Urban mobility redefined
Sharing is the new buying
“Urban cars of the future will need to be autonomous, web-integrated, customizable, green and shared. These vehicles will catalyze the trend toward car sharing versus ownership and expand shared services to a new level of convenience and flexibility. Automotive companies will need to move faster toward more service-oriented strategies and offerings versus product offerings to remain competitive. New entrants, new business models, and stakeholders from multiple sectors create significant disruption risks to the industry that must be addressed, along with faster evolution of public policy to support this sharing.”

Randall J. Miller
Global Automotive & Transportation Sector Leader, EY
The integrated urban mobility vision is moving closer to reality as shared mobility business models succeed

As we stride deeper into the 21st century, evolving demographics, urbanization, digitization and collaborative consumption are likely to disrupt the mobility ecosystem.

The future urban mobility network will involve vehicles with connectivity and self-driving functionality. Digital technologies will enable the provision of customizable mobility packages, and stakeholders will compete for a share of customers' mobility spends.

The road map to the urban mobility vision is based on the growing collaborative economy and the proliferation and success of shared mobility business models. As urbanization depletes natural resources and digitization disrupts distribution channels, technology and peer-to-peer sharing will take center stage in designing a city's intelligent transport infrastructure.

### Why this matters

The road map to the urban mobility vision is based on the growing collaborative economy and the proliferation and success of shared mobility business models. As urbanization depletes natural resources and digitization disrupts distribution channels, technology and peer-to-peer sharing will take center stage in designing a city’s intelligent transport infrastructure.

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### Future of urban mobility

**Vehicle characteristics**

- **Web-integrated**
  - V2V, V2I, V2X communication

- **Customizable**
  - Hardware and software reconfiguration

- **Autonomous**
  - Control shifts from driver to vehicle

- **Green**
  - Fuel-efficient/alternate powertrain

### Digital infrastructure

- **Real-time travel information**
  - Optimized and personalized journey planning

- **Connected transport infrastructure**
  - Traffic and virtual parking management

- **One-stop payment system**
  - Smart cards, e-wallets, online account management

- **Omni-channel strategy**
  - Seamless customer experience through relevant distribution networks

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### Cross-sector stakeholders

- Automotive manufacturers
- Infrastructure providers
- Transport/travel providers
- Research institutions/academia
- Mobility sharing providers
- Connectivity providers
The rise of the collaborative economy is a result of growing urbanization and driven by digitization

Urbanization drains natural resources, while digitization disrupts distribution channels

Rapid urbanization, megacity population explosion, pollution and congestion are exerting tremendous pressure on natural resources. At the same time, digitization, mobile connectivity and social media are making content access without ownership more attractive for consumers. Digitization has also reduced barriers to entry into markets that were previously dominated by companies owning significant assets and distribution channels.

Collaborative economy at the center stage of consumption

Nontraditional players are not only disrupting most industries by enabling simplified access to resources but are also spurring entrepreneurship at a micro level. For instance, property owners are short-term leasing and vehicle owners are offering peer-to-peer mobility services. Consumers particularly benefit as these companies offer economical choices, greater flexibility and multiple payment options.

Why this matters

- Resource constraints have resulted in the rise of collaborative consumption, where the focus is on effective utilization of existing assets with peer-to-peer digital transactions.
- Evolving consumer behavior is resulting in different societal norms, fueling the adoption of collaborative access to resources.
The growth of the collaborative economy in the urban mobility ecosystem is disrupting traditional business models of automotive and transportation companies.

### Traditional urban mobility choices

- **Personal vehicle**
- **Short-term hire**
- **Public transport**

### Key providers

- **Automakers/dealers**
- **Taxis and car-rental companies**
- **Governments/cities**

### Alternative value proposition offered by new-age car sharing companies

- **Real-time booking process** (via apps with vehicle tracking and billing)
- **Easier vehicle access** (via apps, smartcards)
- **Usage-based pricing model** (per minute/hour/mile)
- **Free parking** (exclusive, in-city spots)
- **Multiple vehicle options** (electric, luxury)
- **Sense of community** (neighborhood)

### Why this matters

Success factors to navigate the mobility sharing market:
- Identifying the optimal business model variant – differentiators and factors driving competitive advantage
- Understanding profit drivers, making cost structures flexible and revenue streams sustainable
- Customizing the business model to each city’s dynamic attributes
Designing the business model requires selection from a complex set of variables across four key layers

EY has designed a four-layered mobility business model that can map the current and future variants in this fast-evolving market.

**Mobility sharing business model layers**

- **Layer 1**: Infrastructure/resources
  - Determining the capital outlay: Choosing asset base depending on regulations and parking network based on relationship with cities

- **Layer 2**: Value-proposition
  - Enabling differentiation: Providing flexible trip types and booking and real-time booking and pricing

- **Layer 3**: Customer segments
  - Identifying market positioning: Targeting diverse customer segments based on demographics, education, wealth and technological savviness

- **Layer 4**: Partners/stakeholders
  - Creating competitive advantage: Identifying the right partners from among stakeholders across multiple sectors to create a scalable and cost efficient business model

**Why this matters**
The choices that a company makes at different layers will significantly impact the financial construct of its business model. While differentiation comes from value proposition and customer segments, competitive advantage comes from infrastructure and partners/stakeholders.

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Business model variants have proliferated with scalable business structures, flexible value propositions and diverse customer segments.

We have identified six distinct business model variants and their positioning on the chart reflects their unique characteristics.

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Infrastructure/resources</th>
<th>Customer segments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicles owned/leased</td>
<td></td>
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<tr>
<td></td>
<td>Station-based parking</td>
<td>Individual</td>
</tr>
<tr>
<td></td>
<td>Free-floating parking</td>
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<tr>
<td></td>
<td>OEM-owned</td>
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<tr>
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<td>Driver-based P2P</td>
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<td></td>
<td>Self-driven B2C</td>
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<tr>
<td></td>
<td>Regional B2C</td>
<td></td>
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<tr>
<td></td>
<td>Corporate car sharing</td>
<td>Business</td>
</tr>
<tr>
<td></td>
<td>Corporate fleet management</td>
<td></td>
</tr>
</tbody>
</table>

**Asset-heavy business models**
- Traditional taxi/rental companies with high fixed costs and limited flexibility
- Automakers leveraging their own vehicle fleets to provide more flexibility and customized value propositions

**Asset-light business models**
- Technology-driven companies with variable cost structure and greater flexibility
- Companies enable peer-to-peer ride sharing, which connects people seeking a cost-effective, eco-friendly mode of transit

**Corporate-focused business models**
- Fleet management and auto-finance companies serving corporate customers with efficient car pools and cost-effective, flexible alternative modes of mobility
- This eliminates internal costs, such as the need for travel expense reports and carpool management

**Why this matters**
Asset-light models are becoming popular as they enable multi-city scalability and operational flexibility. Automakers are also encouraging their existing customers to adopt peer-to-peer car sharing, as they look to penetrate the segment.
While profit drivers vary across mobility model variants, the most significant are pricing model, asset ownership structure and technology infrastructure.

### Shared mobility business model components

#### Costs
- **Fixed**
  - Parking
  - Insurance
  - Leasing
  - Interest
  - HR/employee
  - Marketing
  - Miscellaneous
  - R&D, technology development

#### Revenue
- **Usage based**
  - Price per minute or per hour or per mile * average number of minutes (/hours/miles) a vehicle is in use per day * number of vehicles * 365

- **Subscription based**
  - Registration fee * approximate annual addition of new members

- **Recurring revenue**
  - Monthly/annual revenue from registered members

- **Data and service provision revenue**
  - Third party product placements for targeted advertising/marketing

### Profit drivers for shared mobility business model variants

<table>
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<th>Typical profit-sensitivity factors</th>
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### Break-even: minutes usage per vehicle per day = \[
\frac{\text{Fixed cost}}{(\text{price per minute} - \text{variable cost per minute})}
\]

### Why this matters
- New age car sharing companies are innovating with financial structures – converting fixed costs into variable costs.
- The profitability of traditional models depends on their asset utilization and ownership structure (leasing vs. financing), while new-age companies adopt dynamic pricing models according to the real-time demand-supply scenario.
- Business model success is also driven by optimal vehicle utilization – adapting them for different purposes at different times of the day/different days of the week.
Customizing the shared mobility business model for each city will be critical to a successful implementation and adoption by urban dwellers.

The strategic direction of a city influences its willingness to look at different types of mobility solutions – each city needs to find the mobility offering that matches its strategic aspirations. EY’s Urban Mobility Index (UMI) helps profile cities, and provides the necessary framework to help city administrations interact more proactively with all stakeholders in the mobility ecosystem to build tomorrow’s fully integrated transportation platform. It considers four critical areas: the city’s overall infrastructure strategy, sources and management of energy, support to corporations and priorities for citizens.

EY Urban Mobility Index Framework

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<td>• Age split</td>
</tr>
<tr>
<td>• Governance and finance – Structure, finances and effectiveness</td>
<td>• Mobility demand/supply balance – Average travel time, pattern of use, modal split</td>
<td>• Education</td>
</tr>
<tr>
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<td>• Mobility IT infrastructure – Intelligent transport system, smart utilities</td>
<td>• Relative wealth</td>
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Data ownership scenarios in a city’s ecosystem

City as a data hub
Smart, sustainable, competitive environment attractive for investments and talent

Why this matters
Mobility can offer cities competitive advantage. However, one size does not fit all, as every city has its own unique ecosystem. EY’s UMI profiles cities, helping define the requirements and the suitability of mobility services for specific urban contexts.
## Key considerations for mobility sharing stakeholders

### Automakers
- Leverage multiple media channels to establish direct touch points with customers
- Institutionalize checks to ensure data privacy and security

### Car sharing companies
- Work toward addressing trust issues of the consumer in case of P2P car sharing
- Evaluate customer satisfaction levels, effectiveness of customer feedback and user assessment mechanisms
- Provide customization in services, such as one-way services and user-created stops and routes

### Governments/policy makers
- Create an integrated transport strategy to improve connectivity, convenience, flexibility and affordability of multi-modal transit
- Look to provide enlarged free parking zones to car sharing operators in future
- Provide evidence of benefits to consumers via studies to improve user acceptance

### Consumers
- Focus on building cars around cities – small, electric, autonomous
- Consider a mobility-centric strategy, increasing focus on car sharing services to expand revenue streams or combat declining car sales
- Leverage connectivity to enable integration of personally owned vehicles into car sharing and public transport networks

### Products and services
- Develop a city-specific operational plan around car parking, vehicle lease/ownership, responsibility for cleaning/maintenance, etc.
- Seamlessly integrate car sharing network into public transportation network
- Invest in technical development of the platform: software for reservation/billing/fleet, customer management, etc.

### Partnerships
- Identify and associate with car sharing and carpooling companies that could have relationships with/ access to a new customer base
- Look to partner with universities to target the youth as potential customers of car sharing, as they move toward delayed vehicle buying
- Partner with local governments and other Automakers for investment in requisite infrastructure

### Governments/policy makers
- Create overarching best practices across countries, to help local governments save time toward adoption of car sharing
- Provide regulations around defining liability/ accountability, data security and privacy
- Invest in requisite infrastructure: parking spaces/ charging infrastructure

### Products and services
- Form need-based and strategic alliances, JVs and acquisitions to gain technology, expand customer base
- Look to tie up with fuel providers to save on costs
- Collaborate with policy makers around development of legal framework
- Assess readiness for regulatory changes in local markets

### Consumers
- Consider partnerships with car/bike sharing companies and Automakers, to work on legal/policy framework for car sharing
- Introduce subsidies/tax incentives to facilitate the entry of new players and ease business operations for existing ones
- Provide financial support for innovative car sharing companies (funding/direct investment)

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**Urban mobility redefined | Sharing is the new buying**
EY can help with a solution-oriented approach, bringing together specialists across the mobility ecosystem

EY’s Mobility Innovation Group is dedicated to building a world with no travel waiting times, no casualties and no emissions. Consumers and communities increasingly benefit from emerging technologies and business models reshaping the travel experience, while shrinking the world’s carbon footprint. EY is at the forefront of key initiatives across the value chain that make this vision a reality every day.

Focus sectors for mobility innovation
Our Mobility Innovation Services involve specialists from each sector relevant to the mobility ecosystem. These teams are familiar with every aspect of the industry. The focus sectors are as follows:

- Government & Public Sector
- Automotive & Transportation
- Power & Utilities
- Insurance
- Technology, Media & Telecommunications

Mobility Innovation Group

EY Mobility Innovation Group

Mobility Innovation Services
Building a better working world with cross-sector collaboration

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In the Automotive and Transportation Sector, we’re doing our part to enhance human mobility, getting people and products where they need to go – better, faster and smarter – in a rapidly changing environment. Through our globally expansive sector network, we bring a strong point of view on the emerging issues across automotive and transportation, connecting more than 13,000 professionals with deep industry and technical expertise who understand what the trends of the future mean for the present. We work with our clients to deliver innovative yet pragmatic solutions to address their imperatives and deliver tangible business value around the disruptive trends and transformational challenges shaping tomorrow’s industry, today.

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