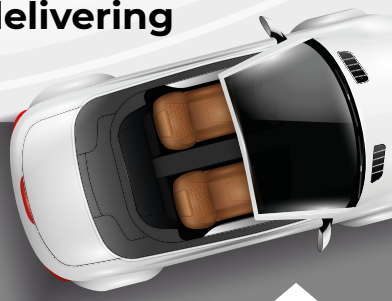


Achieving Safe Embedded Software



As automakers seek to increase their vehicles' automated driving (AD) capabilities, embedded software plays a greater role in delivering autonomous functionality, safely & reliably, every time.



Autonomy is coming

The global market for AVs is expected to reach **4.2 million units** by 2030¹

Growth opportunities

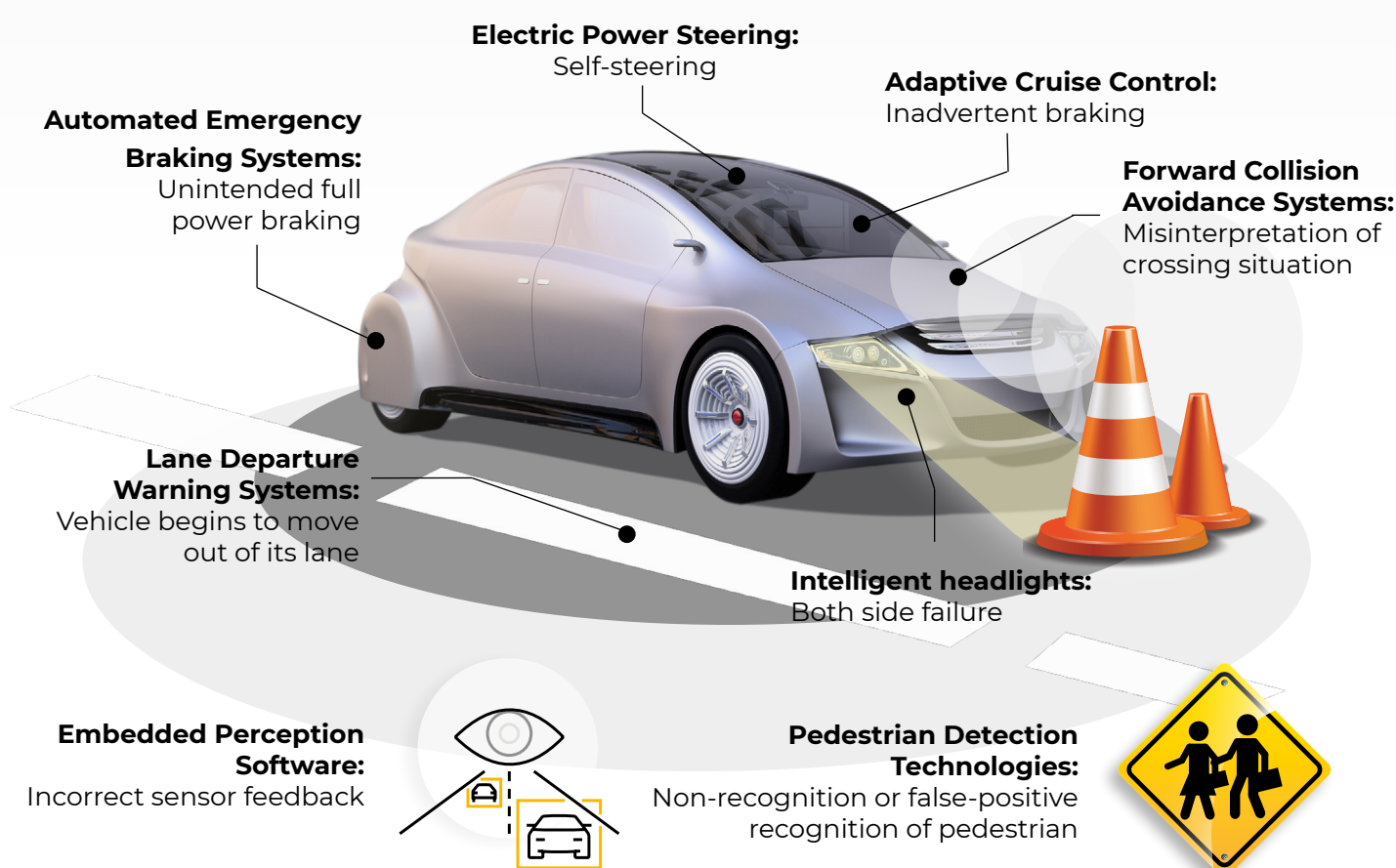
The global ADAS market is expected to grow from **\$27 billion** today to **\$87 billion** by 2030.

Drivers are expecting safety

Consumer preference for automated driving systems is growing, but their expectations for quality are also rising.

Why Safety is Critical to AD Systems²

Embedded software forms the backbone of the complex perception, planning and execution functionality that underlies these systems.



All of these systems require countless safety checks before anything can be implemented in a vehicle. With Ansys SCADE, software engineers can design the embedded controls in a car, flag any embedded software bugs in these systems and trigger a modification of the control algorithms without the lengthy time between testing instances.

Solve the Problem of AD System-Level Modeling and Embedded Software Development

Ansys SCADE provides an efficient, model-based process for designing and verifying software at the earliest stages, so safe operation is built in to:



Increase efficiency to develop and integrate advanced algorithms and features, reducing development time and costs by 50%.



Meet safety standards like ISO 26262 up to ASIL-D and support AUTOSAR software development methodology.



Reduce project delays due to lack of tool consistency and traceability throughout the workflow between global safety, systems, software, simulation and V&V teams.

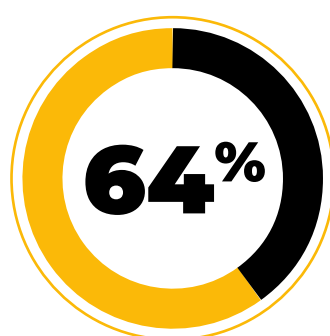


Improve confidence in final code through ISO 26262 code generation and reduce costs by removing costly verification activities at code level.

As the software, hardware and technology all evolve, those working on the embedded code within AD technologies are finding they need to be agile, flexible and open to evolution. Here are a few examples of what we may see in the next decade:

Changing Lanes: What's Next for ADAS and AVs embedded code?

What Executives Are Saying:⁴



Safety and Autonomy: 64% of executives pointed to increased safety or autonomous demand as an area of focus.



First to The Finish Line 36 percent want to be one of the first to mass-produce autonomous vehicles.

Sources:

1: ADAS Market Report (MarketsandMarkets 2020).

2: New SAE Standard For Automated-Driving Developers by Jennifer Shuttleworth (Autonomous Vehicle Engineering 2020).

3: Overview of embedded systems to build reliable and safe ADAS and AD systems by Francisco J. Belmonte et al. (IEEE Intelligent Transportation Systems Magazine 2020).

4: Managing Automotive Technology Trends (Jabil 2018).