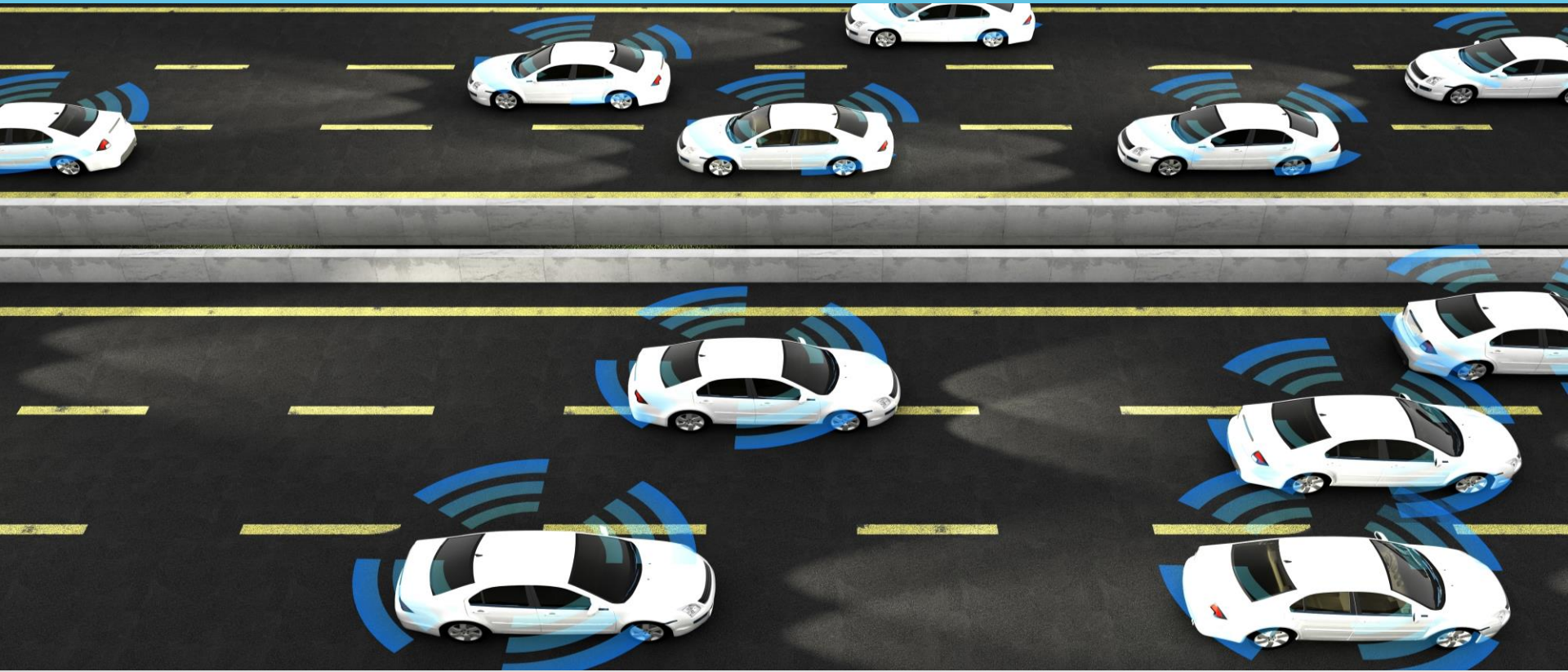
Preventing Cyber Attacks on Aftermarket Connectivity Solutions

Zach Blumenstein, BD Director

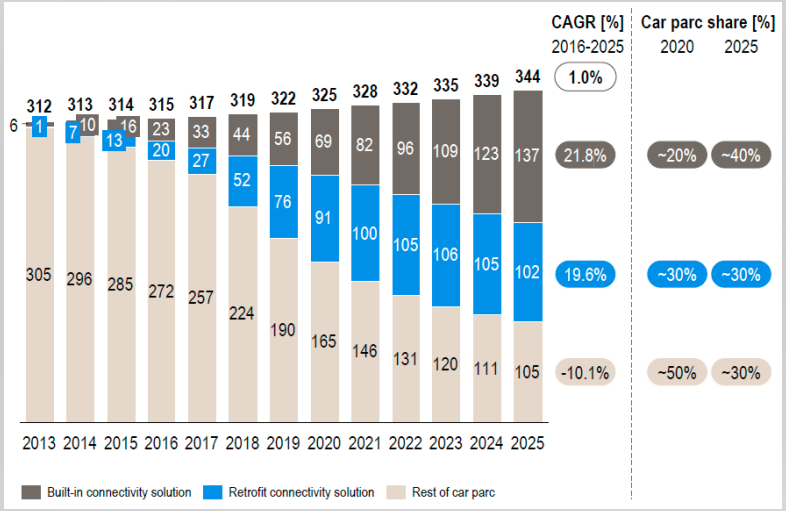
Argus Cyber Security

In less than a year, 100s of millions connected cars



Aftermarket connectivity most prevalent until 2023

- Approx. 100 million connected cars in EU by 2018
- OBD II dongles used by 30% of EU car parc 2020-2025



Source: Roland Berger

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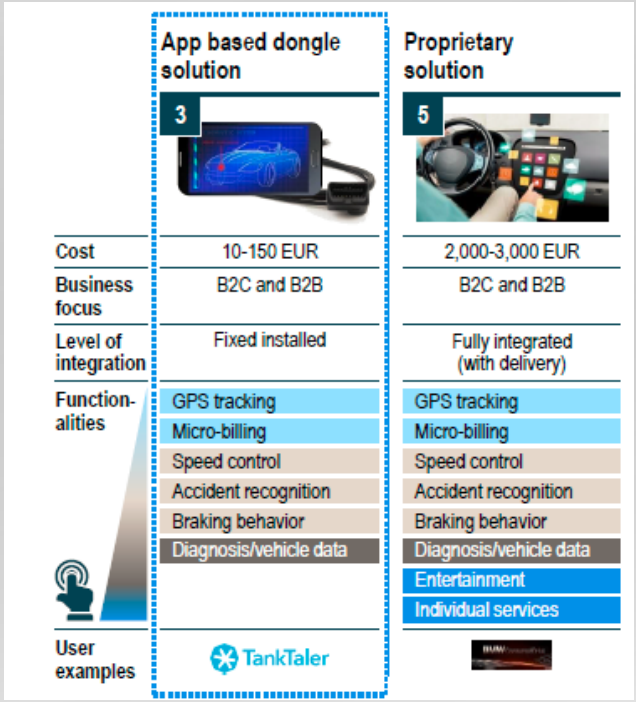
The opportunity

- Dongles are an attractive option
- 7 out of 10 consumers would **pay up to 10% of the car price** on services relevant to them
- 35% of consumers already willing to trade driving data for insurance benefits



Source: Roland Berger, Accenture

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The challenge

"…'smart dongles' provide an attacker with the capacity of easily performing a remote attack with…high impact."

- December 2017 – ENISA, Cyber Security and Resilience of Smart Cars

"…the OBD-II port as it currently exists creates a growing risk to the safety and security of passengers."

- September 2016 – open letter from 4 US Congressman to NHTSA Administrator

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The challenge cont'd

"…Aftermarket devices could be brought on to all ages and types of vehicles with varying levels of cybersecurity protections. Therefore, these devices should include strong cybersecurity protections since they could impact the safety of vehicles."

- October 2016 – NHTSA, Cybersecurity best practices for modern vehicles

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60
MINUTES

Why hack a vehicle?

Cyber Ransom

Car Theft

Targeted Attacks

Hacktivism

Data Theft / Privacy invasion

Mass Events

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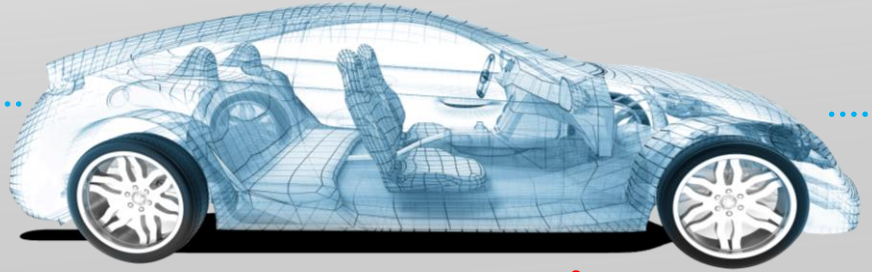
ODB II dongles increase the attack surface

Cellular (3G/4G-LTE)



Infotainment

Bluetooth

V2X

OBD II

WiFi

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Dongles have already been hacked

- Security challenges with telematics dongles
  - Enlarge the attack surface
  - Built on old hardware with weak security
  - OBD II port is directly connected to safety critical functions
  - No cyber security regulatory environment

"...anything connected to...the Internet [enlarges the] attack surface...**especially when it is plugged into the diagnostic port**..."
-Chris Valasek

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Argus exposes aftermarket device vulnerability

- Zubie aftermarket telematics dongle
- Communication based on non-secure HTTP protocol
- Provided direct access to the safety critical systems
- Braking, steering and acceleration could have been affected

Progressive – ***two million*** cars open for exploit

- Progressive's UBI Snapshot device hacked
- No responsible disclosure, could affect on ~2 million cars
- Unlock the doors, start the engine, gather engine information

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UCSD researchers expose flaw


HACKERS CUT A CORVETTE'S BRAKES VIA A COMMON CAR GADGET

- Mobile Devices OBD2 dongle
- Through malicious SMS messages researches gained remote access
- Activating and disabling the brakes, turning on windshield wipers

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Aftermarket Food Chain

Telit — Module Vendors — gemalto — SIERRA WIRELESS

CalAmp (Formerly Wireless Matrix) — Queclink — Telematics Technology Provider — XIRGO TECHNOLOGIES

verizon — Zubie — **Telematics Services Provider** — AUTOMATIC — TOMTOM — OCTO

Future potential

5.5M	~100K	N/A	~3M		
UBI Usage Based Insurance	Consumer Telematics Product	SVR Stolen Vehicle Recovery	Fleet Management	Road assistanceM otorists clubs	Leasing Car-Sharing and Car-Rental companies

Allstate (You're in good hands.) — PROGRESSIVE — Insurers companies/Fleet Management — TOMTOM — Fleetmatics (Intelligence at work)

End-consumer

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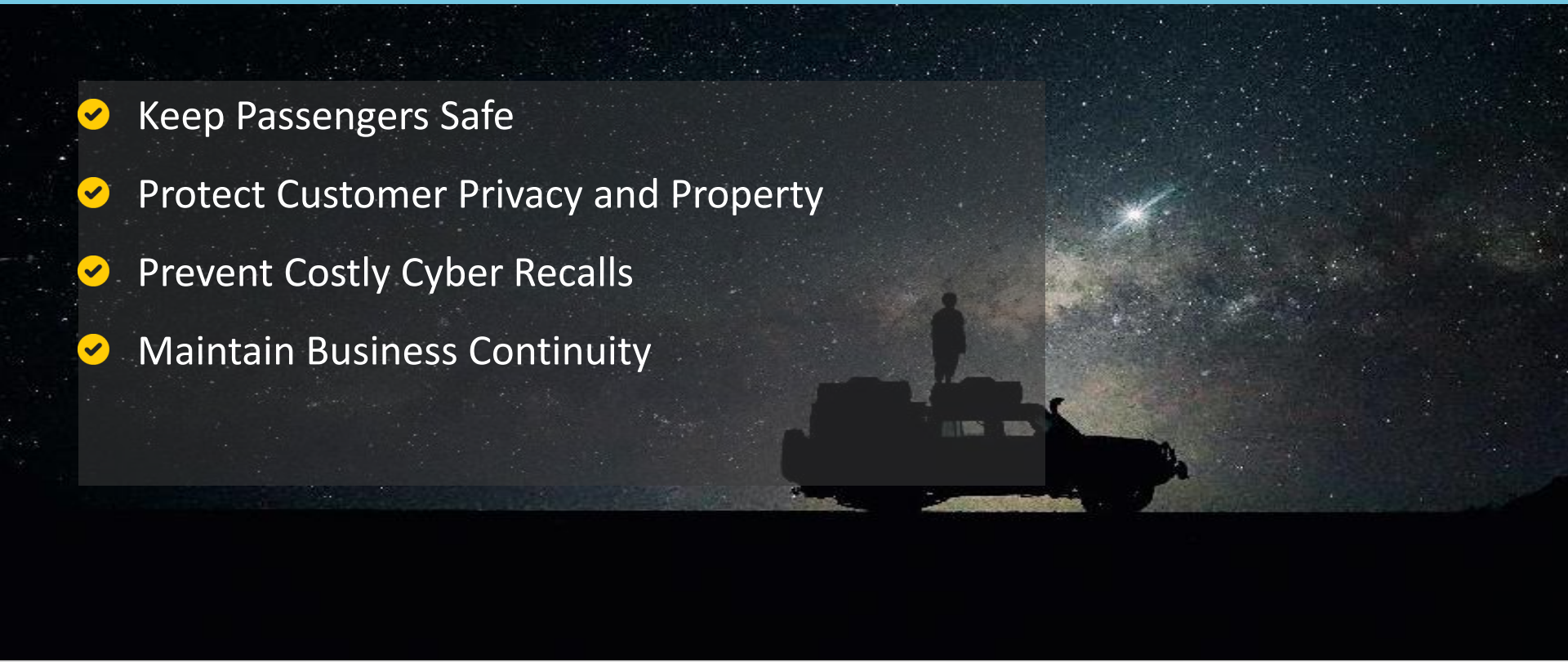
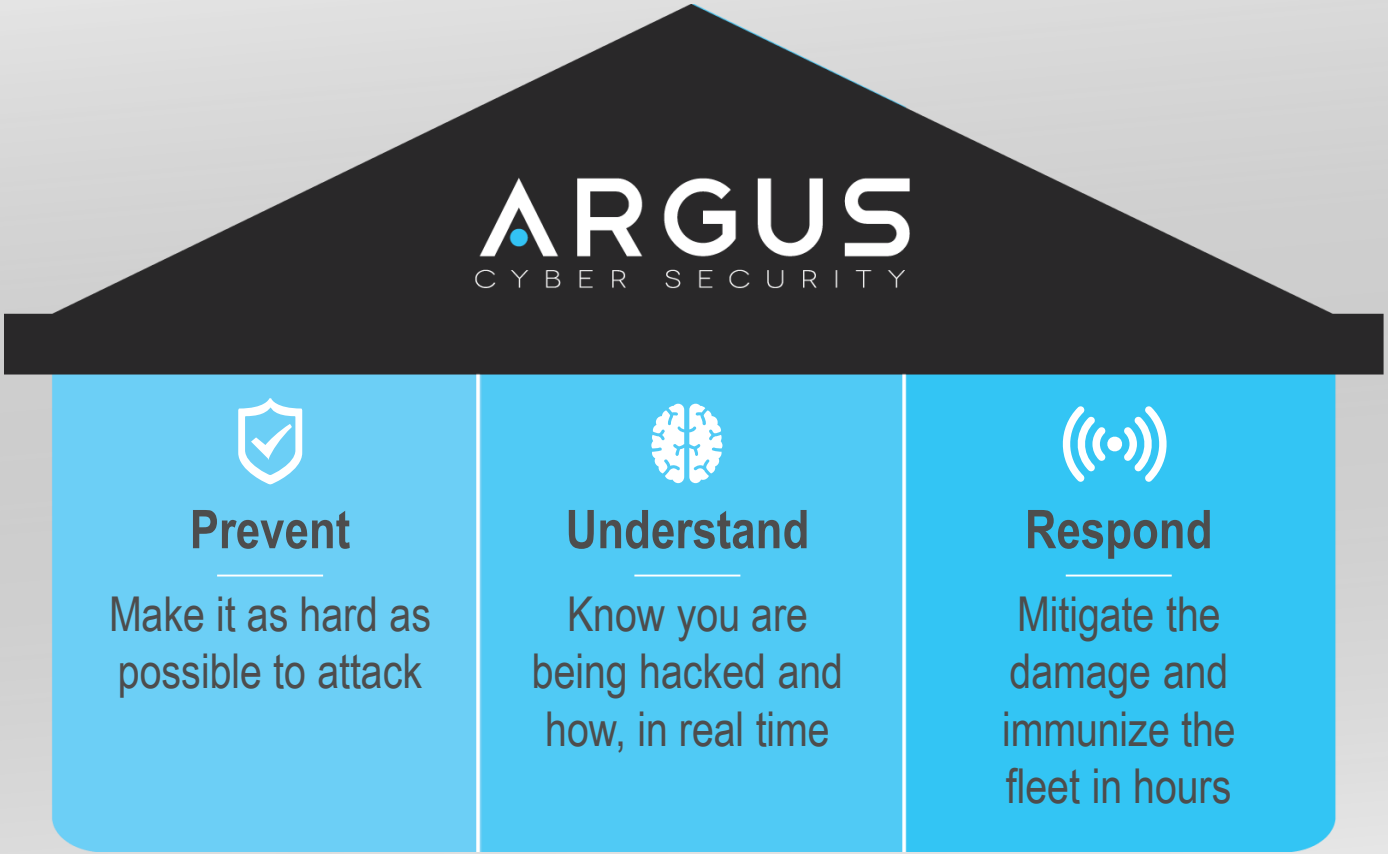
52% People Would Pay $8/Month for Cyber Security

Argus' Mission



- Keep Passengers Safe
- Protect Customer Privacy and Property
- Prevent Costly Cyber Recalls
- Maintain Business Continuity

Argus Cyber Security Philosophy



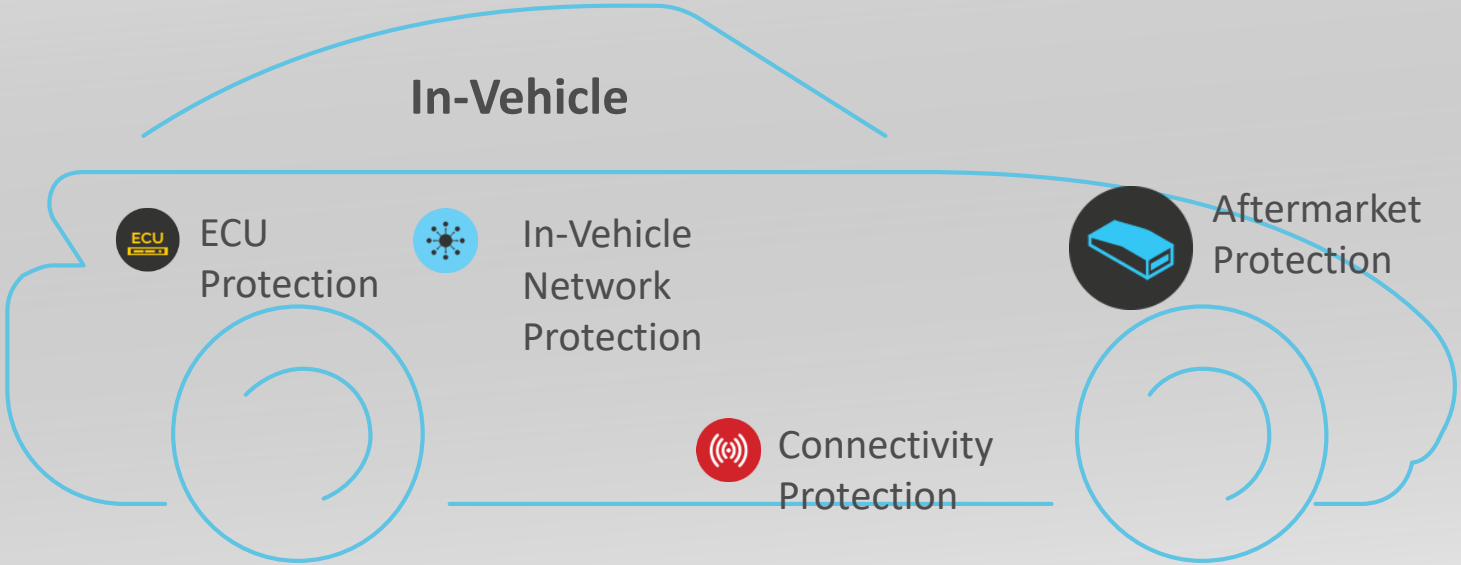
Maximum Prevention – Security in Depth

Prevent

25 Granted and Pending Automotive Cyber Security Patents

Out-of-Vehicle

Lifespan Protection



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DASHBOARD 1 | REPORTS 12 | CONFIGURATION | ADMIN

97% UPDATE STATUS

+9 NEW VULNERABILITIES

+74% BLOCKED ATTACKS

Understand

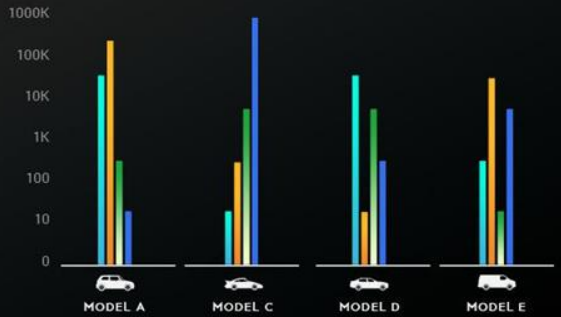
IN-VEHICLE TRAFFIC

FLEET

Allowed Anomalous Blocked

ATTACKS PER MODEL

2015/09 2015/10 2015/12 2015/12



CHECK POINT CAPSULE
SECURITY INCIDENTS

SEVERITY	SOURCE	DESTINATION	MALWARE ACTIVITY
High	Argus Demo	192.117.2.58	Communicate with C&C
Low	Magna car	192.79.2.126	Access to malicious site
Low	Magna C	192.5.46.181	Communicate with C&C

ATTACK ORIGINS

France	15%
Ukraine	15%
USA	18%
Others	37%

ATTACKS TREND

ATTACKED COMPONENTS

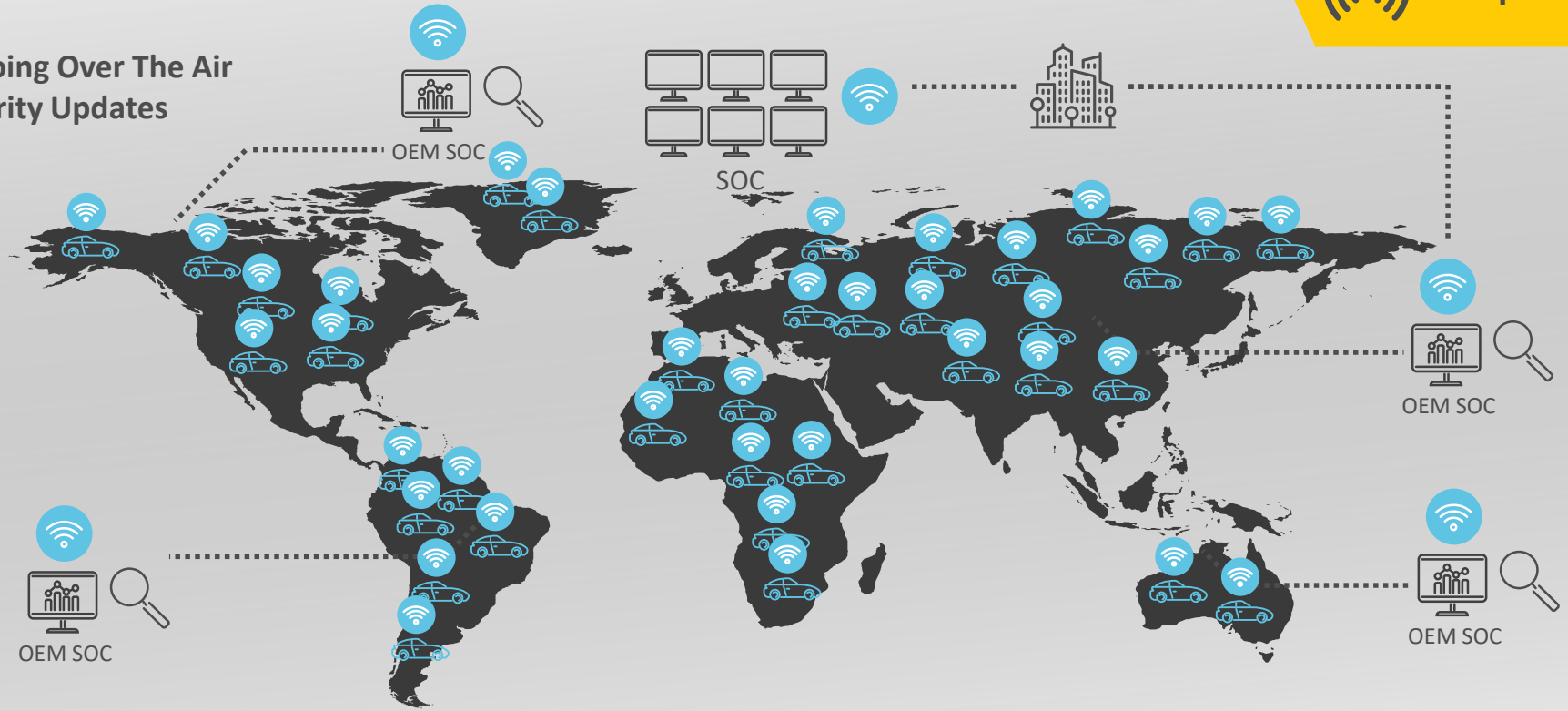
FLEET

BRAKES	12
TEMP GAUGE	495
SPEED METER	1024
WINDOW	11
FUEL GAUGE	58
DOOR LOCK	4
TURN SIGNALS	78
A\C VENT	18

Ongoing Monitoring & Mitigation

Respond

Ongoing Over The Air security Updates



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Our Competitive Advantages

- Unique combination of cyber security & automotive experts
  - Industry's best team (founders, leadership, employees, investors, advisors)
- Widest array of solutions in the market
- Technologically superior, significant IP (25 pending / granted patents)
- Significant projects with OEM and Tier 1s
- Very strong partners
- Recognized as the market leader

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Drive Home Cyber Safe!