Navigating a shifting landscape

Capturing value in the evolving mobility ecosystem
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A 5 transportation technology drives massive changes in the entire mobility ecosystem, many diverse businesses are looking to stake out their places. The future of transportation involves increasingly complex interactions, with untested economics, which address our need for personal mobility: the need to get to many different locations as we pursue such disparate activities as work, shopping, entertainment, family obligations, and social interactions. This ecosystem—outlined in more detail in an earlier report, *The future of mobility*¹—ranges far beyond automobile companies to include a growing array of players providing specialized services, including energy providers, insurance providers, mobility fleet operators such as carsharing and ridesharing services, smartphone providers, sensor technology vendors, and public transportation services.

This paper will explore some of the emerging opportunities for value creation and value capture within the evolving mobility ecosystem: Which emerging roles in the ecosystem offer the greatest opportunity for value capture, and what are the potential challenges and opportunities for existing ecosystem players? These are white spaces that can be targeted and occupied by a wide range of potential players, including both established companies and new entrants. But here’s the challenge: These emerging roles are very much driven by network effects—they involve building specialized ecosystems within the broader mobility ecosystem, where the value of the platform increases as the number of users and depth of engagement with those users expand. Once these ecosystems reach a critical mass of participants, there will likely be a strong tendency toward concentration and consolidation, leading to a small number of powerful platform providers that could become increasingly difficult to unseat. In these kinds of businesses, if you aspire to capture value, you need to become the first mover to build critical mass. Being a fast follower in these businesses is a very risky proposition.

This pattern has been playing out in a broad range of domains outside the mobility ecosystem. Look at the examples of Amazon in online retailing, Google in online search and advertising, and SWIFT in interbank messaging. While many have tried, and some are continuing to try, to unseat these platform players, their position is strengthened by the critical mass of participants that they have mobilized.

Given these dynamics, it is surprising that most existing players in the mobility ecosystem are moving so cautiously to explore and target these value-capture opportunities. Their modest moves increase the risk that much more aggressive new entrants will come into the mobility ecosystem to address these value-capture opportunities, which could ultimately marginalize the more cautious incumbents.
Our article *The future of mobility* outlines four concurrent future states within the evolution of the mobility ecosystem, shaped by two key uncertainties. First, will consumers continue to want to own cars, or will they increasingly prefer to access vehicles on demand as carsharing and ridesharing services become more widely available? Second, will autonomous-drive technology become sufficiently robust and trusted, so that we will increasingly relinquish the driving function to the car itself? (See figure 1.)

**Figure 1. Four futures will coexist**

Extent to which autonomous vehicle technologies become pervasive:

- Depends upon several key factors as catalysts or deterrents—e.g., technology, regulation, social acceptance

- Vehicle technologies will increasingly become "smart"; the human-machine interface shifts toward greater machine control

Extent to which vehicles are personally owned or shared:

- Depends upon personal preferences and economics
- Higher degree of shared ownership increases system-wide asset efficiency

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*Fully autonomous drive means that the vehicle’s central processing unit has full responsibility for controlling its operation and is inherently different from the most advanced form of driver assist. It is demarcated in the figure above with a clear dividing line (an “equator”).*
The earlier paper suggests that all four future states are likely to exist simultaneously but arise unevenly, depending on the segment of the population and the specific mobility needs. Yet this future state of “accessible autonomy” will become increasingly prevalent over time, assuming that more and more of us will prefer access over ownership and that we will also become increasingly comfortable using autonomous-drive vehicles as they become more widely available. Initially, we will likely have a growing preference for access over ownership; this in turn will likely facilitate the transition to autonomous-vehicle technology by mobility fleet operators.

This article will assume that the “accessible autonomy” future state will predominate and will use that future state as a context for exploring likely implications for value creation and value capture.
As we seek to anticipate the emergence and evolution of value creation and capture opportunities in an evolving mobility ecosystem, it will help to focus on the imperative for “return on mobility.”

What do we mean by return on mobility? It starts with the notion that for most of us, most of the time, mobility is a means to an end. Sure, some of us simply enjoy the experience of driving and will hit the road for the sense of freedom and control that being in a car offers. But most of us are focused on what we can accomplish through greater mobility—it is really about what we can do once we get to where we are going. The car (or other means of transportation) is a means to do things that otherwise would be much more difficult. It may be about visiting friends, getting to work, taking our children to ballet class, buying things, seeking entertainment, or discovering and exploring new locations. That’s where the real value is—and the car is simply a vehicle to achieving that value.

What this means is that the evolving mobility ecosystem offers the opportunity to create value to players far beyond automakers—indeed, far outside the car itself. Anyone who can help us maximize the value that we realize at our destinations or stops along the way can become a key player in the mobility ecosystem. Anyone who can help to increase the pleasure (or utility) of the experience while we are in transit also has a role to play. And, of course, anyone who can help us accomplish our goals without spending the time required to get to a destination also shapes the mobility ecosystem—think, for example, of online retailers and package delivery services that eliminate the need to go to a store for purchases.

If we focus on return on mobility as a key driver of value creation, what are the emerging opportunities in the mobility ecosystem to create and capture value? This paper will explore four potential opportunities—trusted mobility advisers, mobility data aggregators, mobility fleet operators, and providers of horizontal operating systems for mobility-related devices.
Trusted mobility advisers: Enhancing the value of mobility

We live in a world of opportunity and challenge. On the one hand, more and more of us around the world are moving into rapidly growing urban centers, giving us an expanding array of destinations to explore and experience. On the other hand, we face mounting pressures and demands on our time; so it’s no surprise that we increasingly feel a need to enhance the value of our time spent.

The good news is that there’s more real-time mobility-related information than ever, particularly with the advent of Internet of Things technologies, to help us make the most of our limited time. The bad news is that there’s too much data for anyone to analyze and translate into an optimal weekend itinerary.

Enter the “trusted mobility adviser”—a service that would know us better than anyone else and that could proactively recommend people and places that would provide us with the greatest value, given our specific context and needs. With a vacation on the calendar, an adviser could suggest a better option when we specify a destination and enhance the experience of movement itself by customizing the experience within the automobile and even, perhaps, suggest entertaining companions.

Changing economics of trusted advisers

Trusted advisers have been around for a long time—think of wealth management counselors, personal shoppers, and concierge doctors. The challenge for those of us who aren’t wealthy has been that getting to know someone deeply as an individual—sufficiently to make good personalized recommendations—requires an unaffordable amount of time and effort. But these advisers provide great value to people who are pressed for time and seeking deep expertise to guide them to the resources that provide the greatest value.

Digital technology is changing the economics of advising in a profound way: A trusted adviser now has the potential to aggregate and analyze extraordinarily detailed (and previously unavailable) data about all aspects of our lives and activities. If we were to grant an adviser permission to monitor our activities, not just on the Internet but in physical space, given the advent of ubiquitous and cost-effective sensor technology, that adviser would quickly develop a rich view of who we are and how we spend our time and money. The exponential improvements of digital technology have dramatically shrunk the cost and
effort of doing this. As a result, an adviser’s services could potentially be made available cost-effectively to a much broader segment of the population; for the first time, such a service could become a mass-market offering.

**Challenges for the trusted adviser**

This is a white space that is just now emerging, and few businesses are as yet making a concerted effort to target this opportunity. Granted, other markets and industries have seen early forays into this space: Some banks and other financial service companies are introducing “robo-adviser” services designed to extend their financial management advice to a broader market, and some “wearable” device companies are beginning to offer analytic services to help their users to improve their physical well-being based on the data generated from their devices.

There are some challenges along the way to addressing this opportunity. How does a service build sufficient trust to make customers comfortable with sharing so much of their personal data? Most companies today are built on business models that generate revenue from product purchases or advertisers trying to reach a desirable audience, and these companies may have a hard time building the necessary trust as an impartial adviser focused on the customer’s needs. At a minimum, they have potential conflicts of interest that could undermine trust: Whose needs are they really serving—the customer’s interests or those of the advertisers and vendors that are paying the bills?

For this reason, the winning trusted-adviser business model will likely be one in which customers pay for advice and recommendations. As we confront ever more options and time pressures, many of us will likely find the services of a trusted adviser increasingly valuable, especially if we can trust that they are really representing our interests rather than those of third parties.

Where that trust exists, privacy becomes less of a concern. In fact, if customers see more and more tangible value in terms of helpful advice provided in return for access to their data, they are more likely to willingly share more of that data, especially if the trusted adviser can convincingly guarantee that these data will be protected and not shared with third parties without explicit authorization.

**Capturing economic value**

Trusted advisers will be in a position to create great value for their customers, but will they be able to capture much of that value for themselves? Advising business models will be driven by powerful economies of scope. Think about it: The more an adviser knows about your activities, the more helpful the service can be relative to one that sees a much narrower slice of your activities. And the more customers an adviser serves, the more helpful it can be to each customer because it can observe patterns of activity among similar customers and offer targeted recommendations. A business serving a smaller number of customers may be at a disadvantage because, with less data, it will likely have more difficulty seeing relevant patterns of activity, especially those just beginning to emerge.

Over time, businesses driven by powerful economies of scope are likely to see significant concentration and consolidation, which typically make it easier to capture more economic value. Of course, a careful balance will need to be maintained: If an adviser becomes too greedy and uses its customer information and position of economic power to extract more money, it will lose a measure of customer trust and risk defections to competitors.

**Entry options for trusted mobility advisers**

So how might a trusted adviser emerge in the mobility ecosystem? We see these advisers as likely emerging in one of three domains: product purchases, entertainment, and social networks. Each of these three drives a significant portion of mobility activity, and customers are likely to see increasing value in
a service that knows our needs and interests so well that it can help us to maximize value from the time we invest in our mobility.

Take the example of product purchases. If a trusted adviser can help me decide which product is most suited for my needs—perhaps even proactively recommending one I was unaware of—and then help me to determine where I can most conveniently access that product at the best price, I will experience a significant improvement in my return on mobility. Advisers can also help find the most convenient vendors.

For example, if I have a task list that includes dropping off clothes at the cleaners, my adviser might reach out and suggest, “Did you know there’s a cleaner that’s newly opened and has great reviews—and it’s on your way to your next meeting (which is already on your calendar)? You can get there, drop off clothes, and still make it to your meeting on time.”

We will drive miles to see a good show or hockey game; so entertainment is another domain where trusted advisers can quickly add value. If my adviser knows my favorite music, it might proactively notify me when certain musicians are performing in my area and help me design an evening on the town, including a dinner reservation before the show. My ever-thoughtful adviser could even program an appropriate soundtrack for the car taking me to these destinations. If I’m going to a sporting event, my adviser—aware of my team loyalties—might suggest a postgame drink at a friendly bar nearby. If I’m facing an eight-hour road trip with my kids, my adviser might suggest two quick detours along the way with decent restaurants and perhaps a park.

An adviser’s access to social networks can pay dividends—if I have some free time and wouldn’t mind meeting a friend for a meal or drink, my adviser knows from my interactions whose company I enjoy the most and who can help me make a connection. More ambitious and daring, my adviser might set me up with some nearby strangers whose profiles suggest compatibility. On other occasions, I may be facing a long drive and could use company, in which case, my trusted adviser might try to match me with a would-be companion headed in the same general direction or, perhaps, suggest that I call a friend who has recently moved to the area through which I’ll be traveling.

While trusted mobility advisers will probably start in one of these three domains, they are likely to expand into the adjacent domains over time in their quest to be offer more customer services. To take just one small example, if a service knows what kinds of movies, music events, sporting events, and nightclubs you have enjoyed, it can proactively recommend entertainment and lifestyle products consistent with those interests. An adviser can also be helpful in suggesting people whom you might want to meet or make plans with, given your shared interests in certain kinds of activities.

In fact, over time the economies of scope will likely lead to further expansion of the advisory role. Mobility tracking provides an effective vantage point to begin to see many other dimensions of a person’s life and expand the scope of the advisory service. For example, as a trusted mobility adviser sees a customer’s spending patterns over time, it might begin
to offer financial management advice. Or, if a customer is visiting health care facilities with increasing frequency, the adviser might suggest ways to improve health and wellness. Over time, the trusted mobility adviser could evolve into a much broader adviser spanning an increasing array of a customer’s needs and aspirations.

**Data drive the business**

How will a trusted mobility adviser access all the data it needs to function? It might try to buy and aggregate data collected by third parties, but the most effective means is likely to be via a smartphone application that monitors customers’ movements and activities throughout the day, both in physical space and on the Internet, along the lines of wellness-directed wearables.

This app could seek customers’ permission to access other applications’ collected data, ranging from payment services and GPS systems to social networks and travel services. The adviser’s broader technology platform would also have sophisticated agent technology to search through relevant third-party data ranging from retailer product websites to real-time traffic congestion monitoring services, all in the interest of recommending to its customers the best options for improving return on mobility.

Naturally, for players in the mobility ecosystem, it’s commonsense to locate these applications in a customer’s car. But this is both limited—what about when the customer parks and proceeds on foot to conduct business and attend events?—and narrow, assuming the customer is also an owner, which may not always be the case: With ridesharing and carsharing, the car we drive to the restaurant may not be the one we take back home.

Given these limitations, mobility advisers will likely aim to locate applications on customers’ smartphones. Indeed, smartphones, rarely out of arm’s reach, are likely to become the key platform for developing a holistic view of an individual’s mobility activities, in both physical and virtual space. For this reason, mobility ecosystem players need to give smartphones a prominent place. Smartphone vendors, network service providers, and application developers could play a significant role in enhancing the return on mobility for individuals.

**Candidates for the trusted mobility adviser role**

Anyone who already has significant data about customers—and especially about their mobility activity—is a potential candidate to become a trusted mobility adviser. This would include automobile OEMs, insurance companies, smartphone vendors, network service providers, and location-sensitive smartphone applications. It would also include social network platforms and network browser providers.

However, since this is such a different role, it could also be a potential target for new entrants that are starting with a clean slate but that, from day one, can proclaim that their loyalty belongs entirely to the customer and not with other vendors who are trying to reach the customer. In terms of potential candidates for this role, the issue of trust cuts both ways: Established companies, with legacy brands, have a head start in building trust over a no-name startup, but those existing businesses typically rely on selling customers other products and services, possibly raising suspicions about ulterior motives and divided interests. New entrants must build trust from scratch, but they have the benefit of being exclusively focused on this business opportunity; as a result, they may be more convincing that their loyalty is entirely to the customer and that they can be completely impartial in recommending relevant products or services.
Mobility data aggregators: Making the invisible visible

If ecosystem players want to increase customers’ return on mobility, they need as much information as possible about those customers’ options, both in terms of destinations and the means of getting there. We’ve been discussing trusted mobility advisers that need to gather customer data to proactively anticipate needs and aspirations. But these advisers will depend on others that can help aggregate data about the mobility environment—that’s the role of mobility aggregators. And, of course, many others—from mobility fleet operators to retail chain stores scouting for a new store location—would find value in data aggregation. As mentioned earlier, advances in digital technology, and, especially, Internet of Things sensor capabilities, are making real-time visibility into options more feasible.9

Platforms that aggregate these data, help to make the information more accessible, and support a broad range of analytic tools to gain insight will prove increasingly valuable to customers as mobility users and as participants in the mobility ecosystem. It would be helpful for a mobility user to understand, for instance, what products are actually available at a retail store, whether an entertainment venue is crowded or deserted, and where his or her friends are hanging out. It would also help to know about traffic congestion and road conditions as the user begins to plan a journey.

In the mobility scenarios where we move from ownership to access, mobility fleet operators can benefit from real-time access to information about the environment in which the vehicles operate as well as the condition of the vehicles themselves. A key to leveraging utilization of services and assets is to have robust data about the fleet and its environment.

The data aggregation challenge

In today’s technology environment, a variety of technology platforms and service providers are capturing this mobility data, but the information is less useful than it should be, sequestered in a growing array of data silos and not effectively integrated. Over time, some companies will likely take on the task of developing aggregation platforms that tap into and integrate data from multiple sources to provide a more holistic view of the mobility environment.

As aggregators bring together these data from a variety of sources, they will aim to draw valuable insights from the emerging patterns. One potential role of a mobility data aggregator is to provide a platform for a growing array of specialized analytic services to massage the data and generate new insights of value to mobility ecosystem participants.
Value creation and capture opportunities

These data aggregation platforms can potentially benefit from powerful network effects. The more information that aggregators process and the more analytic services that are unleashed, the more valuable the insights potentially generated; value creation will likely accelerate as the platforms gain scope and scale. Once again, there is likely to be a tendency toward concentration and consolidation of these data aggregation platforms, and this in turn will likely enhance the ability to capture value as well as to create it.

Candidates for the mobility data aggregator role

Aggregation platforms could become powerful amplifiers of the trusted mobility adviser business by providing these advisers with access to more comprehensive third-party data about the mobility environment. However, this is a different kind of business: As indicated earlier, it is focused not on understanding individual customers’ evolving needs but, rather, on providing more useful data about the mobility environment and analytic tools that can be accessed regardless of need.

Once again, this opportunity could be targeted both by incumbent players in the mobility ecosystem and by new entrants, especially those with deep expertise in big data and related analytic tools. Many incumbents already have large pools of aggregated data, so their challenge will be to access the data of other companies, many of which might be competitors. New entrants have the benefit of being viewed as impartial aggregators of data but have a long way to go in acquiring that data—and must build credibility and trust in terms of the ability to aggregate, protect, and extract value from customer information.
Mobility fleet operators:
Enhancing flexibility and experience

The “accessible autonomy” scenario discussed earlier offers a significant opportunity for mobility fleet operators to create and capture value in the mobility ecosystem. In this scenario, with vehicles increasingly guided by autonomous capabilities, more and more of us will choose to access our vehicles rather than own them.

Value creation and capture opportunities

The owners and operators of mobility fleets would be able to harness significant economic forces to build privileged positions in the mobility ecosystem. Fleet operators would be able to harness network effects to offer users more value as their fleets become bigger and more diversified. A larger fleet means, naturally, that more vehicles are available to customers—and more fleet users make it feasible to provide services in less densely populated areas, expanding the range of destinations that can be accessed.

Also, larger the fleet, more diverse the options and designs the fleet operator can offer. For example, given options, I would likely prefer a different vehicle for traveling to and from work, for taking my family to visit relatives, and for embarking on a night on the town with my spouse and several of our closest friends. A large fleet operator could cater more effectively to these diverse needs than one with fewer available vehicles.

While in the near term these benefits of scale and scope are likely to play out in specific cities or regions, over time they are likely to create more concentration and consolidation on a global scale. As we transition to autonomous vehicles, there is an increasing likelihood that mobility fleet operators will end up owning their fleets, as millions of car owners decide they’d prefer empty garages (although there are potential variations, such as franchising models, that might shift actual ownership of the vehicles to other players). If the fleet operators own their autonomous cars, the business becomes increasingly capital-intensive, with the largest single expenditure being the purchase of the vehicles themselves. In this situation, the opportunity to create growing bargaining power relative to mobility vehicle manufacturers will likely drive fleet operators to expand their geographic presence so that they can get better deals on their vehicle purchases.

The larger mobility fleet operators could also benefit from economies of skill. The challenge of operating fleets of vehicles in an efficient and value-creating way will place a premium on specialized skills in everything from fleet deployment to vehicle performance optimization. The larger fleet operators could potentially be the most effective in attracting world-class specialized talent not only because they will likely be able to pay more, but also because they can offer skilled managers greater opportunity for development than can smaller, more narrowly defined mobility fleet operators.
Horizontal operating systems: Catalysts for innovation within the mobility ecosystem

In many respects, the mobility ecosystem of today resembles that of the computing industry in the late 1970s. In two major arenas, the automobile and the Internet of Things platforms, we see proprietary technology stacks, in which one vendor provides everything key to the functionality of the product, from the hardware components to the application software running on the hardware.

There’s a third arena where a new order is emerging: access devices such as smartphones. A couple of decades ago, this arena looked like the other two: Vertical technology stacks ruled the mobile-phone business. Then Apple introduced the iPhone, creating an online store on top of its operating system and inviting a growing number of third parties to develop applications that could be offered to users to enhance the device’s value.10 Google has taken it one step further with its commercialization of Android as a horizontal operating system for mobile devices, inviting both device manufacturers and application developers to innovate within other layers of the technology stack. The key breakthrough here is to free other players in the mobility ecosystem from having to develop their own operating systems: The OS becomes horizontal in the sense that it is shared by all participants across the ecosystem rather than being unique to each vertical stack of technology.

If we look back on the early days of computing, the advent of a de facto standard operating system unleashed a wave of innovation at both the hardware and software levels, leading to a proliferation of products to serve PC users’ diverse needs. It was this development that led to the industry’s dramatic growth and positioned the OS developer to both create and capture significant economic value in a rapidly expanding computer ecosystem.

What if we were to see a similar development in the other two arenas of the mobility ecosystem: the automobile and the IoT technology domain? As each new car’s digital technology increasingly shapes its functionality—culminating in the development of autonomous-vehicle capability—there may
be increasing opportunity for someone to come in and establish a de facto OS standard for the car. This would create a platform for a growing array of vehicle manufacturers and application developers to create ever more specialized niche offerings and to innovate in terms of the core functionality required to enhance both the vehicle’s performance and the passenger experience.

**Value creation and capture opportunities**

The developer of such a horizontal OS platform would benefit from powerful network effects. The more participants that adopt this operating system, and the more products available on the platform, the more valuable that platform becomes. In the PC industry, this has become a key source of both value creation and value capture: While the rest of the industry fragments around more diverse product offerings, the providers of the OS platform tend to consolidate, giving them an advantaged position in an increasingly diverse ecosystem.

A similar process could play out in the IoT domain: The emergence of a de facto standard OS platform in this arena could lead to a flourishing of innovation in both the hardware and application software domains. Perhaps more importantly, it could also address a key challenge mentioned earlier—the difficulty in integrating mobility-related data generated within various proprietary technology stacks.

**Bridging mobility domains**

Here’s an even more radical possibility—what if we were to see a common horizontal OS layer across all three of these mobility domains: vehicles, mobile devices, and IoT infrastructure? This shared layer might make it easier for a variety of mobility products to interact. For example, in the “accessible autonomy” scenario, a common operating system might make it easier to integrate data and applications from my smartphone with whatever vehicle I might be using, so that I could personalize my experience. Similarly, a common OS might make it easier to connect vehicles with each other (even if they are made by different manufacturers) and with a broader sensor infrastructure to give a much richer view of the mobility environment.
As the mobility ecosystem continues to rapidly evolve with prospective shifts in value creation and capture potential, established players will continually need to reassess their existing positions and explore emerging opportunities to help ensure that they are positioned most effectively. Each of the major categories of players faces somewhat different options and challenges as it considers re-positioning strategies in the mobility ecosystem. One of the key challenges that all players could face if they choose to target the emerging opportunities for value creation and capture is that they may need to move aggressively to develop these opportunities, since network effects reward early movers and challenge those who wait to see further development.

This section will focus on the challenges confronting players in the mobility ecosystem as they seek to address these opportunities. We mean this not to discourage players from pursuing these emerging roles but, rather, to help ensure that they have a realistic assessment of what will be required to address the opportunities. The fact that we are singling out certain players for discussion suggests that we believe they have a real potential to play these roles if they move quickly and smartly.

Automobile OEMs

Automakers might pursue a number of the value creation and capture opportunities outlined earlier, but each of the opportunities presents distinct challenges.

**Trusted mobility adviser**

While the automobile OEMs are currently well positioned to capture some of the data about a customer’s movements (as long as she’s in the car), they lose visibility into those movements once she leaves the car. The key here would be to demonstrate to the customer that the automaker can provide enough value to make it worth her granting permission to track her movements once she leaves the car (most likely via a smartphone app). The good news for OEMs is that in-car apps are already capturing valuable data that could provide the foundation to start building an advisory business. The automakers would need to move quickly on this, though, because as the access scenarios start to play out, customers will be unlikely to remain in a single car, instead utilizing a growing number of cars. Someone other than the customer may own those cars, heightening the challenge of accessing on-the-road customer data.
The mobility adviser opportunity would also require some fundamental shifts in mindset. Automobile OEMs would need to shift from a product business mind-set to a service business mind-set, and some car companies are already on the path to making this transition. They would need to move well beyond a focus on the automobile to understand their customers’ broader movements and the needs and aspirations that drive those movements.

Mobility fleet operators

This could be an attractive opportunity for OEMs because they already make the cars, so long as they’re willing to forgo potential sales to other fleet operators that otherwise would be customers rather than competitors. Once again, automakers would need to shift their mind-set from a product business mind-set to a service business mind-set; they would also need to develop the distinctive skills required to operate large vehicle networks, for which availability and utilization are key drivers of performance.

Horizontal operating system provider

Since automobile OEMs are intimately familiar with the design and manufacture of cars, they would be well positioned to develop a broadly applicable operating system for cars. Competitive dynamics might get in the way, however: Would other automakers be willing to adopt an OS for cars deployed and owned by a competitor?

As discussed earlier, the big opportunity for value creation and capture would be to develop a horizontal operating system that could operate seamlessly across products in three different domains: automobiles, smartphones, and IoT sensor platforms. Automakers have limited knowledge of or experience with the last two domains.

Mobility fleet operators

Companies that encompass both carsharing services and ridesharing services are already targeting one of the key value creation and capture opportunities discussed earlier. Their primary challenge in this arena is to invest aggressively to leverage scale and scope advantages and preempt other emerging fleet operators on a global scale. As we’ve already seen, aggressive growth strategies can precipitate regulatory backlash as established mobility services such as taxis fight back.

These growth strategies initially should be pursued urban area by urban area, because the most relevant critical mass to unleash network effects in the early stages will likely be at the city level. However, these strategies’ long-term effectiveness will likely hinge on the ability to tap into another level of network effects globally: To expand service capabilities, these companies can aim to learn across their network how to more effectively serve fleet customers in every local area, as well as provide more flexibility in terms of using cars for mobility needs that span across multiple urban areas—for example, going to see family in another nearby city or pursuing field work in a given geographic region.

Another challenge for the ridesharing services, whether the new generation of fleet operators or more conventional forms of ride-sharing such as the taxi business, will be the potential transition from a dispersed fleet of driver-owned cars to a centralized fleet owned by the operator. The deployment of autonomous-drive technology will likely precipitate the transition, with profound economic implications: moving from an asset-light business to a much more asset-intensive business, in which the performance of the business, much like a current rental car agency’s, hinges on both vehicles’ acquisition cost and their utilization/ performance during their useful lifespan.
Trusted mobility adviser

This is a potentially attractive additional value creation and capture opportunity for fleet operators. They already will have access to significant data about their customers' mobility activities as well as a head start in building trust in terms of addressing customers' mobility needs. But there will be challenges along the way. Again, achieving full visibility into customers' mobility patterns will require moving well beyond captured in-car data, necessitating a smartphone application that can follow customers wherever they go.

Expanding and deepening the trust of customers will also potentially be challenging. For example, what if a competing fleet operator could more effectively address a customer's specific needs on certain mobility occasions? Would the company be willing to recommend a competitor to its customers under those circumstances? If not, how deep is the trust?

From a cultural viewpoint, there may be a challenge in managing two very distinct kinds of businesses. Mobility fleet operators will be running a high-volume, routine-processing kind of business, while a trusted mobility adviser must follow a much more highly personalized, high-touch business plan. How effectively can these businesses coexist within a single company?

Finally, both businesses will require aggressive investment to build and reach critical mass so that the network effects can be unleashed. Will a single company—especially a small, high-growth company—have the resources and will to pursue two demanding businesses in parallel?

Smartphone manufacturers

These companies are potentially well positioned to target two of the value creation and capture opportunities discussed earlier—trusted mobility adviser and horizontal OS provider.

Trusted mobility adviser

Since we rarely let our smartphones out of our sight, it is the most likely device to capture the richest mobility data for each of us. As a device manufacturer, the smartphone vendor is well positioned to equip the phone with the appropriate sensors to provide a robust view of where we go and what we do. (It's worth noting that wireless network service providers also have some visibility into our movements, but they have less visibility into our offline interactions and transactions.) Given the volume of smartphone-generated data about our movements, the device vendors could be candidates to evolve into trusted mobility advisers, taking this information and guiding us in how to increase our return on mobility.

Of course, since device vendors are in a product business and the mobility adviser is a service business, this would require a significant mind-set shift. As with the automobile OEMs, smartphone device vendors would need to move beyond a narrow transactional view of the customer and look to develop a holistic view of customers and their unique context and aspirations.

Another challenge: scaling the business beyond the customers who currently use its smartphones. If the network effects of this kind of business reward those who are able to become advisers to the largest number of people, a device vendor could be at a disadvantage if it limited its reach and services to users of its own smartphones.

Horizontal operating system provider

Most smartphone vendors today source their operating system from a specialized OS vendor. Two major exceptions are Apple and Google, and it is hardly accidental that these two companies are also pursuing major initiatives to apply leading-edge technology to automobile design and manufacture. They would therefore be in an interesting position to target the horizontal OS provider opportunity, cutting across both cars and smartphone devices.
Both companies are also pursuing interesting IoT initiatives, so they even have the potential to target all three of the major mobility-related technology domains as they design and deploy horizontal operating systems.

The key challenge that any smartphone vendor would face in trying to target the horizontal OS provider opportunity is that achieving the expected results would hinge on being able to persuade a large number of other smartphone vendors—competitors—to adopt its operating system. Google with its Android OS has already had considerable success in doing this, while Apple has so far shown no interest in making its OS available to other smartphone manufacturers.

Over time, if a company decided to aim to expand the adoption of its operating system across the mobility ecosystem’s other technology domains—the automobile and the IoT sensor platforms—it would face the additional challenge of designing a more versatile OS and convincing product vendors in those domains to adopt it.

Operating system vendors

Right now, at least three OS vendors are competing for leadership in the smartphone/tablet arena. These vendors might be candidates to target at least two of the value creation and capture opportunities discussed earlier: horizontal OS provider and trusted mobility adviser.

Horizontal operating system provider

With significant positions already established in the smartphone/tablet arena, these players could expand their horizons to design and deploy a horizontal operating system that could be adopted across the three mobility technology domains: smartphones, automobiles, and IoT sensor platforms. Again, the key challenge would be to convince device manufacturers in the automobile and IoT arenas to adopt an OS designed by a third party rather than developing and using their own proprietary operating systems.

Trusted mobility adviser

OS vendors have the necessary technology expertise to develop and deploy the applications necessary to capture smartphone users’ mobility data. Once again, targeting this opportunity would require a mind-set shift. OS vendors are very much in a product business, and they would need to evolve into a service business, in which value creation hinges upon developing a holistic view of customers and their unique context and aspirations. Equally importantly, OS vendors would need to evolve from a behind-the-scenes licensing relationship with device vendors to a much more visible and high-touch relationship with the technology’s end users.

Application developers

Developers of smartphone applications could potentially target the mobility adviser opportunity.

Trusted mobility adviser

Since a smartphone app would likely be central to a trusted mobility adviser business, application developers might be well positioned to target this business opportunity, especially if their expertise involves the ability to manage and analyze large amounts of data in real time.

As with other product vendors discussed earlier, effectively targeting this opportunity would require a mind-set shift from product vendor to service provider, with much deeper relationships with users of these applications. Developers would also likely have to develop a more personalized, high-touch way of interacting with customers that blends application functionality with the ability to interact with human beings at appropriate times to respond to particularly challenging questions or needs.
Harnessing the potential

The mobility ecosystem, already evolving, is likely to continue to do so, driven both by technological innovation and by evolving consumer preferences and mobility needs. In the process, major new opportunities for value creation and capture are likely to emerge, while existing roles in the ecosystem may experience increasing pressure. In this kind of environment, companies need to fight the tendency to shrink time horizons and focus on short-term performance. As Yogi Berra cautioned us many years ago, “If you don’t know where you’re going, you might not get there.”

“Zoom out, zoom in” strategies
This kind of rapidly changing environment makes it increasingly important to adopt a “zoom out, zoom in” approach to strategy that has been prevalent among many Silicon Valley technology companies. As challenging as it might seem, executives need to zoom out and align their company’s leadership team around a long-term 10–20-year view of the likely evolution of a relevant market or industry—and the implications for the kind of company able to profitably participate in that arena. At the same time, there is a need to zoom in and align around, at most, two or three high-impact business initiatives that a company can pursue in the next six to twelve months and that have the greatest potential to accelerate movement toward the long-term destination.

Taking this approach, diverse ecosystem players may be able to anticipate the challenges ahead and to begin to turn those challenges into opportunities by smartly embarking on small moves today that can lead to repositioning over time. Companies will need to master this strategic approach if they want to avoid being blindsided by long-term trends playing out.

The past century has seen many examples of successful shaping strategies in a diverse array of industries, ranging from containerized shipping and credit cards to clothing and personal computers.
in their market or industry, not to mention if they want to harness these trends to augment their ability to create and capture value. This “zoom out, zoom in” approach can provide the foundation for another strategic approach, described below, that has created significant value in a broad range of markets or industries.

**Shaping strategies**

Equally importantly, times of rapid change and growing uncertainty allow more degrees of freedom to pursue shaping strategies—strategies that seek to fundamentally restructure a market or industry by defining a compelling view of the future and deploying an economically attractive platform to mobilize third parties that will pursue initiatives to support this strategy. These shaping strategies can position the shaper in privileged positions to create and capture growing economic value. Rather than treating the future as a given, shapers understand that they have an opportunity to alter the probability of certain outcomes through their actions.

Shaping strategies are attractive for many reasons. They are highly leveraged in the sense that they mobilize investment by thousands of other participants, rather than relying on the shaper to provide all of the investment. Because shaping strategies mobilize a large number of other participants to take part in restructuring the market or industry, these strategies can spark distributed innovation that in turn can help to accelerate learning and performance improvement. Finally, if the shaper understands the competitive dynamics of the evolving industry structure, it can target and occupy positions in the new landscape that can provide powerful sources of structural advantage.

The four value creation and capture opportunities outlined in this paper could become the foundation for significant structural advantage because of their concentration and consolidation potential and their potential impact in fragmenting other parts of the mobility ecosystem. Each of these opportunities also hinges on the ability to motivate and mobilize a much broader ecosystem of participants and therefore is tailor-made for a shaping-strategy approach.

The past century has seen many examples of successful shaping strategies in a diverse array of industries, ranging from containerized shipping and credit cards to clothing and personal computers. Three elements come together to support a powerful shaping strategy: a compelling shaping view, an economically attractive shaping platform, and a set of acts and assets that build credibility regarding the shaper’s commitment and capability.

The choice for participants in the mobility ecosystem will be to shape or be shaped. If a company elects to not be a shaper, others will likely step in to fill the vacuum. Incumbents need to fully understand the consequences of this choice.
The evolution of the mobility ecosystem is generating substantial new opportunities for value creation and capture—opportunities available to both incumbents and new entrants (including established players from adjacent arenas such as the telephone business and sensor technology platforms). But the key to harnessing these opportunities is to look ahead and anticipate how the forces of change are reshaping the mobility landscape.

Each of the opportunities this paper explores involve designing and deploying platforms that can mobilize a growing ecosystem of participants to add more and more value to the mobility customer. These platform-based businesses offer an attractive opportunity for leveraged growth, with the vast bulk of the investment coming from third parties that have an economic incentive to participate on the platform, allowing the platform operator to generate increasing returns over time. From that perspective, small moves—smartly made and aggressively pursued—can set big things in motion.


8. Ibid.


10. iPhone® is a trademark of Apple Inc., registered in the United States and other countries. The current report is an independent publication and has not been authorized, sponsored, or otherwise approved by Apple Inc.

11. Ibid.


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