laden high tech comic book superhero.

And will they? "When you look at the world and everything people are doing?" Blasi said. "I think the answer to that is yes."

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