

Robotic Parking



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Hubs: *COMING TO A TOWN NEAR YOU*

Mechanization, computers and robotics have revolutionized agriculture and auto making. Yet, the parking industry has stubbornly resisted this commoditization, perhaps due in part to the idea that “all parking is local.”

Millions of individual customers make their respective parking decisions from a wide menu of variables, including price, destination proximity and perks—such as better security or valet service.

But what happens when decision-making is digitized and “optimized” by revenue-hungry auto-makers and data-driven entities selling Mobility-as-a-Service (MaaS)?

Already, parking reservation systems, yield management theorems and ride-hailing services like Uber are altering how parking facilities are managed by filtering what data is presented to the consumer.

Now, another potential game-changer is afoot: What if a customer is no longer parking the car? What if the car is parking itself?

Parking Hubs Ahead?

One outcome might be the advent of parking hubs: special-use parking facilities where autonomous vehicles (AVs) are cleaned, charged and staged when not in use.

It’s anticipated there will be privately owned AVs; however, there may also be large fleets of AVs deployed by ride hailing, car rental and car sharing companies (collectively known as Transportation Network Companies or TNCs).

Some experts believe that, after dropping off their passengers, AVs will either be sent home (if privately

owned) or endlessly circle the block, awaiting recall by their owners or their next MaaS assignment.

Others think these scenarios are unlikely, due to the cost and congestion they would create. Mary Smith, senior vice president for Walker Consultants and a thought leader on how AVs will impact parking, surmises that AVs will simply park themselves nearby.

“Autonomous parking will happen sooner than empty AVs just driving around,” Smith says. “I think a payment system will be associated with the car, perhaps through

the auto manufacturer. It may be a service with a credit card on file and you register the vehicle’s IP address.”

Smith uses the phrase “autonomous parking” to distinguish a car that parks itself after the driver has left the vehicle, from those that are self-parked by a driver, valet parked by an attendant or mechanically parked by an automated parking system (APS).

Numerous automakers now offer autonomous parking as a “driver assist” feature, an incremental step toward a fully autonomous vehicle (despite the hype, likely decades away).

But the rapidly evolving capability of vehicles to perform “autonomous parking” and payment systems embedded into internet-capable, connected cars (CCs), as Smith describes, may accelerate this trend.

While a fully autonomous vehicle may never arrive, autonomous parking is here now. These semi-AVs

will need to park somewhere and they can't just "pull a ticket".

At least one automaker, Germany's Daimler, is also investigating combining all of these concepts.

Parking Cars, Not People

Daimler's experiment has led to some speculation that at least some parking hubs may be purpose-built to accommodate AVs, possibly incorporating APS technology.

Guide to the Design & Operation of Automated Parking Facilities, doesn't see this as a far leap.

"An APS only requires a human driver to position the vehicle in the entry compartment and then activate the system. At that point, the vehicle is driverless. An AV could enter the system as the sensors for positioning the vehicle would be available within the vehicle.

The vehicle would send a coded signal to wirelessly

vehicle, waiting areas and payment machines.

"Savings would also come from the smaller size of the AV population, reducing the square footage per space," he adds.

Mary Smith is more skeptical of an APS built specifically to accommodate AVs. "It will not be cost-effective to construct APSs generally as compared to traditional garages," she says. "Maybe here or there, but not widespread. An APS will continue to make sense where it does today—where it saves a lot of mass and fits a site that otherwise is impractical for a self-park structure."

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New Players Entering the Game?

Will parking operators find AVs to be customers or competitors? As demand shifts from self-park to AV-park—from parking lots to parking hubs—there will inevitably be winners and losers. And players may change sides.

"There will be home bases for TNCs and probably multiple locations for each company per city," says Walker's Smith. "Auto manufacturers do plan to get into the TNC business. Whether it is Uber or GM

The owner of the Mercedes-Benz brand is deeply invested in both CC and AV technologies. In designing both the car and a proprietary APS, is Daimler dangling a toe into the waters of commercial parking?

Don Monahan, a principal at Parking-Xpert, LLC and primary author of the NPA Parking Consultants Council publication,

activate the system. It would also identify the vehicle digitally or by license plate recognition or some other technology for billing purposes."

Monahan says autonomous parking by an AV in an APS would be slightly more efficient as it eliminates the human interfaces for exiting the



Daimler.com



[General Motors], TNCs will need a place to clean, recharge/refuel and store the vehicles when not in service. Parking operators are now talking to TNCs to partner with them to provide space.”

Automakers and car rental agencies already apply the concept of “autofarms” to how they distribute their vehicles to the point of need. Expanding on that idea to cut out the parking operator middlemen may also prove attractive. Thus, TNCs might establish their own parking hubs to control parking availability and cost.

Automakers Seek to Capture After-Market Revenues

“AV manufacturers may get into the parking business for their automated vehicles,” Don Monahan suggests. Pinched by competition and slowing sales, automakers are seeking new revenues by vertically integrating their products and services with the car ownership experience.

By controlling CC payment gateways or steering customers toward favored business partners, manufacturers hope to realize extra income from the buying decisions vehicle

owners make in such areas as parking, repairs/maintenance, tolls and insurance.

BMW’s partnership with the ParkNow reservations system is but one recent example. However, Smith doesn’t see automakers successfully penetrating the commercial parking market, even if that is their intent.

“Why would a TNC choose to share space in a home base owned by GM, when GM is a competitor of that TNC?” Smith asks rhetorically.

“Manufacturers won’t have any big advantage in providing parking to private AV owners, except to possibly process payments. Unless the parking is free at the Mercedes-Benz facility, does it really convince me to buy a Mercedes versus a BMW or Lexus?”

While automakers and TNCs may not want to think of themselves as commodities, it appears they plan to make AV parking a commodity. ■

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KEY ACRONYMS FOR THE DRIVERLESS AGE

AV - Autonomous Vehicle: True, “Level 5” AVs are not realistically expected to be commonplace for another 20 years, but automakers are incrementally adding so-called “driver assist” features at a rapid pace.

APS - Automated Parking Systems:

A space-efficient system for stacking and storing vehicles in small areas via robotic devices without the need for human intervention or drive lanes/ramps.

TNC - Transportation Network Company:

A collective term for entities offering car sharing, car rentals, ride hailing and other transportation services where multiple consumers share the same vehicle.

MaaS - Mobility as a Service:

A scenario where consumers of transportation services rent mobility on an as-needed, pay-as-you-go basis, rather than own the means of transport.

CC - Connected Car: A vehicle capable of communicating with transportation infrastructure and even other vehicles via the internet or other communication channels such as Bluetooth or Near Field Communications.