

Driving Change: Mobility as a Service

How public entities can be ahead of
the next generation of transportation



Executive summary

Technology has reshaped resident lives in many ways, with the rise of the sharing economy generally and transit-network companies (TNCs) for the mobility space being prime examples. The next frontier is predicted to be mobility as a service (MaaS), the aggregation of routing and payment across multiple modes of travel—train, bus, car, micromobility (e.g., bike, electric scooters, etc.), autonomous vehicles and others.

Public entities need to find a way to be relevant to this new industry. Otherwise, they risk being sidelined, resulting in sub-optimal mobility outcomes, including harms to equity, air quality and traffic. Transit agencies have some important assets already, starting with a suite of mobility options that have established preferential infrastructure in many locations (e.g., bus stops, heavy rail, stations, etc.)

Transit agencies across the globe are taking action across a spectrum of approaches, from going it alone into this new space, to partnering with private entities, to intentionally taking a back seat to private-sector efforts.

Each approach has pros and cons, but we are seeing the strongest possibilities for those engaging actively in the landscape. Momentum toward the “walled-garden” MaaS offerings that TNCs are building is very rapid, and, as TNC history indicates, transit agencies must be proactive to retain their central role in transportation.

The successful delivery of MaaS offerings by public and quasi-public entities will require new ways of thinking, new skills and new programs. A focus on customer-centric approaches, new private partnerships, deep data fluency, policy advocacy and change management are cornerstones of this substantial new undertaking.

Context and expectations

The global megatrend of advancing technology has reshaped our lives in many ways. The massive proliferation of broadband, smartphones and cloud computing has facilitated fundamental changes in the ways people work, move, communicate, shop, interact. These changes have implications both for the kinds of services residents expect and the types of businesses and institutions that provide them.

From a customer perspective, services have become simpler, easier and more virtual. Completing tasks that once required visiting many vendors, such as shopping for a variety of goods, can now be done from one website. Tasks that previously included a lot of uncertainty— meeting a friend at the airport, for instance— can now be conducted with more specificity and less lag time.

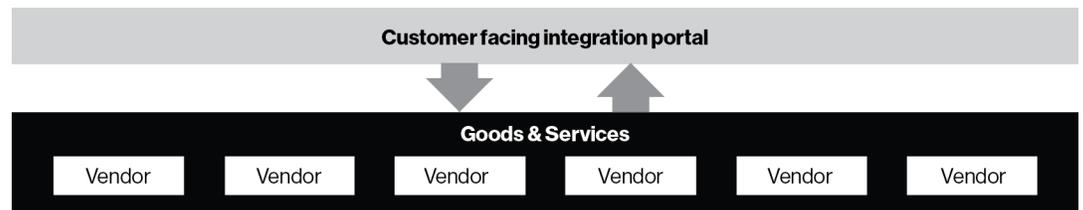
Tolerance for inefficient experiences and wasted time has dropped dramatically, as businesses have offered technology-enabled services to “disrupt” traditional service practices. Customer experiences have improved exponentially across industries, resulting in a trend toward higher and higher expectations for ease of use, connectivity and enjoyment.

The ascendance of platforms

A second key trend involves so-called “platforms”, providers of comprehensive customer-facing interface that offers outstanding options to customers—everything they need in one place, accessible via a single transaction—and forces other service providers into subservient roles. Amazon has become the dominant shopping portal, forcing goods and service providers to accept reduced prices. Facebook is now a primary portal through which people engage in all kinds of communication, forcing reduced revenue on news outlets. And Netflix has emerged as the predominant platform providing access (first by mail and then by streaming) to almost all movies and every type of TV show imaginable.

In each case, the platform provider began by merely providing access to existing services that customers wanted (Star Wars movies, books, taxis). But, as it became more dominant in its industry, the platform began to shift the balance of power, offering its own competing products to reduce the leverage of the initial service providers. Netflix now makes its own movies, Amazon produces its own batteries and clothing and so on.

The ascendance of platforms has important implications for MaaS. The entity that controls the platform often controls the industry.



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The rise of the sharing, on-demand economy

Another important trend is the rise of the sharing or gig economy. Improved communication reduces the friction of acquiring goods and services, whether it's a driver, a movie or someone to assemble your furniture. This has led to the rise of businesses that allow people to quickly, easily and affordably rent items they previously would have owned. Spotify and Netflix, for example, crashed the markets for owning compact discs and DVDs. It was simpler to access them “on-demand” via new, powerful internet connections. Similarly, the market share held by the micromobility sector—encompassing light vehicles, such as e-scooters and dockless bikes, rented to go short distances—is expanding rapidly. Car-sharing, ride-sharing and bike-sharing hold comparable promise.

Transit and transportation implications—TNCs

These three trends of customer expectations, platform providers and an on-demand economy are combining in the transportation space in powerful ways. In this shifting mobility ecosystem, transit-network companies (TNCs), such as Uber and Lyft, have revamped the landscape of customer expectations. Hiring rides is now easy enough that some individuals are forgoing car ownership—and traditional yellow cabs are struggling to find passengers.

These apps' addictively easy interfaces combine routing, ride hailing, payment and real-time updates for both the arrival time of the driver at the pickup location and the passenger at the destination. This has become the standard for (certainly young, affluent) consumer expectations about how transportation services should be delivered. However, ride-hiring apps have also created sub-optimal outcomes for cities as a whole, with such negative impacts as increased traffic and emissions, equity concerns and reduced use of more-efficient forms of transit.

As these TNC companies have grown (arguably, with artificially reduced prices), transit agencies and public entities have scrambled to adjust to the attendant new expectations.

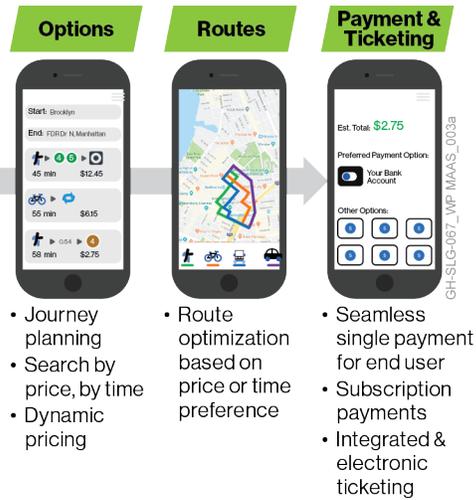
Mobility as a service (MaaS)

Attention is now turning from TNCs' focus on ride-hailing (akin to the simplest and oldest form of mobility as a service—a taxi ride), to multi-modal mobility as a service. A confluence of factors—including the rise of rentable bicycles, car-sharing and micromobility options, the continued relevance of core transit assets like trains and buses and buzz about the enormous potential of self-driving cars—has created a “holy grail” of MaaS: the integration of all the available modes into a single integrated platform that delivers information, recommendations, door-to-door routing options, payment and ticketing (or, increasingly, ticketless travel).

This kind of integrated platform, while likely a boon for public transit—and therefore associated with increased equity, air quality improvements, congestion reduction and so on—is difficult to design and deploy. It requires accessing and managing a lot of data from competing firms that may not be willing to share it. It also entails creating a positive experience for customers, delivering a service with ramifying complexity as more and more modes are involved. Even something as simple as payment and ticketing presents challenges, as many of the existing mobility enterprises have found.

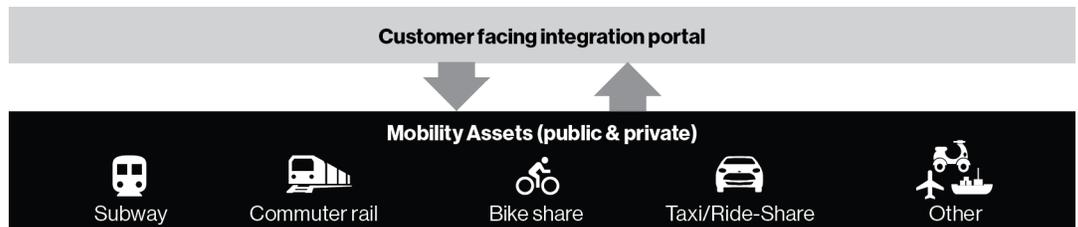


A **unified experience** that integrates various modes of transportation into a **singular journey** with booking & payment managed collectively



Key benefits of controlling the MaaS:

- 1 Significant revenue and data
- 2 Ability to influence over consumer choice
- 3 Negotiating leverage with other mobility providers



The lessons of TNCs and other disruptive platform business models indicates that whoever has the primary relationship with the customers on this new interface will be in a powerful position in at least three areas. They'll be well situated to earn significant revenue, able to influence the choices of those customers and positioned to shape the financial and operational fate of current and future transportation providers.

The ability to leverage customer data in order to, among other things, act as broker and subscription manager will be a crucial component of financial and logistical MaaS viability.

Current MaaS initiatives

The mobility as a service space is immature today. Despite some media hype, no single entity has yet to solve all of its challenges and emerge to dominate the space. Even fully integrated offerings in the market have relatively few users (in the hundreds of thousands) compared to routing apps, TNCs and transit agencies, which boast users in the millions to billions. But important developments have nonetheless occurred, including some successful integrations of multiple mobility modes controlled by different transportation service providers.

/// **Transit agency-controlled models:**

One clear response to this emerging market is for transit agencies to create their own MaaS offerings. They already control many core assets and have strong customer bases. In addition, many have established routing functions online, or mature, contactless payment systems. Potential challenges include getting private mobility services to join the coalition, and the ways governments typically struggle to create customer-facing technology applications that compete effectively with those from the private market. Vienna's WienMobil—an app developed by the city's transit agency that allows multi-model routing and payment—is one such offering. Vienna has been lauded for WienMobil's innovation and initiative, but app rankings are alarmingly low.

/// **Partnership models:**

Transit agencies and governments are also seeing the rise of attractive and functional private apps that integrate data from multiple streams and providers to make multi-modal mobility simpler. Some regions are attempting to partner with such apps, rather than compete or be left out entirely. Birmingham, UK invited Whim—the Finnish firm with the most mature multi-modal MaaS offering in the market today—to partner with them on a MaaS service. Results are still preliminary, but the interface has the ease of use of a private service and has been attracting attention.

Partnering with an integrated app solves the technology challenge, but leaves another important one to be solved: whether and how to integrate with the major TNCs (e.g., Uber and Lyft). Early conversations show an unwillingness on the part of these firms to be included in any MaaS offerings controlled by others. Most partnership or public models partner with alternative ride-hailing providers. But the long-term efficacy of the strategy is unknown.

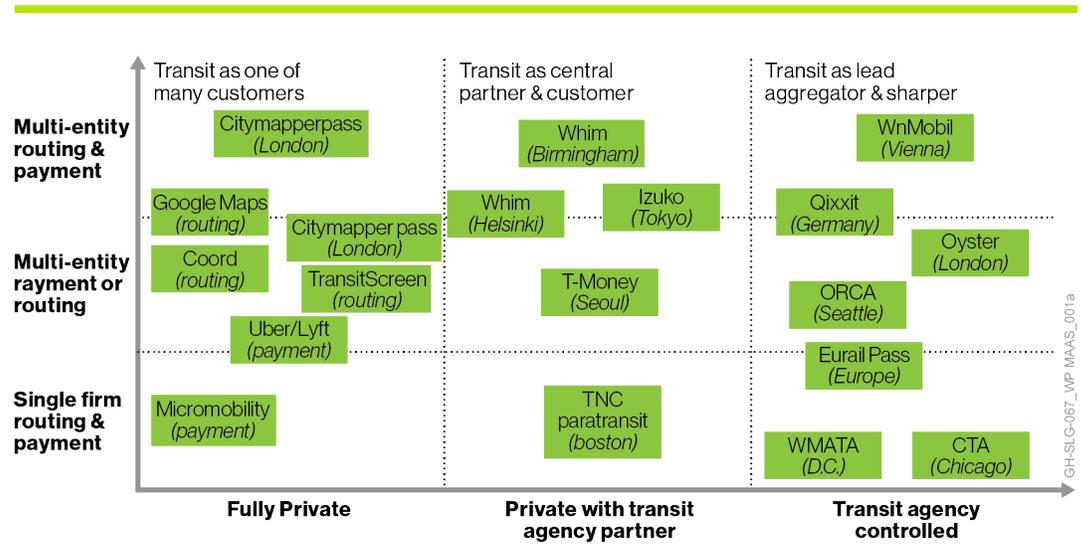
/// **Privately controlled models:**

Some transit agencies, including Transport for London (TfL), have declared that routing and multi-modality are beyond their core competencies. They fear that any application they make will fail, and fail expensively. They have instead opted to publish their data freely and cheaply, letting private players create vital wrap-around services.

London's strategy initially looked quite prudent. Over the previous five years, with the rise of excellent routing, Citymapper has filled the multi-modal routing role capably in the city. In fact, many such private MaaS offerings have the benefit of piggybacking on very mature, engaging and accurate interfaces for routing (e.g., Citymapper) or single-mode routing, ticketing, and payment services (e.g., TNCs).

However, there are potential downsides for municipalities considering such approaches. For instance, Citymapper's recent aggressive forays into the MaaS space—offering an integrated payment card that includes a TfL monthly pass at less than TfL's sticker price—have rendered TfL's conservative position increasingly precarious as the agency risks being marginalized.

TNC-based offerings look ever more likely—and powerful. The fortunes made creating and controlling other platforms have definitely attracted the interest of the private market. Both Lyft and Uber have been acquiring multi-modal assets—established bike-share programs, including Jump and Motivate, micro-mobility leaders, such as Bird—which positions them well to expand to “walled garden” MaaS offerings. These would focus on single-company assets and presumably steer customers toward those assets over time, possibly at the expense of the overall mobility well-being of the city.



How public entities can approach this transition

Governments and transit agencies that want to reap the environmental benefits and other public goods offered by MaaS, not to mention generate vital revenue streams, will need to approach integrated mobility services on several fronts:

Customers:

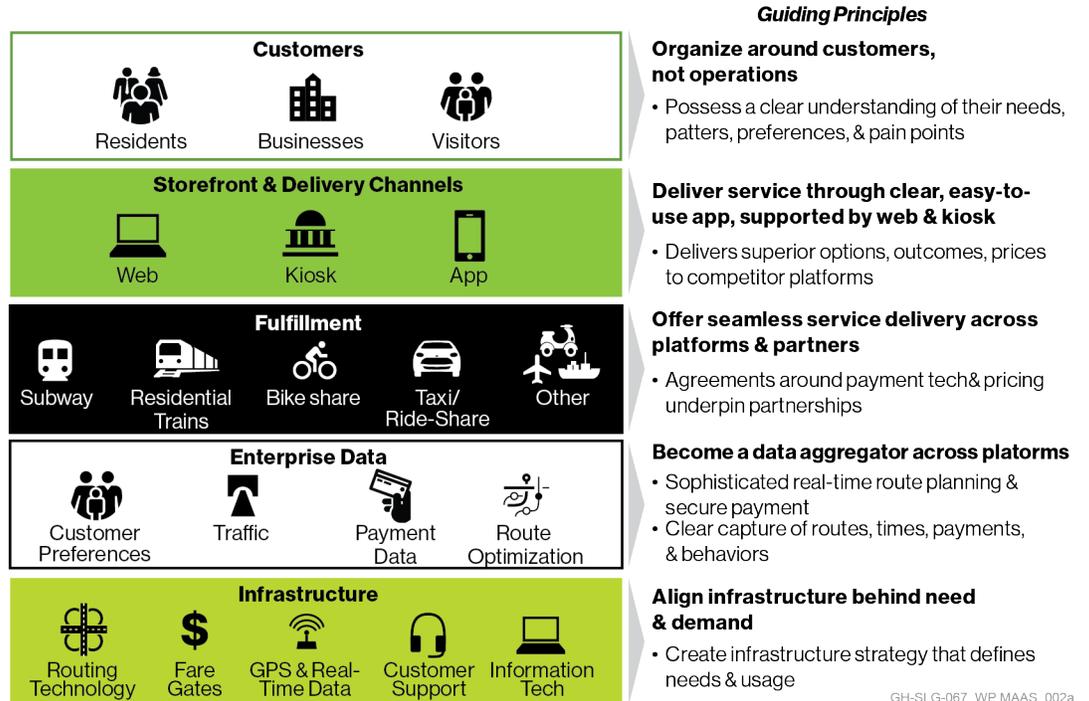
Mobility as a service is similar to many other strategic changes taking place in the public sector. Public entities more and more need to align themselves first around their customers. Rather than expecting customers to learn to navigate bureaucracy, transit agencies must understand that residents increasingly expect to have a more seamless experience. This awareness entails a mindset shift from being the “only game in town” to one of many providers looking to capture and retain customers in a competitive landscape.

Channel:

Best practices in the tech sector require enabling residents to interact via smooth digital portals that more closely mimic their private sector experience. MaaS is likely to rely heavily on mobile usage, based on the use patterns of early iterations of the service. And transit agencies must think about how to make these channels functional so as to deliver excellence in both ease of access and options offered.

Fulfillment:

Behind the digital channel, public entities need a suite of services—in this case multiple forms of mobility, including train, bus, bike, car and other options that users expect. Without that fulfillment, even a great interface is wasted. MaaS for the public sector will inherently involve partnering with outside entities, including other mobility providers. A “walled garden” approach will be difficult for most government entities that do not control a full suite of mobility options including car- and bike-sharing and micromobility. Traditionally, agencies have not partnered extensively in this vein. Developing these strong, trusted partnerships will take time and practice.



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Enterprise data:

Bringing multiple mobility forms to bear in an integrated routing and payment format will require voluminous data and expert analytics. Common types of related data include information about the customer and where they like to go, what subscriptions they have (e.g., e.g., a monthly subscription or pay-as-you-go) and how they will pay (e.g., stored credit cards or e-pay systems). Data about current customer location, destination, traffic patterns and availability of each of the mobility types (e.g., is the downtown train delayed? Are there no more bikes at that station?) will also need to be incorporated.

In addition, all of this data needs to be accessible and usable based on master data architecture, as well as secure from cyber threats. Yet many transit agencies do not currently even know where their customers get on and off the system. A deep engagement with data is essential to deliver the kinds of real-time information and routing customers will expect, along with the multifaceted insights necessary to adjust schedules, routes and assets to better deliver on customer needs

Infrastructure:

Delivering this system requires integrated and functional infrastructure across the physical, digital and human domains. Some examples of potentially promising elements for such integration include fast, reliable broadband connections, in-field payment and gating hardware, cloud storage and customer support. Effective public-entity MaaS planning will certainly direct key revenue streams back into infrastructure. Nonetheless, the control, coordination and maintenance of this infrastructure is a common challenge that trips up public entities and requires dedication, coordination and support from the outset.

What will public sector agencies need to succeed?

MaaS embodies a transition away from owned vehicles as our primary modes of transportation. As such, it encompasses a broad range of services and use genres, not to mention public interest concerns. An effective MaaS platform will ultimately aggregate mobility functions to seamlessly connect people and goods with information, payment and routing options for transportation, delivery and beyond.

Succeeding in the emerging MaaS landscape will thus require new competencies that are currently alien to transit agencies. This space, which typically features private alternatives, requires that agencies use a customer-centric approach, rather than their traditional focus on operations. Delighting customers, responding to them and knowing what they want are all skills that can be acquired, but will inevitably entail dedicated focus, skills and culture change.

In addition, MaaS IT will require lots of data, much of it processed in real time. The data capabilities of many public transportation institutions are nowhere near the necessary levels. Managing the service successfully will require the ability to generate and process significant amounts of data from a range of public and private sources in order to ensure the real-time information customers crave and to analyze how well the service is working. Skilled data collection and analysis will also point to areas where improvements might be made.

At its most basic level, getting a big new initiative like this off the ground requires focused project management, as well as expert change management. Something this substantial, involving external partnerships, major transitions, new capabilities and a high-profile roll-out, will be a huge task for an already taxed existing organization, which may lack the required skills and experience.

Finally, we see a role for policy advocacy. Transportation agencies have a mandate that is bigger than making money. And while this can sometimes appear to hamper them in competition with private offerings, it also allows them a platform to shape the policy landscape into something more equitable and environmentally friendly, thereby delivering better outcomes for the city as a whole.

Crucial links, such as those between improved availability of micromobility options and increased public transit use, or ride-sharing and traffic/parking oversight, can best be forged in the public sector. And MaaS-impelled improvements in convenience, travel speed, accessibility and affordability for all residents represent a public-policy win for all stakeholders.

Rules about congestion pricing, emissions, curb access, autonomous vehicles and licensing all affect the city and influence which MaaS offerings are most attractive. Expertise in these diverse constellations of policy and regulatory factors will also be crucial to success:



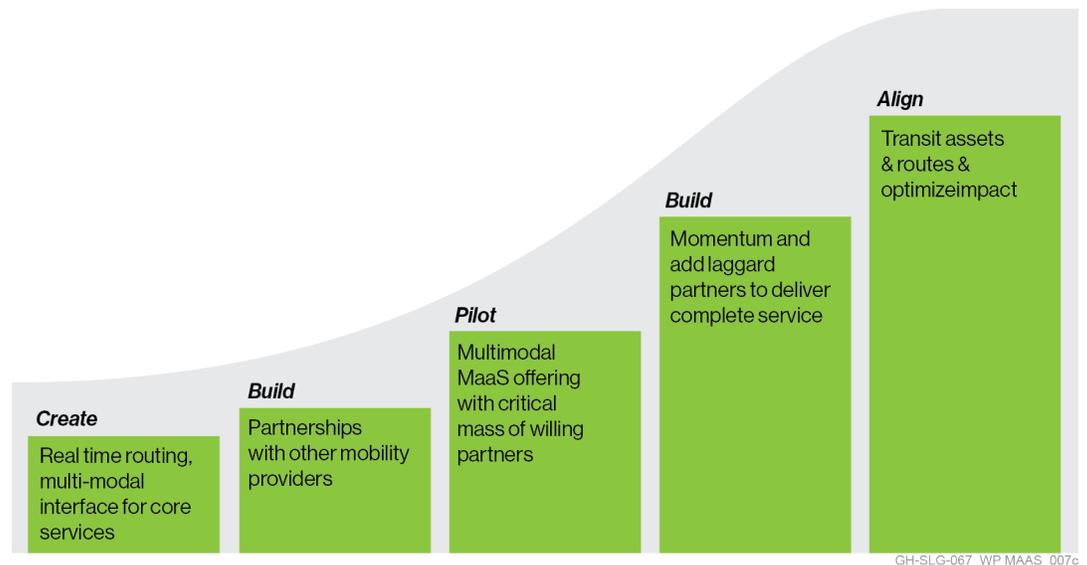
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How to get started

Governments cannot take all of these steps at once. We see successful agencies assembling the building blocks first—developing a few new capabilities and creating limited offerings, while continuing to build out their MaaS platform until it becomes the inevitable front-line default for users.

TNCs are unlikely to partner immediately, as they are occupied with pursuing their own “walled garden” strategies. Thus, transit agencies will likely need to be creative in finding ways to create leverage and keep themselves relevant in the debate. This may include pricing/withholding data or access to key assets. It may also involve building credible alternatives that bring TNCs to the table on more favorable terms. Such alternatives might entail leveraging underutilized fleets of taxi cabs or alternate ride-share providers to complete the mobility suite.

Ultimately, as transit shifts more and more to technology-enabled convenience interfaces, government transportation entities will need to leverage their central position and unmatched physical assets to find opportunities to retain their principal role in the mobility conversation. The potential social and environmental benefits posed by a dynamic, well-managed, public entity-driven MaaS landscape make facing the inevitable transitional challenges well worth the effort.



Why Guidehouse

Our approach to mobility as a service is based on Guidehouse’s considerable breadth of experience in helping cities, states and regions navigate important economic, societal and technological challenges. We have partnered with the nation’s largest transportation providers on their toughest challenges, including future of mobility strategies, innovative services, technology backbones and change management.

Our recipe for success is simple. We embark on a data-driven approach, we thoughtfully engage with and consider the voices of the community and we ensure that the right stakeholders are equipped with rich insights to make informed choices. We engage in an intimate, collaborative process with transportation providers to deliver the big-picture strategies that position our clients and their residents to succeed in the 21st Century.

Guidehouse is dedicated to addressing the needs of the public sector. Our purpose is to act as a trusted advisor to our clients in solving the central challenges facing their societies and economies.

About Guidehouse

Guidehouse is a leading global provider of consulting services to the public and commercial markets with broad capabilities in management, technology, and risk consulting. We help clients address their toughest challenges with a focus on markets and clients facing transformational change, technology-driven innovation and significant regulatory pressure. Across a range of advisory, consulting, outsourcing, and technology/analytics services, we help clients create scalable, innovative solutions that prepare them for future growth and success. Headquartered in Washington DC, the company has more than 7,000 professionals in more than 50 locations. Guidehouse is a Veritas Capital portfolio company, led by seasoned professionals with proven and diverse expertise in traditional and emerging technologies, markets and agenda-setting issues driving national and global economies.

For more information, please visit: **[guidehouse.com](https://www.guidehouse.com)**