Defining Safe Automated Driving

The Insurer View
100% of cars will be connected by 2025*

75% of cars on the road will be Autonomous by 2035! *

*GISMA & Navigant Research
• Autonomous Technology
• Motor Manufacturers (OEM’s)
• Mobility as a Service / Sharing Society
Insurers Involvement in UK CAV projects
Percentage of consumers who feel full self-driving vehicles will not be safe

- South Korea: 81%
- Japan: 79%
- US: 74%
- Germany: 72%
- India: 64%
- China: 62%

Source: Deloitte Global Automotive Consumer Study
Public Perception – A History of Distrust & Fear
TRANSPORT - Integrated Solutions & Wider Implications

AUTONOMOUS DRIVE
Testing - Autonomous Vehicle Technology

Adaptive Cruise Control
- Traffic Sign Recognition
- Emergency Braking
- Pedestrian Detection
- Collision Avoidance
- Lane Departure Warning
- Cross Traffic Alert
- Park Assist
- Long-Range Radar
- LIDAR
- Camera
- Short-/Medium-Range Radar

Surround View
- Digital Side Mirror
- Rear View
- Rear View Mirror
- Blind Spot Detection
- Surround View

Environment Mapping
- Park Assistance

Digital Side Mirror
- Environment Mapping

Environment Mapping
- Environment Mapping
- Environment Mapping
<table>
<thead>
<tr>
<th>LEVEL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>There are no autonomous features.</td>
</tr>
<tr>
<td>1</td>
<td>These cars can handle one task at a time, like automatic braking.</td>
</tr>
<tr>
<td>2</td>
<td>These cars would have at least two automated functions.</td>
</tr>
<tr>
<td>3</td>
<td>These cars handle “dynamic driving tasks” but might still need intervention.</td>
</tr>
<tr>
<td>4</td>
<td>These cars are officially driverless in certain environments.</td>
</tr>
<tr>
<td>5</td>
<td>These cars can operate entirely on their own without any driver presence.</td>
</tr>
</tbody>
</table>
Timing? From ADAS to Automated Driving

Lack of Clarity? = Worried insurers

<table>
<thead>
<tr>
<th>SAE Level</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Assisted</td>
<td>Partial</td>
<td>Conditional</td>
<td>High</td>
<td>Full</td>
</tr>
<tr>
<td>Estimated Timeline</td>
<td>Current</td>
<td>Current</td>
<td>2016</td>
<td>2018</td>
<td>2021</td>
<td>2025</td>
</tr>
<tr>
<td>Control of steering, throttle, brakes</td>
<td>Driver</td>
<td>Driver &amp; Vehicle</td>
<td>Vehicle</td>
<td>Vehicle</td>
<td>Vehicle</td>
<td>Vehicle</td>
</tr>
<tr>
<td>Monitoring of driving environment</td>
<td>Driver</td>
<td>Driver</td>
<td>Driver</td>
<td>Vehicle</td>
<td>Vehicle</td>
<td>Vehicle</td>
</tr>
<tr>
<td>Responsibility if driver fails to take control when requested</td>
<td>Driver</td>
<td>Driver</td>
<td>Driver</td>
<td>Driver</td>
<td>Vehicle</td>
<td>Vehicle</td>
</tr>
<tr>
<td>System capable in...</td>
<td>No capability</td>
<td>Some driving modes</td>
<td>Some driving modes</td>
<td>Some driving modes</td>
<td>Some driving modes</td>
<td>All driving modes</td>
</tr>
</tbody>
</table>

- Driver perception could be that vehicle is responsible...
- But vehicle is not responsible yet
You can’t decide who is responsible without the Data!
Using Data to provide additional / better Customer service?

Car-related services
- Free roadside assistance
- Automatic emergency assistance
- Theft/recovery notification
- Free oil/car services
- Free parking
- Remote vehicle diagnostics
- Information on free parking
- Mobile phone GPS

Services non related to car
- Tailored communications based around places visited
- New Insurance Products
- Partnerships with Stores / Food outlets
- Geo-notification discounts
- Benefits for safe driving away from Motoring
- Credit for e-commerce websites

Data analytics and driving behaviour related services
- Embedded insurance, variable pricing?
- Portable ‘Driving DNA’?
- Trip and expense log book
- Monitoring children’s driving
- Carbon footprint feedback
- Gamification - compare driving with friends, family
- Access your driving data
Automated & Electric Vehicles Act

Automated and Electric Vehicles Bill

New rules to ensure safe and effective insurance for self-driving cars

We have been involved in discussions throughout the various iterations; Modern Transport Bill / Vehicle Technology & Aviation Bill / Automated and Electric Vehicles Bill

Effective strict liability on insurers to pay out in the first instance keeping the safety of road users and pedestrians at the heart of the legislation

Realistic levels of liability on OEMs and other third parties to encourage innovation
People miles driven by 2040 will increase by 25% and shared mobility will account for the majority of them.

People Miles Driven by Future State

- **2025**: Shared driver-driven vehicles account for >10% of miles driven.
- **2022**: Use of personally-owned driver-driven vehicles begins to decline.
- **2040**: Shared mobility accounts for ~80% of miles driven.

**Legend**:
- Incremental Change
- A World of Carsharing
- The Driverless Revolution
- A New Age of Accessible Autonomy
Premium Mix will move away from conventional Motor Insurance and decline overall

A World of Carsharing emerges in the mid-2020's as a significant market segment due to emergence of new mobility models and urbanization.

The Driverless Revolution does not project to be a significant portion of the total market in the near future.

Accessible Autonomy will account for over 60% of passenger miles and 25% of premium need by 2040.

Innovator View:
As much as 80% of premium need in the future will be for new models of insurance.

New models of insurance

Traditional insurance

1. Incremental Change
2. A World of Carsharing
3. The Driverless Revolution
4. Accessible Autonomy

Source: Deloitte analysis

Note: This model was developed by Deloitte's actuarial practice and is based on assumptions around distribution of passenger miles, frequency, and severity of loss events in each Future State.
Imagine technology that saves over 1 million lives a year

AXA is a partner in the development of driverless car technology, helping to create a future with safer roads.

We’re restless for a reason

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1 million lives worldwide.
Thank you for Listening