redbend
CATALYZING CHANGE

SECURE OTA SOFTWARE MANAGEMENT FOR AUTOMOTIVE

AGL TOKYO JUNE 1 2015

COMPANY SNAPSHOT

Summary

- Established 1999
- Acquired by HARMAN - 2015
- HQ & R&D Centers: Israel, France
- Offices in UK, Japan, US, China, Korea
- Technology Acquisitions:
  - Device Analytics - Broadsense - 2009
  - Device Virtualization - VirtualLogix - 2010
- 240 employees

Serving the Connected World

MOBILE

AUTOMOTIVE

INTERNET-OF-THINGS

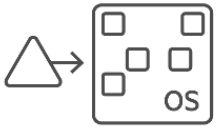
redbend

100 CUSTOMERS; 2B CONNECTED DEVICES DEPLOYED

TRUSTED BY THE CONNECTED WORLD

REDBEND IN AUTOMOTIVE

Installed on >2 Million Vehicles



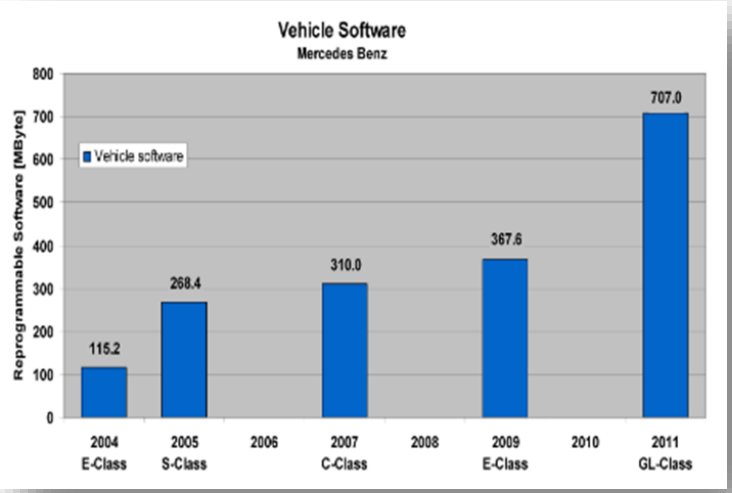
> 4 Millions successful updates

6 Active automotive customers

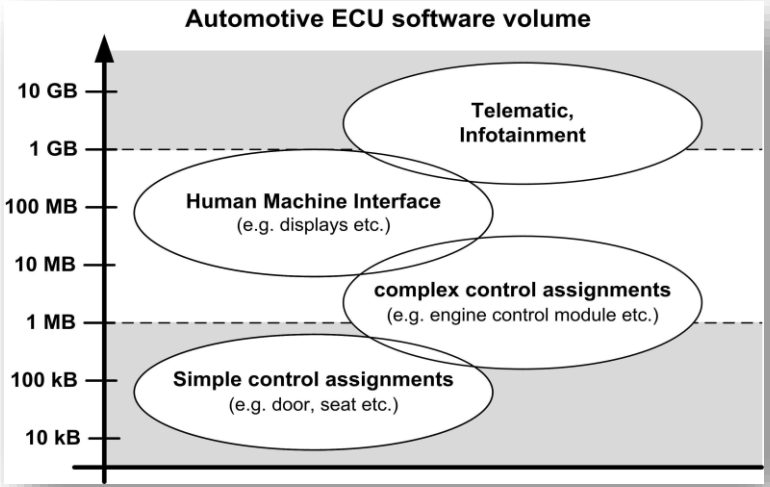
Validated business-case across all life-cycle locations

redbend

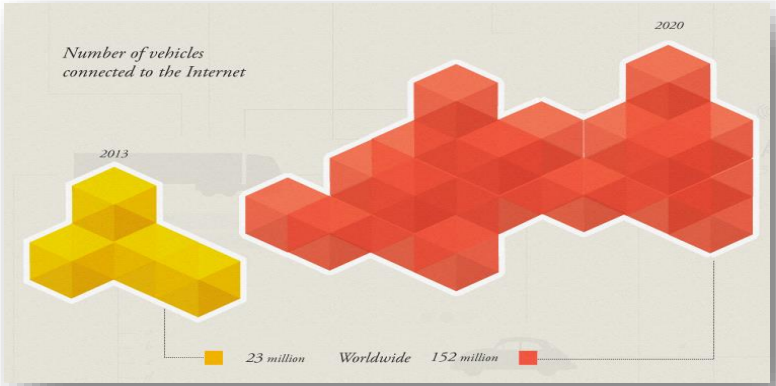
THE CAR – SOFTWARE ON WHEELS

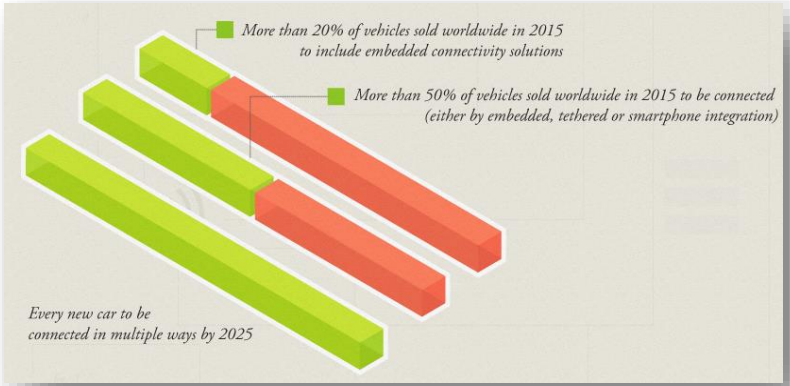


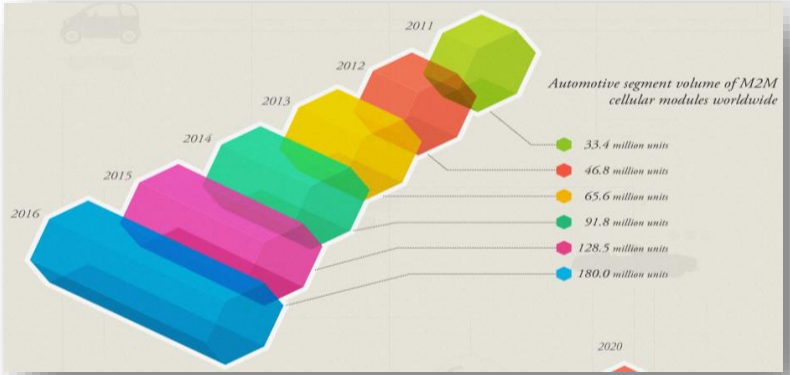
From thesis submitted by Dr. Ralf Schmidgall



THE CONNECTED CAR



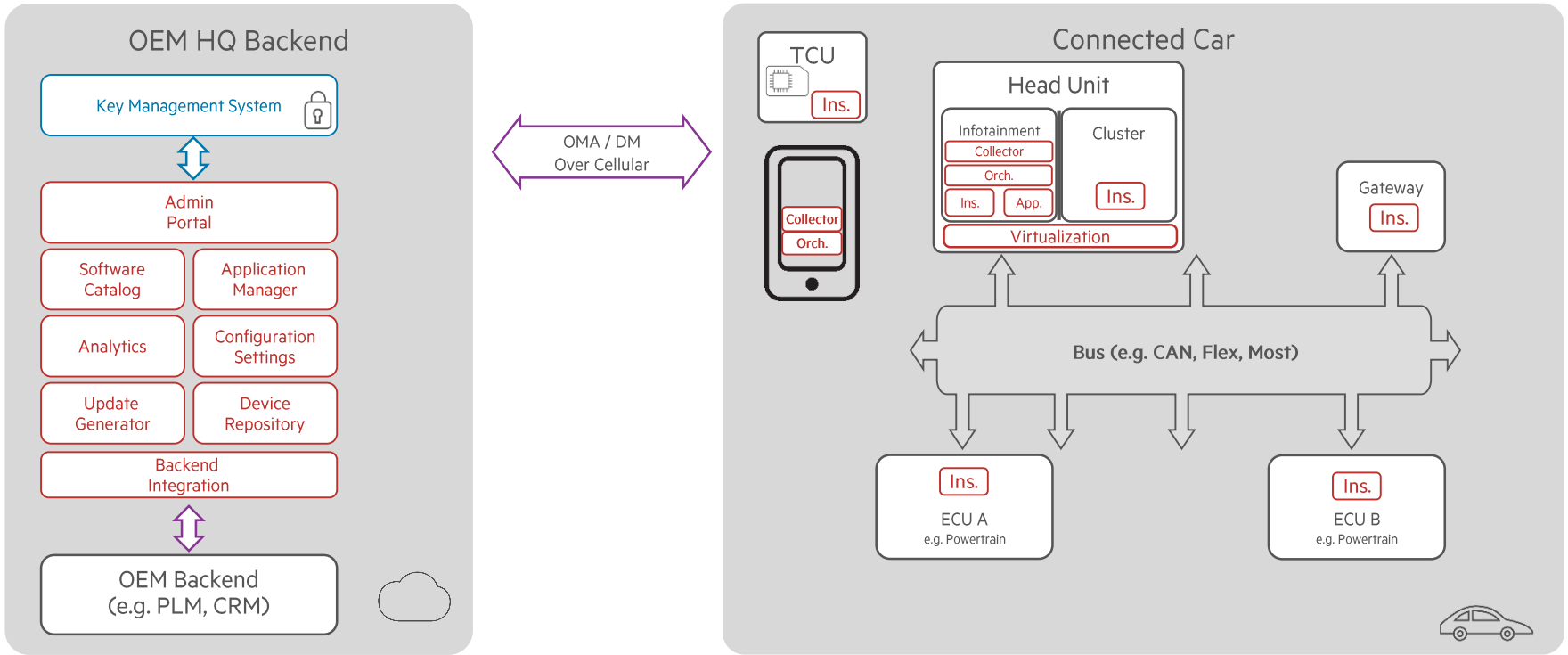




redbend

Source: Forbes 2015

CONNECTED CARS – SOLUTION OVERVIEW



redbend

VALUE ACROSS THE CAR LIFE CYCLE

Engineering

- Software Update as part of the design
- BOM and weight reduction

Production

- Reflashing eliminates bottlenecks
- Allowing late changes and fixes

Shipping

- Allow localization at the target destination
- Time-to-delivery reduction
- Manual labor reduction

Dealer

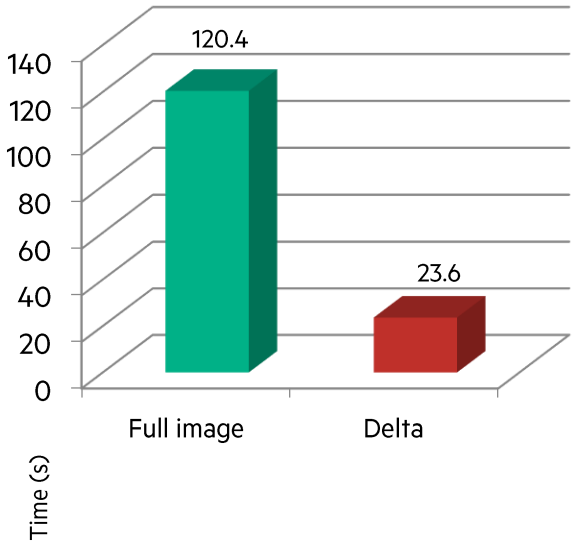
- Software updates cost reduction
- Waiting time reduction
- Enhanced customer experience

Home

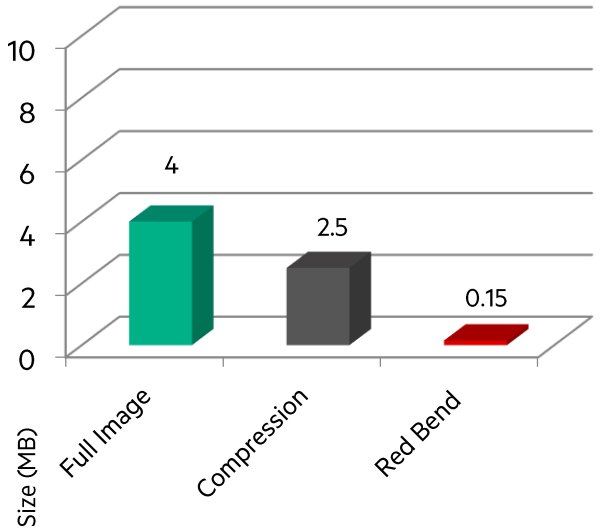
- Expensive recall elimination
- Enhanced customer experience
- Connectivity monetization

IMPACT OF RED BEND SMART DELTA

Speed: Production ECU over CAN bus



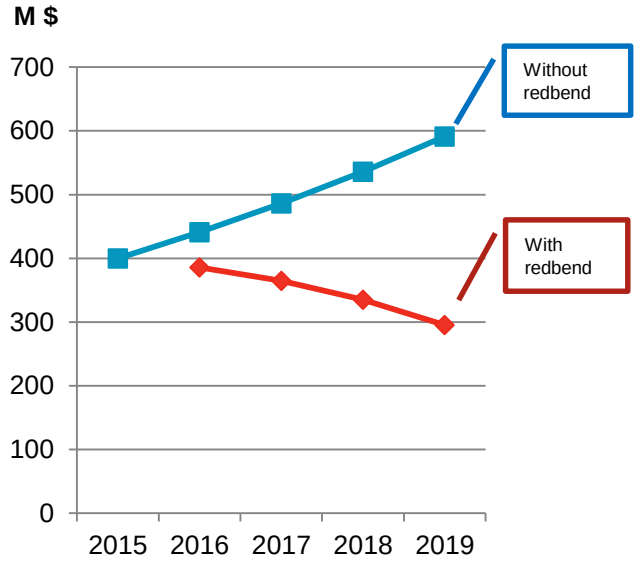
Size: Production ECU over CAN bus



redbend

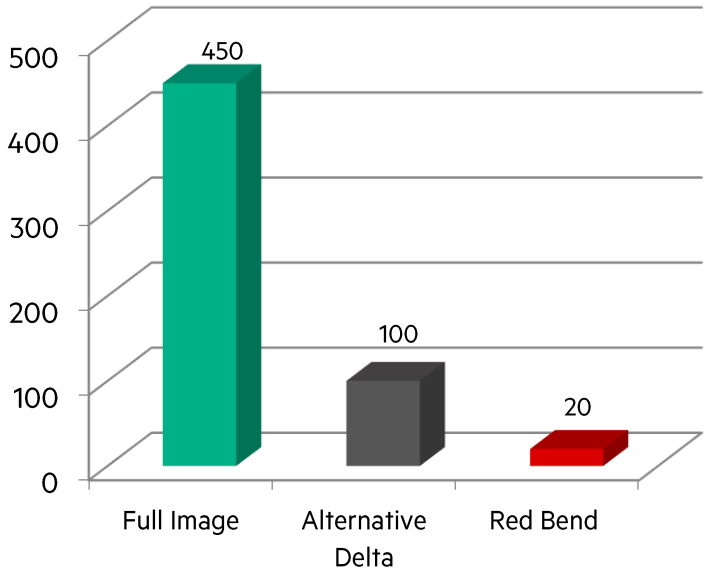
REDBEND USE-CASE – @ THE DEALER

- A leading European OEM
- Average software update takes ~30 minutes
- Each update costs OEM ~50 $ (10$ per 6 minutes slot)
- Smart delta technology is expected to save >60% of the update time



REDBEND USE-CASE – @ HOME

- A leading US OEM
- Bandwidth cost is paid by OEM
- OEM is pushing 3-4 updates per year
- Eliminate the need to go to the dealer



redbend

THE CYBER- SECURITY OF THE CONNECTED CAR

- The connected car increases significantly the vulnerability of the car to cyber-attacks
- BMW performed OTA update in order to close a cyber-security hole
- The media is also interested in automotive cyber-security

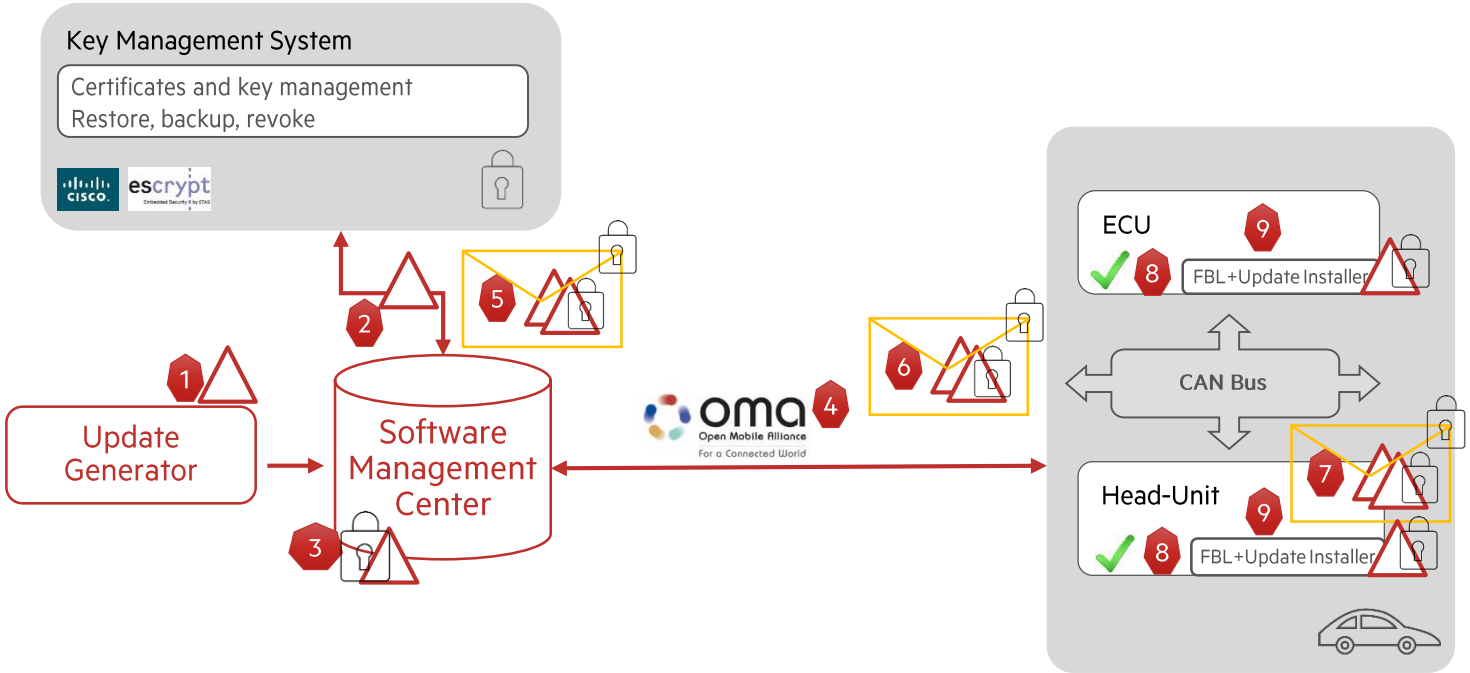
CASE STUDY: MARKEY REPORT 2014

TRACKING & HACKING: SECURITY & PRIVACY GAPS PUT AMERICAN DRIVERS AT RISK

- Senator Markey's report is based on a survey of 16 major automobile manufacturers
- How vehicles may be vulnerable to hackers and how driver information is collected and protected
  - Most automobile manufacturers were unaware of or unable to report on past hacking incidents.
  - **Three** did not respond
  - **Only two** automobile manufacturers were able to describe any capabilities to diagnose or meaningfully respond to an infiltration in real-time
- Report conclude that new legislation is needed:
  - Wireless access points in cars must be protected
  - Collected information must be appropriately secured
  - The manufacturer must be able to detect, report and respond to real-time hacking events

redbend

SECURED SOFTWARE UPDATES



Secured FBL verifies image upon boot

SUMMARY

- Trends show significate grow in software and connectivity
- The connected car also open the door to potential cyber-security treats
- Car OEMs & T1s are not well prepared
- One-stop-shop for Automotive Cyber Security is required

Yoram.berholtz@redbend.com

redbend
CATALYZING CHANGE