

OPTIMAL+

Lifecycle analytics you can trust

Lifecycle analytics for reliable automotive

2019



It's a changed world

Technological innovation has transformed our lives.

Products and devices are more intelligent and connected.

These products rely on thousands of electronic components.



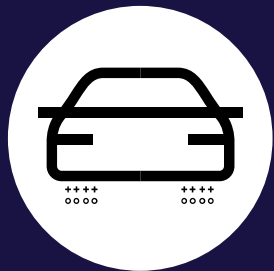
Electronics reliability is critical

Components must be
more reliable than ever before.

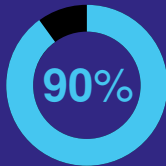


Automotive innovation exemplifies the challenge

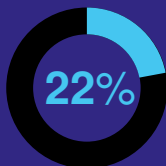




Automotive innovation reliability challenge



car innovations & new features are driven by electronics²



warranty costs related to electronics & semiconductors³



car recall increase from 2014-2016 due to electronics⁴

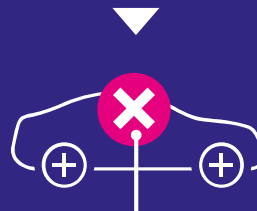


Toyota's gas pedals recall
Ford's failure-to-park recall
Takata's air bag recall

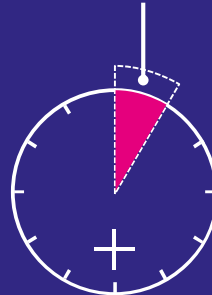


15x Drive per day¹:
1.5hr traditional car vs.
22.5hr autonomous car

Audi says



1 car failure
every hour¹



Reliable electronics is a must



1) Audi, DVCon Munich, 2017
2) Automotive change drivers for the next Decade, EY, 2016
3) BMW - AEC Automotive electronics reliability workshop, 2017
4) NHTSA Recall Data

Growth of electronics creates safety and reliability challenges

90% of car innovations and new features are driven by electronics



Just ask Audi



Recall

400,000 Jeep,
Chrysler and
Dodge cars
recalled in 2017
due to electrical
component failure



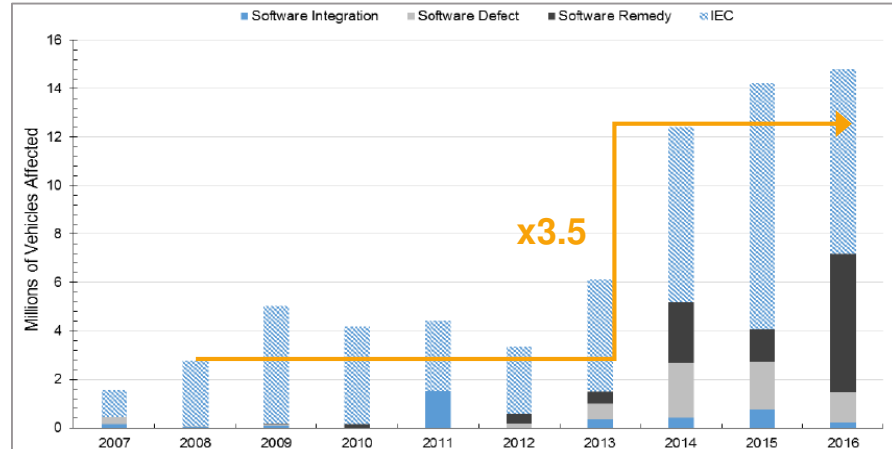
Growth of electronics creates safety and reliability challenges

3X car recall increase
from 2014-2016 due to electronics



Growth of electronics creates reliability challenges

Total car recalls due to electronic components



Contains data for BMW, Daimler AG, FCA, Ford, General Motors, Honda, Hyundai, Kia, Toyota, Volkswagen, and Volvo. Identified from dataset updated through 2016. Excludes Takata inflator recall campaigns.

New cars < 3yrs are significantly prone to recalls



Growth of electronics creates safety and reliability challenges

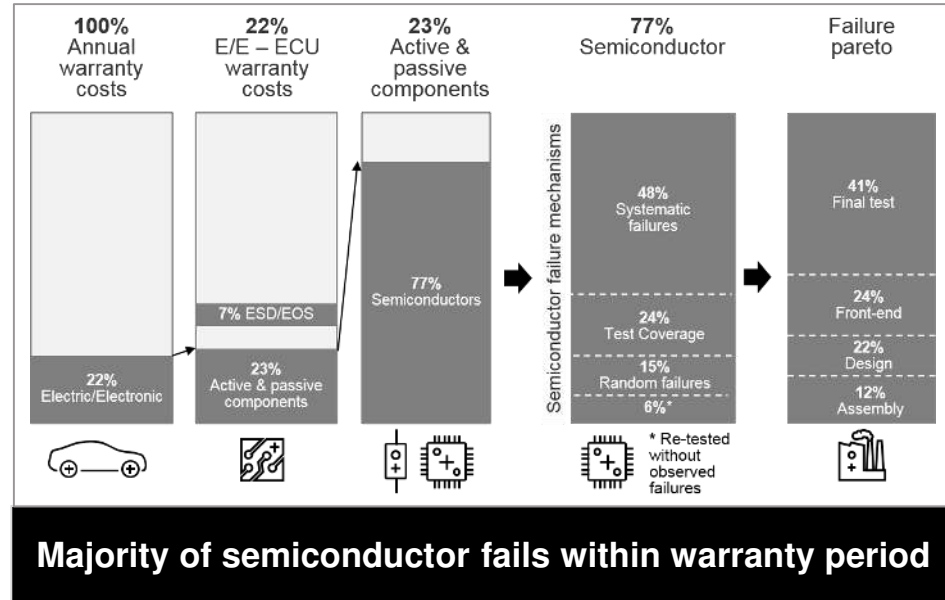
22%

of **warranty costs** are related to electronics and semiconductors



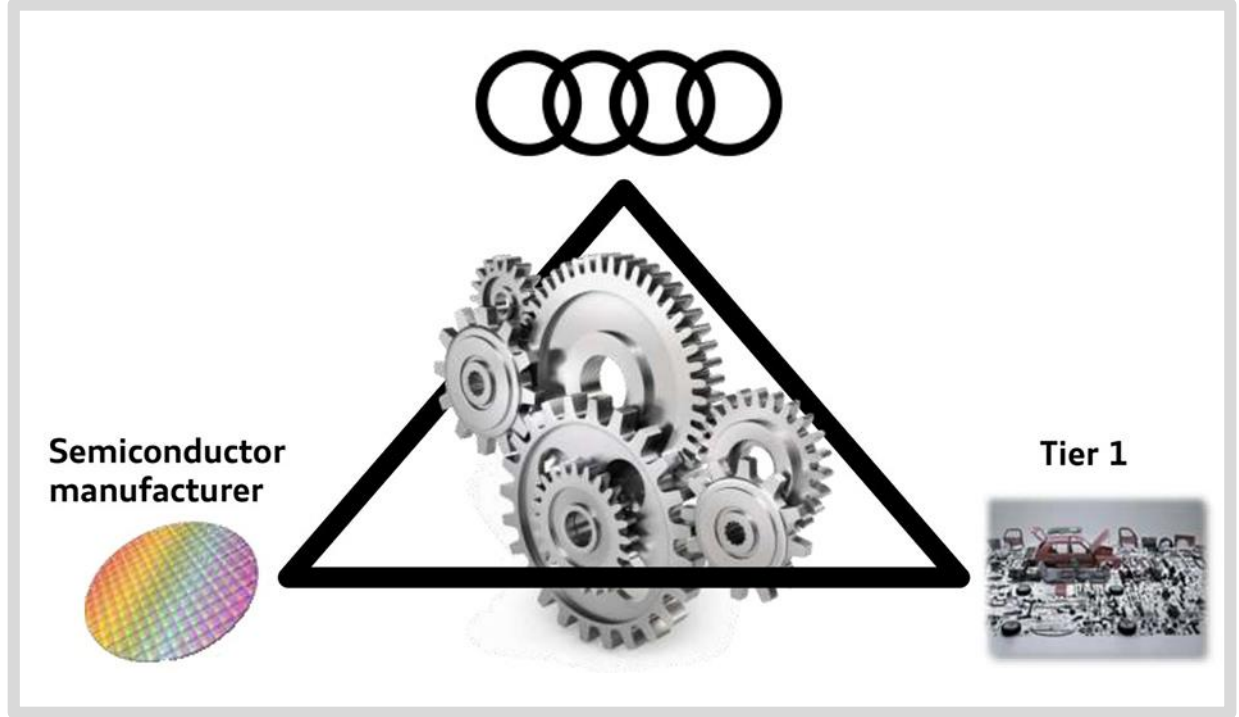
Growth of electronics creates reliability challenges

Warranty share
of electronics
0 to 24 months





...only synergy
enables new
potentials



Autonomous cars will only intensify the reliability issue

1.5 hrs/day
traditional car drives
VS
22.5 hrs/day
autonomous car drives



**Our electronics
need to get much
more reliable**



Supply chain shift from value “pyramid” to “hub and spoke”



Autonomous driving will disrupt the automotive industry...

Existing value chain



New hub-and-spoke

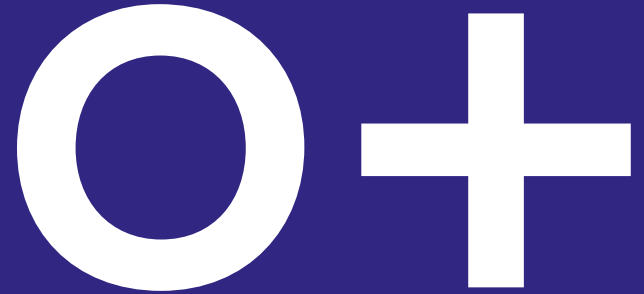


Our role

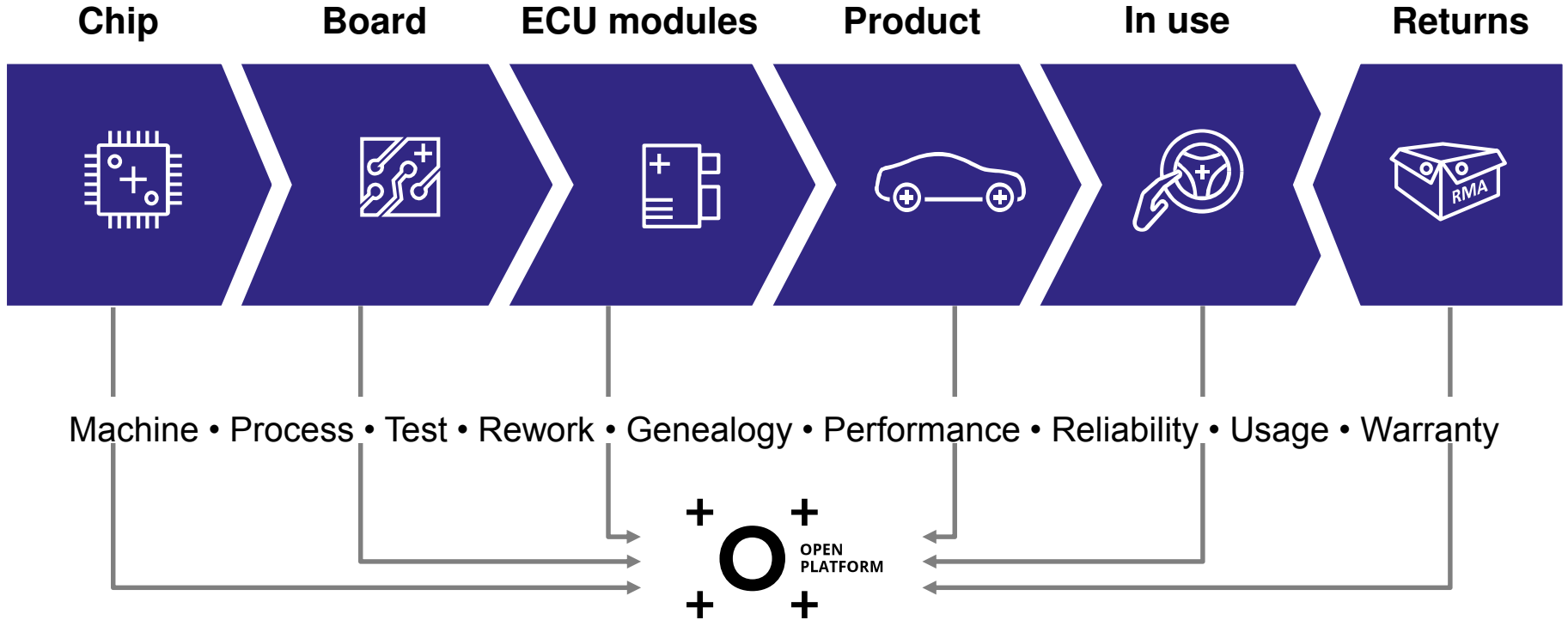
We deliver unprecedented manufacturing efficiency and reliability to the Automotive, Semiconductor and Electronics supply chains.

We provide actionable insights through unique data analytics to prevent bad products from reaching the market.

We call it **lifecycle analytics**

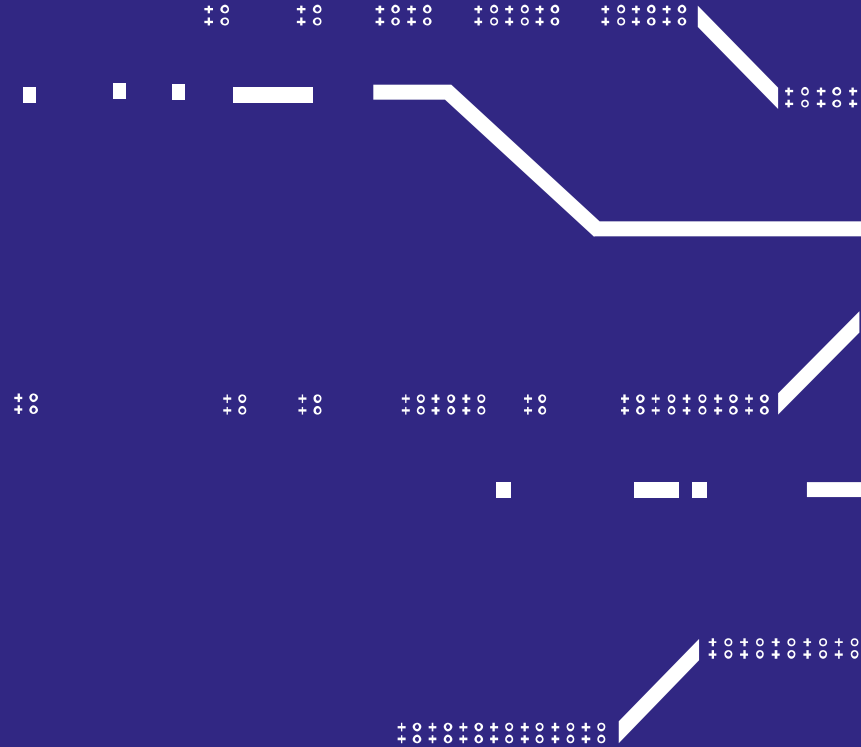


Lifecycle analytics – Following the product journey

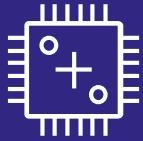


Analyzing huge volumes of data

100bn+
devices per year



Our expertise



Semiconductor



Automotive Electronics



Consumer Electronics
& Computing

Significant business impact

Reliability

50% case
avoidance

Yield

increase
up to
10% NPI
2% HVM

Efficiency

up to **25%**
cost savings

Speed

from weeks
to days
NPI, TTM, RCA



We help our clients transform data into automated actions



Collect

- Data harmonization
- Product, machine and process data

Detect

- Prescriptive analytics
- AI / Machine learning
- 24x7 analytics engine
- Real-time

Act

- Automatic
- Distributed
- Controlled





Accelerating innovation

Open platform synergistic with any big data strategy

Machine learning | Artificial intelligence | Prescriptive analytics



Trusted by leading brands

Customers

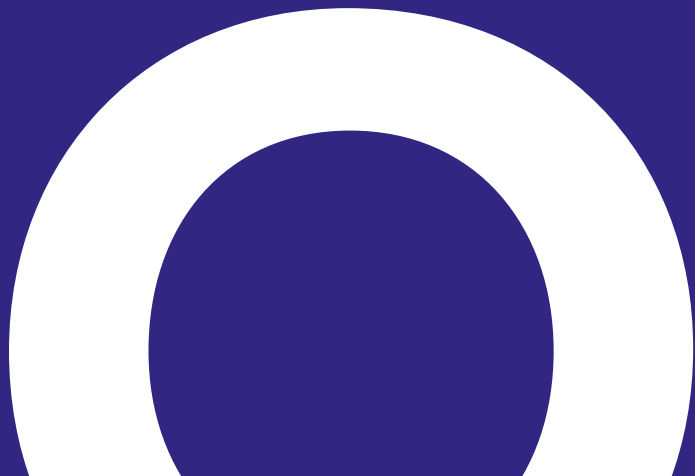
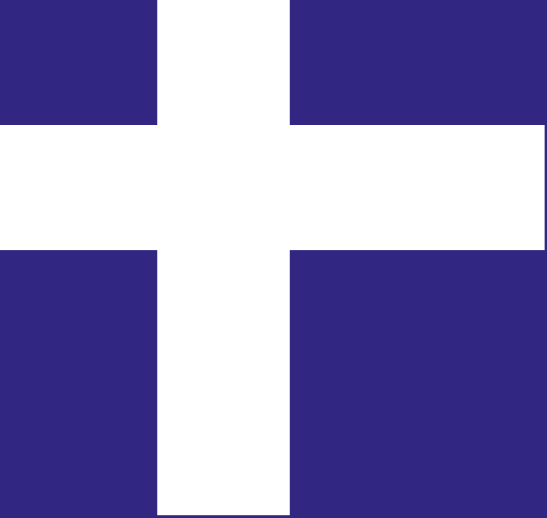


Supply chain



Supply chain visibility + Lifecycle analytics = Reliable electronics





Thank you

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