



**COLLISION INDUSTRY**  
C O N F E R E N C E



**Emerging Technologies**  
**Scanning & Diagnostics**

Presented by:  
Jack Rozint  
Jake Rodenroth  
Chuck Olsen  
Sean Guthrie



# **COLLISION INDUSTRY**

## **C O N F E R E N C E**



# **Emerging Technologies**

## **Scanning & Diagnostics**

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*Plus Special Guests*

# Agenda



- **Tools Work Group**
  - Vote to accept Quick Start Guide work product
  - Brief update on next steps
- **Special Presentation Guest**
  - Future Vehicle Technologies – Michael Simon, Bosch GmbH
- **New Business Update**
  - ADAS & Safety Systems Technician - Darrell Amberson
    - ✦ Skill Sets
    - ✦ Qualifications
    - ✦ Training
    - ✦ Compensation





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## **Emerging Technologies Tools Subcommittee Updates**

**Chuck Olsen  
AirPro Diagnostics**

**Diagnostics and Calibrations**

**Programming**

ADAS Ready and ADAS Capable

ADAS Tools and Procedures



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## **Emerging Technologies Tools Subcommittee Members**



- Chuck Olsen, AirPro Diagnostics
- Darryl Ambersom, LaMettry's Collision
- Jason "Buck" Zeise, LaMettry's Collision
- Gene Lopez, Seidner's Collision Center
- Michael Quinn, Certified Collision Group
- Aaron Clark, Assured Performance
- Jay Horak, AutoEnginuity
- Aaron Schulenburg, SCRS
- Jaime Lazarus, The Car Whisperer
- Robert McBride, ALLDATA
- Kaleb Silver, Hunter Engineering
- Glenn Eaton, Drew Technologies

## AUDIENCE RESPONSE QUESTION:



The Quick Start Guide is an approved work product:

1. Agree
2. Disagree
3. Abstain

Leave this area for  
the response results



## Introduction to Diagnostics, Calibrations and Programming



- Collision industry awareness
- Tools needed for procedures beyond Pre-and Post scanning
- Basic outline for performing diagnostic procedures
- Diagnostic procedures
- Module Programming
- Basic calibrations
- Advanced calibrations (ADAS Cameras, Radar)
- Labor time considerations





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*Special Presentation*  
**Latest Trends in Vehicle  
Technology**

# What is considered ADAS?

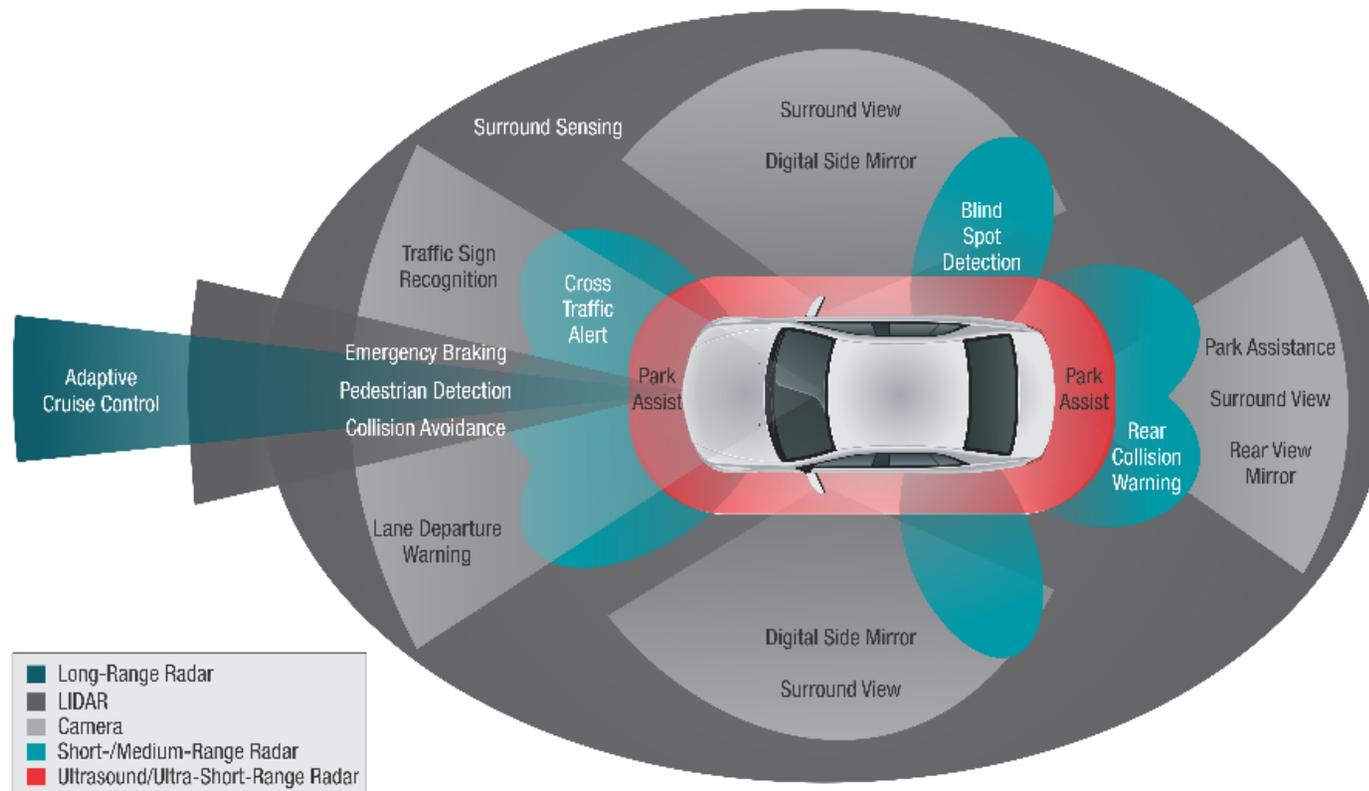


- *Advanced Driver Assistance Systems*

1. Adaptive Cruise Control
2. Adaptive Light Control
3. Automatic Braking
4. Automatic Parking
5. Blind Spot Detection
6. Collision Avoidance
7. Driver Drowsiness
8. GPS Navigation
9. Hill Descent Control
10. Intelligent Speed Adaption
11. Lane Departure Warning
12. Night Vision
13. Tire Pressure Monitoring



# ADAS Today



# What is coming next?



Assist the driver

Relieve the Driver  
*"Auto Pilot"*

Be the Driver  
*"No Steering Wheel"*



# Levels of Autonomous Vehicles - SAE



- Level 0 - the human driver does everything
- Level 1 - an automated system can sometimes assist the human driver to conduct some parts of the driving task
- Level 2 - an automated system can actually conduct some parts of the driving task, while the human continues to monitor the driving environment and performs the rest of the driving tasks
- Level 3 - an automated system can both actually conduct some parts of the driving task and monitor the driving environment in some instances, but the human driver must be ready to take back control when the automated system requests
- Level 4 - an automated system can conduct the driving task and monitor the driving environment, and the human need not take back control, but the automated system can operate only in certain environments and under certain conditions
- Level 5- the automated system can perform all driving tasks, under all conditions that a human driver could perform them



# How Soon Is This Coming?



GENERAL MOTORS

## Meet the Cruise AV: the First Production-Ready Car With No Steering Wheel or Pedals

GM files petition asking DOT permission to safely deploy self-driving vehicle in 2019

*Fri, Jan 12 2018*



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# Special Guest



Michael Simon  
Robert Bosch GmbH



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## Technology Impacting the Collision Industry



*The Transformation Has Already Begun!*

Presented by:  
Michael Simon  
Bosch

# 2008 – 10 Years Ago – Toyota Camry

#1

**Toyota Camry**

473,108

## Notable Features of the 2008 Toyota Camry

- Darker wood (XLE)
- Reclining backseat (XLE)
- Standard side-impact and side curtain airbags
- Optional stability system
- Hybrid version available



## Notable Features of the 2018 Toyota Camry

- **Bird's Eye View Camera with Perimeter Scan**
- **Pre-Collision System**
  - Applies the brakes if it detects a potential frontal collision.
- **Lane Departure Alert / Assist**
  - A camera on your windshield alerting you when it senses that you've veered from your lane.
- **Automatic High Beams**
- **Dynamic Radar Cruise Control**



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## Consider This:

In 2008, if I would have stood up here and told you:



- Virtually everyone in this room will have a device in your pocket that you can speak too that will be able to answer just about any question you may have, knows you and can adjust the temperature in your house before you arrive home, and has more power in your pocket than the most high end home computers, what would you have thought?
- A decade ago, smartphones (as we know them by today's standards) didn't exist. Three decades earlier, no one even owned a computer. Think about that—the first personal computers arrived about 30 years ago. Today, it seems nearly everyone is gazing at a glowing, handheld computer. (In fact, over two-thirds of Americans own one, [according to a Pew Report.](#))



# The World Around Us Today

## Autonomous Vehicles Timeline

- GM and others to launch fully autonomous EV robo-taxis in the US in 2019. (Reuters-Jan 12, 2018)
- Daimler's Mercedes-Benz, Bosch to launch self-driving car service in Silicon Valley in 2019 (USA TODAY-Jul 10, 2018)
- Tesla's fleet has accumulated over 1.2 billion miles on Autopilot and even more in 'shadow mode', report says (Electrek-Jul 17, 2018)

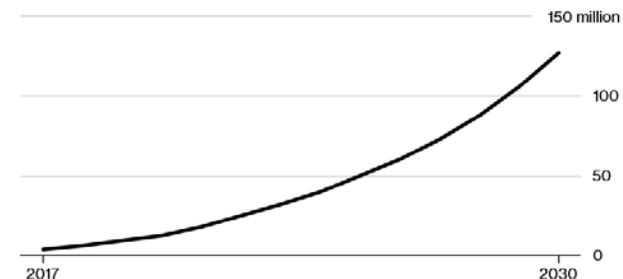
**Estimated 120 million electric vehicles on the road by 2028**



**A look at the inside of a fully autonomous car of the future**

### Electric Boom

The global fleet of electric vehicles is set to soar



Source: IEA



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# Where is the Focus Today by the OEM's / Tier 1? (Billions \$\$ Being Invested)

## Electrification of the Fleet

- Range is at 300+ miles per charge
- Charging time is improving
  - ~180 miles in 20 min.
  - Future scenario - Automated battery swap options – 10 Min.
- Infrastructure
  - Building out charging networks
  - Battery technology improving rapidly

## Telematics

- 100% Data Availability
- Infrastructure
  - 5G
  - V2I2V will evolve to V2V2I
- FNOL
  - Currently proposed is a closed loop system from OEM to first responders, Insurance, Repair, to Consumer
  - Enables OEM's to offer more services like Insurance / Maintenance

## Autonomous Driving Vehicles

- Sensor Fusion
- AI (Artificial Intelligence)
- AEB (Automatic Emergency Braking)
- Challenges
  - Infrastructure
  - Legislation
  - Liability / Safety
  - How will older vehicles play in the new infrastructure?



# Did you know?

*Published on: Apr 12, 2018 by INC magazine / Thomas Koulopoulos*



- Autonomous Electric Vehicles (A.E.V.) require 90 percent less maintenance, can achieve 80 percent + sustained utilization rates (i.e. 23 hours a day), do not need parking garages and parking spaces, and will reduce traffic accidents by 90 percent + (94 percent of all accidents today are attributed to human error).

## **A few inevitable changes that are coming!**

1. Insurance companies will need to adjust models for insuring human-driven vehicles, making car ownership a financial luxury for individual owners.
2. If projected out to 2050 we may save over one trillion dollars in the US alone since the cost of motor-vehicle deaths, injuries, and property damage in 2016 was \$432 billion in the US alone, according to the National Safety Council.
3. Deaths due to vehicular accidents will be reduced globally by over 1,000,000 lives yearly.
4. There will be widespread employment disruption within developed countries that rely heavily on both the manufacture of owner-driven vehicles. Dealerships may disappear entirely.
5. Lending for auto loans will shift dramatically from human owners to vehicles that own themselves.
6. And lastly, let's not forget the impact of vehicles on the planet. According to a study by NASA, vehicles are the single largest contributor to climate change.



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# Predictions (Michael Simon Personal Only)

These predictions are NOT represented by any company, including BOSCH

- There will be more miles driven in an Autonomous mode (level 4 / 5) than by human's in less than 9 years.
  - Level 1 - Hands on
  - Level 2 - Hands off
  - Level 3 - Eyes off
  - Level 4 - Mind off  *Closer than 5 years for mass market*
  - Level 5 - Steering wheel optional (no human needed in the car)
- The way we purchase / use cars is likely to change in less than 10 years
  - As an example, services like Lyft, Uber, or Waymo may contract “x” hours per month for a fixed rate.
    - ✦ You could opt for shared or private service
  - Rental car companies will still be used for longer road trips or times you need a personal car
  - The majority of people may not own a vehicle, but if they do the model may include one payment for the car, insurance, and maintenance.



# What does this mean for you? Your business?



- This is the start of the biggest economic and social shift of the last 100 years.
- Industry sources project that the number of automobiles on the road in 2050 will be less than 15 percent of what it is today. **In the USA that's a drop from 250 Million vehicles in 2018 to 33 million in 2050.** However, the number of vehicle hours driven (by the cars, not by us) increase 400 percent. *(INC Article)*
- The automation will mean fewer jobs in the industries we know today.
  - New industries will emerge.
- How will the Aftermarket play when the vehicle manufacturer will have more control over the Vehicle / Service / Repair?
  - Your existing business model will change! 10 years is not a long time.
- EVs will change service needs from internal combustion engines.
  - The model for funding infrastructure will probably need to change.
- This will impact both OTR (Class8) as well as passenger cars.





# The Check Engine Light / Pre and Post Scanning



- CEL only mandated to turn on when the vehicle emissions exceed 2.5 times the federal test procedure
- Vehicle manufactures have developed extensive on board diagnostics to understand if all of the systems, especially safety, are functioning correctly.
- The Post Scan is a good indicator of the health of all of the systems in the vehicle.
- Unfortunately, diagnostic codes are usually only a symptom, not an exact repair action.

## Why?

1. Liability! (post Scan)
  - Proof that inspection was completed.
2. Developing the repair workflow. (Pre Scan)
  - Not all codes were caused by the accident.
3. Many diagnostic codes have specific conditions to set.
  - A drive cycle that may include:
    - ½ tank of gas
    - 30 MPH
    - Engine at operating temperature



# What does the collision shop need to survive?



- Professional aftermarket scan tool! (95% or better coverage)
  - Code coverage is critical
  - Only a few companies offer this capability that covers the majority of the systems.
  - Allows you to establish a reliable work flow.
- An automotive technician that understands the systems and can leverage the capabilities of the tool to effect repairs.
  - This may be in the form of a partnership with a local aftermarket repair shop that you trust.
- For the 5%, access to an OEM scan tool, or OE dealer, or partner with a local shop that has to an OEM tool.
  - There are also companies that provide OE tool interface / on site support.

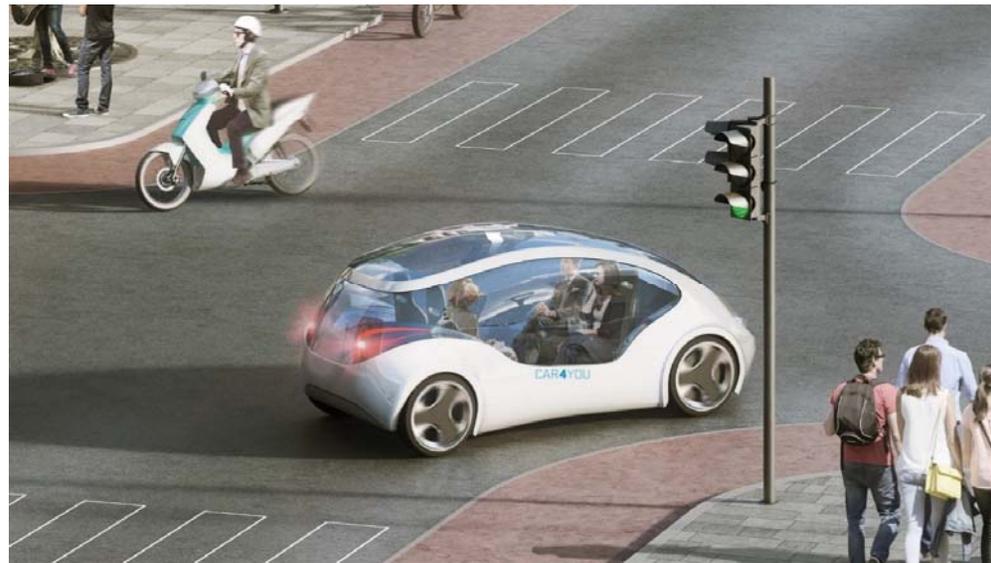


Thank you!



Michael Simon

E-mail: [michael.simon3@us.bosch.com](mailto:michael.simon3@us.bosch.com)



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**ADAS & Safety  
System Technician  
*Update***

# Update – ADAS & Safety Systems Technician



- Darrell Amberson – ASA
- Definition:

*Automotive Technician skilled in computer functions, advanced diagnostic equipment, and new vehicle technologies. Knowledgeable in OEM repair procedures, having mechanical aptitude and qualifications, with primary focus on (SRS) Supplemental Restraint System and (ADAS) Advanced Driver Assistance Systems.*



## AUDIENCE RESPONSE QUESTION:



Should this Committee form a Work Group to explore a new category of technician for safety, ADAS, and computerized systems? :

1. Yes
2. No
3. Abstain

Leave this area for  
the response results

