

TECHNOLOGY BY MEGHAN WALSH

Carmakers Reenter the Space Race

A FEW YEARS AGO, if you had asked Caleb Henry, a senior analyst at the satellite and space financial-research firm Quilty Analytics, how soon cars would be relying on signals from space for streaming services like software updates, GPS, infotainment apps, and autonomous driving, he

would have said it's a long way off. "Now," he says, "it's much more feasible."

A number of recent advancements have experts forecasting that satellites may be beaming signals into the 1.5 billion earthbound cars within a handful of years. "You're going to see the

connected-car movement really take off over the balance of this decade," says Walter Berger, president and chief operating officer of Kymeta, which did a test-drive across the United States with its flat-panel satellite antenna atop a Toyota 4Runner.

Earlier this year, Tesla's Elon Musk asked regulators for permission to connect his Starlink satellite network with moving vehicles. One of China's largest carmakers, Geely, also just recently began manufacturing satellites. Even the Big Three have indicated that the future of the industry depends on selling not hunks of metal but the digital services that animate them. A recent industry survey found that 37 percent of drivers would switch brands on the basis of connectivity. If manufacturers can figure out how to integrate streaming services, they'll not only secure customer loyalty but also create recurring revenue streams for the entire life cycle of a car.

But the greatest potential of satellite connectivity, experts say, is in bringing hands-free steering to the masses. "This could be the critical enabler," says Francois Truc, a Korn Ferry senior client partner. Though the future of autonomous driving remains uncertain and the timeline slower than originally anticipated, automakers are definitely not abandoning what some estimate to be an \$80 billion

investment. And this much is certain: autonomous cars require both an infallible signal and the capacity to exchange massive amounts of data. Terrestrial networks, meanwhile, cover at most 15 percent of the globe.

Like driverless technology, reaching for the stars also carries significant costs. Building and launching a single satellite can cost hundreds of millions of dollars. And the real-world mechanics are far from figured out. Flat-panel antennas are more transportable than the old-school ones atop news vans but carry a price tag of around \$40,000 and still are not small enough to hide beneath the hood of a sedan. Then, of course, those antennas must have something to ping. While there's been a huge surge in what are called low-earth-orbit constellations, which offer a much faster signal response than traditional satellites, in urban areas it still doesn't match the efficiency of cellular connection.

Even so, dreams can travel very far in this industry. As experts point out, many of today's legacy carmakers were at the forefront of the space race that led to a man on the moon. GM, Ford, and Chrysler all had aerospace divisions and contributed essential knowledge and production to the Apollo missions. The question, says Truc, is "Will history repeat itself?"

TAKEAWAY

The risks are high, but connecting to satellites could be huge for the industry.



Hiroshi Watanabe / Getty Images

CULTURE BY ARIANNE COHEN

Psssst— Don't Be a Jerk

A DRIVER HONKING LOUDLY. A grumpy server. *Seinfeld's* Newman. When you think of rudeness, you think of its more virulent strains. But mild rudeness, it turns out, can undermine your company's culture and bottom line in devastating ways. A November survey by Korn Ferry finds that workplace incivility is rampant,



Richard Drury / Getty Images