

ALEX KEROS

Manager, Vehicle and Advanced Technology Policy



GENERAL MOTORS



MOBILITY IS CHANGING...AND CHANGING QUICKLY



eMOBILITY

ACTIVE SAFETY AND AUTONOMOUS



CONNECTED

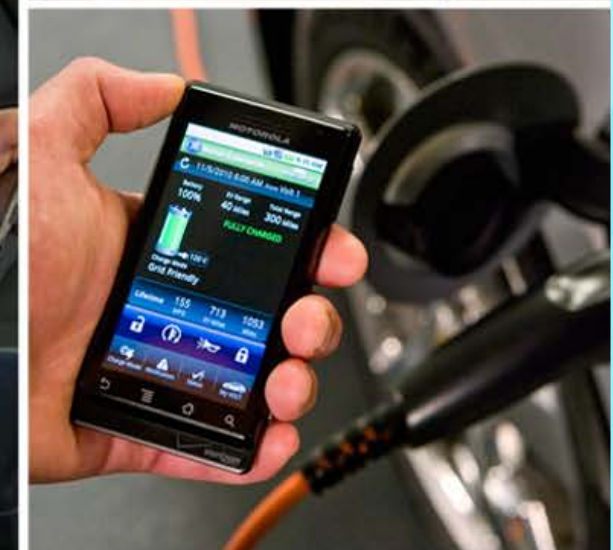
SHARED MOBILITY



KEY DRIVERS OF CHANGE IN PERSONAL TRANSPORTATION



CUSTOMER EXPECTATIONS



Bring their digital life into their vehicle

Bring their vehicle into their digital life

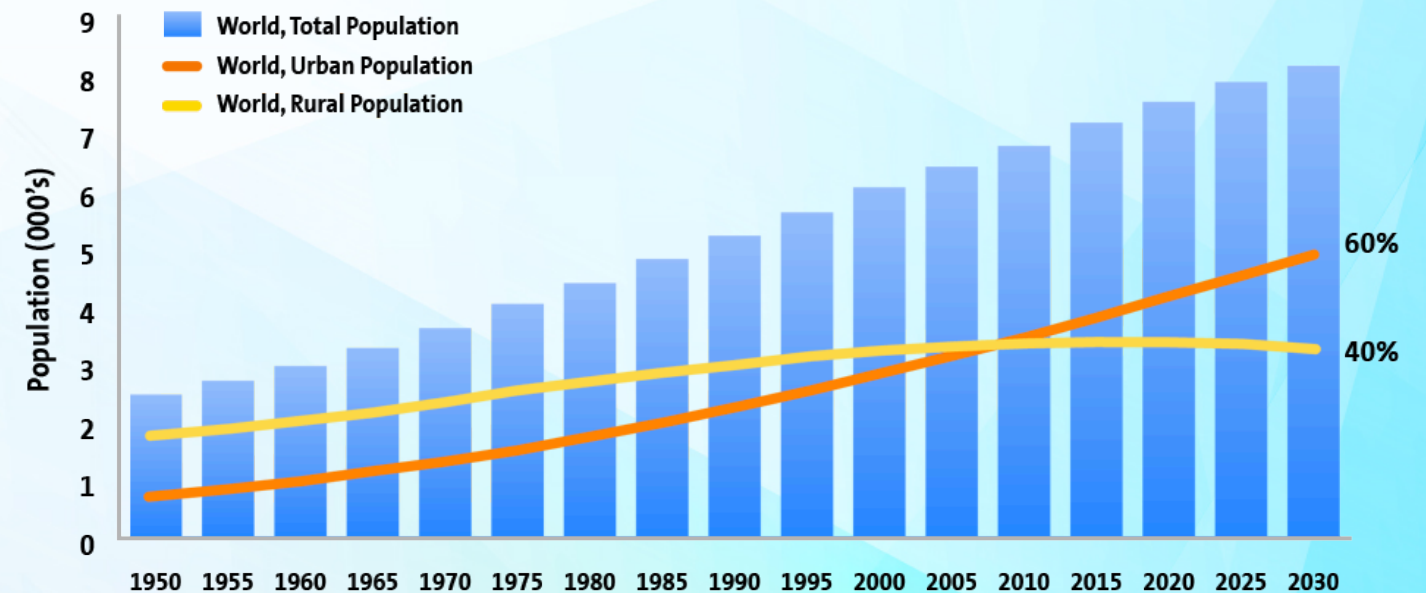
CONNECTED LIVING



- ▶ 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!

URBAN MOBILITY

- ▶ 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)

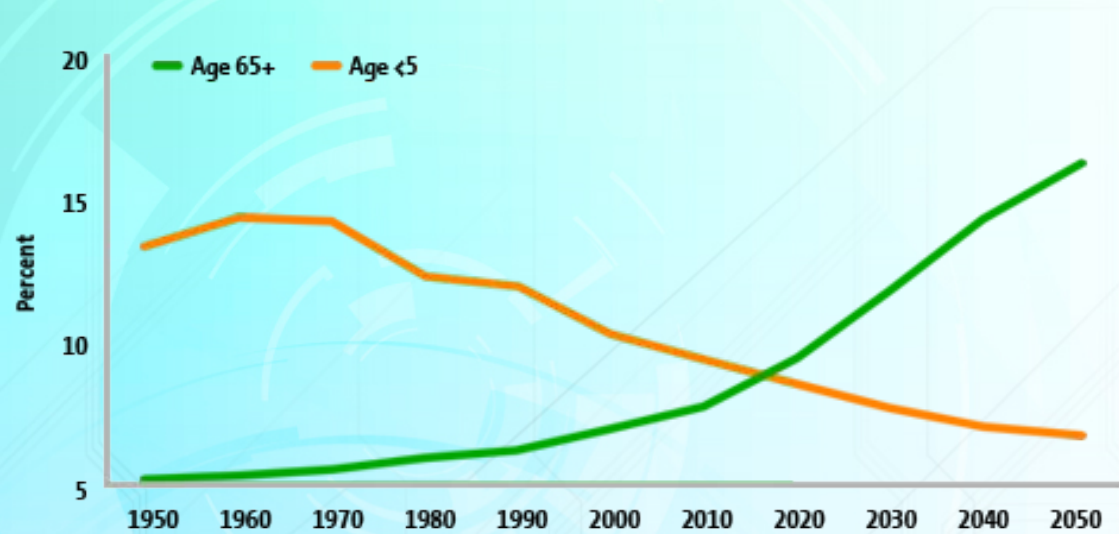


GLOBAL YOUTH



- ▶ 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

GLOBAL AGING & LIVING LONGER



► 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

EFFICIENCY IMPROVEMENTS



ELECTRIFICATION



EFFICIENCY IMPROVEMENT



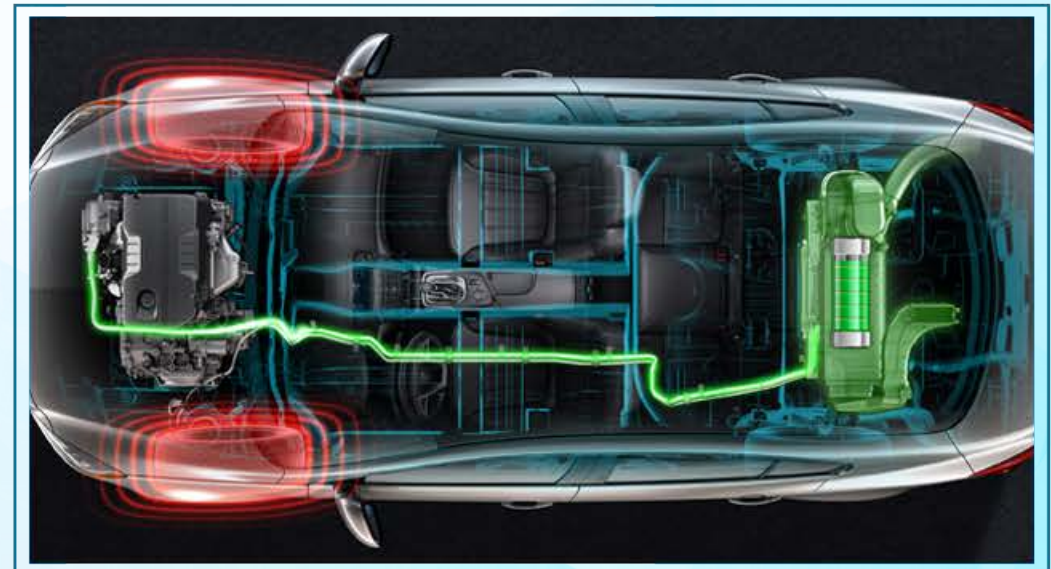
Downsized Turbo Engines



Multi-speed Transmissions



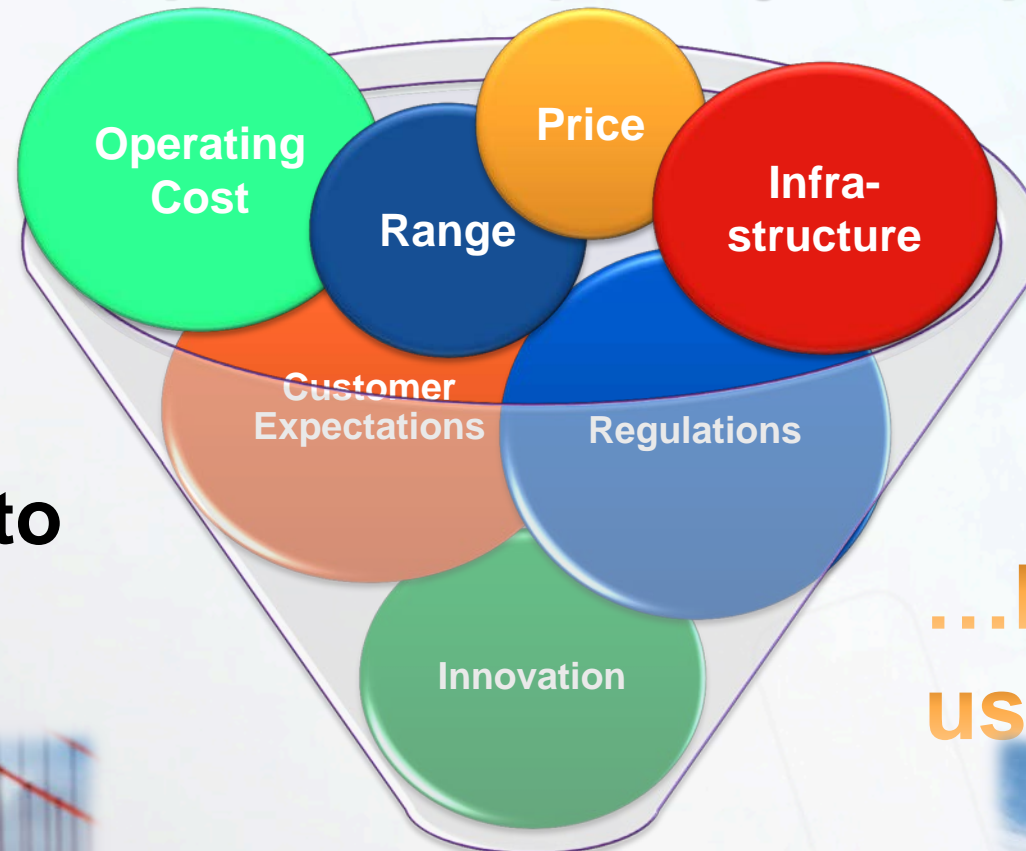
Stop/start Technology



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 Chevrolet Spark EV



2015 Cadillac ELR



Chevrolet Bolt Concept



SHARING ECONOMY



Albums → *CDs* → *iTunes* → *Streaming*

Access vs. Ownership... Music, Movies, Car/Ride Sharing...

GM-LYFT STRATEGIC ALLIAN



- ▶ 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



MAVEN CAR-SHARING SERVICE

- ▶ 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



MAVEN



THE MERGER OF VEHICLE INTELLIGENCE AND CONNECTIVITY...



GM SPEEDS UP WITH ONSTAR 4G LTE



Built-in Wi-Fi hotspot



Connect multiple mobile devices at once



Faster, more reliable connection



Connect to vehicle remotely



On more than 30 GM vehicle models

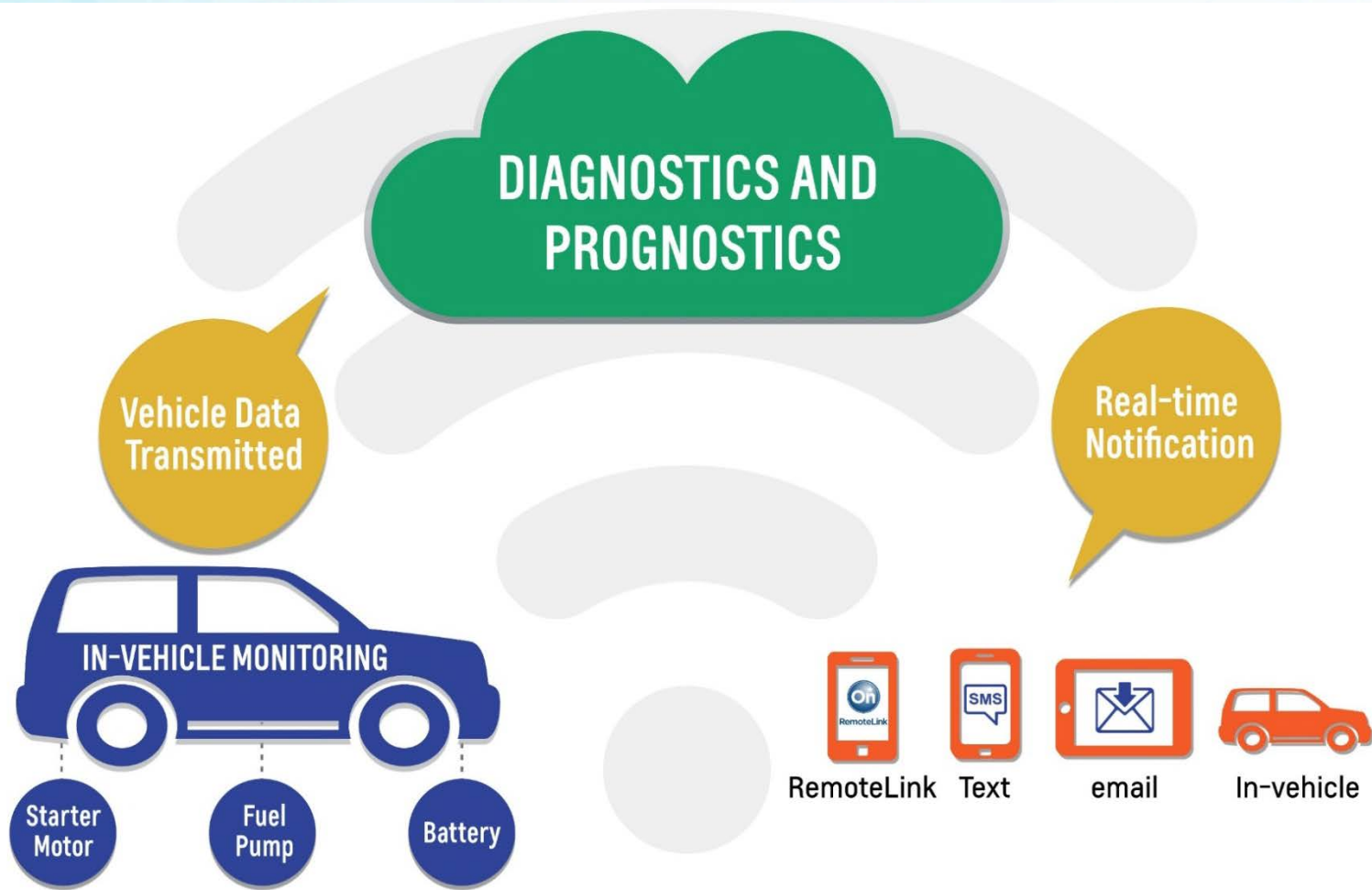


**NEW FOR 2016: PROGNOSTICS;
ANDROID AUTO/APPLE CAR PL**

The Next Evolution:
Prognostics



CHEVROLET PROGNOSTICS: PREDICTING WHEN CERTAIN COMPONENTS NEED ATTENTION – INTRODUCED THIS YEAR

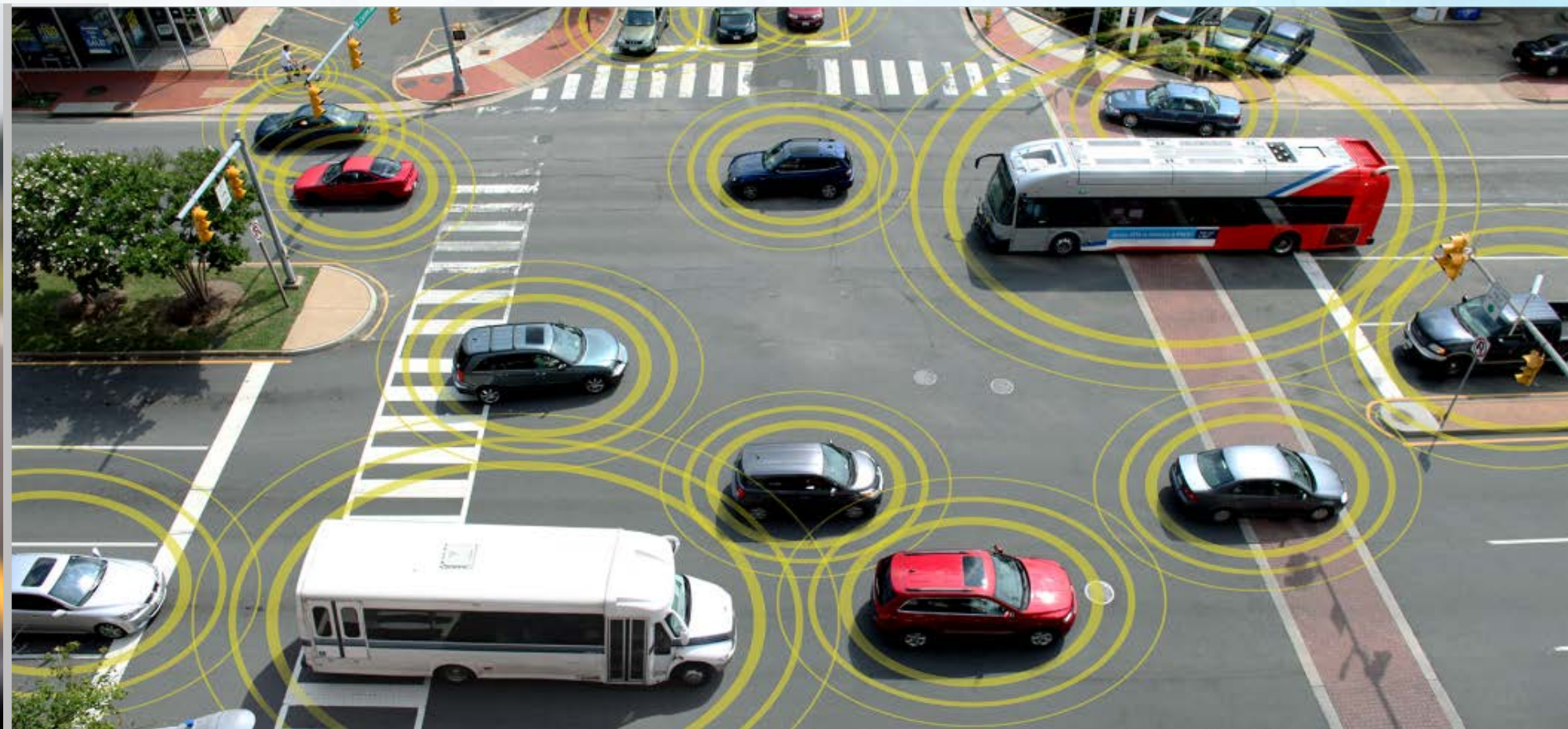


HOW IT WORKS WITH YOUR BATTERY



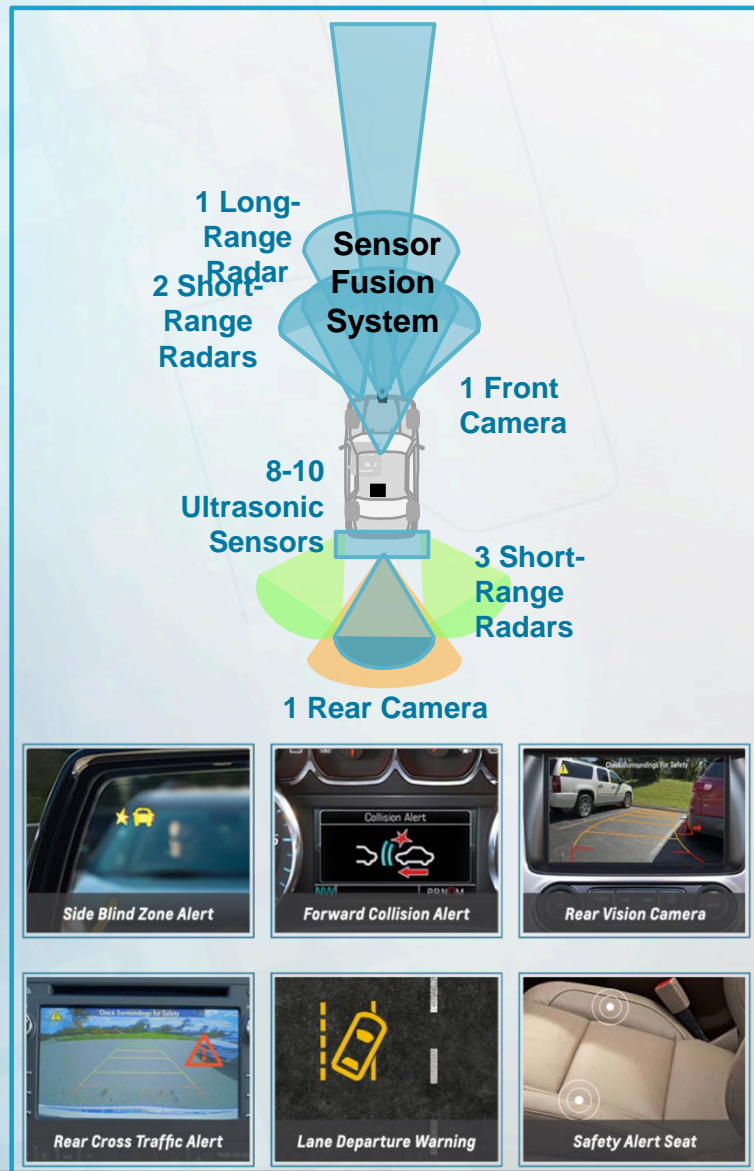
V2X TO DEBUT ON 2017 CADILLAC CTS

Technology allows cars to communicate with each other (V2V), the infrastructure (V2I), and pedestrians

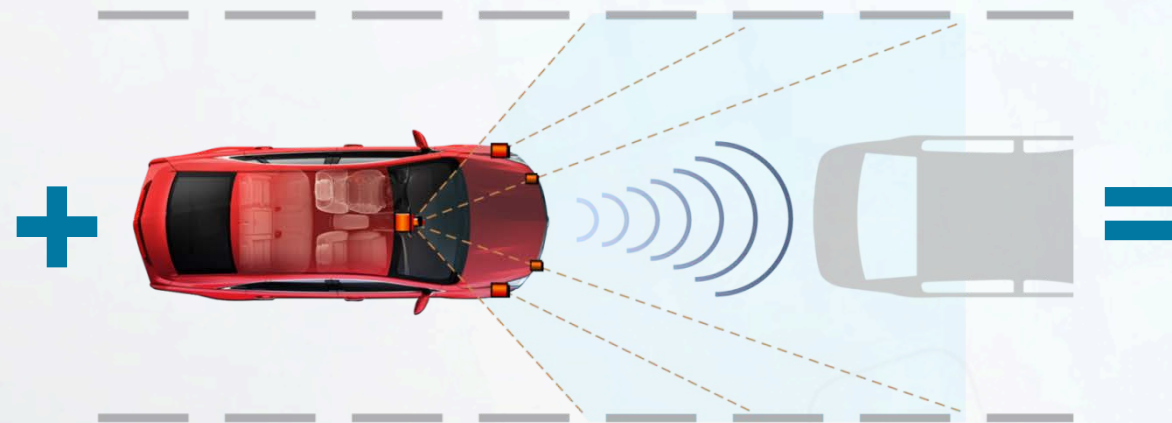


CADILLAC TO INTRODUCE SUPER CRUISE ON ALL-NEW CT6

ACTIVE SAFETY



AUTOMATED STEERING & LANE FOLLOWING



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.

CADILLAC SUPER CRUISE



CARS THAT DON'T CRASH

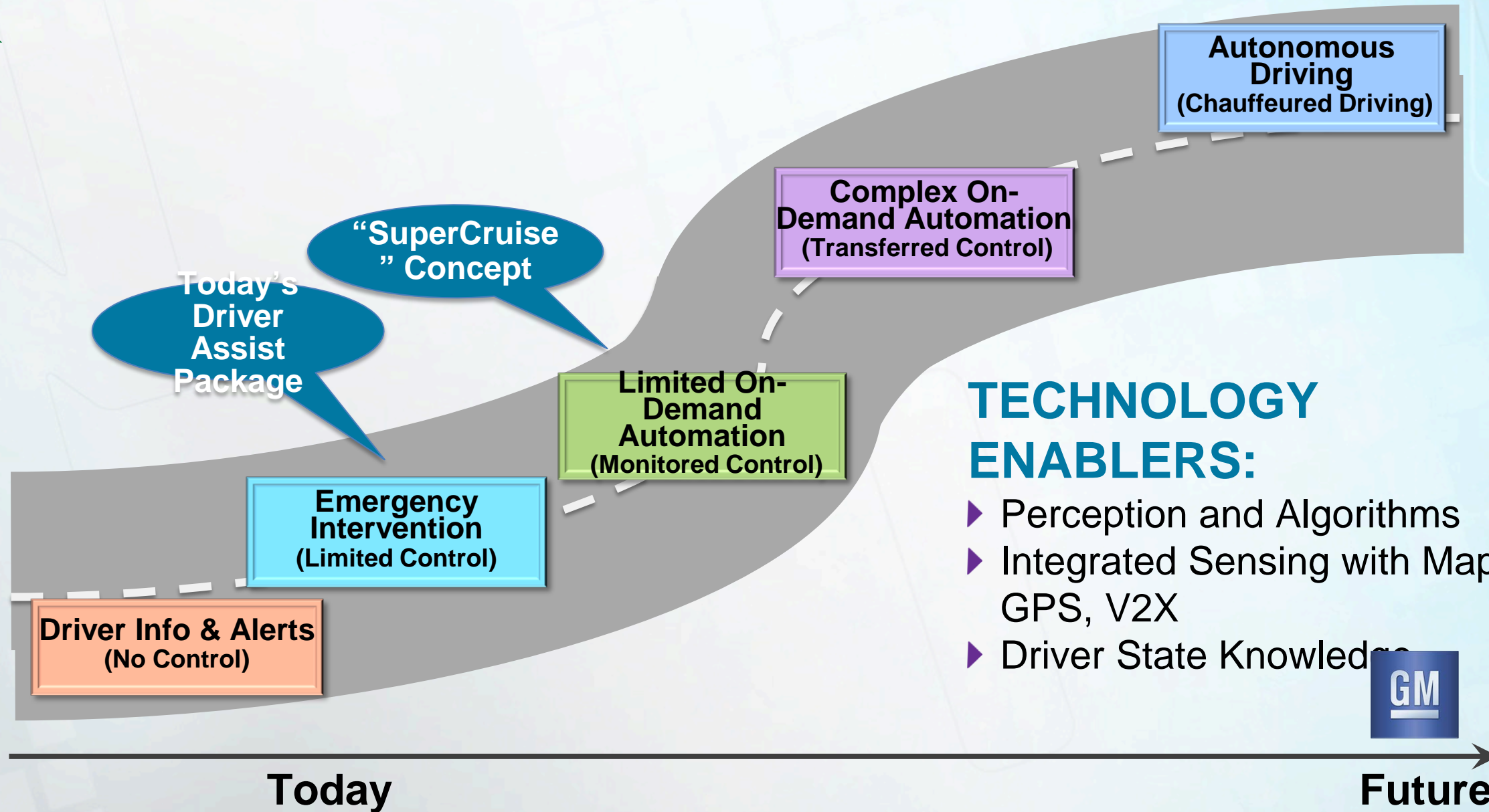


VEHICLES THAT DRIVE THEMSELVES



ROADMAP TO AUTOMATED DRIVING

Increasing Capability



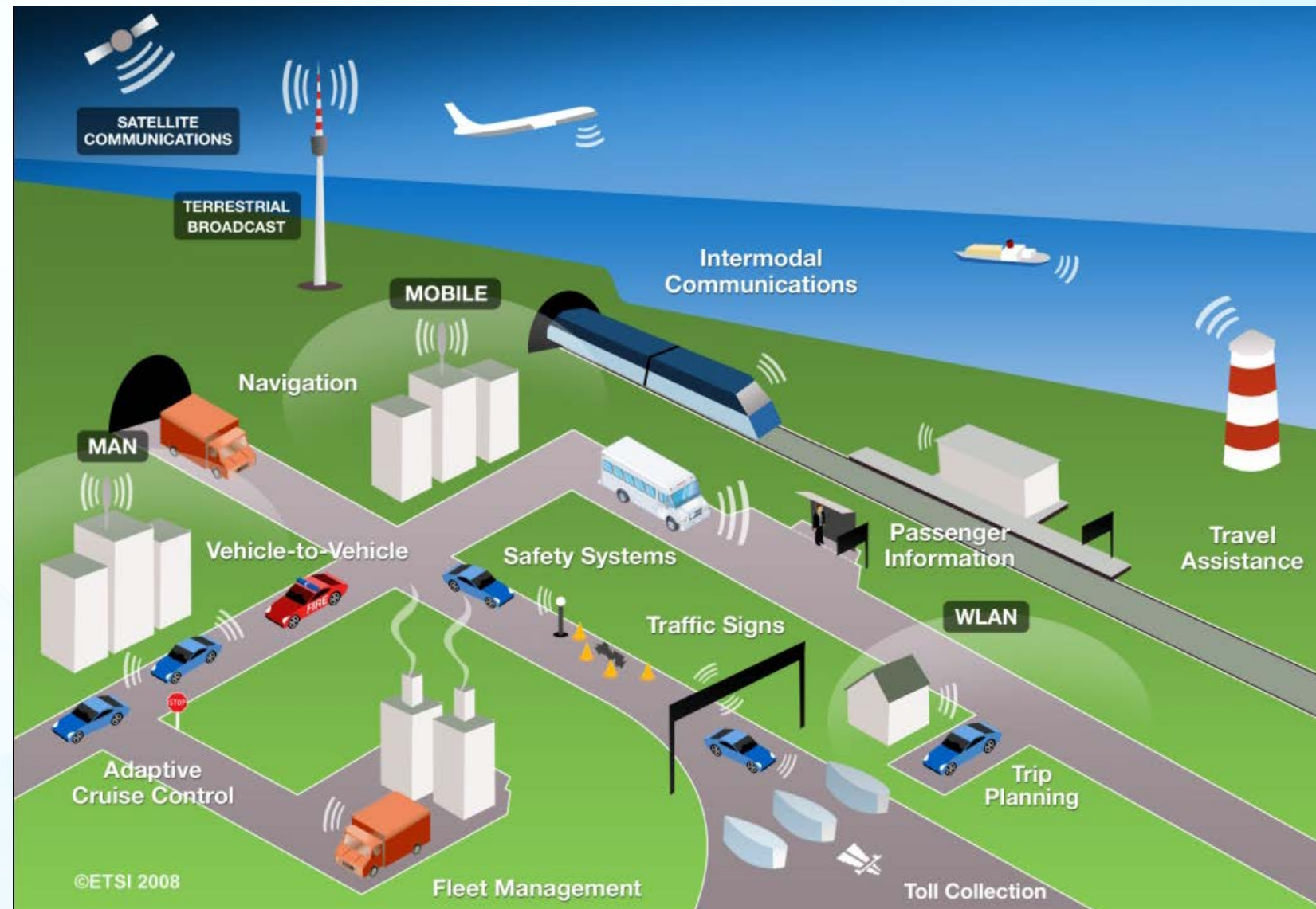
TECHNOLOGY ENABLERS:

- ▶ Perception and Algorithms
- ▶ Integrated Sensing with Maps, GPS, V2X
- ▶ Driver State Knowledge



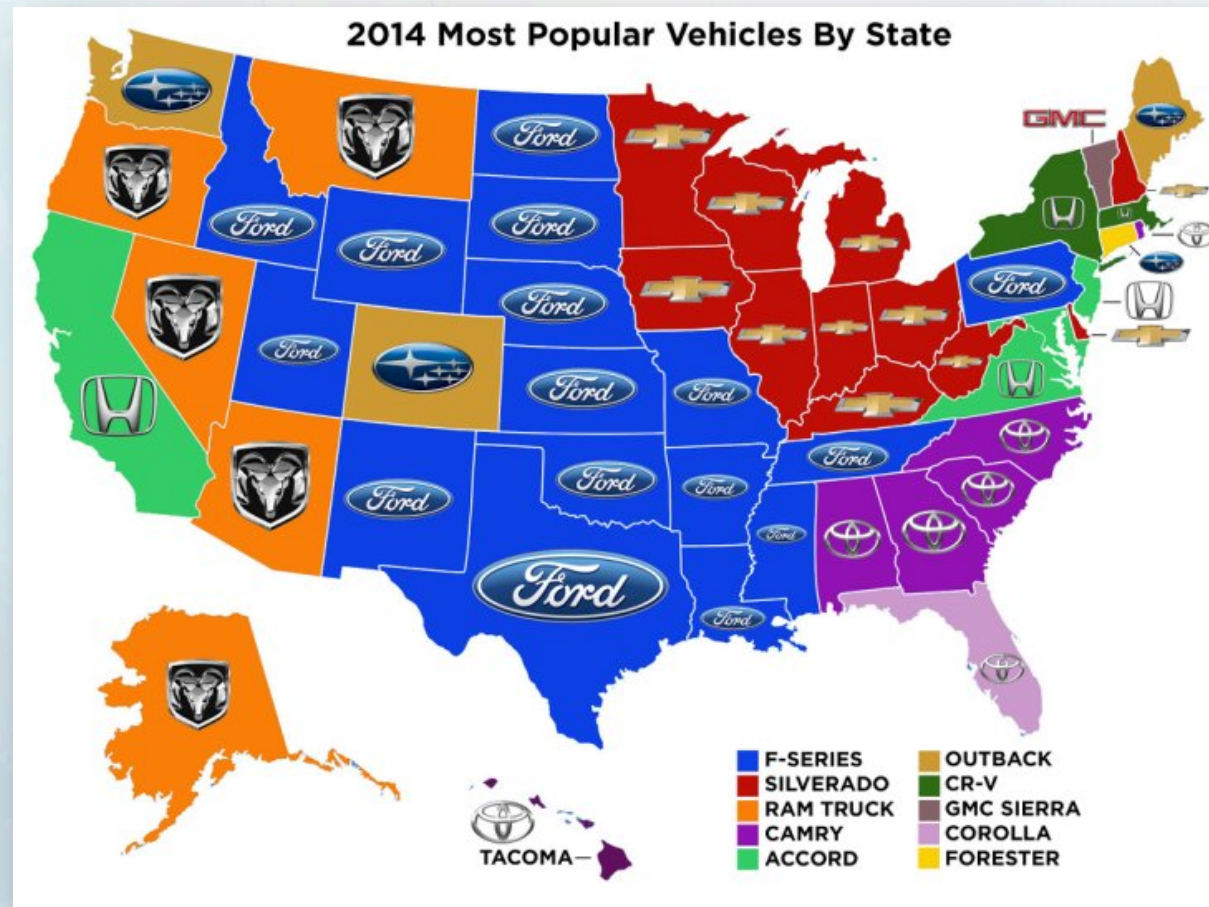
INTELLIGENT TRANSPORTATION IN THE NEXT DECADE (2025)

- ▶ 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



Data: IHS Automotive/Graphic: Yahoo Autos.

<https://autos.yahoo.com/blogs/motoramic/the-most-popular-new-vehicle-in-each-state--not-what-you-might-expect-181118005.html>

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...”



THANK YOU!

