Shared Mobility Vehicle Design: Towards the Future

While latest taxi models are becoming more feature rich along with electric capabilities, OEMs are also focused on developing compact yet efficient concepts for shared mobility in the future.

Karsan Concept V1

- On-board Wi-Fi
- Swivel Seats
- Li-Ion battery built to last the total life of the vehicle
- Easy access for the disabled with wheelchair restraints
- Removable plastic body panels for fast repairs
- 90° door opening with automated ramp for easy ingress/egress
- Dedicated wheelchair area
## Major Players Shaping the On-Demand Bus Transit Market

<table>
<thead>
<tr>
<th>Region</th>
<th>Company</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NORTH AMERICA</strong></td>
<td><strong>Chariot</strong></td>
<td>5000 rides per week Raised $3 million in funding Acquired by Ford</td>
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<tr>
<td><strong>EUROPE</strong></td>
<td><strong>Moobil+, DrinBus</strong></td>
<td>On-demand public bus services in Germany and Italy</td>
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<td><strong>ASIA PACIFIC</strong></td>
<td><strong>Didi Chuxing</strong></td>
<td>Didi Bus - buses sourced from leasing companies &amp; licensed travel agencies</td>
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<td>****</td>
<td><strong>Beeline</strong></td>
<td>Singapore’s on-demand bus app that directly connects passengers with bus operators</td>
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<td>****</td>
<td><strong>Shuttl</strong></td>
<td>80,000 downloads Target: 100,000 rides/day by 2017</td>
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<td>****</td>
<td><strong>ZipGo</strong></td>
<td>50,000 downloads &gt; 1000 rides/day</td>
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<td>****</td>
<td><strong>CityFlo</strong></td>
<td>1800 rides/day 5000 downloads</td>
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<td>****</td>
<td><strong>Skedaddle</strong></td>
<td>Inter-city on-demand bus transit Number of members doubled to 80,000 between 2015 and 2016</td>
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<td><strong>Tuup</strong></td>
<td>Offers multi-modal mobility options – on-demand ride sharing, intercity bus and train, car rental, and car and bike sharing Kyyti is its on-demand shuttle service 15,000 users in 2 months Service to expand from Oulu to larger cities in 2017</td>
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<tr>
<td>****</td>
<td><strong>Allygator</strong></td>
<td>Private on-demand buses (Germany)</td>
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</tbody>
</table>
Trends in Demand Responsive Shuttles Market
The demand responsive shuttle market is witnessing rapid transformations that is being accelerated by a wide range of stakeholders.

### Demand Responsive Shuttles Fleet Size, Global

- **2017:** ~3k
- **2025:** ~1 ml
- **CAGR (2017–2025):** 101%

### Market Revenues

- **2017:** $32 million
- **2025:** $57 billion

### Demand Responsive Shuttles – Key Trends

- **Investments**
- **Public Transit Partnerships**
- **OEM Partnerships**
- **Ride Hailing Developments**
Autonomous Shuttle Pilots – Global Snapshot

Transit agencies and authorities across many countries are playing an increasingly significant role in restructuring the traditional bus and other mass transit markets.

Source: Frost & Sullivan
Automation & Shared to Disrupt Two Business Models
Convenience + Cost → Disrupt e Hailing; First & Last Mile Connectivity → Disrupt Car Sharing

Purpose:
- **On demand, economical Urban commute.**
  - **KPIs:** Space utilization, high charge density, capacity
  - **Type of vehicle:** Specialised Pods

Purpose:
- **Urban and inter urban commute.**
  - **KPIs:** Ease of access, convenience, personalisation
  - **Type of vehicle:** Specialised vehicles with personalisation

Purpose:
- **Add experiential Value in mobility.**
  - **KPIs:** Personalisation, premiumness
  - **Type of vehicle:** Hybrids capable of switching modes

1. **Dynamic AD Shutles → e Hailing**
   - **Catalyst:** Migration from fixed to dynamic routing over 25 mph

2. **AD Car Sharing → e Hailing**
   - **Catalyst:** First and last mile connectivity via automation.
AD [Shuttles & e Hailing] → Dominant Business Models in 2030
Automated Shared Mobility Market Expected to Be Over $100 Bn By 2030

1. 2030 Global Shuttles Market (Total vs AD)
   - $300 Bn Market Value
   - 4.1 Mn Shuttles
   - $4.5 Per ride
   - 67.5 Bn Rides
   - $2.4 Per ride
   - 20 Bn Rides

   Technology Enablers: Urban focused geo fencing and HD locators, solid state lidar technology.
   F&S Recommendation:
   - EV platform vehicles for up to 10 passengers with high end connectivity features and flexible seating arrangements.

2. 2030 Global e Hailing + Sharing Market (Total vs AD)
   - $1.1 Tn Market Value
   - 28 Mn Vehicles
   - $7.0 Per ride
   - 156 Bn Trips
   - $3.5 Per ride
   - 16 Bn Rides

   Technology Enablers: Fleet Management Software, Path Planning
   Dominant Regions: 1. North America 2. Europe 3. China
   F&S Recommendation:
   - Flexible architecture driven hybrid and EV vehicles capable of providing high end customisation
Shared Mobility Vehicle Design: Towards the Future

With growing need for on-demand shuttle services, more advanced concepts such as modular driverless designs can transform to make travel time and in-vehicle space more useful and productive.

**Current and Future Designs for Demand Responsive Shuttles**

**Easy Mile – EZ10**
- Provides customizable and scalable services for operating as a shuttle or as an "on-demand" ridehailing service.
- Maximum seating capacity of 12 (6 seating, 6 standing).
- Can operate in either direction.
- 14 hours operation time.
- Max. Speed: 40 km/hr.
- 3 modes of operation: Metro Mode, Bus Mode and On-Demand Mode.

**Chariot – Demand Responsive Shuttle by Ford**
- Internet connectivity for passengers.
- 14-seater capacity.
- Live GPS Tracking.

**NEXT – Autonomous Modular Mass Transit**
- Each module can accommodate 6 people.
- Modular Design.
- Easy Accessibility.
- 14 hours operation time.
- Max. Speed: 40 km/hr.

With growing need for on-demand shuttle services, more advanced concepts such as modular driverless designs can transform to make travel time and in-vehicle space more useful and productive.
Partnerships and Investments Defining the Integrated Mobility Market

Delivery of real-time, door-to-door, multi-modal travel encompassing pre-trip, in-trip and post-trip services bringing Convenience, Time & Cost Savings to the Mobility User

Partnerships

- Chicago partner
- West Midlands partner
- Taxi partner, Helsinki
- Mobile ticketing partner

Investments & Acquisitions

Raised
Euros 14.2 million

Source: Frost & Sullivan
Implications—OEMs are Moving to Car as a Service
A number of automotive OEMs are shifting towards offering mobility services to make up for the loss incurred in their vehicle sales as such services will help reduce the number of cars on the road.

<table>
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<tr>
<th>OEM</th>
<th>Drive Yourself Business Models</th>
<th>Be-driven Business Models</th>
<th>Smart Parking</th>
<th>e-Mobility</th>
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<td></td>
<td>One-way CS</td>
<td>Two-way CS</td>
<td>P2P CS</td>
<td>Corp. CS/Flexible Leasing/Rental</td>
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- ✓ Own Initiative (either through subsidiary or by themselves)
- ✓ Investment through arm
- ✓ Strategic partnership with investment
- ✓ Collaboration without investment
- ✓ Supplier relationship

*refers to experiments.
Only services and products currently operational are considered; past pilots and future launches are not included.
Source: Frost & Sullivan
Automotive Services Landscape In 2030

As value shifts from product to service, the market is expected to evolve from the car as a product to the car as an enabler of a connected living ecosystem.

Source: Frost & Sullivan
For More Details Contact

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Mobility Practice

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