Creating Innovations in the Automotive and Smart Mobility Industry Primer for 2016

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As automobiles are increasingly connected, they are transforming from providing basic transportation to creating new smart mobility value propositions. Resulting technology innovations will lead to unprecedented business opportunities, as well as challenges for organizations across many industries.

Scope
Automotive and smart mobility innovations combine new capabilities and realities to leverage new digital business opportunities and minimize risks.

Successful organizations and leaders must focus on:

- Understanding the impact of technology advancements on the emergence of automotive and smart mobility innovations
- Leveraging the emergence of connected vehicles and their impact on organizations, customers, partners, governments and societies
- Preparing for the evolution of the Internet-of-cars, including vehicle-to-vehicle and vehicle-to-infrastructure communications and their impact on business models and industry convergence.
The connected vehicle and smart mobility represent the most disruptive transformation in the automotive industry since the industry’s inception, and will lead to a total redefinition of the automobile and its value chain. The shift from a predominant focus on mechanical engineering excellence toward technology and software-centric innovations will highlight the critical importance of IT and its role in creating new consumer and business benefits.

Over the next 10 years, automobiles will become "smart vehicles" that access, consume, create and enrich information — information that will then be shared via connectivity with people, businesses, organizations, public infrastructure and machines, including other vehicles. The benefits and opportunities resulting from the connected automobile will be considerable for individuals, business and society as a whole. For example, connected vehicles will lead to new entertainment options, increased productivity, new commerce experiences, improved traffic flow, lowered emissions and reduced accident rates.

Smart mobility will also lead to significant changes that will impact the fabric of the automotive industry, creating new value propositions, business models and supply chains that expand across multiple industries. Smart mobility will heighten the role of nonautomotive companies — in particular, technology vendors, Internet companies, consumer electronics (CE) companies, retailers and service organizations.
Top Challenges and How Gartner Can Help

As a result of connectivity and new technologies, the automobile will experience a renaissance by expanding its value proposition from a physical one to a virtual, information-centric dimension.

The ability to benefit from new digital opportunities rests on automotive companies' creativity and ability to build dominant value propositions that embrace technology across all of their customer touchpoints and business partner interactions and within their own organizations. Conversely, technology companies leading in the virtual world will have the opportunity to leverage digital business designs to expand into the physical world of transportation and mobility. This will ultimately pave the way for automotive companies to actively create industry convergence: the redefinition of industry boundaries by shifting the focus from individual products to cross-industry value experiences.

The new smart mobility era will disrupt established value-chain assumptions and approaches, but automotive and technology companies can benefit from this new phase of innovation if they can adapt to the changes quickly and ingrain them into their businesses, organizations and leadership. However, this will require an open and honest assessment of current strengths and weaknesses, and a clear desire to become a leader in the smart mobility era.

Gartner will provide strategic insights, directions and solutions regarding these opportunities and challenges for business and technology leaders in the automotive industry as well as industries impacted by smart mobility, including IT and CE companies, service providers and governments.

What key technologies and innovations must organizations track, assess and utilize to advance connected vehicle and smart mobility offerings?

The technology- and software-defined vehicle is the foundation for developing successful connected vehicle and smart mobility offerings in the future. CIOs, IT leaders, business leaders and product developers must be able to understand current and future maturity levels of key technologies to develop successful, innovative and upgradable offerings at the right price points. That includes vehicle-centric technologies like sensors, processors, embedded software and electronic architecture, as well as off-board technologies like cloud computing, over-the-air software update capabilities and data analytics.

Senior business and technology decision makers must master such key technologies to reinvent their organizations, processes, products and partner strategies accordingly. For example, self-driving vehicle technologies on the sensor, algorithm and machine-learning sides continue to advance quickly and will provide differentiation opportunity for companies — at least in the short term. Hence, it is paramount for automotive and technology companies to develop a strong understanding of what technology areas to focus rightsized investment and partnership activities on to accelerate go-to-market times for future autonomous vehicle solutions at affordable end-user prices.

Gartner will provide guidance on what technologies will be critical to own, partner on and explore to take advantage of connected vehicle and smart mobility offerings. This will include assessing the
maturity of these technologies, as well as the vendors offering them. This information will be invaluable for business and technology leaders to optimize their technology investment and deployment objectives.

**Planned Research**

- Assessment of key connected vehicle and smart mobility-related technologies, including their maturity and importance on business impacts.
- An outlook on technology trends and how to best use technologies in the automotive and smart mobility space.

How will market trends and consumer needs regarding connected vehicles and smart mobility evolve, and how must organizations address them?

Identifying emerging market trends early and understanding consumer needs accurately will determine the degree of success of automotive and technology companies focusing on connected vehicles. CEOs, CIOs and chief marketing officers (CMOs) must master these tasks to plan for and develop the right solutions at the right time. Failing to do so will result in missed market opportunities and the misallocation of investment capital. While automotive and technology companies generally are successful in meeting consumer needs for their respective product categories (such as via surveys and product clinics), the convergence of both categories represents a new challenge for both of them.

For example, consumer expectations for on-demand mobility solutions, such as ride-sharing services, are still emerging. Hence, companies need to better understand consumer preferences for such service offerings and how to develop solutions that are positioned as premium vs. standard offerings. Given the importance of preparing their organizations to be positioned successfully in the new era of smart mobility, companies will have to expand their customer focus to a broader market scope and subsequent scouting of cross-technology trends. Going forward, automotive and nonautomotive companies must realize the unique choices the connected vehicle represents in positioning and communicating new value propositions to end users. For example, the automobile is the ideal communication platform for conveying vehicle-specific repair and customer service messages.

Gartner will provide market and consumer insights and trend information that is focused on how they will evolve in the future and not just only at the current state of the market. This is paramount for organizations to understand to create attractive offerings for the future.

**Planned Research**

- Outline of current consumer needs and attitudes regarding connected vehicles and smart mobility
- Opportunities and challenges in identifying and addressing future market needs
How will the smart mobility ecosystem evolve, and what impact will it have on business models and industry convergence?

The opportunities and changes coming from connected vehicles will be profound and will lead to digital business.smart mobility creators that are defining this new era and digital business.smart mobility participants that will help to fulfill it. Therefore, CEOs and CIOs must prepare for radically different value chains that introduce new partners, peers and competitors. The shift to IT-centric innovation will create new opportunities for most companies, but will also challenge conventional wisdom, and is likely to surprise some traditional organizations. This will require that business and technology leaders in those companies impacted by smart mobility ensure a clear understanding of strengths, weaknesses and subsequent required investments into new technology innovations and partner activities.

This means that impacted organizations will have to define, link and manage smart mobility ecosystems that allow for new offerings and business models. In particular, companies will have to explore how the ability to connect information from the vehicle in real time and in a predictive manner with the outside, and vice versa, can lead to new business benefits. This will dictate the objectives and requirements for defining and managing a smart mobility ecosystem of partners and technologies. For example, automakers have to consider the range of implications for partnering with leading smartphone device and operating system providers to bring smartphone functionality into the vehicle at the risk of giving up control over the customer experience to these companies.

Gartner will provide top business and technology leaders with strategic advice on how they need to steer their organizations in the emerging smart mobility ecosystem, both from a business and technology perspective. This includes the impact smart mobility will have on their current and future business models and how, eventually, the boundaries of their industries will expand and/or how new competitors will emerge that are entering their market from different vantage points.

Planned Research

- How is smart mobility — the digital transformation in the automotive domain — changing business models in the automotive segment, as well as adjacent sectors?
- How will the ecosystem of automotive companies, technology and service providers evolve? Who are the key new partners that will lead in this evolution?
Related Priorities

Table 1. Related Priorities

<table>
<thead>
<tr>
<th>Priority</th>
<th>Focus</th>
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<tr>
<td>Building and Expanding a Digital Business</td>
<td>Digital business is the creation of new business designs by blurring the digital and physical worlds. An unprecedented convergence of people, business and things will disrupt existing business models.</td>
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<tr>
<td>Internet of Things</td>
<td>Connected &quot;things&quot; have provided benefits to enterprises and consumers. The Internet of Things is evolving as increasing penetration and greater numbers of use cases lead to much greater utility.</td>
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<tr>
<td>Delivering Winning Products and Portfolios With PLM for Manufacturing</td>
<td>PLM is creating, guiding them and continually cultivating products and product portfolios from ideas through retirement to deliver the most value for businesses, partners and customers.</td>
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Source: Gartner (January 2016)

Suggested First Steps

- "Master the Four Stages of Connected-Vehicle Evolution to Lead the Renaissance of the Automobile"
- "Industry Convergence — The Digital Industrial Revolution"
- "Innovation Insight: The Connected Vehicle Will Dominate Automotive and Mobility Innovations"
- "Automobile of the Future: The Ultimate Connected Mobile Device"

Essential Reading

- "Predicts 2016: Automobiles Become Digital Endpoints in the Era of Smart Mobility"
- "Hype Cycle for Connected Vehicles and Smart Mobility, 2015"
- "Predicts 2015: Connected-Vehicle and Mobility Innovations Inspire New Digital Business Opportunities"
- "Maverick* Research: Crashing Industries and Our Societal Beliefs — The Real Implications of the Autonomous Vehicle"

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