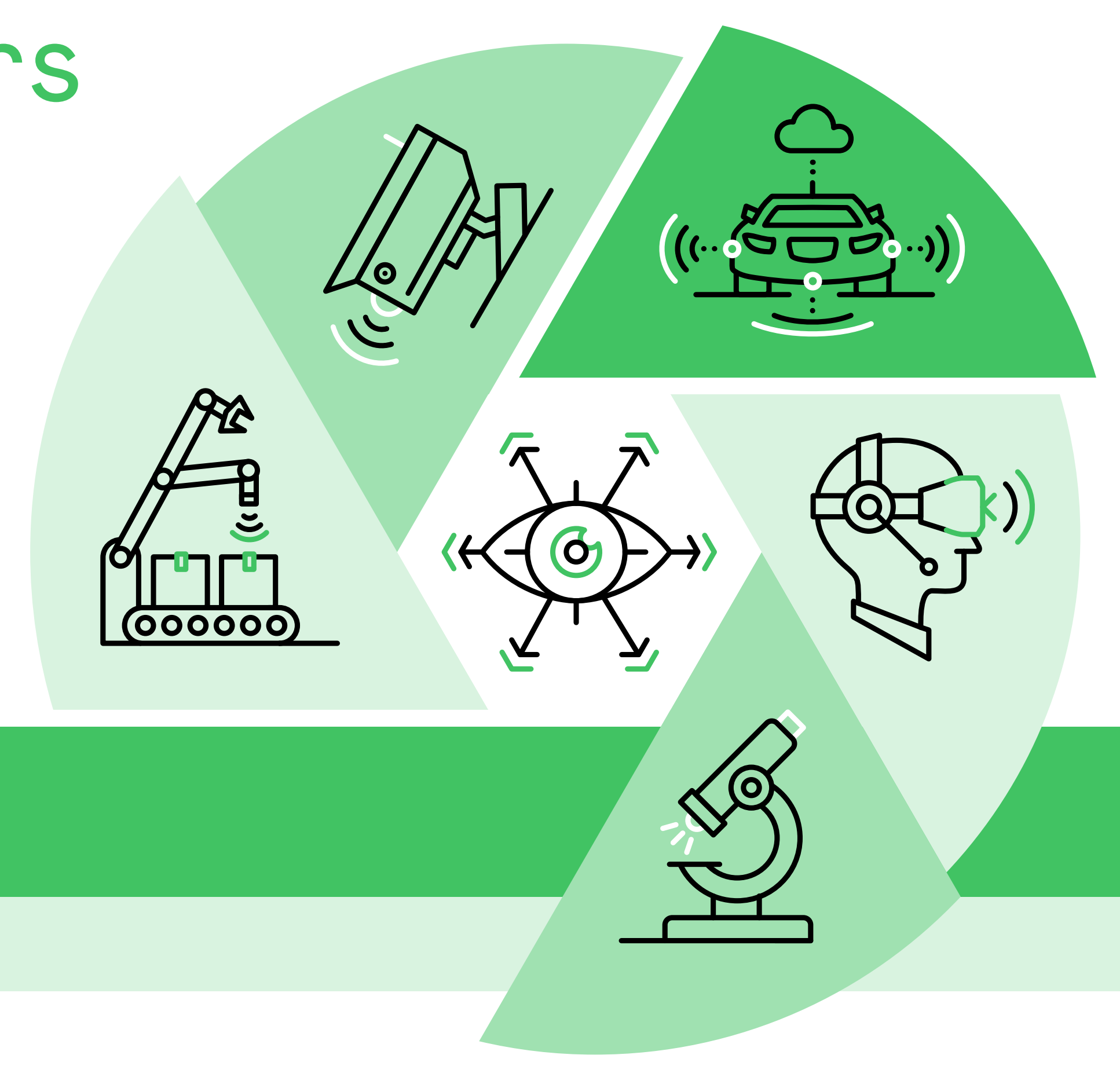
AVNET
Reach Further™

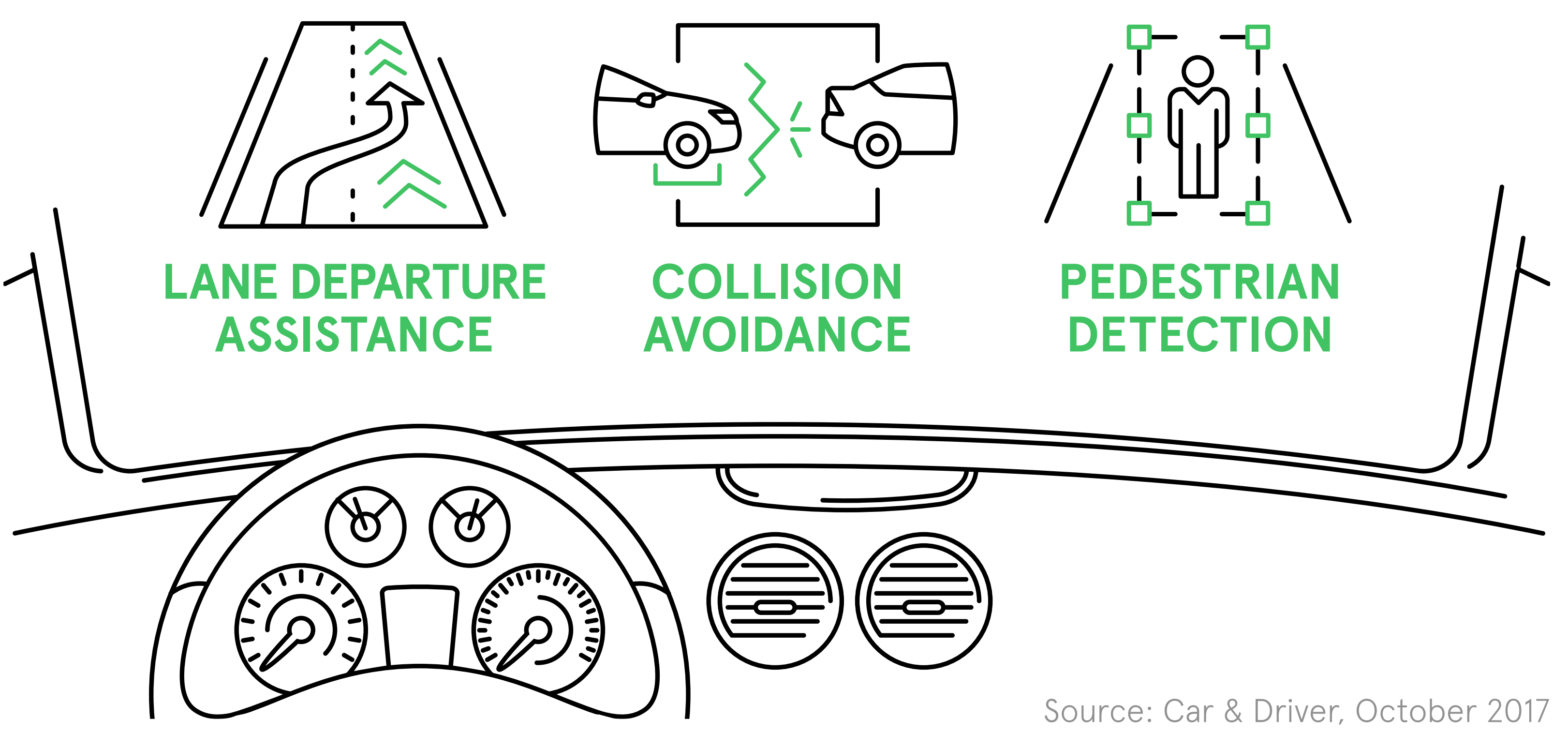
Embedded Vision by the Numbers

How embedded systems and computer vision are shaping the future



ADAS

Advanced driver assistance systems are a huge application of **embedded vision** with features like:



LANE DEPARTURE ASSISTANCE

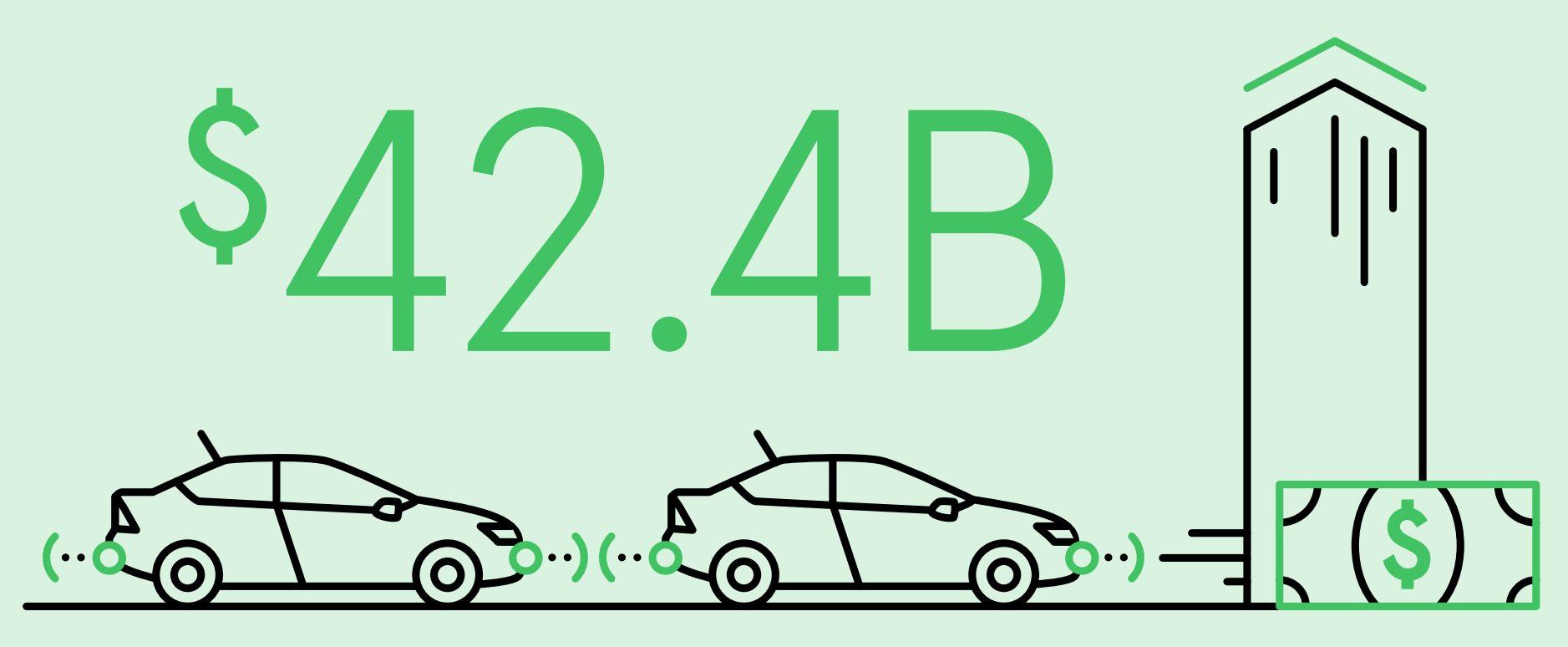
COLLISION AVOIDANCE

PEDESTRIAN DETECTION

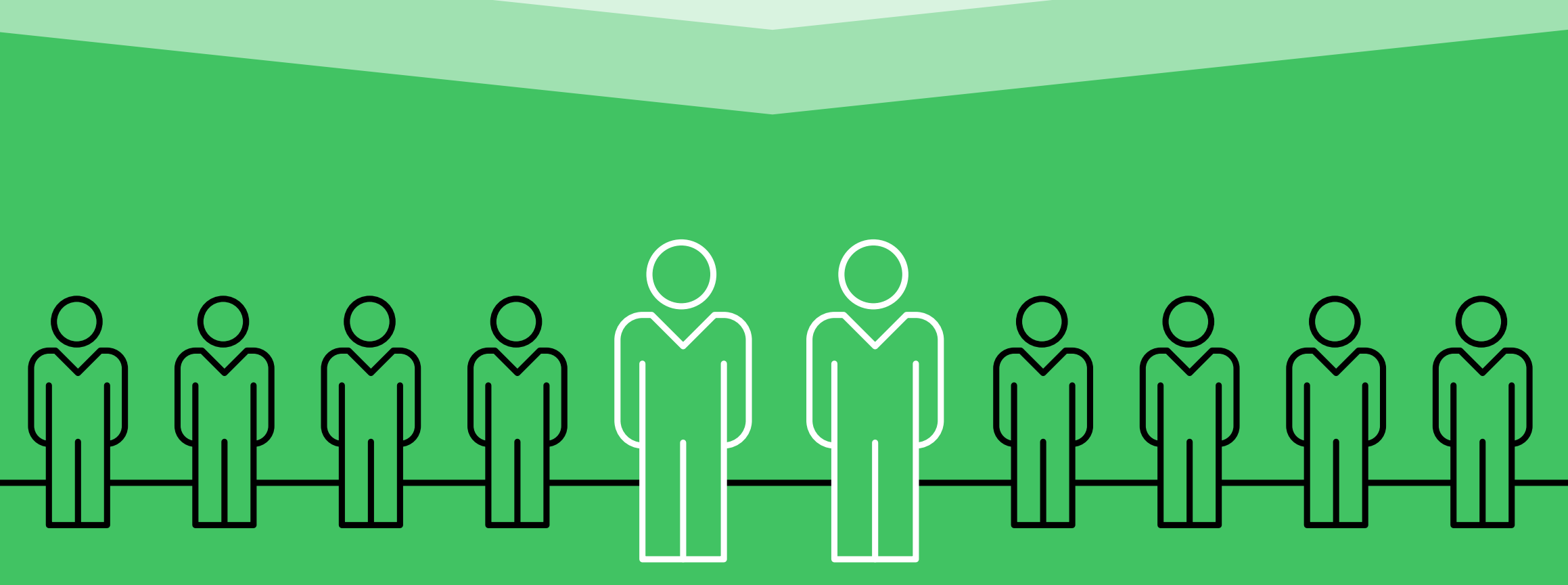
Source: Car & Driver, October 2017

Autonomous driving **embedded vision** market by 2021:

$42.4B



Source: Embedded Vision Alliance, September 2017

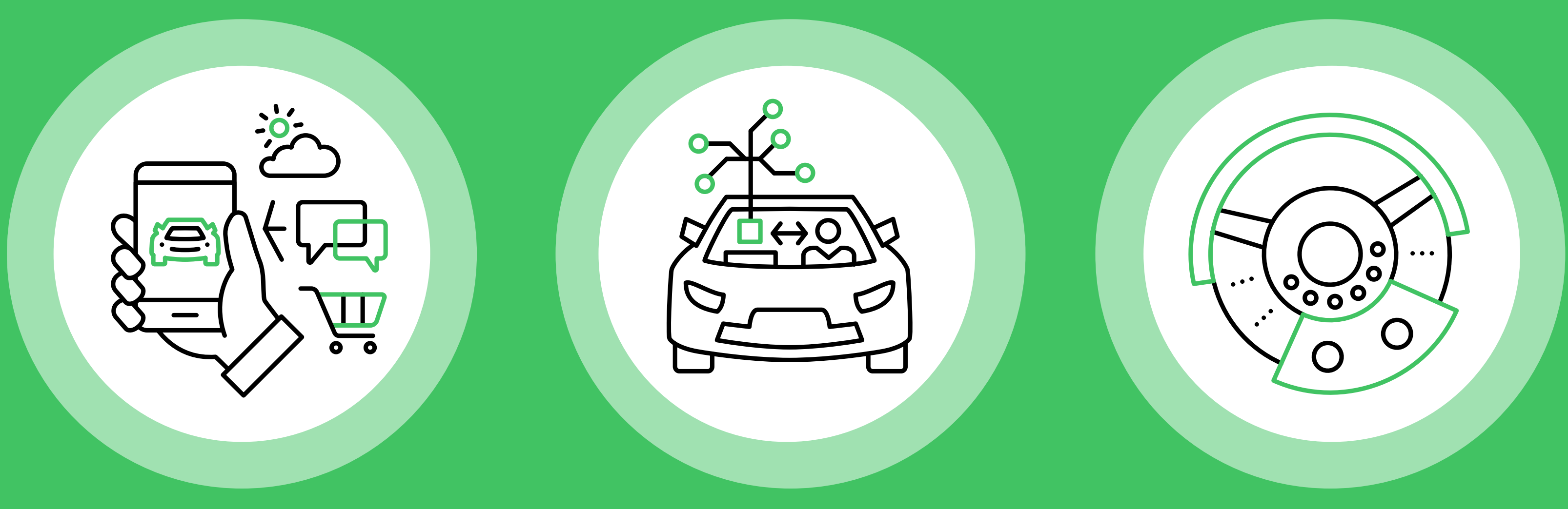


20%

of consumers would pay as much as

$3,000

for autonomous driving applications:



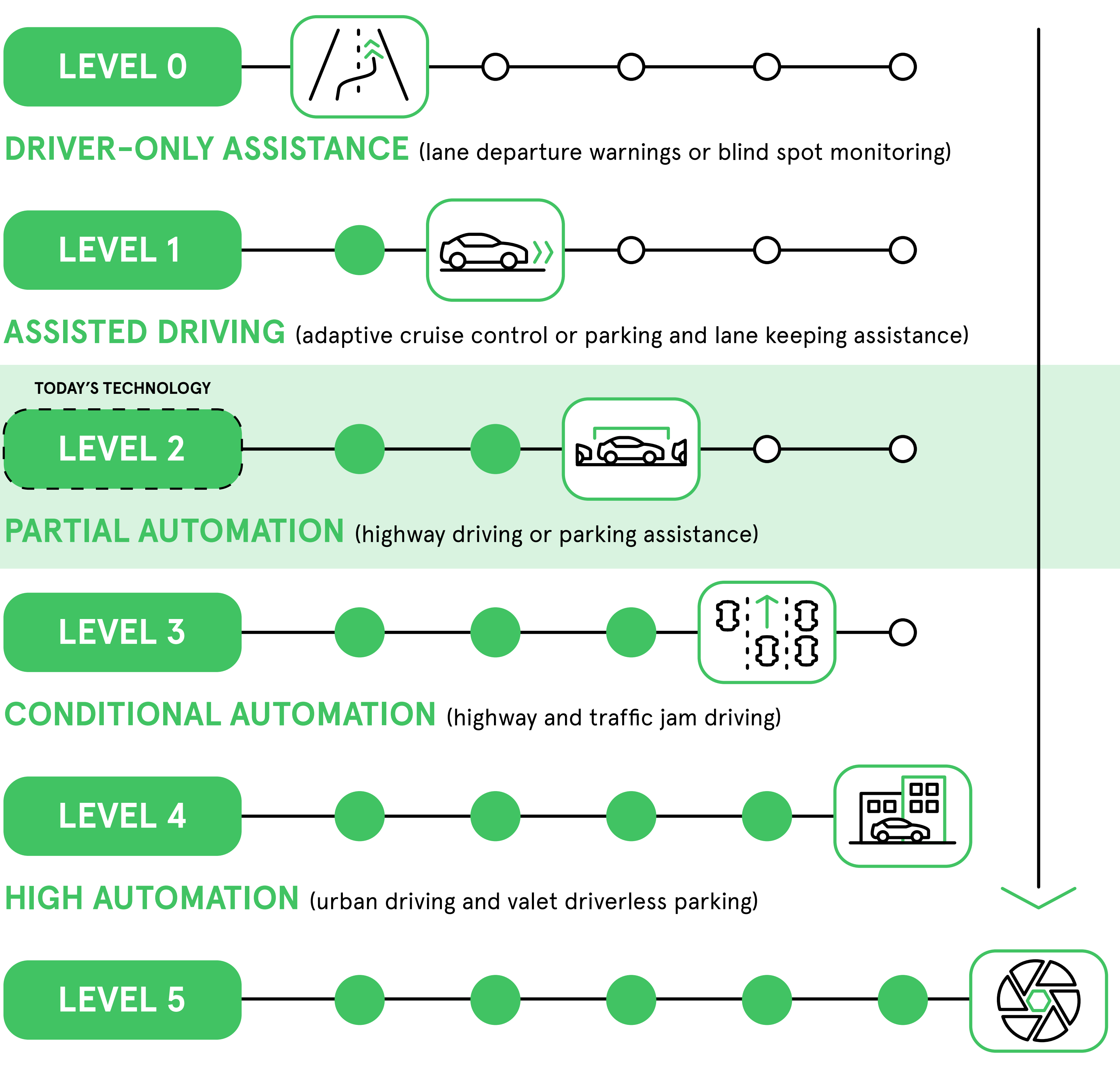
MOBILE DEVICE-CONTROLLED INFOTAINMENT SYSTEMS

AI-BASED ASSISTANT IN-VEHICLE

EMERGENCY AND AUTONOMOUS BRAKING AND STEERING SYSTEMS

Source: J.D. Power and Associates, March 2014 and April 2017

Setting the stage for **fully autonomous** driving:



LEVEL 0

DRIVER-ONLY ASSISTANCE (lane departure warnings or blind spot monitoring)

LEVEL 1

ASSISTED DRIVING (adaptive cruise control or parking and lane keeping assistance)

TODAY'S TECHNOLOGY

LEVEL 2

PARTIAL AUTOMATION (highway driving or parking assistance)

LEVEL 3

CONDITIONAL AUTOMATION (highway and traffic jam driving)

LEVEL 4

HIGH AUTOMATION (urban driving and valet driverless parking)

LEVEL 5

FULL AUTOMATION (combines all other autonomous driving levels)

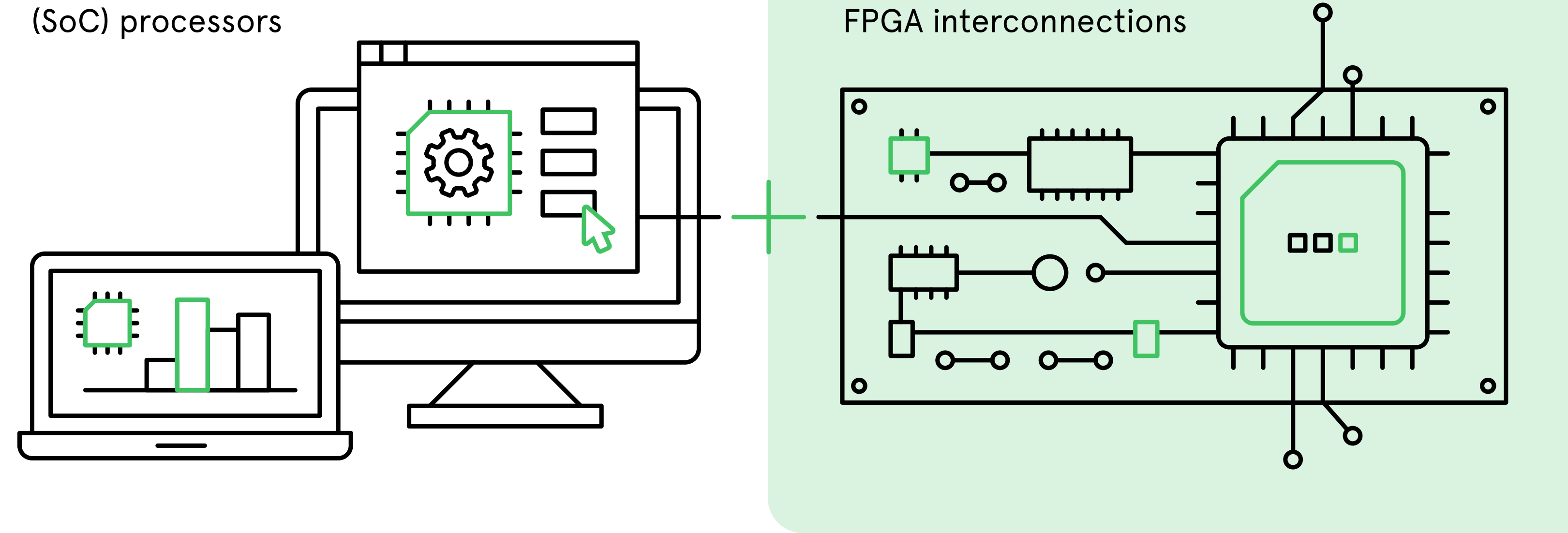
Source: Car & Driver, October 2017

All Programmable technologies bring clarity to the complexity of higher-level automation

SoCs with programmable logic create lower power, higher efficiency data paths that enable machines to make high functioning decisions:

SOFTWARE PROGRAMMABILITY
with system on a chip (SoC) processors

HARDWARE PROGRAMMABILITY
with designer-defined FPGA interconnections



Source: Avnet, January 2018

How **embedded vision** happens

Before, external chips and pre-written hardware interconnects slowed down the process of machine vision.

Now, with all Programmable technologies, the complex process of getting information from a camera into an action taken by the car is made simple.

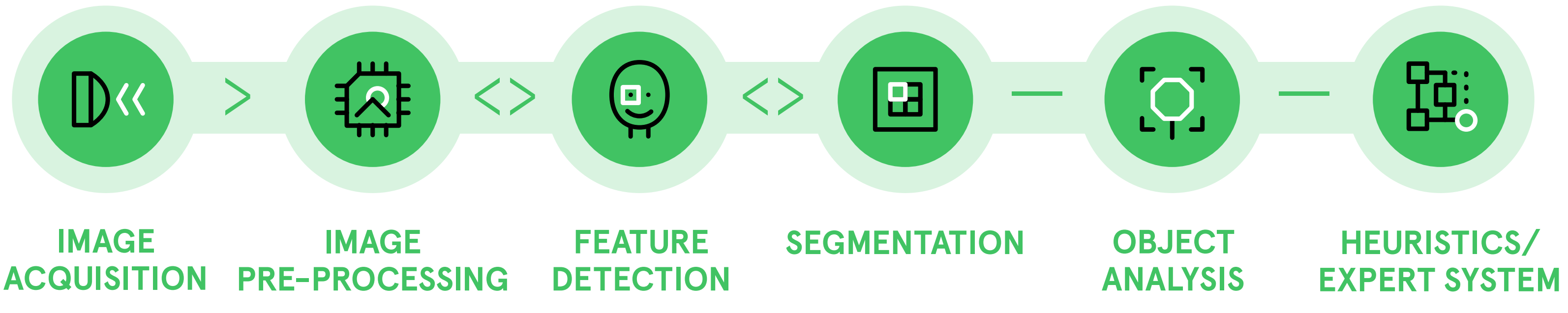


IMAGE ACQUISITION > **IMAGE PRE-PROCESSING** <> **FEATURE DETECTION** <> **SEGMENTATION** — **OBJECT ANALYSIS** — **HEURISTICS/ EXPERT SYSTEM**

Source: Embedded Vision Alliance, December 2013

Learn how Avnet can help you reach further
avnet.com/embeddedvision

Sources:
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