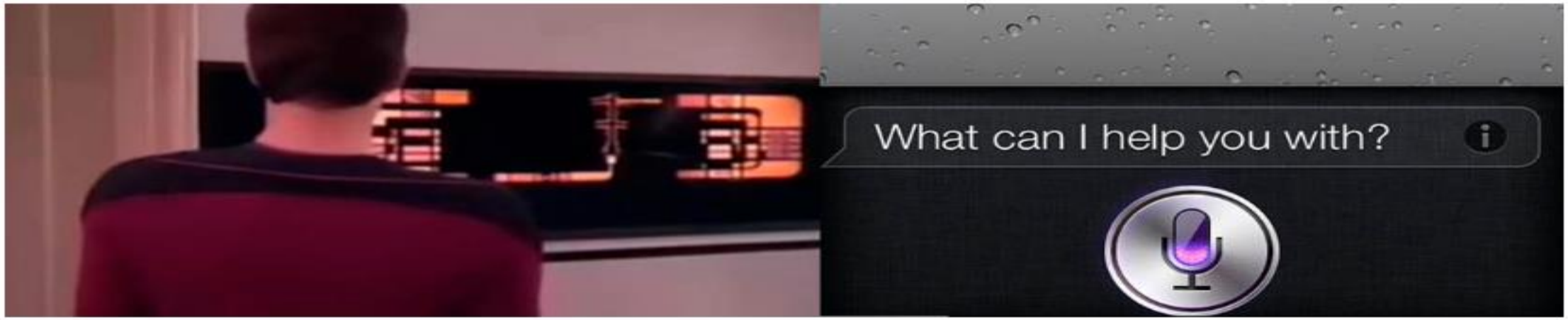
Future of Mobility

Arun Devaraj, Engineering Head- India

10th Aug, 2018

Visteon®

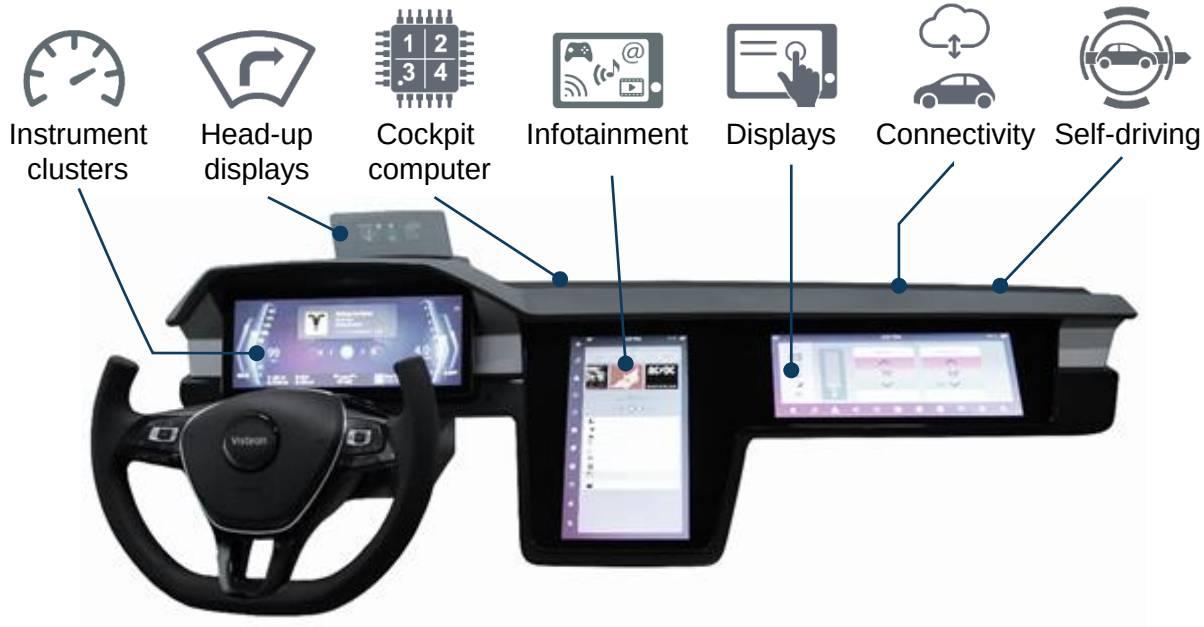
What we saw in Star Trek is finally a reality!



Siri- Star Trek_Computer.mp4

About Visteon

Complete Product Portfolio



Core Technology Platforms

- Ranked among the top five connected car companies*
- The largest Tier 1 automotive supplier focused exclusively on the fast-growing cockpit electronics segment
- Developing breakthrough approach to autonomous driving, applying artificial intelligence for object detection and classification

*Source: ABI Research

The Future

This is the future

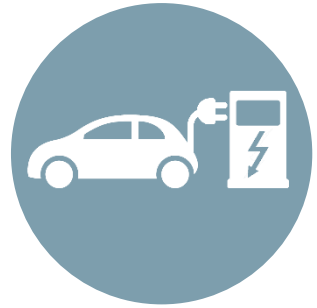
Key Trends in Automotive

Visteon

Connected

Autonomous

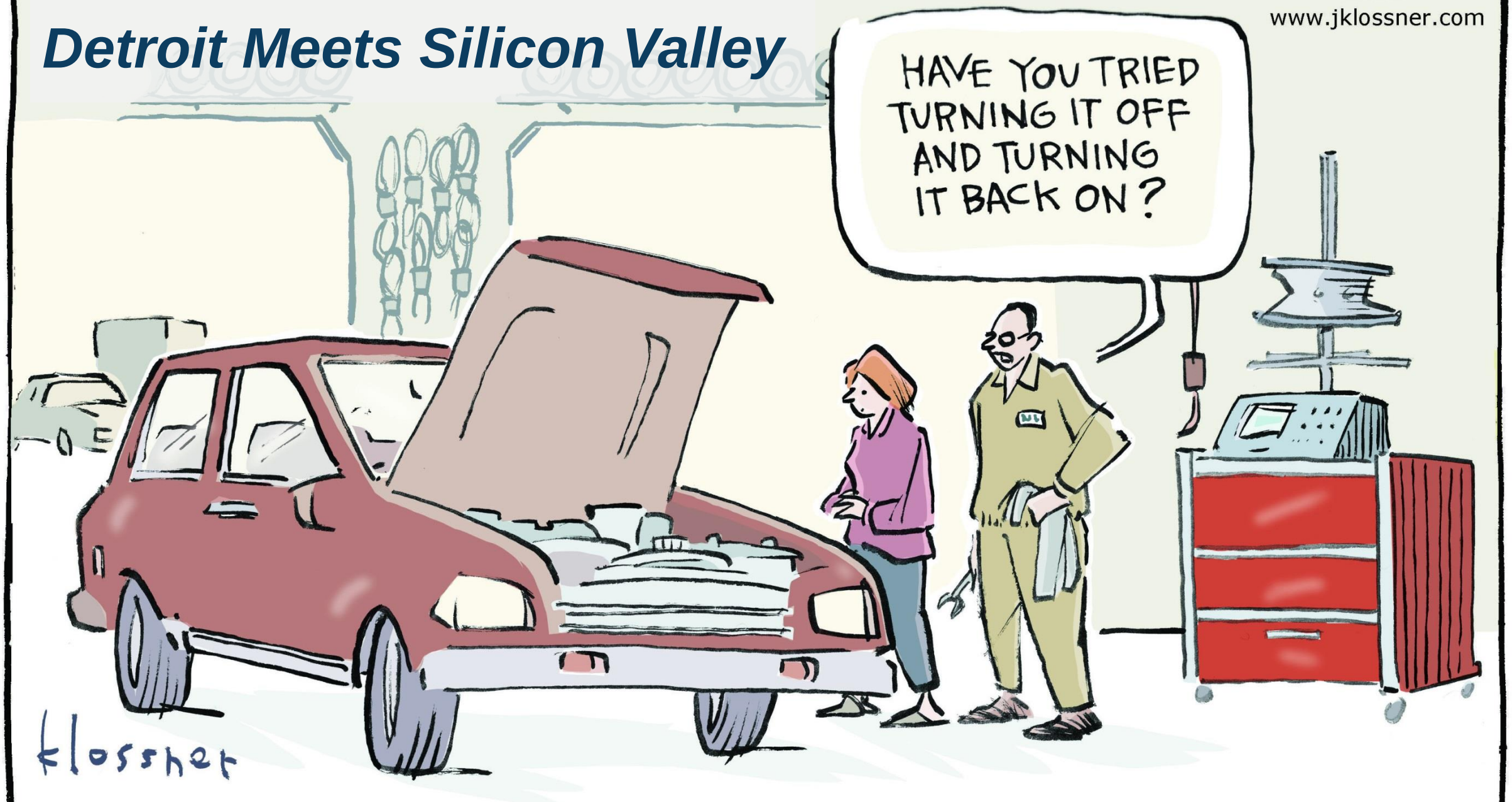
Shared



Electric

Autonomous and connected car are key trends for technology suppliers

Detroit Meets Silicon Valley



NO, I WILL NOT TAKE YOU TO A-1 STEAKHOUSE. I RECOMMEND YOU GO TO THE GYM FIRST, AND THEN TO V8 VEGETARIAN RESTAURANT.

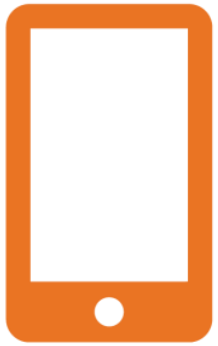
Trends in India

India by 2022

Visteon

29 years

Average age



890 Million

Smartphone subscription

11GB

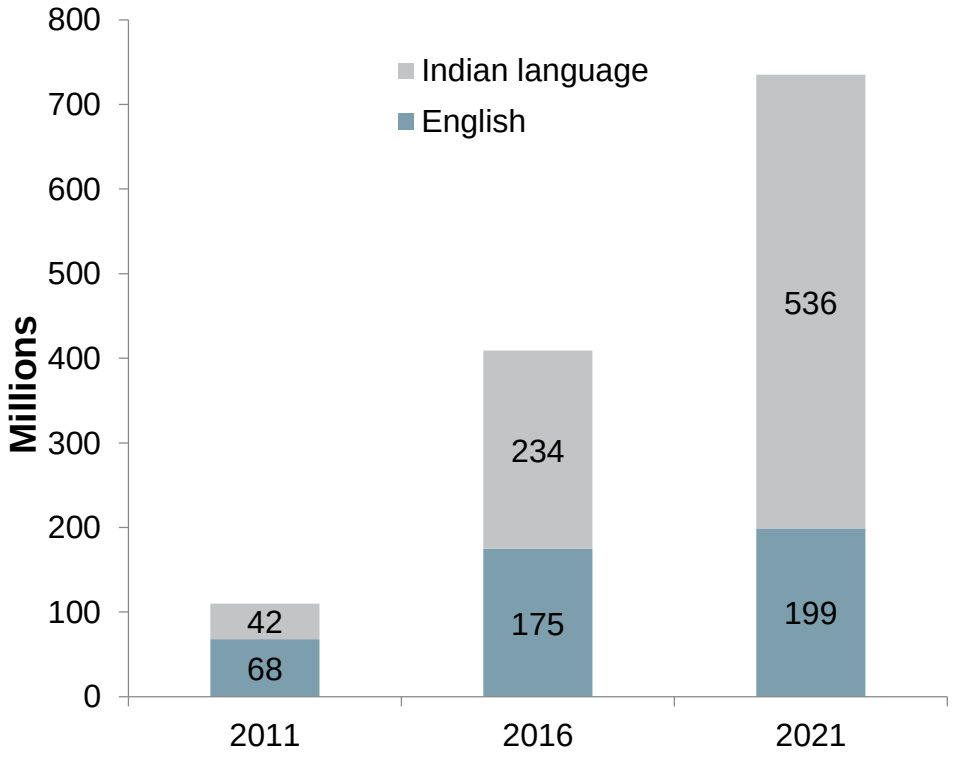
Data consumption / smartphone/ month

20 Billion

App downloads per year

11

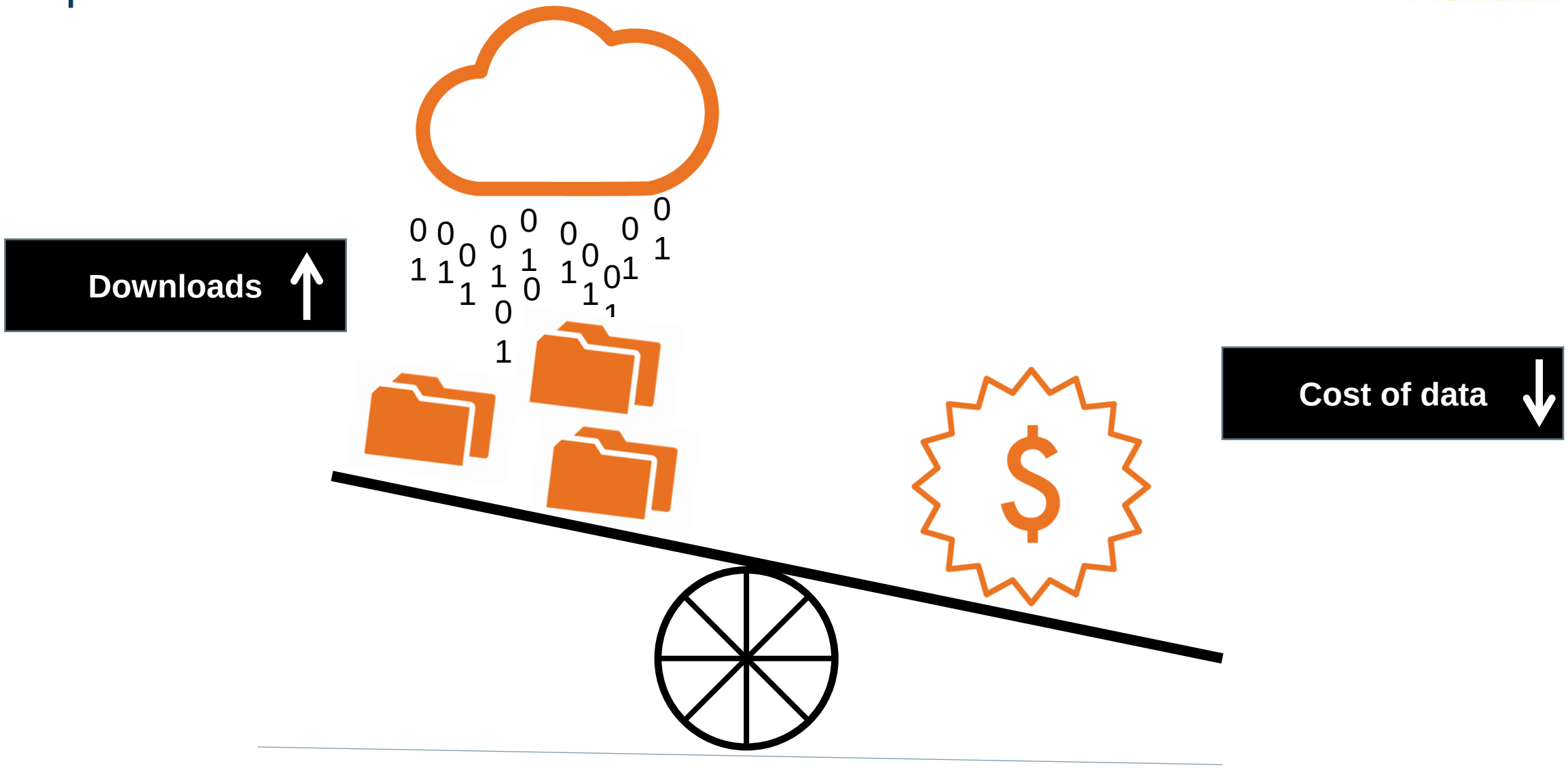
Indian language users



9/10 new internet users in India over the next 5 years are likely to be Indian language users

Data prices

Visteon



2022

800M Smartphone subscriptions

20B App downloads

Voice

20% of searches are voice based and moving to cloud

Low Latency Networks

Visteon

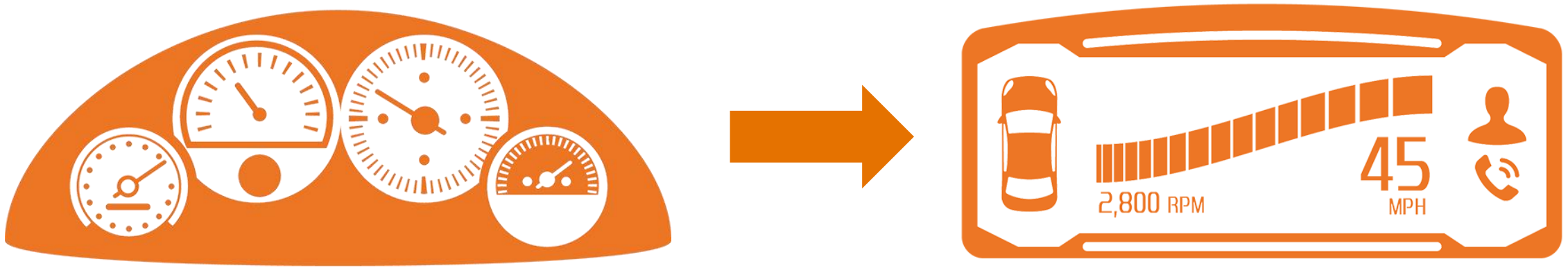
5G

<1millisecond latency

Future of Mobility in India

1010
110101010101
010101010101
0101010101
101010101
10101
10

Large Displays



Large Displays

Visteon

Consolidation of Driver info

Visteon

2015

Analog Cluster

AM/FM Radio

From AM/FM radio to connected infotainment

2017

Digital Cluster

From analog meter to all-digital cluster

Display Audio

2020

Integrated Digital Cluster and Display Audio

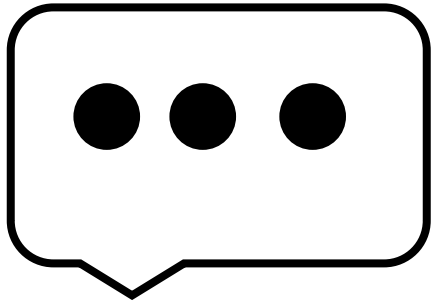
Integrated cockpit domain controller powered by single ECU

Single integrated ECU powering all cockpit electronics instead of multiple discrete ECUs

Device Convergence

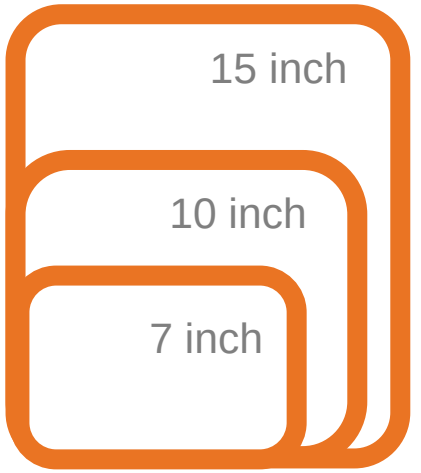
Visteon

Convenience



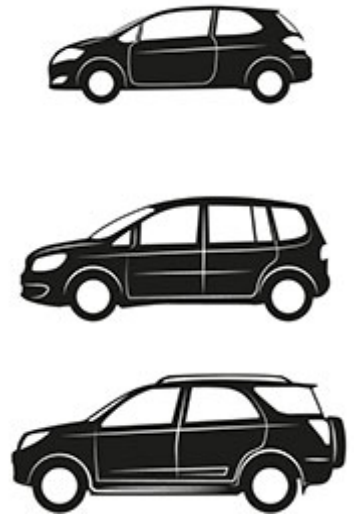
Scalability

User's persona is on the cloud



shared across infotainment systems of any size

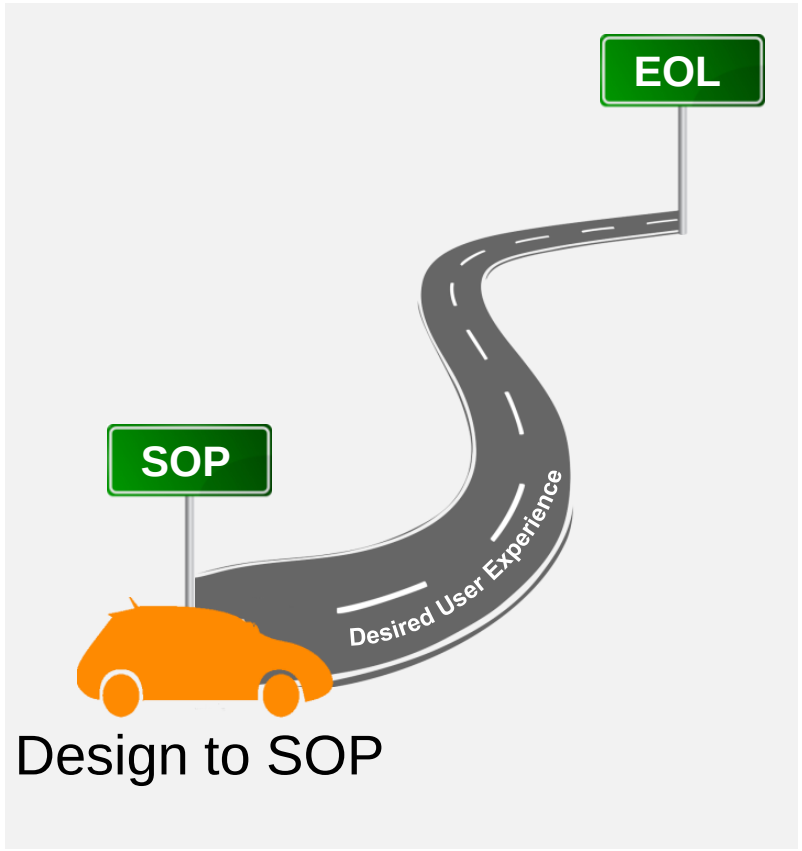
&



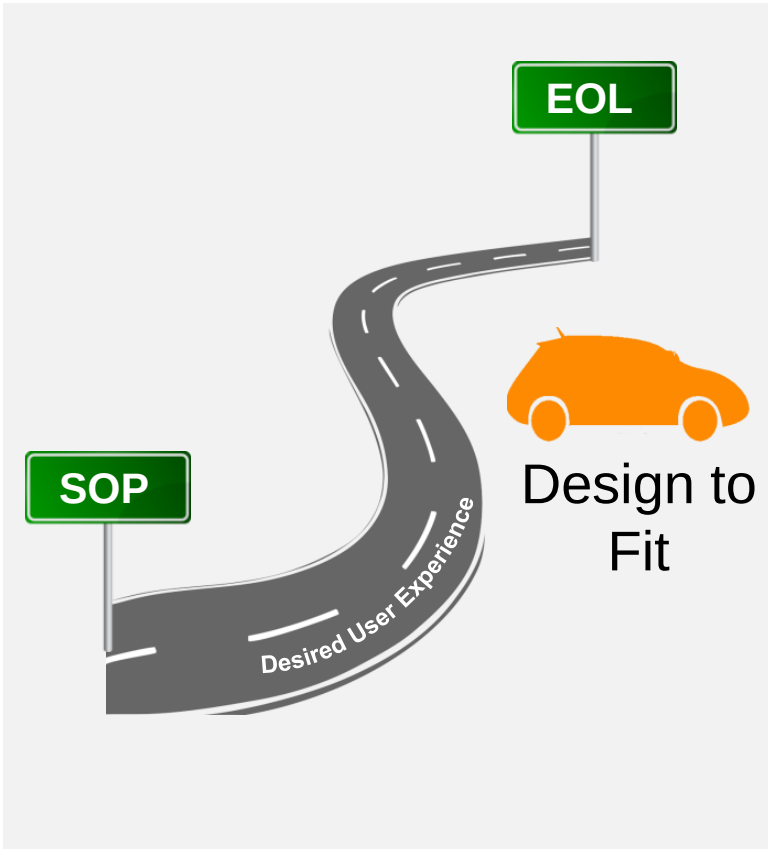
Multiple vehicle lines

Adaptability

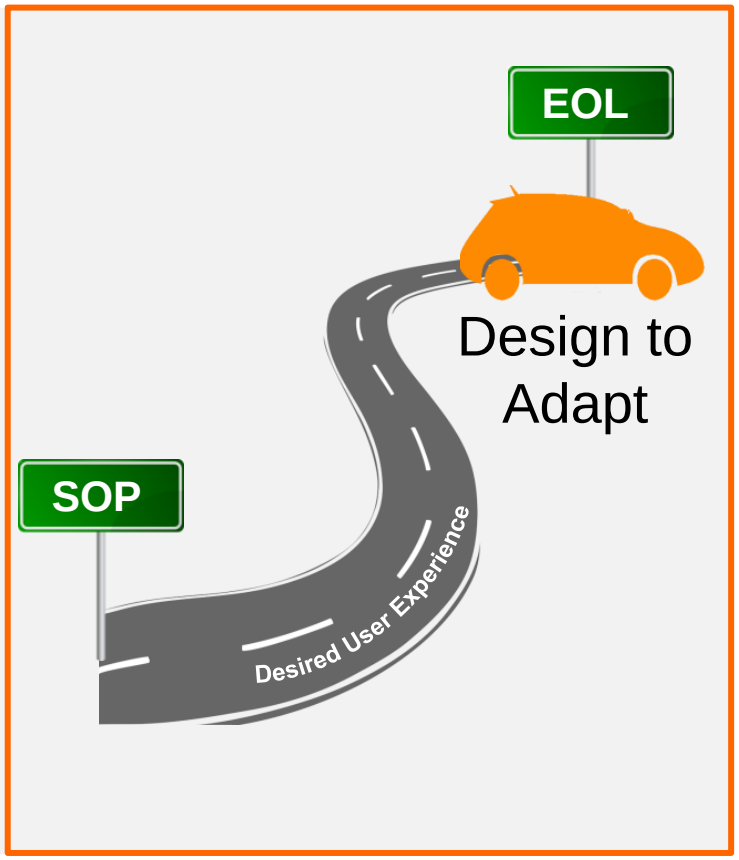
Visteon



(Today)



(Tomorrow)



(The Future)

Supplier Considerations

An F-35
fighter jet has
25 million lines
of code;
a luxury car
100 million.

```
if (gidsetsize <=
NGROUPS_SMALL)
group_info->blocks[0] =
group_info->
     small_block;

else {
for (i = 0;nblocks; i++)
     {
          gid_t *b;

b = (void
*)__get_free_page
(GFP_USER);
```

```
     small_block;

else {
for (i = 0;nblocks; i++)
     {
```

Source: Roland Berger 2015

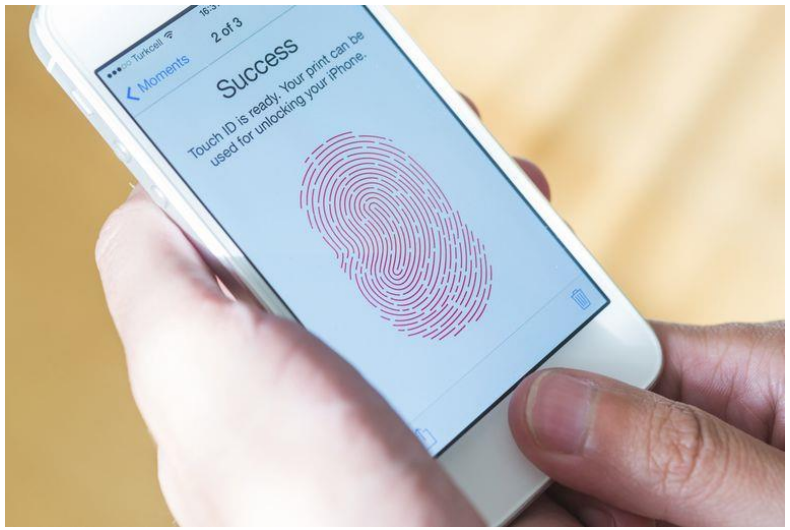
Image source: Altran

One major threat is hacking

Cybersecurity

klossner
" THE TOASTER HAS BEEN HACKED
INTO THINKING IT'S A BLENDER."

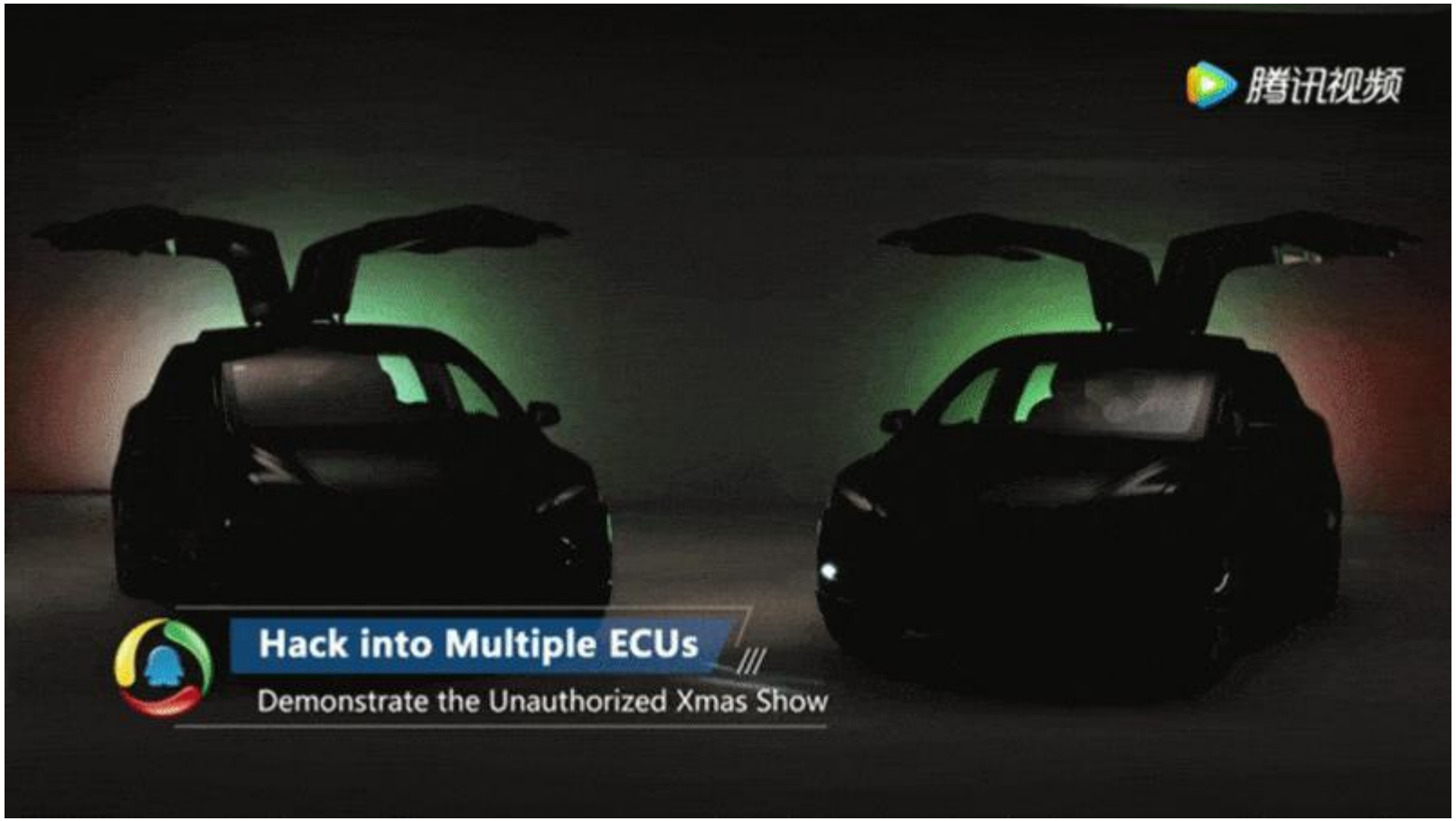
Touch ID or Enter Passcode


2 of 3
Moments
Success
Touch ID is ready. Your print can be used for unlocking your iPhone.

9:41
Cancel
Move your head slowly to complete the circle.
Accessibility Options

2017

Chinese Researchers Hack The Tesla Model X So Hard They Make It Do A Lightshow



Cybersecurity to be part of DNA!

Visteon

Security Requirements

Secure Design
Threat and risk analysis

Features
Security tests

Code Analysis
Security operations

System Validation
Fuzz testing

Pen testing

Increasing Reliance on Software

Visteon

2005- 2010

- Buttons
- Segment LCD
- AM/FM
- Analog

2010- 2018

- Smartphone
- Apps
- GPS/ Maps
- Bluetooth/ WiFi
- Touch/ Voice
- Digital+ Hybrid

2018+

- Autonomous
- AR/ AI
- Telematics
- Cybersecurity
- Apps/ OTA
- 5G/ HD Maps
- Conversational
- Digital

Key Challenge – Increasing Reliance on Software

Visteon

2005- 2010

- Buttons
- Segment LCD
- AM/FM
- Analog

2010- 2018

- Smartphone Apps
- GPS/ Maps
- Bluetooth/ WiFi
- Touch/ Voice
- Digital- Hybrid

2018+

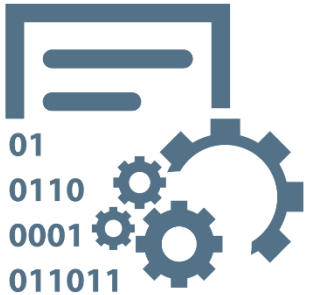
- Autonomous
- AR/ AI
- Telematics
- Cybersecurity
- Apps/ OTA
- 5G/ HD Maps
- Conversational
- Digital

Implications for Suppliers in Auto 2.0

Visteon

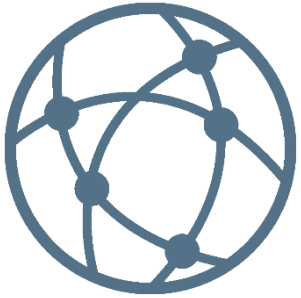
Shift from systems integrator to IP creator

- Technology cycles compressing rapidly
- Focus on core areas of technology
- Develop differentiated IP in focus areas



Transform into software technology company

- Cultural mindset change across the whole organization
- Changes required for business and engineering processes
- Core set of software platforms instead of point solutions



Develop software talent globally

- Compete with industry and other tech companies for talent
- Build global footprint to tap into worldwide talent pool
- Develop strategic partnerships with like-minded software services companies

Auto suppliers will need to transform into software companies

Visteon

Thank You!