

# SUSTAINING DIFFERENTIATION



## WABCO INDIA LIMITED

### INVESTOR DAY 2018

### MUMBAI

June 19 2018



# YOUR WABCO HOSTS



**M Lakshminarayan**  
Chairman



**P. Kaniappan**  
Managing Director



**R.S. Raja Gopal Sastry**  
Chief Financial Officer



# SAFE HARBOR STATEMENT

---

Statements in this document describing the Company's objectives, projections, estimates and expectations may be "forward looking statements" within the meaning of applicable securities laws and regulations. Actual results could differ materially from those expressed or implied due to many factors. Important factors that could make a difference to the Company's operations include, among others, economic conditions affecting demand / supply and price conditions in the domestic and overseas markets in which the Company operates, changes in the Government regulations, tax laws and other statutes and incidental factors. The Company does not undertake any obligation to update such forward-looking statements. All market and industry data are based on Company estimates.



# ABOUT WABCO: THE INDUSTRY'S TECHNOLOGY INNOVATOR

In 2017:

**\$3.3B**  
Annual  
revenues

**~15,000**  
Employees in  
40 countries

**15** Industry technology  
firsts introduced  
during the last 5 years

**No.1**  
in all BRIC  
markets

**10** Years  
NYSE listing

**2,900**  
Service  
Partners

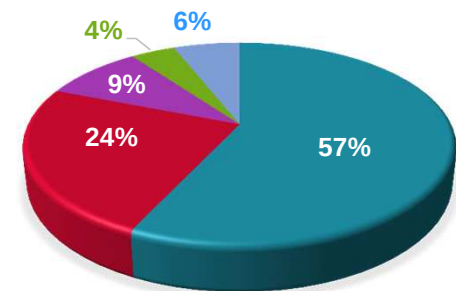
**27**  
Factories

**2,600**  
Engineers  
worldwide

**\$465m**  
Performance EBIT  
(14.1% Margin)

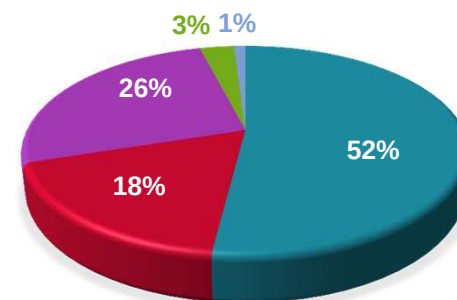
**383**  
Patents  
granted

SALES BY CUSTOMER TYPE



■ OE Truck & Bus ■ Aftermarket  
■ Trailer ■ Off-Highway  
■ Car

SALES BY REGION

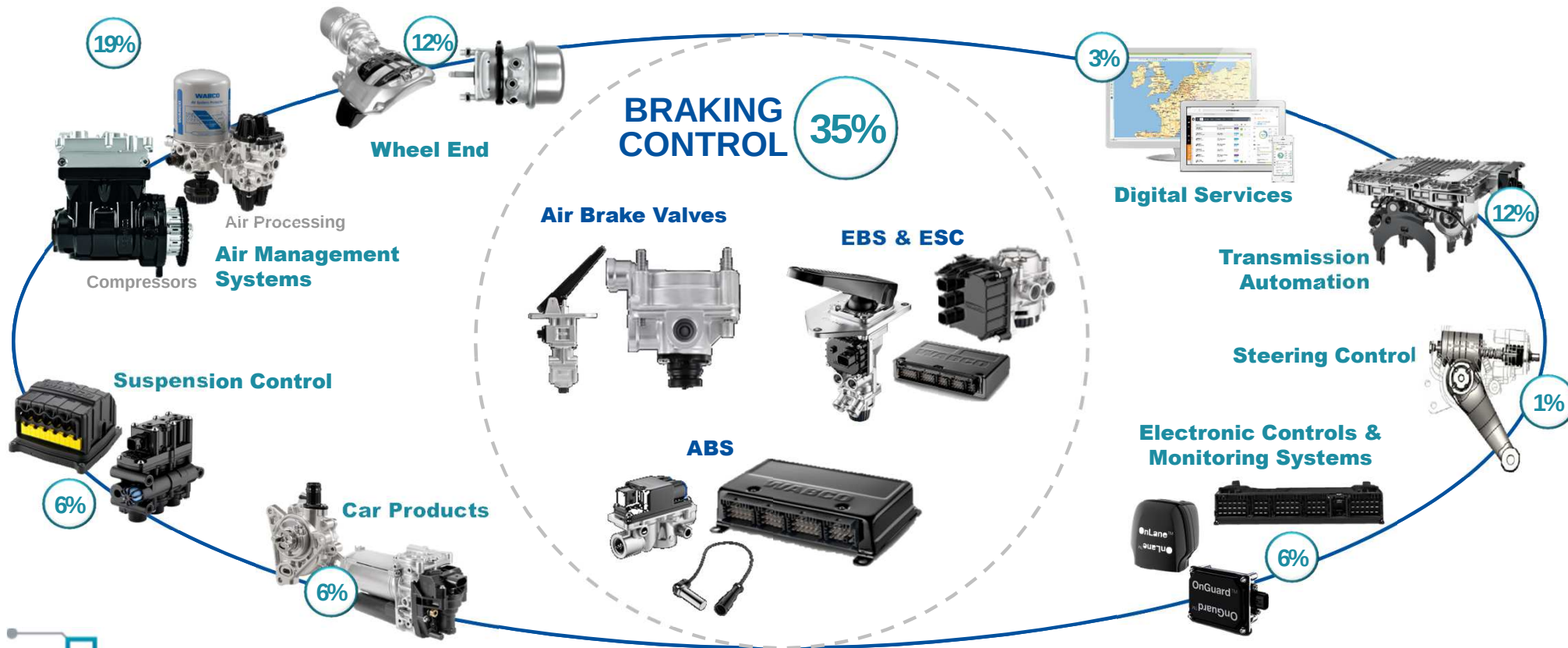


■ Europe ■ North America ■ Asia ■ S.America ■ Other



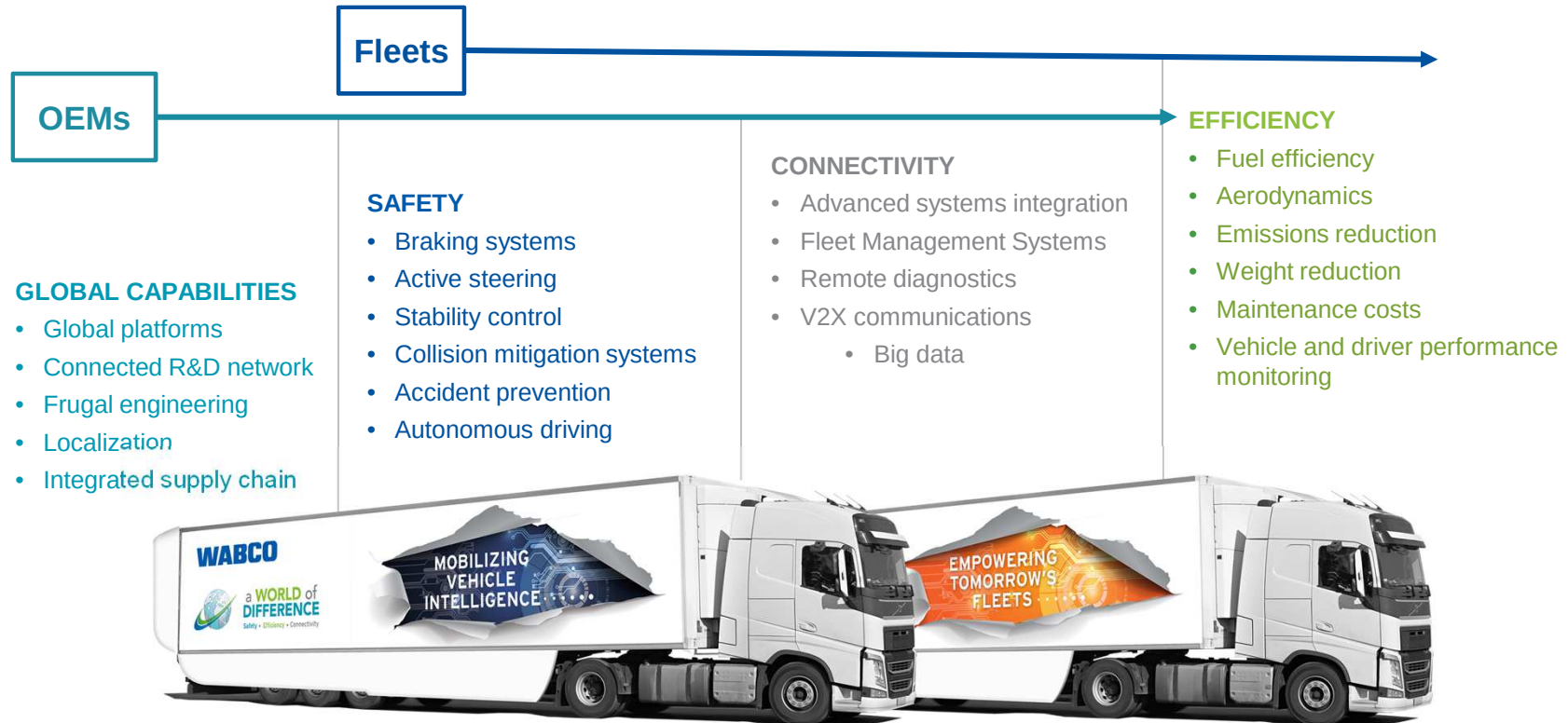
# A RICH PORTFOLIO OF TECHNOLOGIES

X% AS PERCENTAGE OF  
WABCO 2017 SALES



# OUR VALUE CREATION PROPOSITION

We apply advanced technology and services to support commercial vehicle OEM and fleet needs

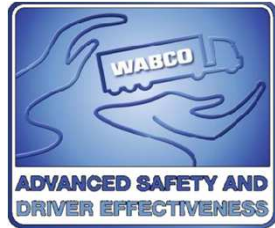




# CONSTANTLY INVADING NEW TECHNOLOGY SPACES

## TECHNOLOGY STRATEGY EVOLUTION

## INDUSTRY VISION



Braking System Platform

Transmission Automation

MAXX™ Air Disc Brakes

c-comp™ Clutch Compressor



Mechanics  
Electromechanics

Active Steering

Stability Control

OnGuard

FuelGuard™ E-APU

OptiFlow

e-comp™ Electrically Driven Compressor

Hybrid EBS

Platooning

OptiRide™

OnCity



Telematic units

ProView

Multi Brand Diagnostic

Evasive Maneuver Assist  
Lane Keep Assist  
Maneuvering

Big Data Analytics  
V2V

Fleet Management Systems



Electronic Systems

Digital Systems

# ANTICIPATING THE EVOLUTION OF OUR INDUSTRY

## Mega Trends



Population Growth,  
Urbanization &  
Smart  
Infrastructure



Regulatory  
Push for Greener  
Environment



Increasingly  
Complex  
Customer Needs



Exponential  
Growth of New  
Technologies

## Commercial Transportation Requirements

Segmentation  
of Commercial Vehicles



Long Haul  
Transportation



Urban / Suburban  
Transportation



Off-Highway  
Application

## Impact on Commercial Vehicles Requirements



AUTONOMOUS



ELECTRIC



CONNECTED



# DRIVING VEHICLE EFFICIENCY & SUSTAINABILITY



## Fuel Efficiency



## Trailer Aerodynamics



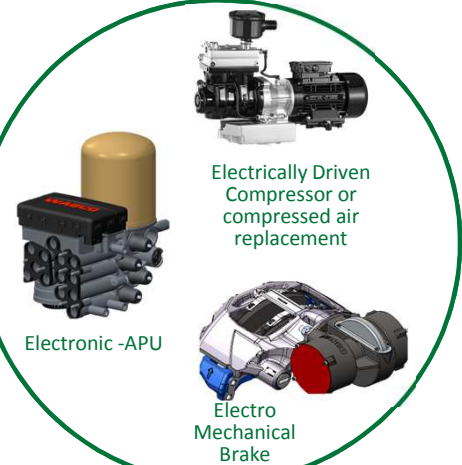
## Weight Reduction

## Energy Recuperation

### EBS Brake Control

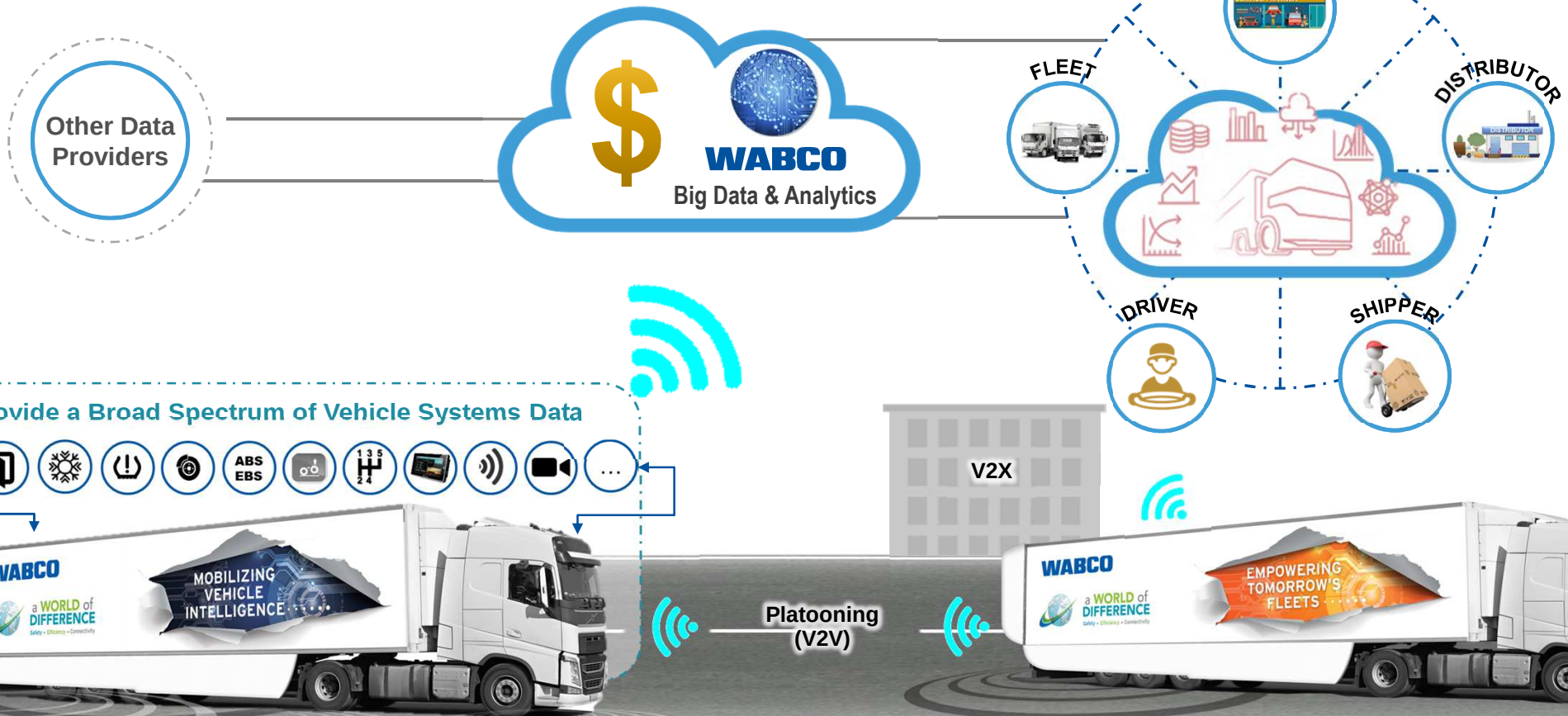


## Electric Vehicles

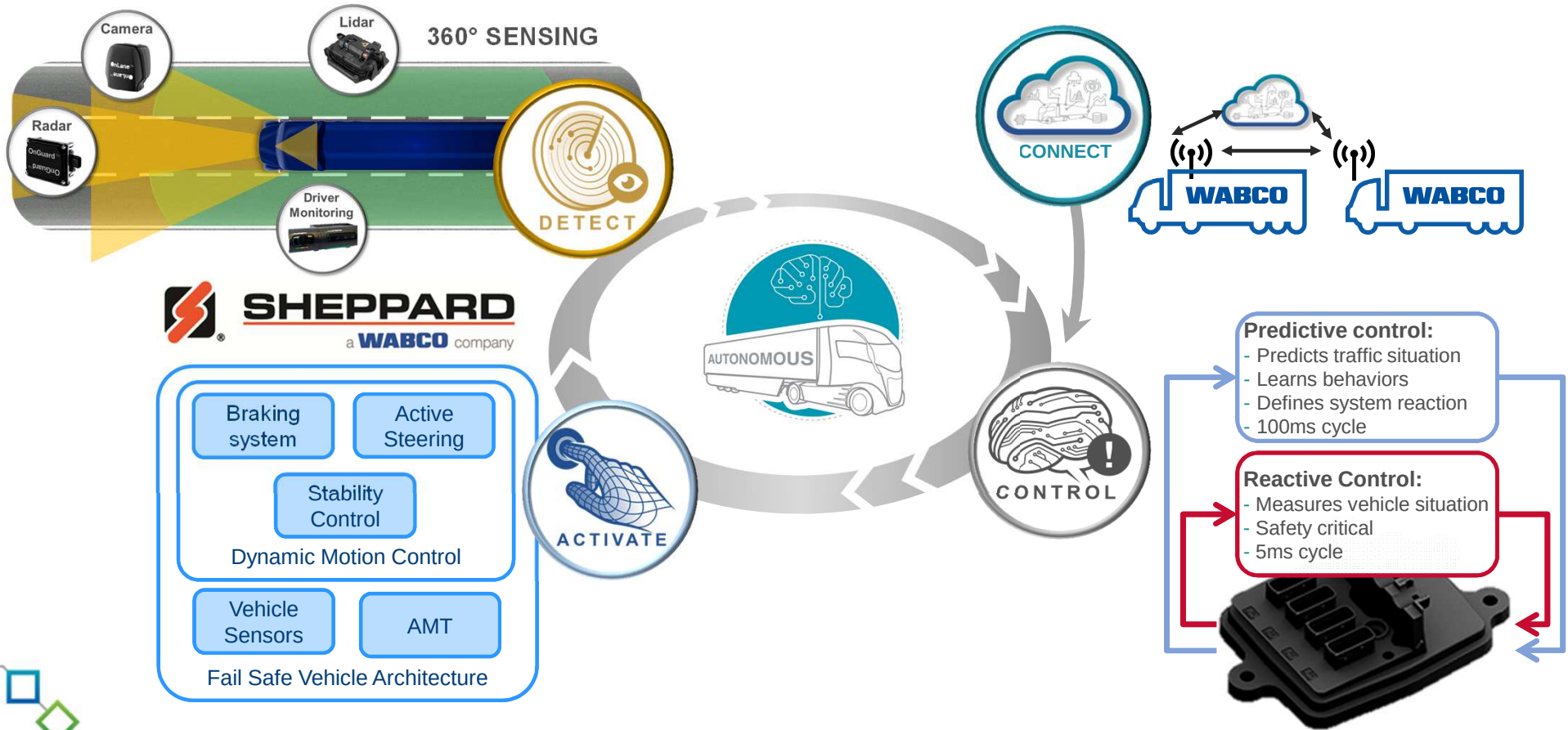


# CONNECTIVITY: MOBILIZING VEHICLE INTELLIGENCE

WABCO uniquely offers insights on truck, trailer and driver performance



# WABCO BLUEPRINT FOR AUTONOMOUS DRIVING



# THE DNA OF OUR INNOVATION LEADERSHIP

## Advanced Development Organization

seeds innovation, leads technology screening and concept validation for rapid prototyping

During the last decade:

**100%** Increase in number of engineers

**>30%** Increase in R&D investment

On an annual basis:

**>380** Patents granted\*

**>900** Products released\*

## A Globally Integrated Product Development Team

Broad System & Vehicle Expertise

Strength in Technology & Innovation



Advanced Development

Best Solution

Frugal Engineering

Rich Software Expertise



## Skilled Application Engineers

in all key regions provide excellent customer connectivity and support

## Frugal Engineering Expertise

- able to create pull for new technologies and mature products in increasingly price sensitive markets

Regional Application

- Delivers Advanced Technologies at Best Cost

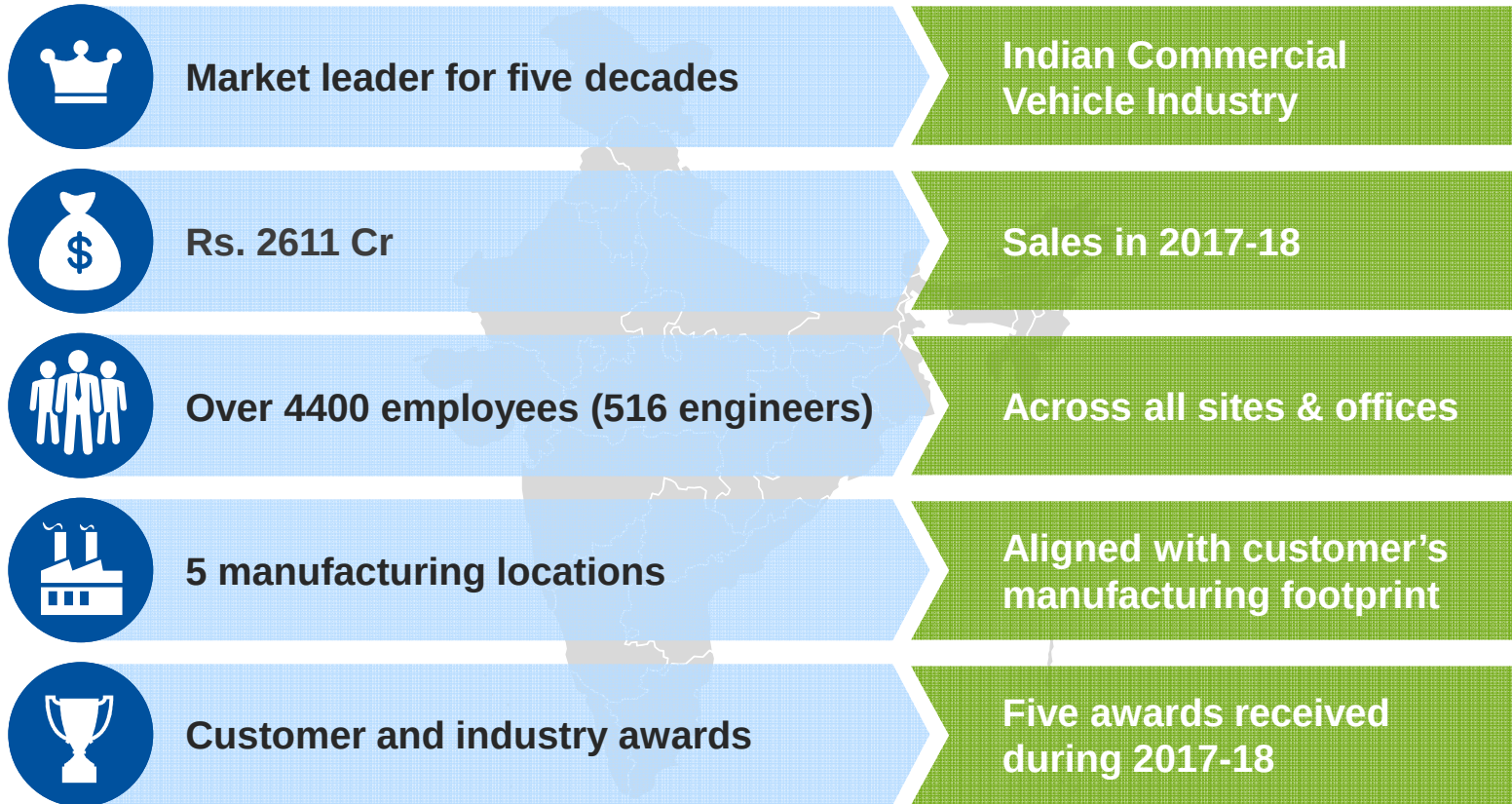
\* As of December 2017



# WABCO INDIA



# A LEADING SUPPLIER OF TECHNOLOGIES AND SERVICES TO THE INDIAN CV INDUSTRY



# INDIA LEGISLATION – STATUS AND FORECAST

Legislation requires installation of products enhancing Efficiency, Safety and Connectivity

Red = in discussion

| Type                     | Status<br>(January 2018)                   | 2016            | 2017                                                      | 2018                                       | 2019                                                        | 2020                                 | 2021 | 2022 | 2023                   |  |
|--------------------------|--------------------------------------------|-----------------|-----------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------|--------------------------------------|------|------|------------------------|--|
| Emission / Efficiency    | BS IV<br>BS VI                             |                 | BS IV (Nation wide)                                       |                                            |                                                             | BS VI (Nation wide)                  |      |      |                        |  |
| Safety                   | 100% ABS for TB&C, Trailer & 2 Wheeler     | ABS for M3 / N3 | Trailer ABS                                               | ABS for M1 / M2 & 2 Wheeler ABS            |                                                             |                                      |      |      |                        |  |
|                          |                                            |                 | Speed Governor                                            | N1 / N2 ABS Regulation                     |                                                             |                                      |      |      |                        |  |
|                          |                                            |                 | Trailer Code                                              |                                            |                                                             |                                      |      |      | ESC & ADAS for all T&B |  |
|                          |                                            |                 |                                                           | Truck Code – AC / Cabin ventilation system | AEBS System                                                 |                                      |      |      |                        |  |
|                          |                                            |                 | Bus Body Code                                             | Bus Body Code – Phase 2                    |                                                             |                                      |      |      |                        |  |
|                          |                                            |                 | Agricultural Trailer Brakes – On hold till further notice |                                            |                                                             |                                      |      |      |                        |  |
| Connectivity             |                                            |                 |                                                           |                                            | RPAS / Additional safety requirements for M1 & N1 – AIS 145 |                                      |      |      |                        |  |
|                          |                                            |                 |                                                           |                                            | Intelligent Transport Solutions                             |                                      |      |      |                        |  |
|                          |                                            |                 |                                                           |                                            | Vehicle location tracking and emergency button              |                                      |      |      |                        |  |
| Electrification & Others | E Vehicles<br>End of Life Scrapping Policy |                 | FASTag                                                    |                                            |                                                             |                                      |      |      |                        |  |
|                          |                                            | FAME – Phase 1  |                                                           |                                            | FAME – Phase 2                                              |                                      |      |      |                        |  |
|                          |                                            |                 |                                                           |                                            |                                                             | Automated Manual Transmission        |      |      |                        |  |
|                          |                                            |                 |                                                           |                                            |                                                             | E Vehicles / Hybrid Vehicles for T&B |      |      |                        |  |
|                          |                                            |                 |                                                           |                                            |                                                             | End of Life Scrapping Policy         |      |      |                        |  |

# PENETRATION OF GLOBAL PRODUCTS / ADVANCED TECHNOLOGIES

## ESC – Electronic Stability Control

Automatically intervenes to improve stability Prevents vehicle from rolling over, skidding & jack-knifing when driven too fast through a curve



## AMT

### Automated Manual Transmission

Euro IV & GST increased the AMT applicability  
Upcoming FE norms and shortage of skilled drivers to drive AMT Sales  
Work with OEMs to applicate in major Truck models

## ADB – Air Disc Brake

Increasing interest for ADB introduction in Buses, Export models and Trucks to improve vehicle performance & efficiency  
OEMs planning for introduction in BS6 platforms (SOP: Q1 2020)



# EXPAND PRODUCT PORTFOLIO HORIZONTALLY

## DOOR CONTROL SYSTEMS

**Globally proven design :** ECU & integrated flow control valve  
Control valves meeting automotive specifications  
Built in emergency and damping function is available



## STEERING

This **active steering** supports all truck platform axle load  
**Natural steering feel, No change in diameter**  
**Low integration effort, Low weight**  
**Low power consumption**



Complete system solution with **ECAS**

Lightest “Air Suspension” in India market

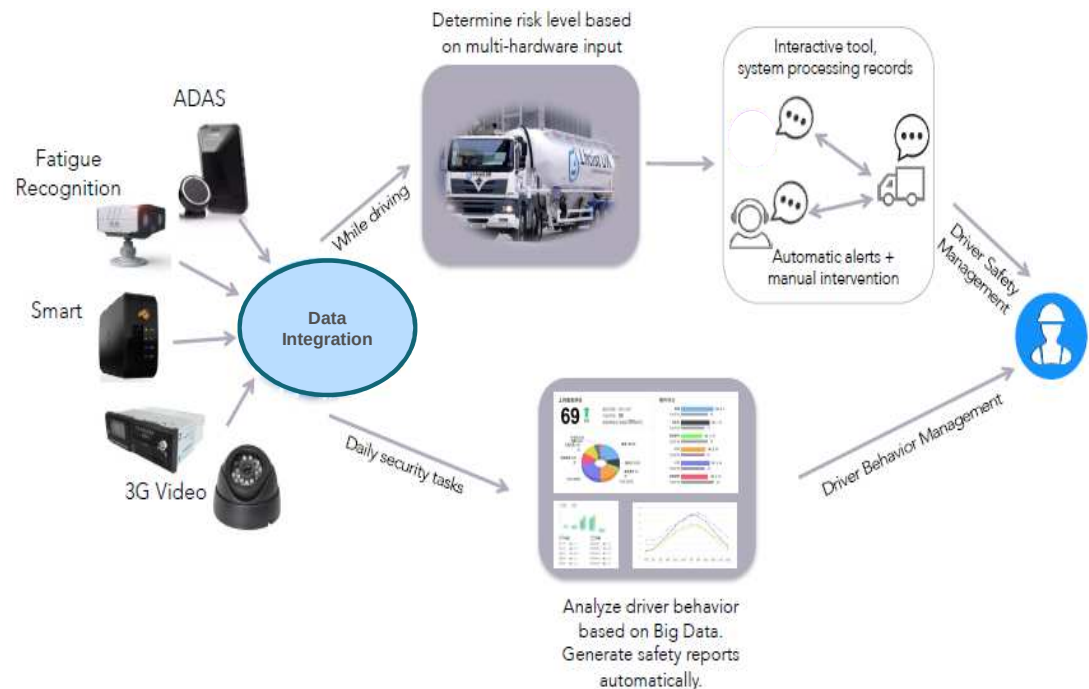
Improvement in fuel efficiency and tyre life saving



# DRIVE GROWTH OF SMART DIGITAL SOLUTION BUSINESS

- Government regulation on safety will drive FMS in bus segment
- OEMs will offer as a standard solutions
- Emergence of larger fleets
- Euro 4 has facilitated CAN based solutions
- FMS with CAN based diagnostics will support AM workshops to overcome skill shortage

## FLEET MANAGEMENT SYSTEMS





# WABCO TECHNOLOGY FOR ELECTRIFIED VEHICLES



## FUEL Powered Trucks

### Air Generation



### Air Actuation



### Brake & Vehicle Control



Electrification

## ELECTRIC Powered Trucks



Several million trailers in use today need air to be operated

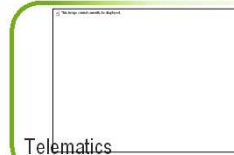
Electronic air suspension control

Energy recuperation and brake blending requires electronic braking system

More telematics required to operate electric fleets



ADAS & Electronic Controls

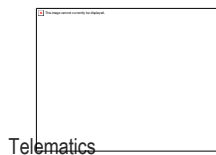


Telematics

### ADAS & Telematics



ADAS & Electronic Controls



Telematics

# MAHINDRA WORLD CITY PLANT

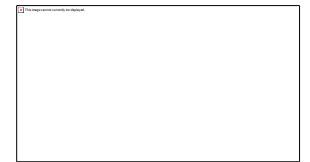
## Area Wise Sales

America  
48%

Europe  
47%

Asia  
5%

Mahindra



WE DELIVER ALL  
ACROSS THE  
GLOBAL MARKET



CRANKSHAFT



CRANKCASE



AIR SUPPLY  
UNITS



ACTUATORS



VALVES



COMPRESSORS

# WABCO TECHNOLOGY CENTER INDIA

## INCREASING RESPONSIBILITY

- Primary responsibility for modular Braking System Platform (MBSP) software development
- Application engineering- ABS, ADAS
- Automated Manual Transmission roll-out in India

## PRODUCTIVITY

- Software test automation
- Equipment Exports to WABCO Germany

## CREATIVITY

- ADAS re-simulation – Significant savings per release
- Dual use of Hardware in Loop test for mBSP and ABS-E8

## SOFTWARE DEVELOPMENT FOR mBSP



## Application Engineering



SOFTWARE DESIGN  
ANNUAL PRODUCTIVITY GAINS

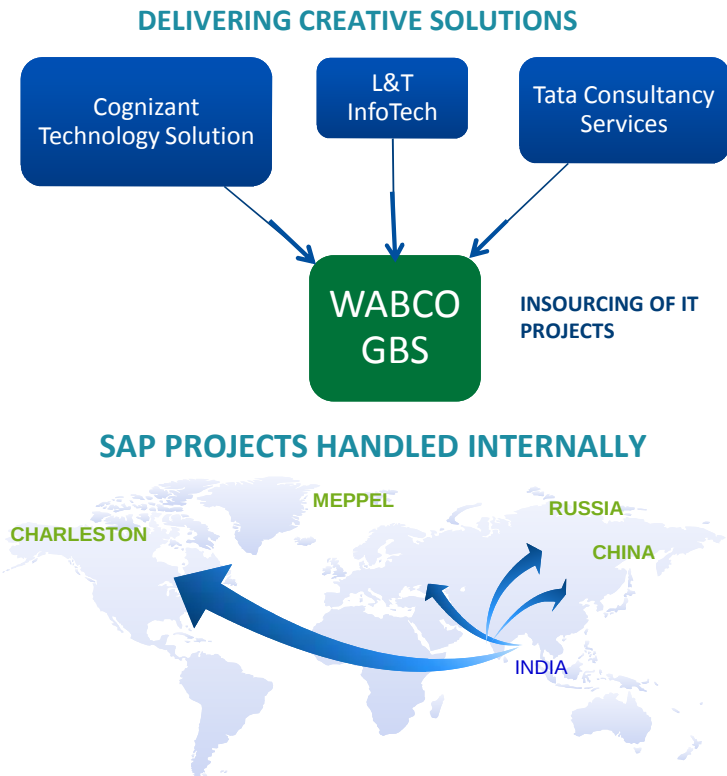


# GLOBAL OPEX EFFICIENCY :GLOBAL BUSINESS SERVICES

- Cross functional organization
- Infrastructure application services related to IT and business services - TRAMO, HR, OE sales , Sourcing & Purchasing, Product Engineering, Finance
- Central Command Centre
- Hub for mobile Apps development

## VALUE PROPOSITION

- Cost : Leveraging BCC
- Professionals : Advanced education
- Quality : Focus on service improvement
- Innovation : Complementing skills contribute to systems and process improvements



# SHAREHOLDER VALUE CREATION



Source: National Stock Exchange

# AWARDS AND ACCOMPLISHMENTS

“Best Supply Chain Transformation” award from Cummins India – Aug’17



Second prize in National Productivity Championship competition conducted by IMTMA – Aug’17





# AWARDS AND ACCOMPLISHMENTS

## Recognition of excellence through awards



First prize in SAE computer aided engineering (CAE) Finite element analysis (FEA) competition – PE team – Feb 2018



Platinum and Gold awards in NIQR Six Sigma competition – Jan 2018



Platinum awards in AOTS competition for maintenance engineers – PAM team (WINC and WINM) – Mar 2018



# EVENTS



**Launch of Intelligent Trailer Program**



**Expansion of GBS**



**Demonstration of ADAS Technology to Mr. Girish Wagh**

Mar 28

Mar 28

Mar 29



# IN CLOSING

## STRONG FUNDAMENTALS

- Five decades of market leadership and customer value through unique positioning towards tapping potentials from emerging trends
- Strong cost competitiveness across the value chain
- Customer focused, TQM-driven, Lean organization
- Well- established Aftermarket network

## SERVING OEM CUSTOMERS – DOMESTIC AND GLOBAL

- Uniquely positioned to offer advanced technology, global operating standards engineering excellence & cost competitiveness
- Enriching product portfolio through local innovation

## CONTRIBUTING TO WABCO's GLOBAL SUCCESS

- Frugal mindset well embedded in product development and supply chain
- Preferred supplier for domestic and global OEMs
- Preferred location for WABCO global services through WTCI & GBS



# DISCUSSIONS

---



# THANK YOU



a **WORLD** of  
**DIFFERENCE**

Safety • Efficiency • Connectivity

**WABCO**