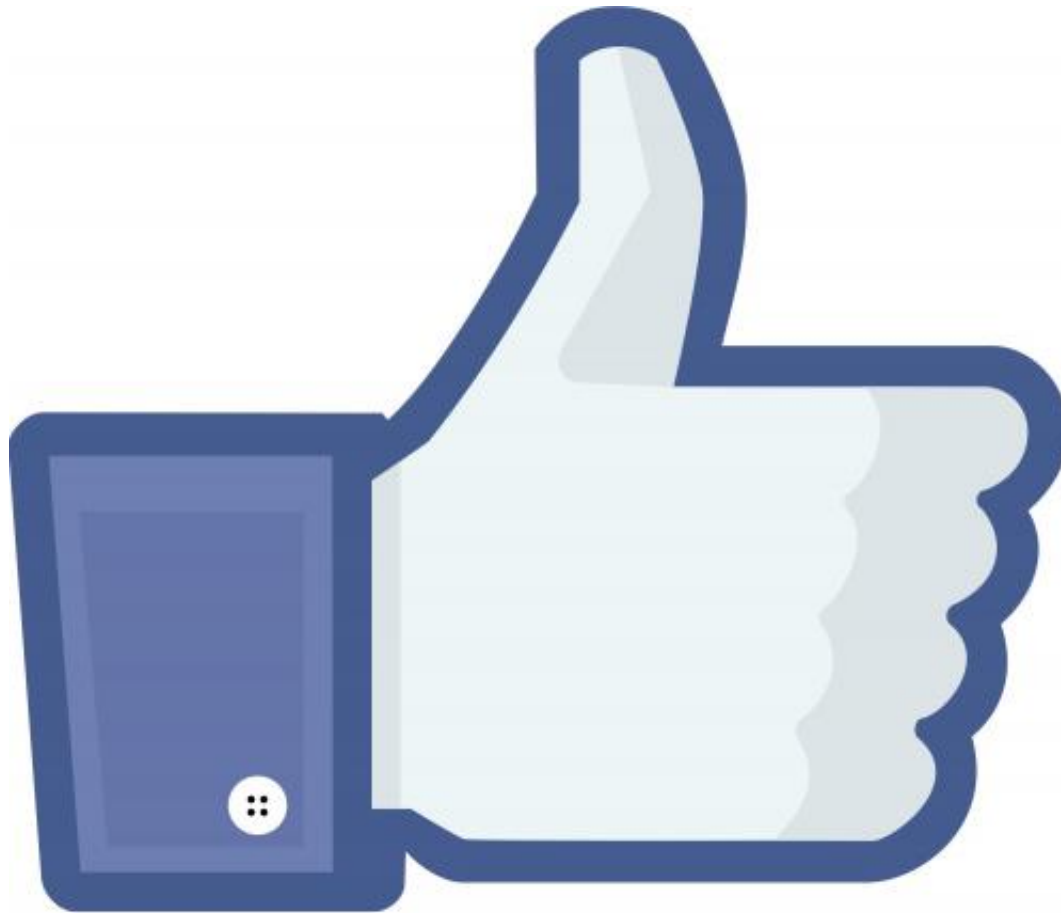


Facebook gives sneak peek into sci-fi future

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Mike Schroepfer is sitting in a conference room inside Facebook's Frank Gehry-designed headquarters. His ultra-modern surroundings—22-foot ceilings, raw steel beams, polished concrete pathways that flow through acres of open desks—suit his responsibilities.

Schroepfer, the company's [chief technology officer](#) known around Facebook as "Schrep," works on the stuff of [science fiction](#). High-altitude drones that blanket swaths of the earth with Internet access. Computers that think like humans. Virtual worlds where you can hang out with friends on the other side of the country or the planet.

All are big technology bets that sound like they were just beamed down from the USS Enterprise, not dreamed up inside the Silicon Valley company that built the world's largest social network. But this is what Schroepfer has been asked to do by Facebook's chief executive Mark Zuckerberg: To peer 10 years into the future.

The assignment clearly energizes Facebook's techie in chief, whose eyes sparkle when talking about these three major initiatives that he says will propel Facebook—and technology—forward. He says even the notion that people will gather in virtual spaces when they are miles apart will one day be commonplace.

"Human bonds are about shared experiences and shared memories. This is the ultimate tool for that. It is effectively a teleporter," Schroepfer says of Facebook's virtual reality device Oculus. "It's the closest thing we will ever do to re-materializing you Star Trek style."

The stakes could not be higher for Facebook. The company is investing heavily in this futuristic vision, often to the alarm of Wall Street. Facebook's third-quarter operating margin excluding certain expenses, one reflection of its spending, slipped to 54% from 57% in the same period a year ago.

Facebook seems to have no intention of reeling in spending. All of these projects have a 10-year timeline. And Facebook says it plans to take a slow approach to making money from Oculus VR, which it bought last year for \$2 billion.

Schroepfer tells USA TODAY that it's a matter of survival in an increasingly competitive industry. Facebook has to be willing "to invest in disruptive technology and disrupt ourselves," he says.

Facebook learned that lesson the hard way. It very nearly missed the last major computing platform switch to smartphones from desktop computers, a misstep that loomed ominously over its initial public offering. Now it's reinvented itself as a "mobile first" company and it's determined to be among the first to anticipate the next major technological breakthrough. The aim is simple: To continue the momentum of the social networking service and of its lucrative advertising business.

"It's very critical that we be pushing towards the new technologies and not reacting to them," Schroepfer says.

Critical because Facebook is not the only one racing into the future.

Silicon Valley abounds with lofty ambition. Apple is said to be exploring building cars, Uber is planning for a future where cars drive themselves and Amazon wants drones to deliver packages. And Google, Silicon Valley's "moonshot" factory and one of Facebook's chief rivals, underwent a sweeping reorganization last month to separate its lucrative search and advertising business from more experimental ventures such as driverless cars.

Facebook is facing competitive pressures from every direction. Google, for instance, is just as laser-focused on artificial intelligence and virtual reality as Facebook.

"There is only one strategy that a tech company can do and that is to flee into the future just as fast as they can," Silicon Valley forecaster Paul Saffo says. "Every time a company slows down to maximize

profits, they fall out of the race. It's that simple."

Alarm over heavy spending on speculative ventures has undercut Facebook stock (FB) in the past. But with advertising sales climbing, investors are patient—at least for now. Facebook reported that third-quarter revenue rose 41% to \$4.5 billion from the year-ago quarter. Total costs and expenses rose even more quickly, 68%, but the estimate-topping quarter sent shares soaring, hoisting the company's market value over \$300 billion.

Pivotal Research Group analyst Brian Wieser says he's "mindful" of how much Facebook is spending but says "it's difficult to restrain our optimism on the growth potential for the foreseeable future."

That gives Facebook the breathing room it needs to push forward on three initiatives it says will define the company going forward.

CONNECTIVITY: Facebook now reaches more than 1.5 billion people. But, if Facebook has its way, the entire planet will be on the Internet and on Facebook. So it's brainstorming how to reach the billions who are not yet connected to the Internet.

"The reason there isn't Internet connectivity in a lot of places in the world is that it's just not economically feasible to string telephone polls over the entire planet," Schroepfer says.

Facebook has teamed up with mobile carriers to offer free access to Facebook and other services in developing countries through its Internet.org app. It's also building drones and satellites to reach remote regions where traditional means of connecting to the Internet are too challenging. For instance, it will start beaming the Internet to parts of sub-Saharan Africa starting next year. And eventually Facebook hopes to deploy a fleet of drones that circle the earth at altitudes above

commercial airliners and, even higher in the skies, satellites to deliver the Internet to the most remote reaches of the planet.

"These are technological things that don't exist today that we're investing in to radically reduce the cost of providing Internet access," Schroepfer says. "The goal is in 10 years, we want there to be zero billion not connected to the Internet. It's that simple."

ARTIFICIAL INTELLIGENCE: Facebook is developing intelligent machines that learn much the way the human mind does to make Facebook smarter and more responsive to its users.

"I think of it as a super power for the planet," Schroepfer says of artificial intelligence. And it has very practical applications, such as teaching computers to distinguish objects and then describe the contents of photographs for visually impaired or blind users. "A caption on an image might be: 'awesome day,' and you have no idea what that means," Schroepfer says. "We have technology now that can say: There are three people. They are smiling. It's on the beach."

Artificial intelligence can also help filter the massive amounts of information flowing through Facebook so people can quickly find what they care about most, Schroepfer says. Early examples include Messenger's M service, which is a digital personal assistant that can answer questions and perform tasks such as booking restaurant reservations, and Moments, a new app that sifts through your camera roll to find photographs of friends so users can share them.

By unearthing the stuff that's truly important to users, Facebook hopes to keep people on the service longer and, of course, target more relevant ads. Schroepfer says AI will be like having a "super smart friend" who stays awake all night drinking Red Bull to make sure you see what you want to see in your News Feed.

"Imagine that you could actually sit down and say: 'Listen Facebook: Uncle Frank has a terrible sense of humor. I don't want to see any of Uncle Frank's jokes. I love my mom and I want see every post. I am a huge Yankees fan so anytime someone posts about the Mets, do not show it to me.' ... And Facebook says: 'Got it.' And then that's what you see on your News Feed," he says.

The goal? To turn Facebook from "a click and type into much more of a conversation," he says.

VIRTUAL REALITY: Zuckerberg has hailed virtual reality as the next major computing platform after mobile devices. That spurred Facebook's purchase of Oculus which plans to ship a consumer version of its Rift headset in the first quarter of next year.

At first, the main users of the Oculus headset will be hard-core gamers, but eventually the three-dimensional, 360-degree world could power all kinds of new experiences. Oculus is already building more social experiences such as two people playing ping pong or stacking blocks. Facebook is preparing for new kinds of social interactions, such as grandparents seeing a toddler take her first steps or friends taking a walk together on a virtual beach.

"They put on headset. You put on a headset. And you can be teleported anywhere you want in the world. It can be fishing. It can be at the zoo. It can be at the museum. It can be in your living room," Schroepfer says. "After about a minute, it really does feel like that person is there even though they are 1,000 miles away."

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