MOBILITY IS CHANGING...AND CHANGING QUICKLY

- eMOBILITY
- ACTIVE SAFETY AND AUTONOMOUS
- CONNECTED
- SHARED MOBILITY
KEY DRIVERS OF CHANGE IN PERSONAL TRANSPORTATION
CUSTOMER EXPECTATIONS

Bring their digital life into their vehicle  Bring their vehicle into their digital life
Mobile-cellular subscriptions approaching 7B, the number of people on the earth

3B use the Internet

Facebook has over 1.4 billion active users globally; 85% are mobile users

90% of the world’s data has been created in the last two years - 2.5 quintillion bytes of data created every day!
In 1950, two-thirds of the world’s population lived in rural areas... by 2030, almost two-thirds will live in cities.

There are 28 megacities today with populations exceeding 10 million.

Hypercities: Tokyo (38M), Delhi (25M), Shanghai (23M), Mexico City, Mumbai and Sao Paulo (21M).
In 2030, 37% of the world’s population will be under the age of 25 (over 3.1 billion)

Significantly lower percentage of those aged 16-30 have driver’s licenses compared to 30 years ago

A study of global youth revealed a common set of values: family, friends, money/status, education, travel, stability, and freedom
By 2030, countries with large populations ages 65+ include:

- Japan  38%
- Germany  33%
- Italy    32%
- Canada   27%
- UK       26%
- U.S.     24%

Aging isn’t what it used to be... “mature” citizens more active, healthier, and live longer than ever before.
MEGATRENDS FOR FUTURE POWERTRAINS

<table>
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<tr>
<th>EFFICIENCY IMPROVEMENTS</th>
<th>ELECTRIFICATION</th>
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- Turbo

- Charging port
EFFICIENCY IMPROVEMENT

- Downsized Turbo Engines
- Multi-speed Transmissions
- Stop/start Technology
- eAssist Light Electrification
PUTTING IT ALL TOGETHER

*Mobility development shaped by multiple factors...*

We want options that customers not only choose to purchase......

...but *LOVE* to own & use!!

eMotional Vehicles
All-new 2016 Chevrolet Volt

2015 Cadillac ELR

2015 Chevrolet Spark EV

Chevrolet Bolt Concept
Access vs. Ownership... Music, Movies, Car/Ride Sharing...
GM-LYFT STRATEGIC ALLIANCE

- Integrated network of on-demand autonomous vehicles in U.S.
- GM preferred provider at Lyft rental hubs
- Connectivity through OnStar for richer ride-sharing experience
- Joint personalized mobility services and experiences
GM's new car-sharing service

Provide customers access to highly personalized, on-demand services.

Initially launching at U-Michigan, Ann Arbor

Expanding to Chicago, Boston, and other cities this year

With Maven, Lyft alliance, CarUnity, and OnStar, GM is uniquely positioned in car-sharing space
THE MERGER OF VEHICLE INTELLIGENCE AND CONNECTIVITY...
**GM SPEEDS UP WITH ONSTAR 4G LTE**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tbody>
<tr>
<td>Built-in Wi-Fi hotspot</td>
<td>Connect multiple mobile devices at once</td>
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<tr>
<td>Faster, more reliable connection</td>
<td>Connect to vehicle remotely</td>
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<tr>
<td>On more than 30 GM vehicle models</td>
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**NEW FOR 2016: PROGNOSTICS; ANDROID AUTO/APPLE CAR PLAY**
V2X TO DEBUT ON 2017 CADILLAC CTS

Technology allows cars to communicate with each other (V2V), the infrastructure (V2I), and pedestrians.
**HOW IT WORKS**

**LANE FOLLOWING:** Using a combination of GPS and optical cameras, Super Cruise watches the road ahead and adjusts steering to keep the car in the middle of its lane.

**COLLISION AVOIDANCE:** A long-distance radar system detects vehicles more than 300 ft. ahead. The vehicle will automatically accelerate or apply the brakes to maintain a preset following distance.
ROADMAP TO AUTOMATED DRIVING

**Future**
- Autonomous Driving (Chauffeured Driving)
- Complex On-Demand Automation (Transferred Control)
- Emergency Intervention (Limited Control)
- Limited On-Demand Automation (Monitored Control)
- Today’s Driver Assist Package

**Today**
- Driver Info & Alerts (No Control)
- "SuperCruise" Concept

**TECHNOLOGY ENABLERS:**
- Perception and Algorithms
- Integrated Sensing with Maps, GPS, V2X
- Driver State Knowledge
INTELLIGENT TRANSPORTATION IN THE NEXT DECADE (2025)

- Automated highway driving
- Partial/full urban driving
- Extensive V2V (and V2P) capability
- Acceleration of intelligent infrastructure
- High-volume/high-speed integrated connectivity
- Efficiency/electrification
- Shared mobility
...AND DOING ALL OF THIS SUCCESSFULLY IN VARIABLE MARKET CONDITIONS

Yahoo! Autos February 20, 2015

LA Times, February 14, 2015.

Accord Cruises to No. 1 in Sales.

...The rankings reflect the car-centric nature of the California auto market, Libby said.

“The difference in vehicle mix varies so much between states it is almost like they are different countries,” Libby said. “At the other end of the Spectrum is Texas which skews toward big pickups and then domestic products.”

...“California just doesn’t have the ‘buy American’ culture of the Midwest and other places where the American car Companies manufacturer their vehicles,” [Jake] Fisher said. The environment also has been a bigger issues in California car sales...”

Data: IHS Automotive/Graphic: Yahoo Autos.

THANK YOU!