Accelerating macro trends create new challenges

Regulated Active Safety growing with increased consumer awareness

Best-value electrification required to meet step function change in regulation

IoT driving connected car to new levels & creating new challenges

More Safe

More Green

More Connected

Connectivity
- Validating 5.9GHz standard for Dedicated Short-Range Radio Communication (DSRC)

Cybersecurity
- Auto Information Sharing and Analysis Center (ISAC) developing process to share & fix vulnerabilities

Big Data
- OEMs enabled to collect but not personalize information

... and opportunities
Complete system technology integrator

Macro trends are creating OEM challenges and consumer demand

Flexible system designs
Best-value innovations
Vehicle integration expertise
Agile software solutions

Solving customer problems

Intelligent Driving

Delphi responding to opportunities with end-to-end solutions
Creating a cost-effective, safer driving experience

Lower levels of automation deliver 80% of the safety benefit for 20% of the cost of fully autonomous driving.

Active Safety technology enabling automated driving is available today.

Levels of automated driving:
- None
- Assisted
- Monitored
- Conditional
- Full

Safety benefit:
- 0%
- 100%

Cost:
- 1x
- 10x

Source: NHTSA and Delphi cost models
US Automotive Crash Fatalities

Source: http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/overview-of-fatality-facts
Creating intelligent electrification with Delphi’s 48V solution

**48V electrification**

- Optimized electrical architecture is the foundation

**The Delphi solution**

- Builds on electrical solution competency
  - Includes electrical architecture, power electronics and management
- Designs a custom vehicle architecture
  - Maximizes the use of power, moving high load components to 48V & incorporating all desired comfort, convenience & functional features
- Incorporates Delphi’s suite of products

**Enabling intelligent electrification**

- Improved functionality, better performance, greater efficiency

  **Software, Software, Software…**

**Optimized electrification architecture**

- Fuel injection systems
- Engine control
- Valve Train & engine sensors
- DC/DC converter
- Connected Infotainment
- Active Safety

**Customized vehicle architectures for all applications**
Future solutions enabled by industry-leading architectures

2015

- Distributes decision-making across 100 microprocessors and 50 electronic control units
- Moves information at less than 65 Mbps using a language created in the 1980s

2020+

- Data speeds will increase 2200% to 1.5 Gbps using high speed Ethernet
- Centralized multi-domain controllers will make decisions 34,000 times faster than a human

High speed data enables tomorrow’s technology today
Consumer demand is driving connected car capability

World-class connectivity helps address Safe & Green challenges

The IoT is disrupting traditional automotive
Intelligent Driving – where it all comes together

- Side Radars
- Driver State Sensing
- Front View Cam
- Side View Cam
- Rear View Cam
- V2V/V2X
- Multi Domain Controller
- Front Radars
- Front Cameras
- Lidar
- Side Radars
- Side Radars
- Side View Cam
Building blocks of Intelligent Driving

<table>
<thead>
<tr>
<th>Optimized Vehicle Architecture</th>
<th>Connected Infotainment</th>
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<tr>
<td>Multi-Domain Controller</td>
<td>Integrated Cockpit Controller</td>
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<tr>
<td>High speed electrical architecture</td>
<td>BYOD</td>
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<td>Engine management system</td>
<td>Cloud computing</td>
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<tr>
<td>Manage complexity &amp; performance</td>
<td>Features &amp; functionality</td>
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<table>
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<tr>
<th>Active Safety Sensor Fusion</th>
<th>Massive amounts of Software</th>
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<tr>
<td>Suite of sensors</td>
<td>Coded by Delphi and partners</td>
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<tr>
<td>Redundancy &amp; reliability</td>
<td>Automated algorithms, learning as you drive</td>
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Enabling Automated Driving

Safe, Green & Connected converge for a world-class driving experience
Continuing to advance automated driving technology

V2cloud

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<th>V2P</th>
<th>V2I</th>
<th>V2V</th>
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<tbody>
<tr>
<td>Vehicle to pedestrian</td>
<td>Vehicle to infrastructure</td>
<td>Vehicle to vehicle</td>
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</tbody>
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We're crossing the street

Thanks for the warning, we'll prepare to stop to let you cross safely

I'm green for the next 5 seconds

I'm slowing down preparing to stop

We've got to go through the intersection in 10 seconds

Okay! We'll stop at the green light to let you go through safely

Leveraging Active Safety technology to prevent accidents
Safe, Green and Connected converge…

V2safe  V2green  V2connected

...for an intelligent driving experience
Thank you!