

## Facebook out to read minds (Update)

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Facebook is developing a system capable of typing 100 words-per-minute straight from the brain

Facebook wants to read your mind.

At least, when it comes to what you'd like to say or type.

The social network giant, at its annual developers conference, unveiled Wednesday projects aimed at allowing users to use their minds to type messages or their skin to hear words.

"Speech is essentially a compression algorithm, and a lousy one at that," Facebook executive and former DARPA director Regina Dugan told a packed audience at the Silicon Valley event.

"That is why we love great writers and poets, because they are just a little bit better at compressing the fullness of a thought into words. What if we could type directly from our brain into a computer?"

The project grew from being an idea six months ago to being the focus of a team of more than 60 scientists, engineers, and system integrators, according to Dugan, who heads a Building 8 team devoted to coming up with innovative hardware for the social network's mission of connecting the world.

"We are just getting started," Dugan said.

"We have a goal of creating a system capable of typing 100 words-per-minute straight from your brain."

## **Cutting out implants**

Video played during her presentation showed a woman with an advanced neurodegenerative disease using her mind to move a cursor on a computer screen, slowly typing words.

Such brain-computer interface technology currently involves implanting electrodes, but Facebook wants to use optical imaging to eliminate the need to surgically intrude on brains, according to Dugan.

Facebook is looking at creating "silent-speech interfaces" based on sensors that could be worn, and made in quantity.

"We are not talking about decoding your random thoughts; that is more

than many of us want to know," Dugan quipped.

"We are talking about thoughts you want to share. Words you have decided to send to the speech center of the brain."

Such technology could let people fire off text messages or emails by thinking, instead of needing to interrupt what they are doing to use smartphone touchscreens, for example.

It would also have the potential to capture concepts and semantics associated with words people are thinking, making language differences irrelevant by enabling sharing of what is in mind, Dugan said.

"Unlike other approaches, ours will be focused on developing a noninvasive system that could one day become a speech prosthetic for people with communication disorders or a new means for input to AR," Dugan said in a post on her Facebook page, referring to augmented reality.

"Even something as simple as a 'yes/no' brain click, or a 'brain mouse' would be transformative."

## **Feeling words**

The Building 8 group is also working on sensors that let people "hear" through their skin, with what they feel being converted into words in a variation on how the ear turns vibrations into comprehensible sounds.

"Our brains have the ability to construct language from components," Dugan said.

"I suggest that one day, not so far away, it may be possible for me to think in Mandarin and for you to feel it instantly in Spanish."

Such technology remains years away, according to Dugan.

Work under way in Building 8 "will one day allow us to choose to share a thought, just like we do with photos and videos," Facebook co-founder and chief executive Mark Zuckerberg said in a post on his page at the social network.

"Eventually, we want to turn it into a wearable technology that can be manufactured at scale."

Facebook started the Building 8 group last year, and put it in the hands of Dugan, who had previously led an advanced-technology projects group at Google.

Before joining Google, Dugan ran the Defense Department's Defense Advanced Research Projects Agency, devoted to developing technology for the US military.

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