June 26, 2018

# **ACTIVE SAFETY**

### **Teach In**

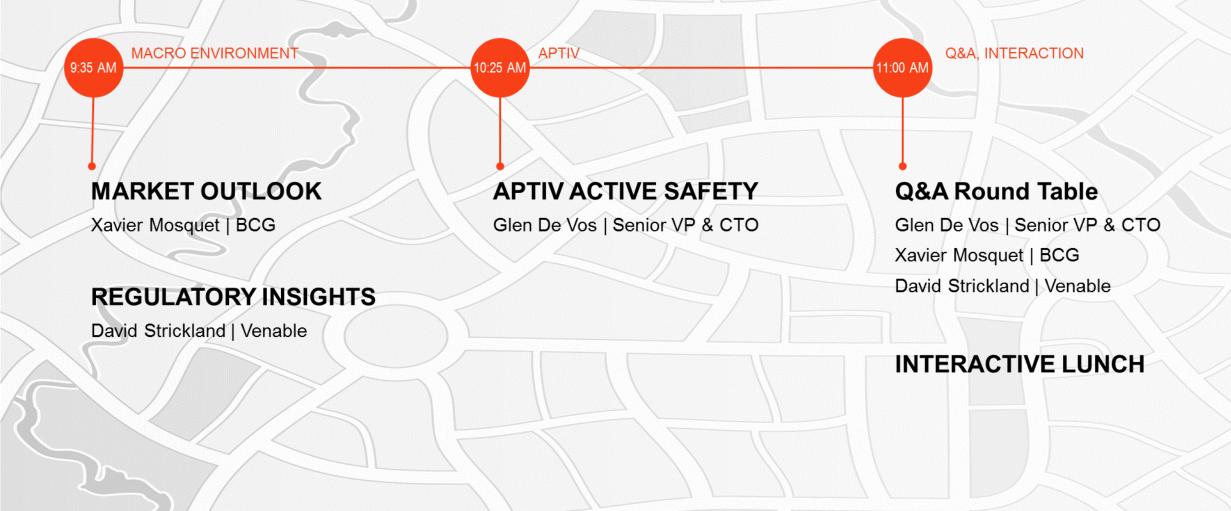
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# Elena Rosman

VICE PRESIDENT, INVESTOR RELATIONS, APTIV



### **Active Safety Teach In Agenda**



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# **Forward Looking Statements**

This presentation, as well as other statements made by Aptiv PLC (the "Company"), contain forward-looking statements that reflect, when made, the Company's current views with respect to current events, certain investments and acquisitions and financial performance. Such forward-looking statements are subject to many risks, uncertainties and factors relating to the Company's operations and business environment, which may cause the actual results of the Company to be materially different from any future results. All statements that address future operating, financial or business performance or the Company's strategies or expectations are forward-looking statements. Factors that could cause actual results to differ materially from these forward-looking statements are discussed under the captions "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the Company's filings with the Securities and Exchange Commission. New risks and uncertainties arise from time to time, and it is impossible for us to predict these events or how they may affect the Company. It should be remembered that the price of the ordinary shares and any income from them can go down as well as up. The Company disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events and/or otherwise, except as may be required by law.



# Today's Discussion

UNIQUELY POSITIONED WITH PORTFOLIO OF RELEVANT ACTIVE SAFETY TECHNOLOGIES UNDERPINNING INDUSTRY LEADING GROWTH OUTLOOK

### MACRO

WHERE AND HOW WILL THE MARKET EVOLVE

### APTIV.

BUSINESS OUTLOOK AND COMPETITIVE DYNAMICS

#### SPENT YEARS UNDERSTANDING HOW THE MARKET WAS DEVELOPING

PORTFOLIO STRATEGY KEY TO APTIV'S BOOKINGS AND MARKET SHARE GAINS

### REGULATORY

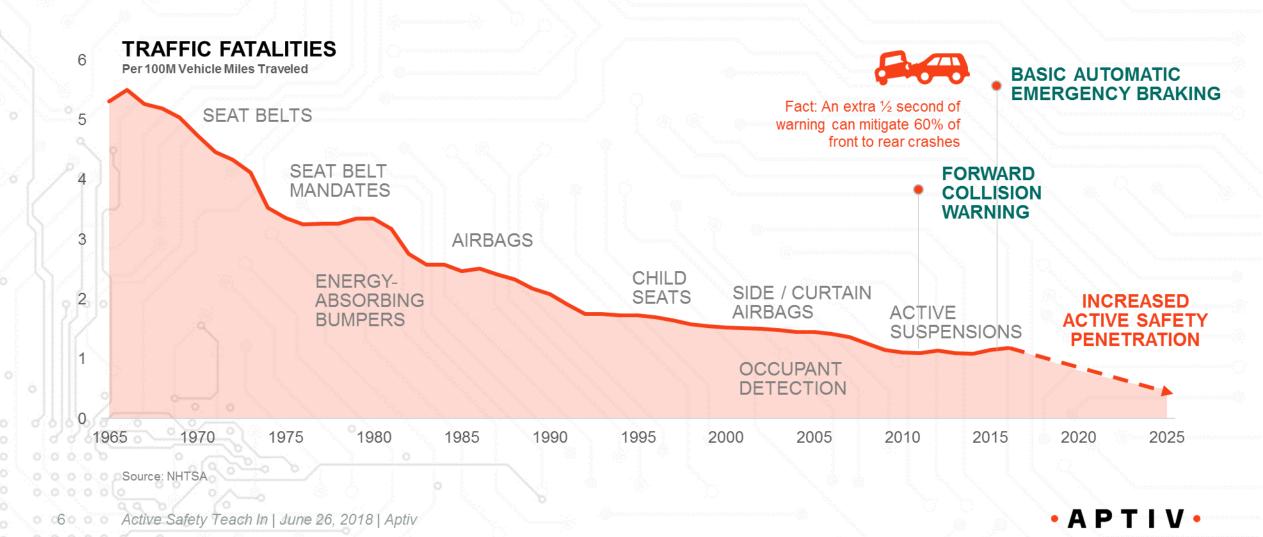
IMPACT OF FEDERAL AND MUNICIPAL POLICIES

REGULATION DRIVING ADOPTION; AT THE FOREFRONT OF DEMOCRATIZATION

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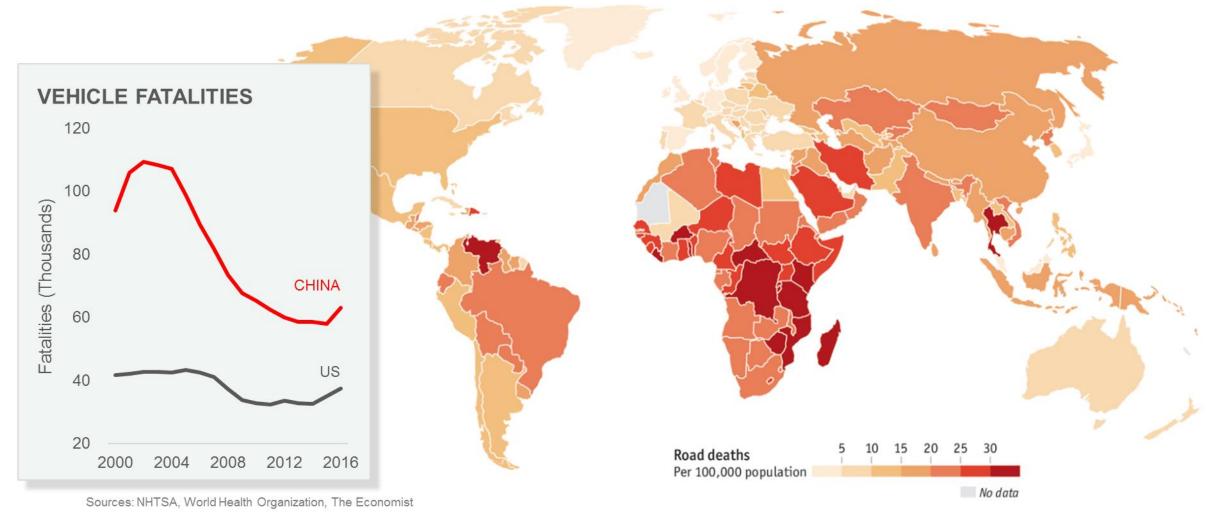
# **Passive Safety Reaching Its Limits**

AUTOMOTIVE INDUSTRY SUCCESSFUL IN CONSTANTLY REDUCING VEHICLE FATALITIES, BUT PASSIVE SAFETY BENEFITS REACHING ITS LIMIT; ACTIVE SAFETY A CRITICAL NEXT STEP IN REDUCING VEHICLE FATALITIES



# **Less Mature Markets Even More Hazardous**

SIGNIFICANT OPPORTUNITIES FOR PROGRESS REMAIN



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# **Today's Presenters**

BRINGING TOGETHER INDUSTRY THOUGHT LEADERS WITH APTIV COMMERCIALIZATION FOCUS

# VENABLE LLP



#### **David Strickland**

Partner in Venable's Regulatory Group, and Former Administrator of the National Highway Traffic Safety Administration (NHTSA)



The Boston Consulting Group



Xavier Mosquet Senior Partner and Managing Director The Boston Consulting Group

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Glen W. De Vos Senior Vice President, Chief Technology Officer and President, Mobility and Services Group



# **Executive Summary**

#### **ACTIVE SAFETY PENETRATION ACCELERATING**

- Increasing consumer awareness and willingness to pay present upside for the active safety market
- OEMs making Active Safety core to their strategy and driving penetration of more advanced features

#### **REGULATORS AND INFORMATION SERVICES SUPPORT CONTINUED DEMOCRATIZATION**

- Regulators recognize active safety saves lives; continued empirical evidence supports mandates and recommendations
- China moving quickly to "catch up"; expected to follow EU standards

#### APTIV WELL POSITIONED TO CAPITALIZE ON CONTINUED TRENDS: 2018 REVENUE ~\$1B

- Relevant portfolio of advanced solutions; winning in both premium and high volume segments
- Demonstrated Smart Vehicle Architecture capabilities ensure scalability and cost optimization
- Automated driving on the spectrum of Active Safety; leveraging SW investments and partnerships for L0-L3 applications



# **Xavier Mosquet**

SENIOR PARTNER AND MANAGING DIRECTOR, THE BOSTON CONSULTING GROUP

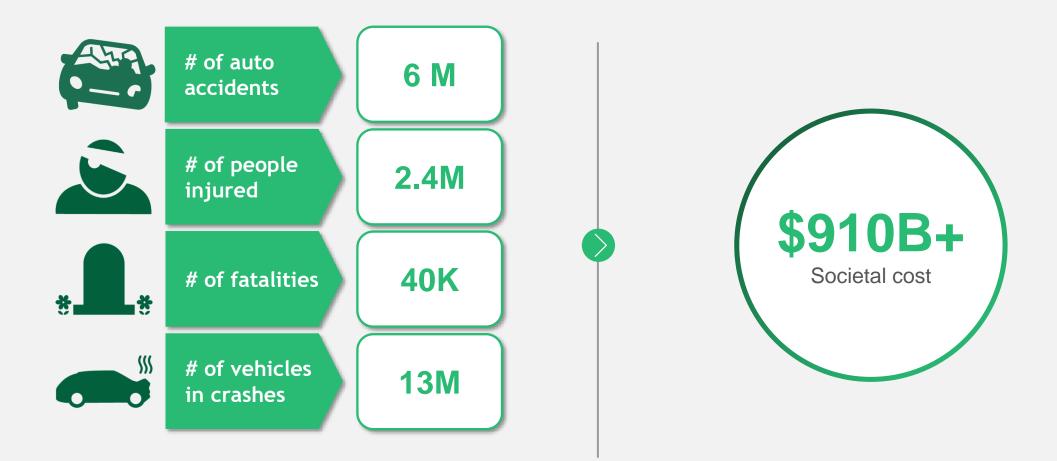


# BCG

THE BOSTON CONSULTING GROUP

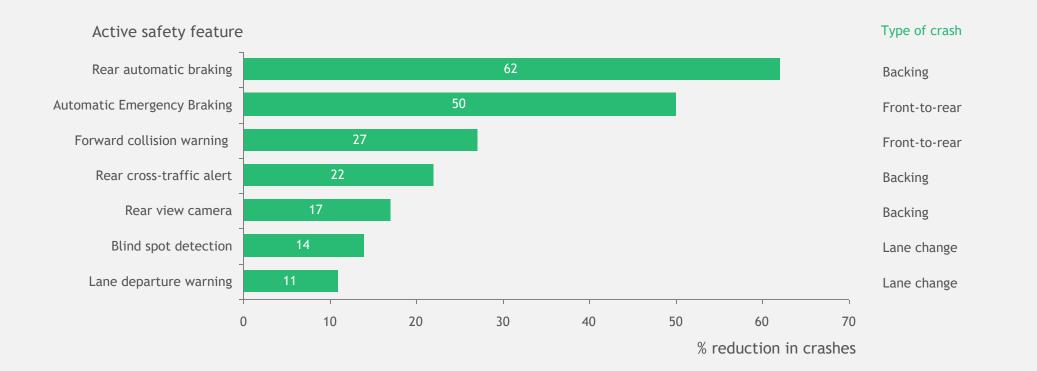
# Active Safety Evolution

# The number and severity of auto accidents in the U.S. are troubling



### Active safety can reduce number of crashes

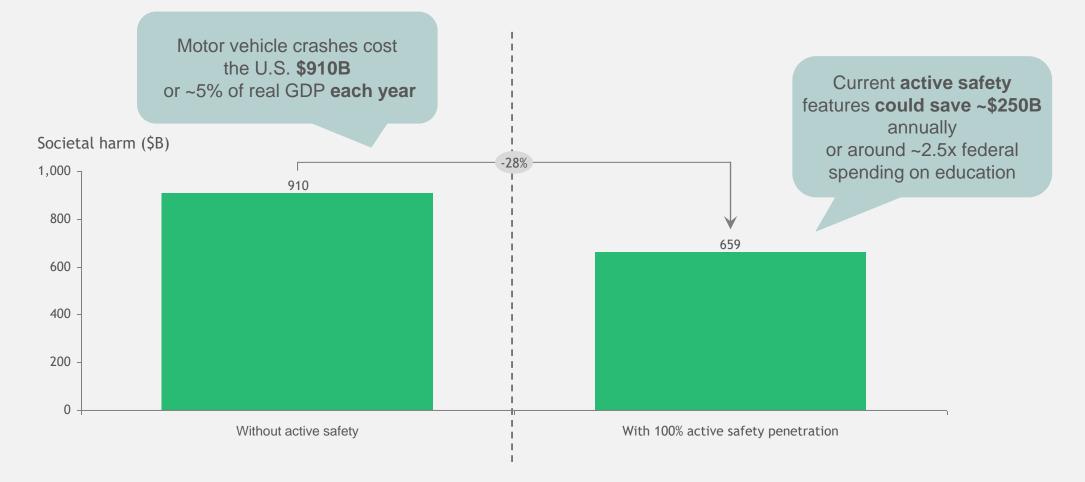
Active safety features can reduce backing and front-to-rear collisions by up to 62% and 50%, respectively<sup>1</sup>



1. US backing crash study conducted 2012 – 2015, front-to-rear collisions study conducted 2010 – 2014 and lane change study conducted 2009 - 2015 Source: NHTSA, IIHS

## Motor vehicle crashes cost U.S. society \$910B per year

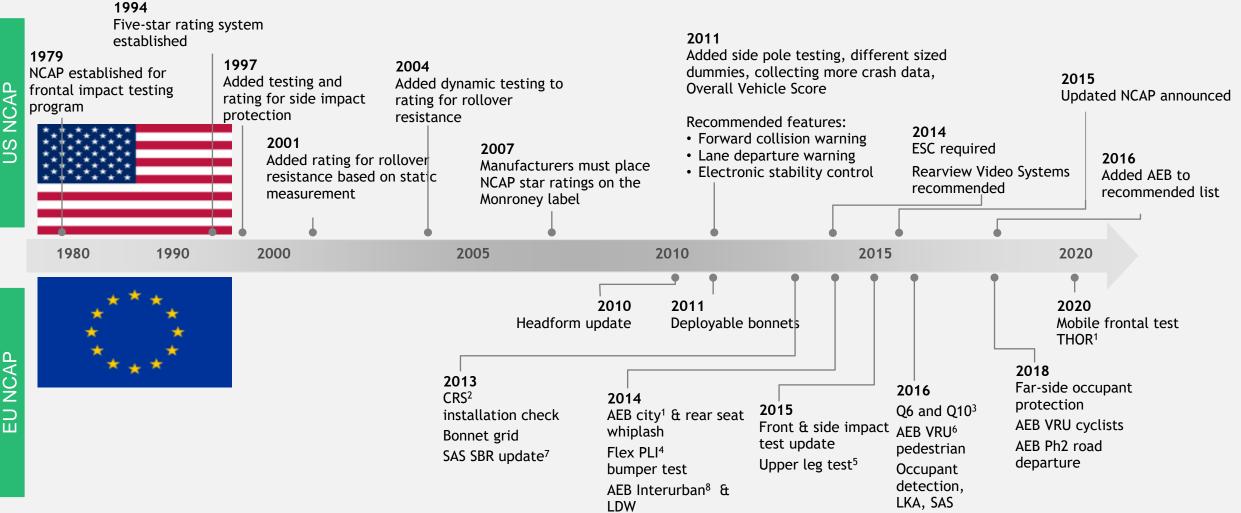
Current active safety features have the potential to reduce societal harm by 28%





### Four factors to unlock potential societal benefits of active safety

## US and EU regulators pushing NCAP at rapid pace



1. Automated Emergency Braking at low speeds. 2. Child restraint systems. 3. Child dummies with advanced biomechanical and anthropometric characteristics. 4. Pedestrian Legform Impactor. 5. Pedestrian test to assess impact on upper leg and pelvis at 40km/h. 6 Vulnerable Road User or pedestrians with disabilities or reduced mobility and orientation. 7. SAS = Speed Assistance Systems (i.e. Intelligent Speed Assist), SBR = Seat Belt Reminder. 8. Automated Emergency Braking at mid/high speeds. Source: Expert interviews, Euro NCAP website, public search

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# US regulators committed to ensuring active safety penetration



Twenty automakers<sup>1</sup> pledged to voluntarily equip virtually all new passenger vehicles by September 1, 2022



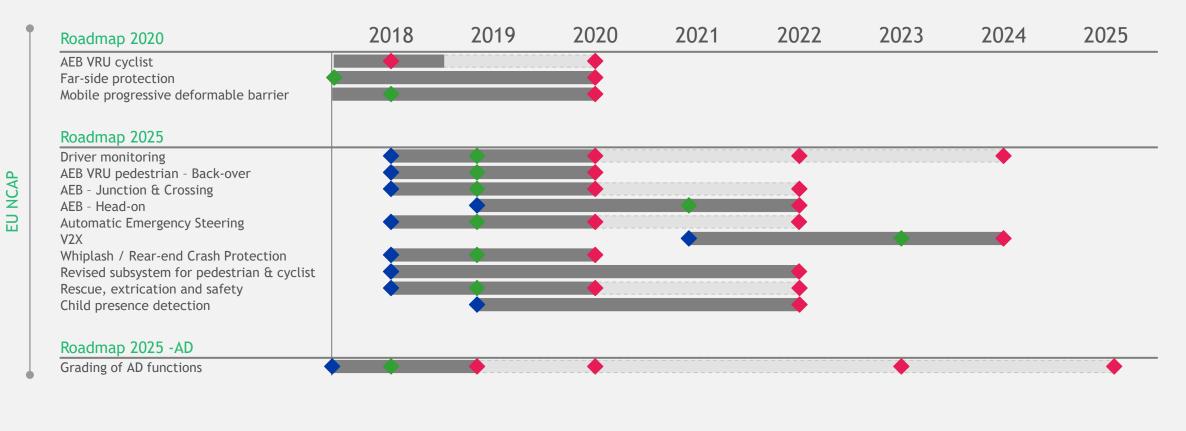
Announced NCAP update to include crash avoidance and included AEB in list of recommended technologies

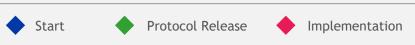


Launched studies with industry and academia to study effects

1.Participating OEMs include Audi, BMW, Fiat Chrysler, Ford, General Motors, Honda, Hyundai, Jaguar Land Rover, Kia, Maserati, Mazda, Mercedes-Benz, Mitsubishi Motors, Nissan, Porsche, Subaru, Tesla Motors, Toyota, Volkswagen and Volvo. These companies represent more than 99 percent of the U.S. automobile market.

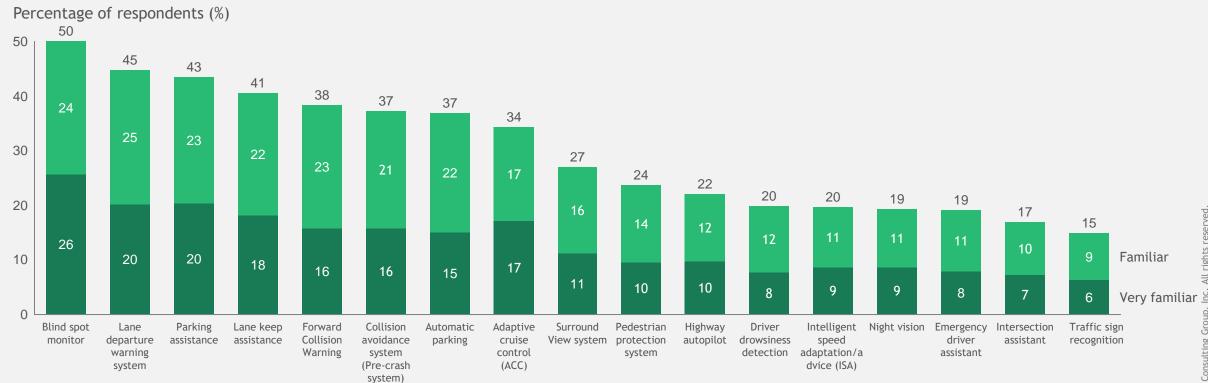
# EU regulators committed to continue pushing active safety as well, China to match EU NCAP standards







## High level of awareness among consumers



Q: from the list of the safety or convenience car technologies below, how familiar are you with each one?

#### SLIDE REDACTED

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# Consumer acceptance and willingness to pay for active safety



#### Recap: Levels of driving automation

Level	Name	Steering and acceleration/ deceleration	Monitoring driving environment	Fallback performance of dynamic driving task	System capability (driving modes)				
	Human driver monitor the driving environment								
0	No Automation	Human driver	Human driver	Human driver	n/a				
1	Driver Assistance	Human driver and system	Human driver	Human driver	Some driving modes				
2	Partial Automation	System	Human driver	Human driver	Some driving modes				
	Automated driving system ("system") monitors the driving environment								
3	Conditional Automation	System	System	Human driver	Some driving modes				
4	High Automation	System	System	System	Some driving modes				
5	Full Automation	System	System	System	All driving modes				

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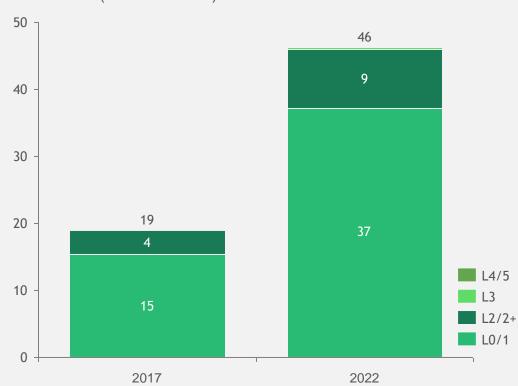
# Market evolving as a continuum rather than in discreet SAE levels

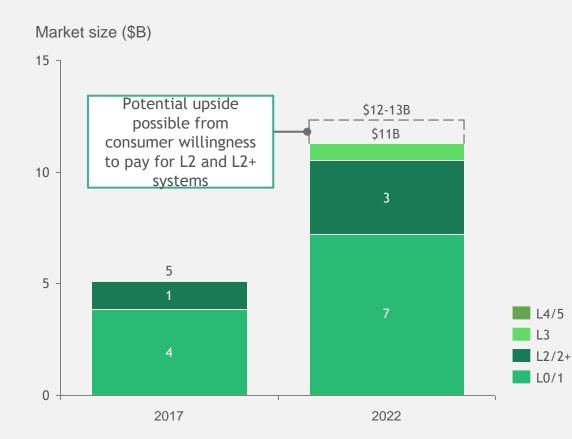
	Level 0	Level 1	Level 2	Level 2+	Level 3	Level 4	Level 5
Use cases	Systems to aid or warn driver, including emergency intervention e.g. backup camera, blind spot warning, collision warning	Adaptive Cruise Control (ACC)	Lane keep assist + ACC	Highway automated driving without lane change or driver assisted lane change Traffic jam assist (car in front)	Highway automated driving, Lane change driver led/assisted or automatic	Most driving scenarios automated, including lane change	All driving scenarios automated, no steering wheel or pedals
Driver in loop	Yes	Yes	Yes	Yes (lower engagement)	No	No	No
Safe stop	No	No	Likely (slow down in lane)	Likely	Yes	Yes	Yes
Driver reengagement	No	No	Yes	Yes	Yes	No	No
Redundancy	No	No	No	No	No	Yes	Yes

## Each level of automation paves way for the next

	Level 0/1	Level 2	Level 2+	Level 3	Level 4/5
Cameras	1-2	1-2	4 - 8	5 - 6	5 - 14
Radar	0 - 5	3-5	1 - 5	3 - 5	8 - 21
Lidar	0	0	0	1	1 - 5
Ultrasonic	4 - 6	6-12	4 - 12	8 - 12	0 - 12
AD module	0	1	1	1 - 2	1 - 3
Driver monitoring	No	No	Camera/ touch	Camera/ touch	Camera/touch
Redundant steering/braking	No	No	No	Yes	Yes

# Regulatory pace, consumer awareness/willingness and OEM commitment will continue market growth





Market size (million vehicles)

Source: BCG analysis

## Key implications for the market

Societal value of active safety is significant, 30+% of annual societal cost of accidents can be avoided short term, 90% as a target

OEMs will use active safety as point of differentiation

CPV and penetration are expected to continue growing, with the core market focused on L0-L2+ for the near future

Active safety will provide stepping stones for full autonomy (L4)





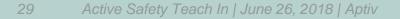
# BCG

THE BOSTON CONSULTING GROUP

bcg.com

# **David Strickland**

PARTNER, VENABLE





## **Regulatory Roadmap**

#### **REGULATORS RECOGNIZE ACTIVE SAFETY SAVES LIVES**

- As early active safety technology has become more common, regulators have looked at the data and recognized that advanced safety features have reduced crashes and fatalities
- As more advanced solutions are deployed, regulators will continue to examine the data, and we expect will be sensitive to the societal benefits both human and economic this technology provides

#### TAKING PRAGMATIC APPROACH TO FUTURE REGULATION

- We expect that the regulator will continue to encourage manufacturers that have deployed these systems to democratize them, using NCAP and/or agreements akin to the AEB agreement
- In the U.S., the promulgation of regulations mandating ADAS systems will be based on data, which we expect to drive regulations across major markets; will start with US and EU, and China is expected to follow EU NCAP

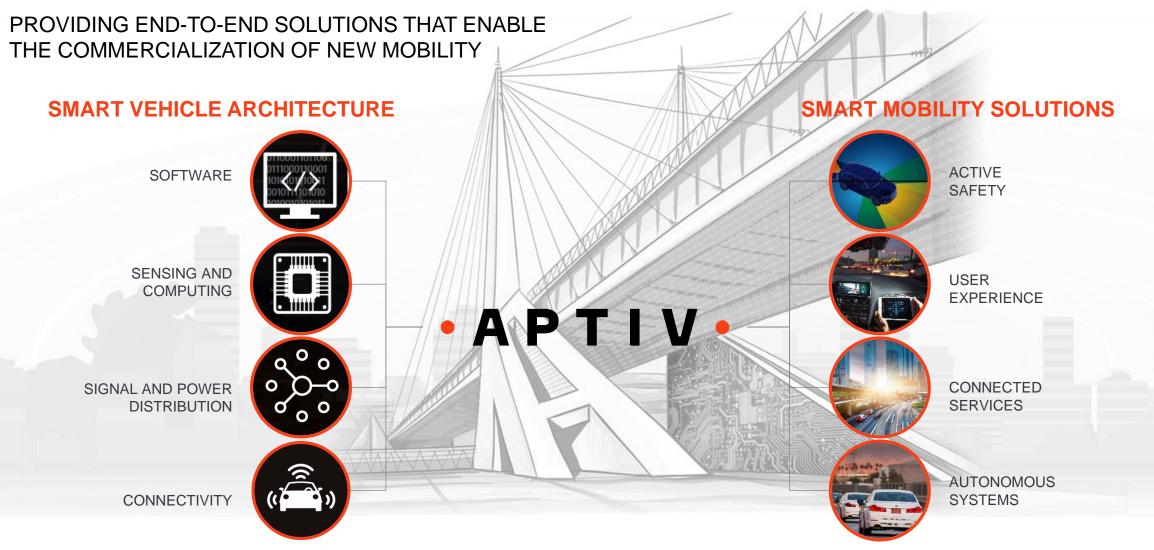


# **Glen De Vos**

SENIOR VICE PRESIDENT, CHIEF TECHNOLOGY OFFICER AND PRESIDENT, MOBILITY AND SERVICES GROUP, APTIV



# **Addressing Mobility's Toughest Challenges**



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# Leveraging Full Aptiv Capabilities

UNIQUELY POSITIONED WITH BOTH THE BRAIN AND NERVOUS SYSTEM OF THE VEHICLE

MULTIPLE APTIV PRODUCT LINES CONTRIBUTE TO - AND BENEFIT FROM - INCREASING SAFETY ADOPTION





ACTIVE SAFETY PROVIDING SOFTWARE, DOMAIN CONTROLLERS AND SENSING SOLUTIONS WHICH ENABLE INCREASING SAFETY AUTOMATION



SIGNAL AND POWER DISTRIBUTION KNOWLEDGE ENABLES OPTIMIZED, FAILSAFE VEHICLE ARCHITECTURES, AND DE-RISKS INTEGRATION FOR CUSTOMERS



FOUNDATION IN SECURITY & CONNECTIVITY WITH 40M CONTROLLERS SHIPPED ANNUALLY; DEEP VEHICLE CONTROL AND ACTUATION EXPERTISE

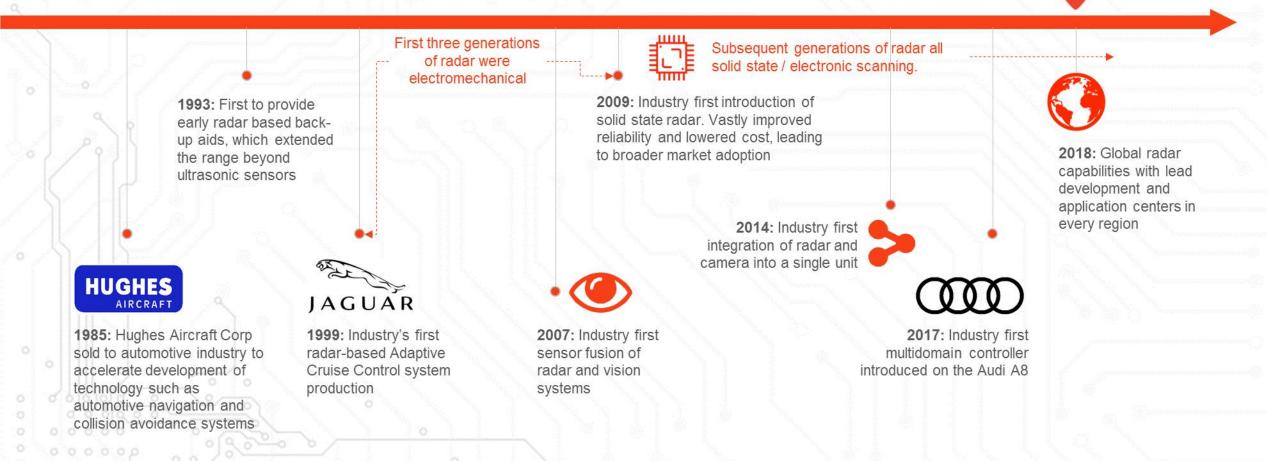


AUTOMATED DRIVING ALGORITHMS AND EXPERIENCE HELPS DEFINE ROADMAP, DEMONSTRATE SCALABILITY



# **Heritage In Active Safety**

OVER 25 YEARS OF EXPERIENCE IN COMMERCIALIZING AUTOMOTIVE GRADE SAFETY SOLUTIONS

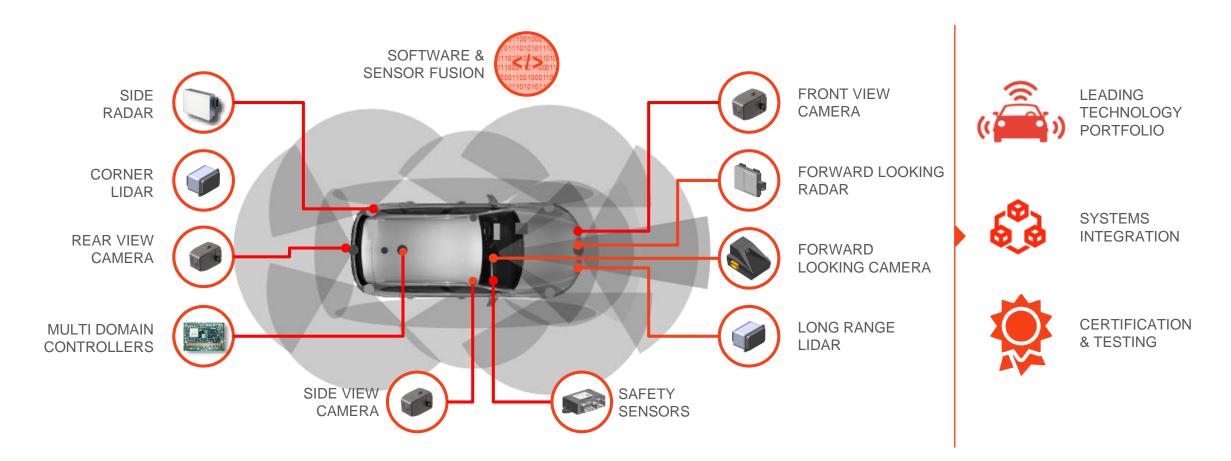


Today

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# **Active Safety Portfolio**

COMPREHENSIVE ACTIVE SAFETY SOLUTIONS SUPPORTED BY DEEP SYSTEMS KNOWLEDGE AND RELEVANT PRODUCT PORTFOLIO



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# **Perception Systems Enable Advanced Safety**

INVESTMENTS IN ENGINEERING AND STRATEGIC PARTNERSHIPS UNIQUELY POSITION APTIV ACROSS ALL THREE SENSING MODALITIES

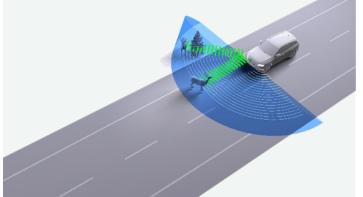
#### RADAR

25+ YEARS OF EXPERIENCE WITH THE 8<sup>TH</sup> GENERATION OF RADAR TECHNOLOGY IN DEVELOPMENT

#### STRENGTHS

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- LONG RANGE SENSING
- OBJECT MOVEMENT
- ALL WEATHER PERFORMANCE

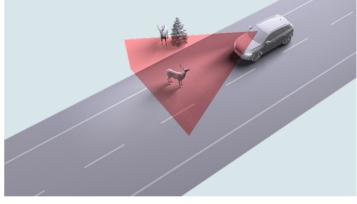


#### VISION

LEADING PLAYER IN THE MARKET WITH A LONG-TERM MOBILEYE PARTNERSHIP FOR VISION PROCESSING

#### STRENGTHS

- OBJECT CLASSIFICATION
- OBJECT ANGULAR POSITION
- NON-OBJECT SCENE CONTEXT

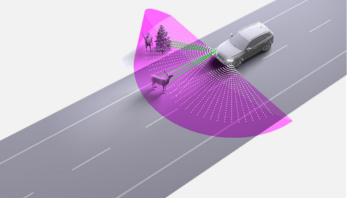


#### LiDAR

STRATEGIC INVESTMENTS DRIVE THE ADVANCEMENT OF SOLID STATE LIDAR SOLUTIONS

#### STRENGTHS

- PRECISE 3D OBJECT DETECTION
- RANGE ACCURACY
- FREE SPACE DETECTION



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# The Importance of Sensor Fusion

MULTIPLE SENSING MODALITIES REQUIRED; SENSOR FUSION IS THE SECRET SAUCE THAT BRINGS THEM TOGETHER

Lidar

CAMERA

FUSION

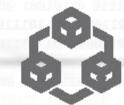
Object detection	+	+	0	+
Pedestrian detection	—	0	+	+
Weather conditions	+	0	—	+
Lighting conditions	+	+		+
Dirt	+	0	—	+
Velocity	+	0	0	+
Distance – accuracy	oo oo <del>q</del> axto b	ererte <del>+</del> esser	0	obiio <mark>+</mark> obiiu
Distance – range	+	0	0	+
Data density	_	0	+	+
Classification	_	0	+	+

RADAR



ASSESS CONFIDENCE OF THE DETECTED OBJECTS AND EVALUATE PLAUSIBILITY OF THE OBJECT

IMPROVE ACCURACY OF POSITION AND MOTION ESTIMATION

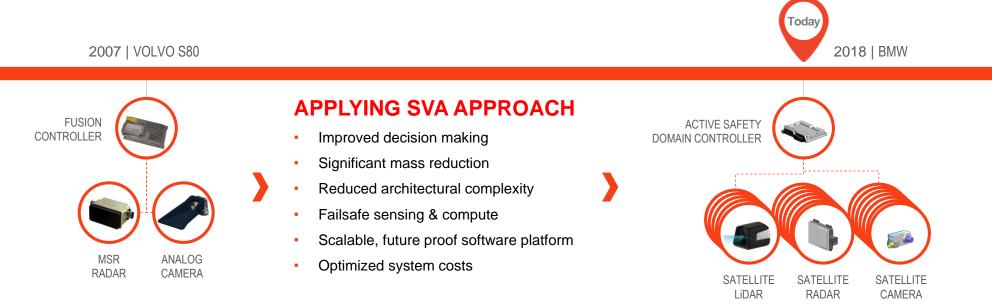


MAXIMIZE AVAILABILITY AND ENSURE FAILSAFE OPERATIONAL PERFORMANCE



# **Smart Vehicle Architecture (SVA) for ADAS**

APPLYING SMART VEHICLE ARCHITECTURE APPROACH KEY TO SCALABILITY, AND OPTIMIZED COST FOR NEXT GENERATION FUNCTIONALITY



#### MAX SYSTEM CAPABILITIES

- SENSORS SUPPORTED: 2
- CLOCK SPEED: 50 MHz
- DMIPS: <56
- LINES OF CODE: <100K

#### COMMERCIALIZATION

- FUNCTIONAL SAFETY: NO
- SCALABILITY: NO
- FLEXIBILITY / REUSE: LIMITED
- OEM ON-COST: FIXED

#### MAX SYSTEM CAPABILITIES

- SENSORS SUPPORTED: 16
- CLOCK SPEED: 2+ GHz
- **DMIPS:** 130K
- LINES OF CODE: 15M+

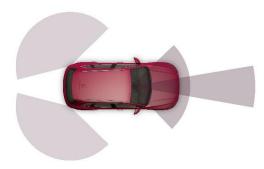
#### COMMERCIALIZATION

- FUNCTIONAL SAFETY: YES
- SCALABILITY: HIGH
- FLEXIBILITY / REUSE: HIGH
- OEM ON-COST: OPTIMIZED

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# **Today's Active Safety Architecture**

MARKET CONTINUING TO DRIVE PENETRATION OF MORE ADVANCED SOLUTIONS



**LEVEL 0/1** Function-specific automation of one control function

#### **EXAMPLE FEATURES**

- Automatic emergency braking
- Adaptive cruise control
- Blind spot detection

#### SENSOR SUITE

- Rear corner radar x 2
- Front radar
- Forward camera

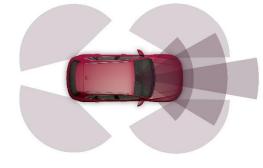
LEVEL 2 Combined function automation of two or more control functions

#### EXAMPLE FEATURES

- Highway assist
- Traffic jam assist

#### SENSOR SUITE

- Rear corner radar x 2
- Front radar
- Forward camera
- Multi-domain controller



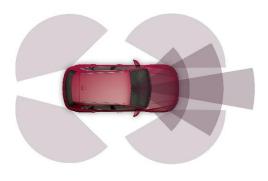
LEVEL 2+ Conditional automation; driver engaged with hands-free highway assist

#### EXAMPLE FEATURES

- Auto lane change
- Highway assist
- Traffic jam assist

#### SENSOR SUITE

- Corner radar x 4
- Front radar
- Forward camera
- Multi-domain controller



LEVEL 3 Conditional automation; driver able to fully disengage under specified conditions

#### EXAMPLE FEATURES

- Highway pilot
- Safe stop on side of road

#### SENSOR SUITE

- Corner radar x 4
- Forward radar
- Forward vision
- Surround vision
- Driver state camera
- Forward LiDAR
- Multi-domain controller

# **Content Per Vehicle**

INCREASING LEVELS OF FUNCTIONALITY RESULT IN SIGNIFICANTLY HIGHER ADDRESSABLE CPV



LEVEL 0/1 Function-specific automation of one control function

**\$275 - 325** Addressable CPV

- Sensing (\$125 195)
- Compute (~\$150)
- Embedded Software



LEVEL 2 Combined function automation of two or more control functions

**\$450 - 550** Addressable CPV

- Sensing (\$200 225)
- Compute (~\$200)
- Embedded Software



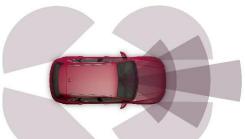
LEVEL 2+ Conditional automation; driver engaged with hands-free highway assist

**\$750 – 1200** Addressable CPV

- Sensing (\$300 400)
- Compute (\$450 800)

### + Software

- Multi-Domain Sensor Fusion
- Control Algorithms
- Integration



LEVEL 3 Conditional automation; driver able to fully disengage under specified conditions

**\$4000 - 5000** Addressable CPV

- Sensing (\$1500 2000)
- Compute (\$2300 2600)
- Signal & Power (\$100 300)

### + Software

- Multi-Domain Sensor Fusion
- Planning and Policy
- Control Algorithms
- Integration



# Winning With Premium OEMs

- DELIVERING PREMIUM PERFORMANCE DIFFERENTIATION FOR L2 AND ABOVE
- SCALABILITY ENABLES CUSTOMIZATION
- COMPLEX CONTROLLER DESIGN MEETING FUNCTIONAL SAFETY REQUIREMENTS



OST POWERFUL COMPUTE PLATFORM AVAILABLE IN A VEHICLE TODAY

- Mobileye and Nvidia based L2-L3 domain controllers
- Side Radars and Forward Camera for NCAP and AD features
- End to end test and verification responsibility for full domain controller





## **Democratization of Active Safety...**

BASE ACTIVE SAFETY FUNCTIONALITY MOVING TO MASS MARKET PLATFORMS

Evidence of automation effectiveness driving new regulation standards, while consumer information programs continue to stimulate the ADAS market by requesting increasingly advanced active safety systems



REGULATIONS DRIVE ADOPTION

INCREASED PREVALENCE VALIDATES EFFECTIVENESS

PREMIUM OEMS INVEST MORE TO DIFFERENTIATE Regulation extending the ADAS market to entry level vehicles...



...causing premium OEM to invest in more advanced safety technologies to continue to differentiate

# ... Leading To High Volume Applications

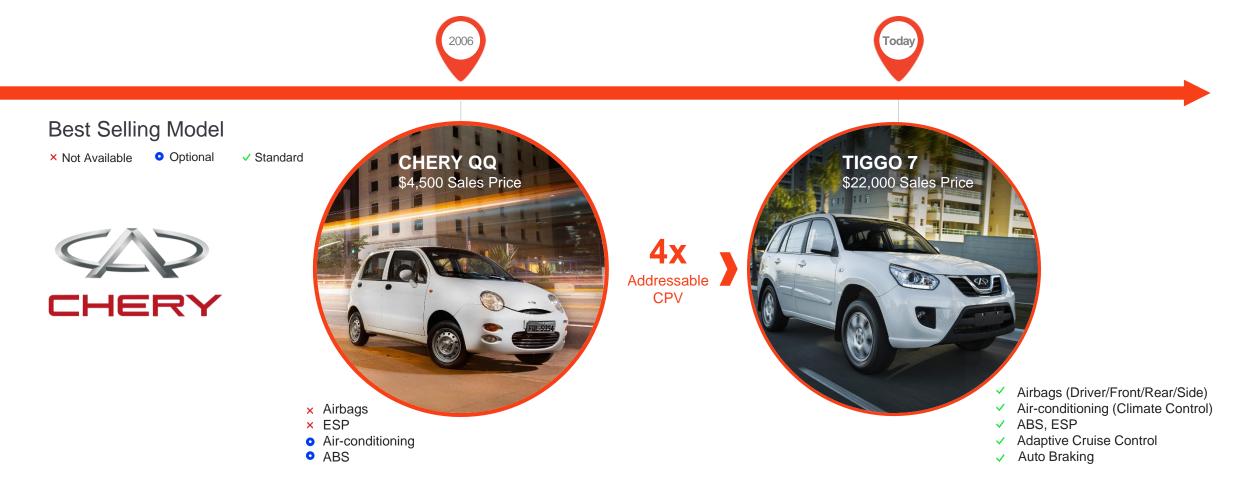
- DELIVERING COST OPTIMIZATION FOR L0 TO LOWER LEVEL L2 SOLUTIONS
- SCALABILITY FOR DESIGN FLEXIBILITY AND ENGINEERING REUSE
- PACKAGING OPTIMIZED FOR ALL VEHICLE CLASSES THROUGH SMART VEHICLE ARCHITECTURE





# **China Safety Market Maturing Rapidly**

CHINA OEMs DRIVING EXPONENTIAL INCREASES IN ACTIVE SAFETY ADOPTION



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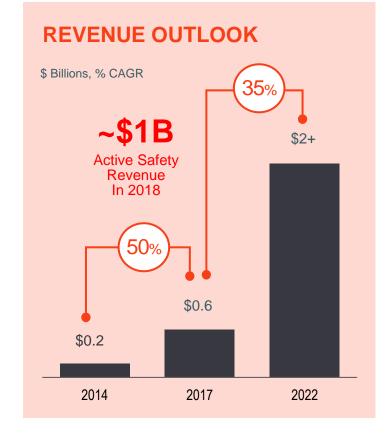


# **Active Safety Financial Outlook**

CUSTOMER AWARDS REFLECT MARKET SHARE GAINS



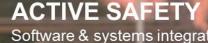




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# **Active Safety Leading To Automated Driving**

AUTOMATED DRIVING ON THE SPECTRUM OF ACTIVE SAFETY SOLUTIONS; INVESTMENTS IN SOFTWARE, SENSING AND COMPUTE DRIVE REVENUE TODAY AND IN THE FUTURE



[oday

Software & systems integration enabling leadership position in active safety

### **AUTOMATED DRIVING**

Accelerating with OEMs and New Mobility to deliver level 4/5 solutions



Future

SELF-DRIVING VEHICLE

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# **Automated Driving Investments**

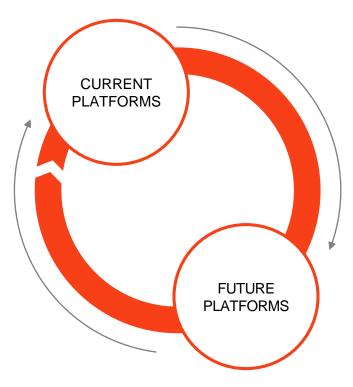
ACQUISITIONS AND AUTOMATED DRIVING SOFTWARE STACK PROVIDERS, AND STRATEGIC INVESTMENTS IN SOLID STATE LIDAR COMPLEMENT EXISTING APTIV CAPABILITIES



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# **Leveraging Mobility & Services Investments**

### ADVANCED CAPABILITIES HELPING DIFFERENTIATE CURRENT APTIV PLATFORMS AND INFORM PRODUCT ROADMAPS



### AUTOMATED DRIVING ON THE SPECTRUM OF ACTIVE SAFETY

- Existing strengths in sensing and compute core to unlocking functionality
- Demonstrated AD capabilities differentiate Aptiv, ensure scalability and reuse

### **CONNECTED SERVICES CAPABILITIES**

- OTA evolves from development applications to full vehicle lifecycle management
- Embedding OTA on all applicable Aptiv products by 2020

### **SCALABLE ARCHITECTURES**

- Ensuring OEM architecture are scalable from Level 2 today to Level 4 in future
- AD failsafe operational knowledge informing architecture product roadmaps



# Summary

APTIV WELL POSITIONED TO BENEFIT FROM DEMOCRATIZATION OF ACTIVE SAFETY

- Core Active Safety market for L0-L3 poised for growth inflection
- Portfolio of relevant technologies enabling OE point of differentiation and scalability

• АРТ

- Increasing levels of functionality result in significantly higher addressable CPV
- Customer awards validate growth outlook and market share gains
- Active Safety on the spectrum of automated driving

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# Glen W. De Vos

Senior Vice President, Chief Technology Officer and President, Mobility and Services Group



Glen De Vos is senior vice president and chief technology officer of Aptiv, a position he has held since March 2017.

In this role, Mr. De Vos is responsible for leading the company's innovation strategies and development of advanced technologies. As CTO, Mr. De Vos leads the global engineering organization, which includes more than 16,000 technologists located in 14 major technical centers across the globe.

Previously, Mr. De Vos served as vice president, Software & Services, Delphi Electronics & Safety (E&S), located at the company's Silicon Valley Lab in Mountain View, CA. He began his Delphi career with E&S in 1992 and following several progressive engineering and managerial roles in infotainment and user experience, was named vice president, Global Engineering for Delphi E&S in 2012.

Mr. De Vos has extensive business, engineering, and manufacturing experience including time at General Electric and ITT Power Systems.

Mr. De Vos received a Bachelor of Science in Engineering from Calvin College in 1982, a Bachelor of Science in Mechanical Engineering from the University of Michigan in 1983, and a Master of Business Administration from Ball State University in 1994.



# **Xavier Mosquet**

### Senior Partner and Managing Director, The Boston Consulting Group



Xavier Mosquet is Senior Partner and Managing Director of The Boston Consulting Group (BCG) and Founder of the Detroit Office Xavier joined BCG in London in 1985. He later moved to Paris, then in 2005 opened BCG's Detroit office. He has been for 8 years the leader of BCG's Global Automotive Practice. Xavier received five Awards for his consulting work in the Automotive industry with US Treasury. He was named Turnaround Consultant of the Year in 2010 by the Global M&A Network and one the Top Global 25 Consultants in 2012 by Consulting Magazine

#### Work experience at BCG

Within BCG, Xavier Mosquet specializes in the Automotive sector on matters of strategy and operational excellence. He notably led the BCG team working for the Presidential Automotive Task Force and the US Treasury in the restructuring of GM and Chrysler, the forming of the Fiat-Chrysler alliance and the GM IPO. He supports his clients in NA, Europe and Asia.

#### **Select publications**

- A Road to Safer Driving, BCG-MEMA report 2015
- The Electric Car Tipping Point, the future of powertrains for owned and shared mobility, BCG report 2018
- Revolution in the Driver's Seat, the road to autonomous vehicles, BCG report 2015
- Self-Driving Vehicles, RoboTaxis and the Urban Mobility Revolution, BCG report 2016
- Testimony on Automotive Innovation, US Senate Committee Hearing 2016

#### **Prior experience**

Prior to joining BCG in 1985, Xavier worked for four years with Total as department head for renewable energy

#### Education

Xavier holds a general engineering degree from the French Ecole Nationale des Mines, a Master of Physics from Paris University, and an MBA with distinction from INSEAD



# **David Strickland**

### Partner, Venable LLP



A partner in Venable's Regulatory Group, David Strickland focuses his practice on transportation policy, consumer protection, internet privacy, data security, and legislative and government affairs. In addition, David is Counsel to the Self-Driving Coalition for Safer Streets. He has significant federal government and private practice experience.

Most recently, David served as the fourteenth Administrator of the National Highway Traffic Safety Administration (NHTSA). As the top automotive safety official in the United States, he was responsible for fulfilling the agency's mission to reduce crash-related fatalities and injuries while ensuring the highest standards of safety on the nation's roads.

David oversaw a broad range of vehicle safety and policymaking programs, including setting vehicle safety standards, investigating possible safety defects, and tracking safety-related recalls; annually distributing over \$600 million in highway safety grants to states and leading the behavioral safety program; and establishing and enforcing the regulations on fuel economy. His major accomplishments at NHTSA include overseeing the development of the first national fuel economy programs for both passenger vehicles and heavy-duty trucks in conjunction with the Environmental Protection Agency, and implementing the vehicle safety and highway safety grant mandates included in the 2012 Highway Reauthorization (MAP-21). He also issued the first ejection mitigation standards for passenger vehicles to help keep passengers from being partially or fully ejected from vehicles during a rollover crash; mandated that lap and shoulder belts be installed on all new motorcoaches; launched the nation's largest connected vehicle (V2V) safety pilot program; and issued the first automated vehicle policy. In addition, David brought national attention to child passenger safety issues and was a leader in the campaigns to fight impaired and distracted driving.



# Aptiv Technology Advisory Council (ATAC)

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Mr. Glenn Lurie Chief Executive Officer Synchronoss Technologies

Former Chief Executive Officer of AT&T's Mobility



**Mr. David Strickland** Former Administrator of the National Highway Traffic Safety Administration (NHTSA)

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