

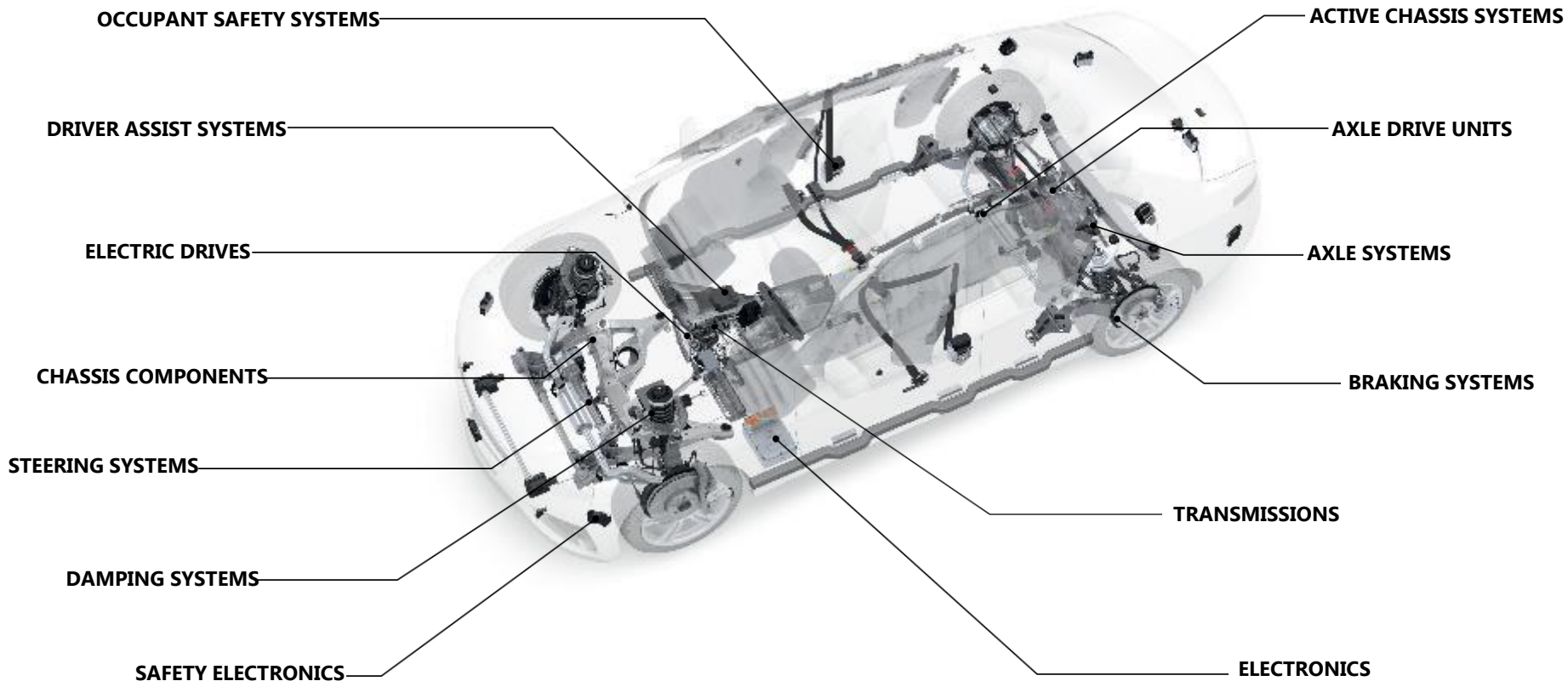


# Chirag Hiremath

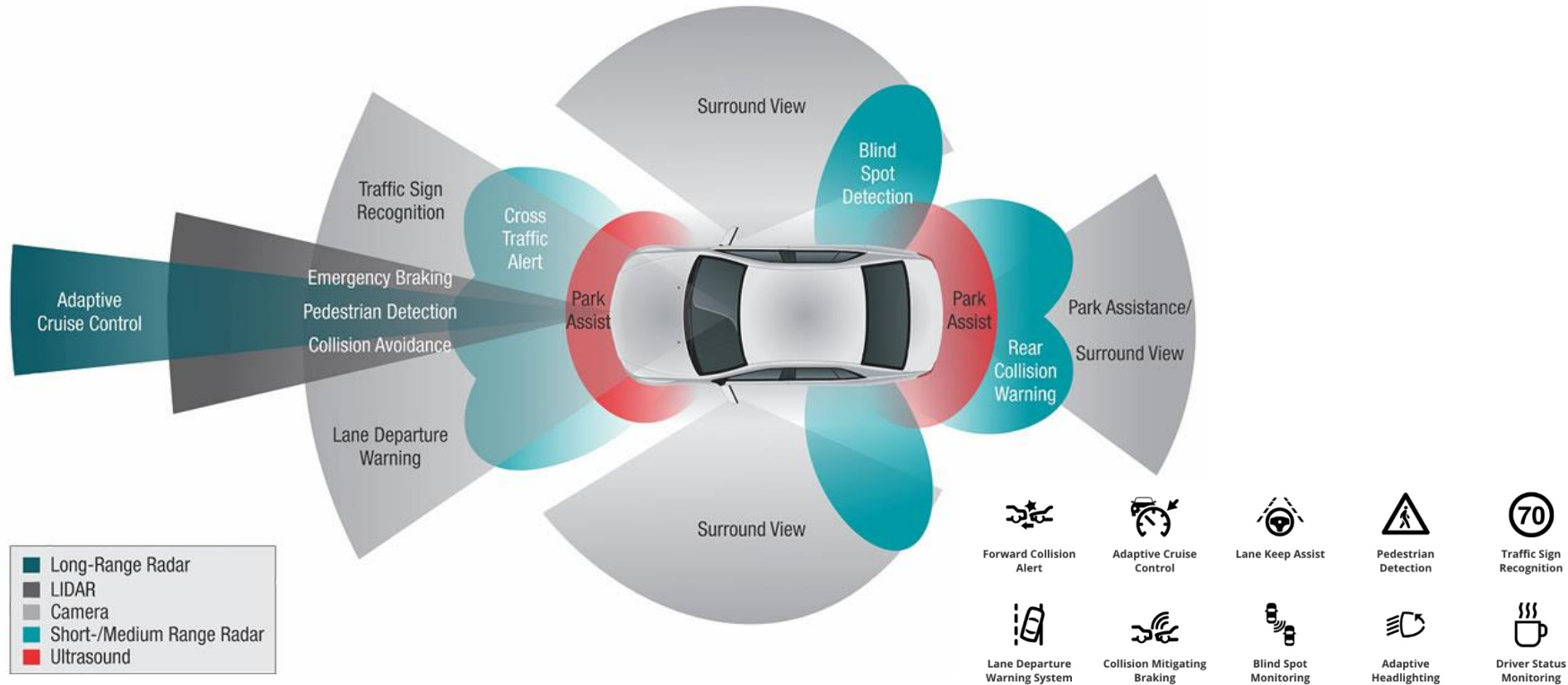
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**Principal Thermal Engineer – ADAS & Electronics**

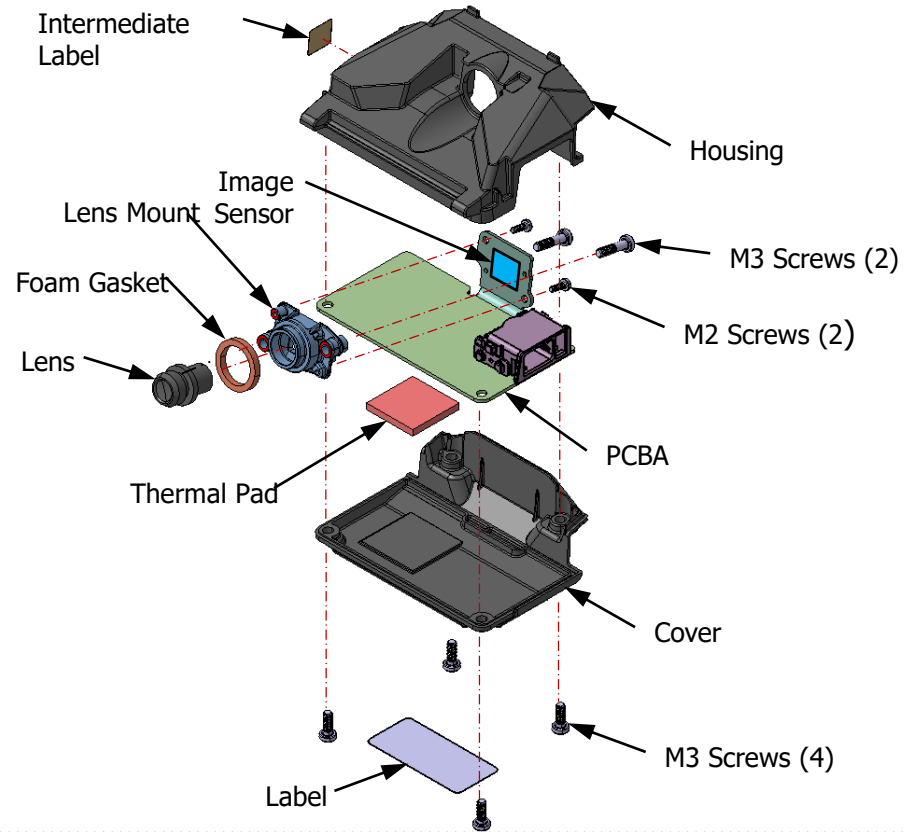
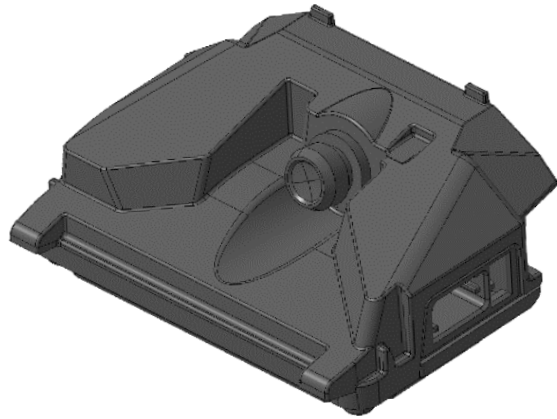
# ZF Technology Portfolio:



# Advanced Drive Assistance Systems (ADAS):



# Cameras:

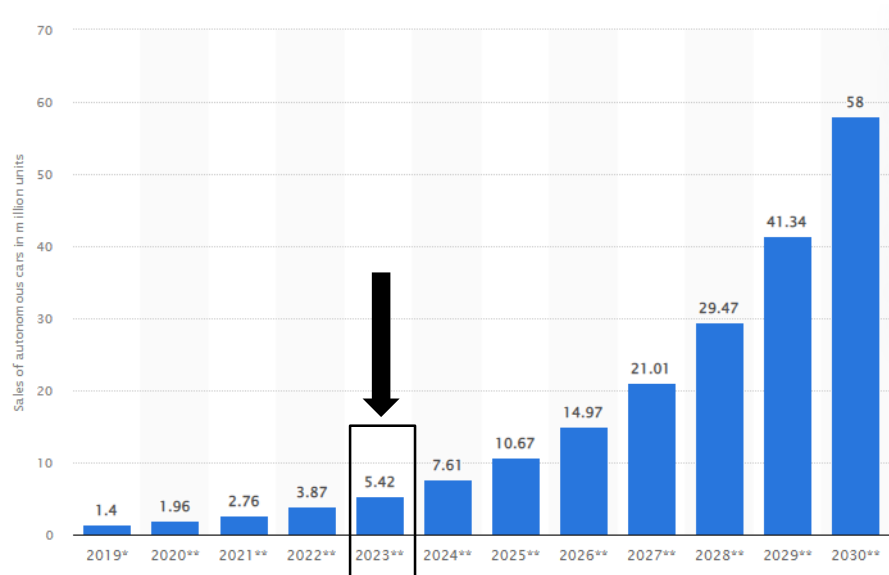


# Importance of Thermal Engineering in ADAS:

- ADAS products include complex electronic systems that generate significant amount of heat
- Thermal management ensures reliable and consistent performance, extend product lifespan and prevent safety risks
- Thermal design techniques such as heatsinks, thermal interface materials etc. are used for thermal management
- Thermal engineering plays a crucial role in ensuring the ADAS products operate safely, otherwise leading to
  - Reduced performance
  - Premature failure
  - Safety hazards

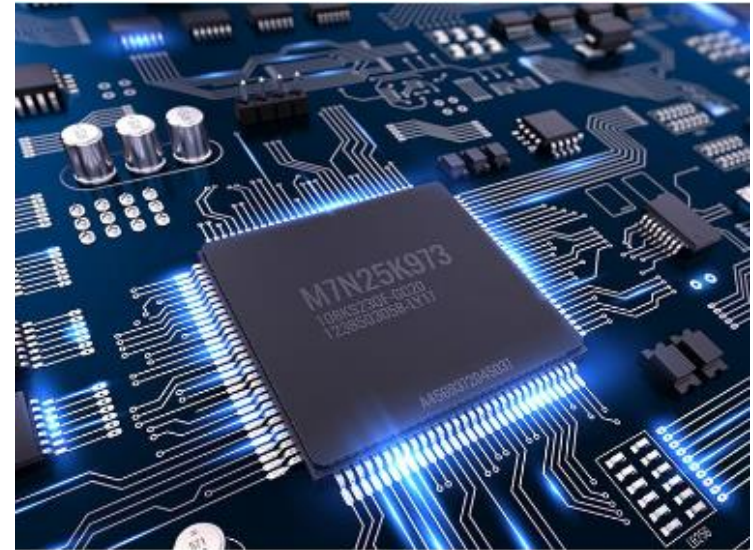
# Opportunities:

## Market demand



Projected sales of autonomous vehicles worldwide from 2019 to 2030

## Complex Electronics



# Thank You.