What if? Just, what if?

Autonomous vehicles and real estate

by Roy Schneiderman

Autonomous vehicles are one of several mega-disruptive technologies "everyone knows" will have a significant impact on real estate going forward. And "everyone knows" if investors do not factor the future impacts of autonomous vehicles into their underwriting, they are doomed to failure.

Indeed, for the past several years, the real estate press has been peppered with articles discussing the implications of the coming era of autonomous vehicles or, more colloquially, "driverless cars." It is an attractive vision. It would be wonderful to have all of the benefits that are likely to flow from driverless cars, and I am sure the real estate industry will be able to successfully adapt to accommodate them.

But what if the inevitable triumph of autonomous vehicles does not happen? Or the inevitable takes much longer to manifest than people are currently expecting? Is this Luddite heresy? Or simply prudent skepticism?

After all, nuclear power was once thought likely to become "too cheap to meter," until people realized this meant there would need to be nuclear plants strewn around the country and something had to be done with the waste. Hydroelectric power was a renewable energy source with vast potential — until the environmental impacts were considered. Airplanes faster than the speed of sound were going to revolutionize travel and bring the world together but for, in part, the fact noise considerations made flight over populated areas impractical. And let's not forget the Segway, which also was going to revolutionize transportation and was deemed "as big a deal as the PC" by none other than Steve Jobs himself.

So, when I read a very thoughtful Green Street Advisors analysis of autonomous vehicles that proclaimed ride-sharing services and the promise of driverless cars represent the single biggest game-changer for real estate over the next several decades, I felt I had to consider alternative scenarios.

Five potential issues that could substantially slow down, if not derail, widespread adoption of autonomous vehicles are:

(1) The technology can't become reliable enough, fast enough. The "Can you hear me now?" era may (or may not!) be nearing an end for cell phones. But it has taken decades for cellular technology to reach the point when people are starting to take call quality for granted. When this technology was developing and improving, dropped phone calls and poor connections were merely an annoyance, with land lines a reliable backup when needed.

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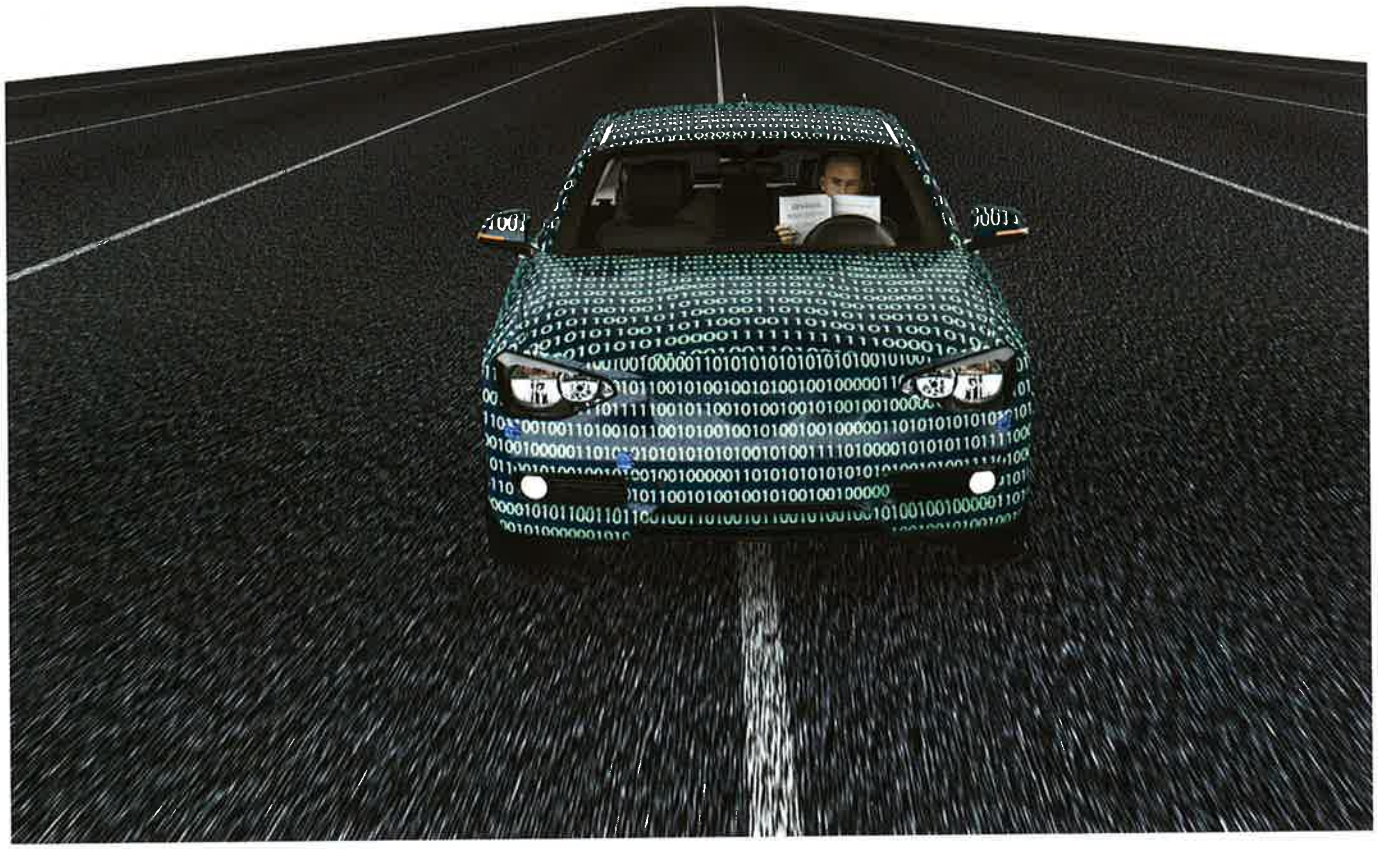
Mishaps with autonomous vehicles will have far more severe repercussions.

A Rand Corp. report concluded it would take hundreds of millions, or even billions, of miles "to prove clear statistical evidence of autonomous vehicle safety." If such testing is done before the technology is rolled out, it will be prohibitively time-consuming and expensive. If tested "in use," as cellphones were, there could be some dramatic failures that create both a public and political backlash.

Ironically, the fact the technology, although flawed, may well be less error-prone than human drivers will not be sufficient, as the



public may well prefer the devil they know and understand.

(2) Sharing the road with humans. Eventually, autonomous cars may fully or substantially replace human drivers. In the United States, at least, there will be an intervening period, however, in which driverless cars and trucks will need to share the road with human drivers.

This is unfortunate because driverless technology would no doubt be easier to perfect if all vehicles were driven autonomously, as driving protocols and intervehicle communications could be standardized and enforced more easily. Substantial time, testing and capital will be needed to develop programs that allow autonomous and human-controlled vehicles to co-exist. Ironically, this may mean autonomous vehicles will first be adopted in small jurisdictions with strong governments — think Singapore — where human-driving can be easily controlled. Manhattan also may be an option.

Alternatively, places with little existing traffic could be good incubators. Should North Korea ever undergo reconstruction, it could be an ideal place for an "all autonomous vehicle" proving ground. And such a place would have the added advantage of needing a lot of new road infrastructure, which could be built using techniques and technologies that facilitate autonomous vehicles.

(3) Legal and insurance considerations. At present, most of the liability associated with vehicle accidents rests with drivers and their insurance companies, although there are high-profile exceptions where vehicle manufacturers are liable. Driverless cars are, well, driverless. Liability is likely to be borne by vehicle manufacturers, software developers, and providers that facilitate communications among vehicles. Each of these functions is likely to be fairly centralized in a handful of large corporations, each of which will have extraordinarily high potential liability. Having said that, one can imagine manufacturers blaming the people supplying the components, and the software manufacturers blaming owners that don't install the latest updates. In any event, insurance and liability issues will look very different from today.

In a survey of more than 200 experts commissioned by the Institute of Electrical and Electronics Engineers — a professional organization "dedicated to advancing technology for the benefit of humanity" — "legal liability" was identified as one of the top three impediments to widespread adoption of autonomous vehicles, ahead of somewhat more obvious issues of cost and technology.

Although one day there may well be a lot less damage and injury than in today's human-

controlled era, it is highly likely things will still go wrong from time to time, and sorting out the liability side of the equation will not be easy or quick.

(4) Competing systems. There are two distinct issues with respect to "competing systems." The first will involve the degree to which autonomous vehicles are a creature of the private sector (Google Inc., General Motors Co.), the public sector (most transportation infrastructure) or a hybrid (many utility companies). The policy implications are immense and could take considerable time to resolve. At present, autonomous-vehicle technology has been a private-sector endeavor. This could change quickly for any number of reasons: job impacts, a few high-profile disasters, or simply a general sense that "consumers need protection."

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In a slightly different vein, if development is left to the private sector, any number of competing systems and software could be developed. Think VHS versus Betamax. Or Apple iOS versus Windows. Eventually, some level of standardization or cooperation will be needed. Or perhaps one technology simply becomes obsolete, as with Betamax. Antitrust issues could hamper standardization. Fear of obsolescence could inhibit consumer acceptance.

The bottom line is an extraordinary number of public policy issues need to be sorted through, and this process is not likely to go quickly. Indeed, "public policy" is one of the other top three issues the aforementioned IEEE survey identified as impediments to the adoption of autonomous vehicle technology.

(5) Glitches, hacking and terrorism. At the dawn of the computer era, columnist Bill Vaughan wrote, "To err is human; to really foul things up takes a computer." It was a lighthearted comment primarily aimed at "bugs and glitches." But as the number of autonomous vehicles increases, software glitches or hardware failures could become a serious issue. Say a solar flare suddenly caused 5 percent of the autonomous cars in Pittsburgh to accelerate five miles per hour faster than their programming indicates. Maybe that scenario is not likely or possible. But some sort of glitch is likely at some point in time.

Far more dangerous would be hackers disrupting the system simply to prove they could do it, or the nightmare of terrorists trying to maximize human and economic pain. If such events happen early in the adoption process, public acceptance could grind to a halt.

Implications for real estate

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First, it would slow or eliminate the anticipated changes in building design. Garages with parking spaces sized under the assumption nobody would ever need to exit a parked vehicle (because the occupants would have exited and the vehicle would park itself) would become problematic, although self-parking cars might well be feasible even in the contrarian world hypothesized in this article.

On-site parking itself would not be going away any time soon, however, even if Lyft Inc. and Uber Technologies cause reduced demand. Seemingly prescient developers who maximize leasable space by minimizing parking might find themselves waiting for a future that is slow in arriving, while office buildings, apartment buildings and retail centers with substantial parking may find their road to obsolescence slower than anticipated.

Second, one of the more interesting predictions about the autonomous vehicle revolution is that it will diminish the appeal of transit-oriented development, as efficient, driverless cars become the new transit infrastructure. At best, this is likely to be a slow-developing trend, as autonomous cars that can traverse a congested downtown, a highway system and suburban cul-de-sacs may still be a long way off.

Finally, much of the speculation about autonomous vehicles has centered, quite appropriately, upon potential job loss. Somewhere on the order of 4 million people make a living driving trucks or other vehicles, and much has been made of the social implications should these jobs vanish. Setting aside such broader questions, this level of job loss could have implications for both the residential and the retail sectors because of the loss of some reasonably well-paying blue-collar jobs. But maybe, just maybe, not quite so fast as has been expected. ❖

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