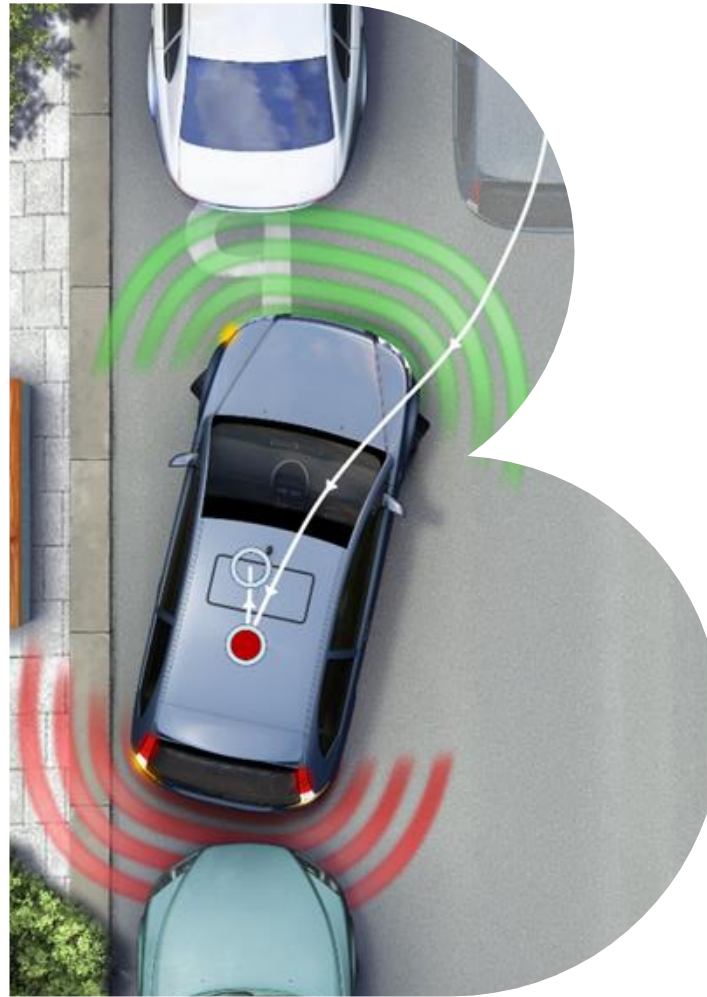


Telematics in India: Trends and Opportunities



CONNECTED
 Vehicles 2017

Agenda



A

Telematics: An overview

Brief overview of the significance of telematics in automotive



B

Telematics market

Global market overview, Deep dive into Indian telematics market including characteristics, market structure and drivers



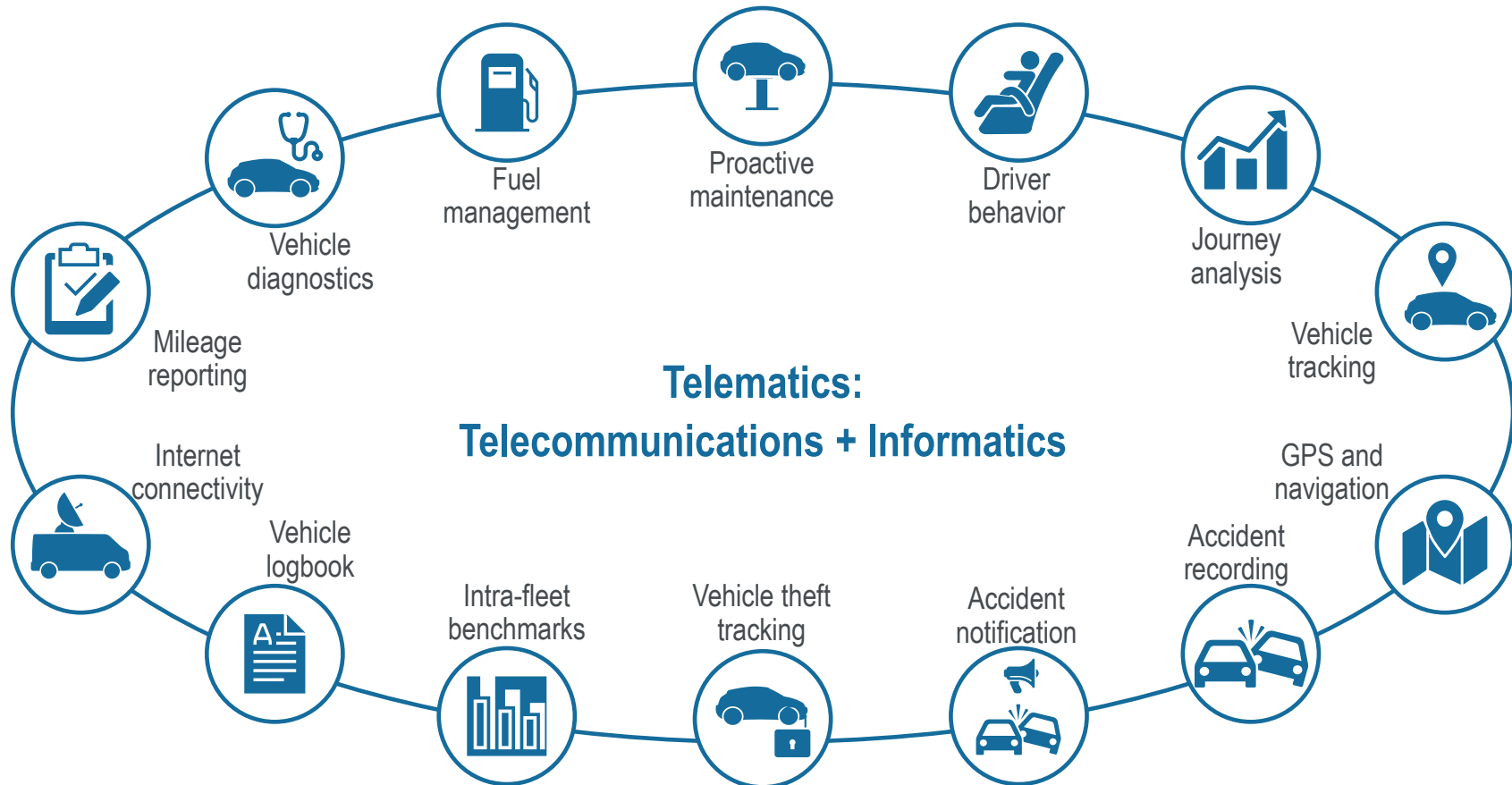
C

Trends and opportunities in India

Key trends and characteristics of telematics ecosystem, potential opportunities for Indian players

In automotive sector, telematics equipment offers a wide variety of features to help make the vehicle smarter

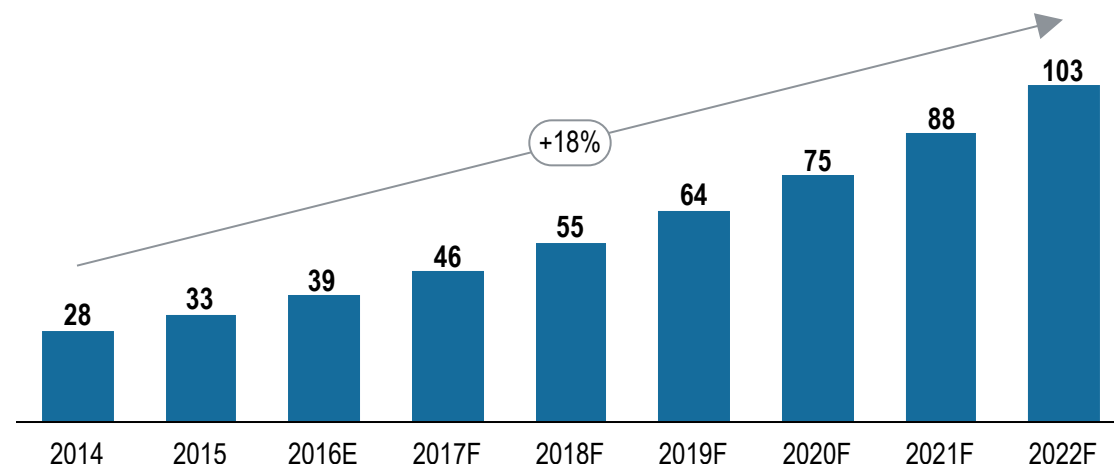
Services facilitated by telematics equipment in automotive industry



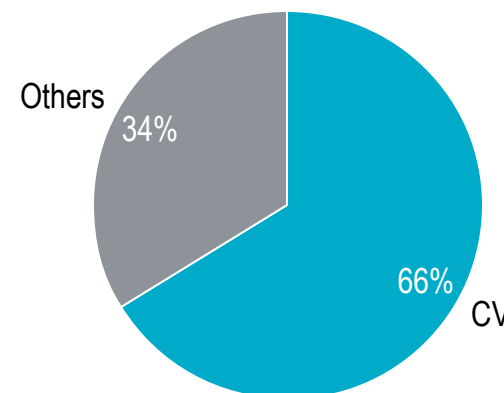
Globally, the vehicle telematics market is valued at USD 39 Bn; strong growth at 18% CAGR projected till 2022

Global vehicle telematics market: Overview

Global vehicle telematics market revenue, 2014 – 2022 [USD Bn]



Revenue share by vehicle type, 2015 [%]

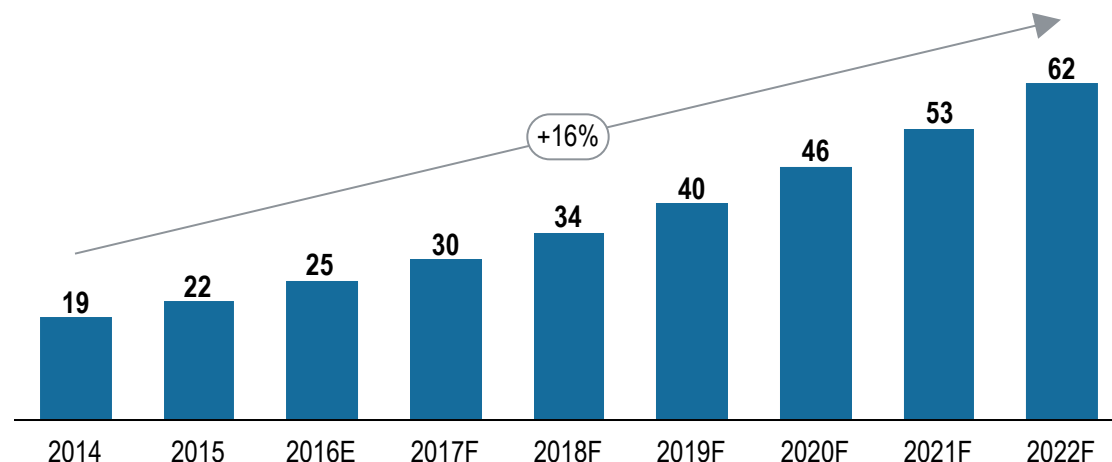


- > Global vehicle telematics market is valued at ~USD 39 Bn in 2016, it is expected to grow at CAGR 18% to USD 103 Bn in 2022
- > Global telematics market is dominated by commercial vehicles which account for nearly two thirds of the total share
- > "Others" segment includes passenger vehicles, aircrafts etc.
 - Passenger vehicles drive demand in this segment primarily due to significant usage in cab services and increased deployment in medium and high end passenger vehicles such as Volkswagen, BMW, Audi etc.

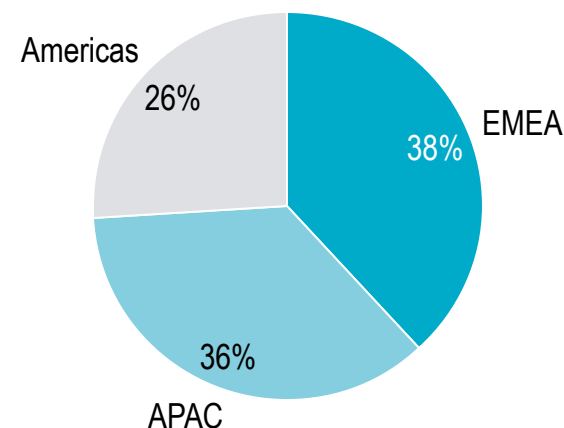
EMEA dominates the global CV telematics market with a 38% share; APAC is expected to be the leading contributor by 2022

Global commercial vehicle telematics market: Overview

Global CV telematics market revenue, 2014 – 2022 [USD Bn]



Revenue share by region, 2015 [%]

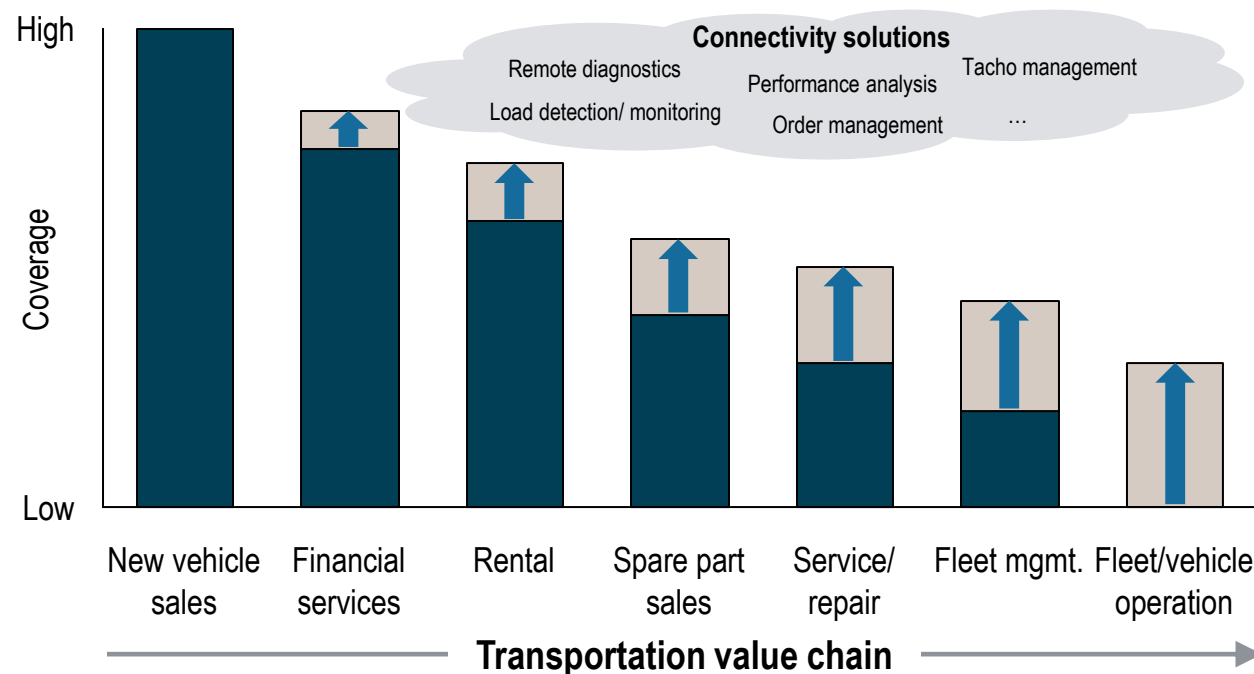


- > CV telematics finds applications in various fields such as passenger safety and security, customer relationship management, business services such as fleet management and tracking as well as private services such as navigation support to passengers
- > EMEA accounts for the greatest share of the market – regulatory initiatives such as eCall Driver Safety project are a key driver
- > APAC is the second largest market driven by countries such as China, Japan, India etc. – By 2022, APAC is expected to be the leading contributor to global commercial vehicles telematics market

Key driver behind growth in CV telematics is that it enables a greater value chain coverage....

Importance of truck connectivity

Profit pool coverage



Connectivity solutions

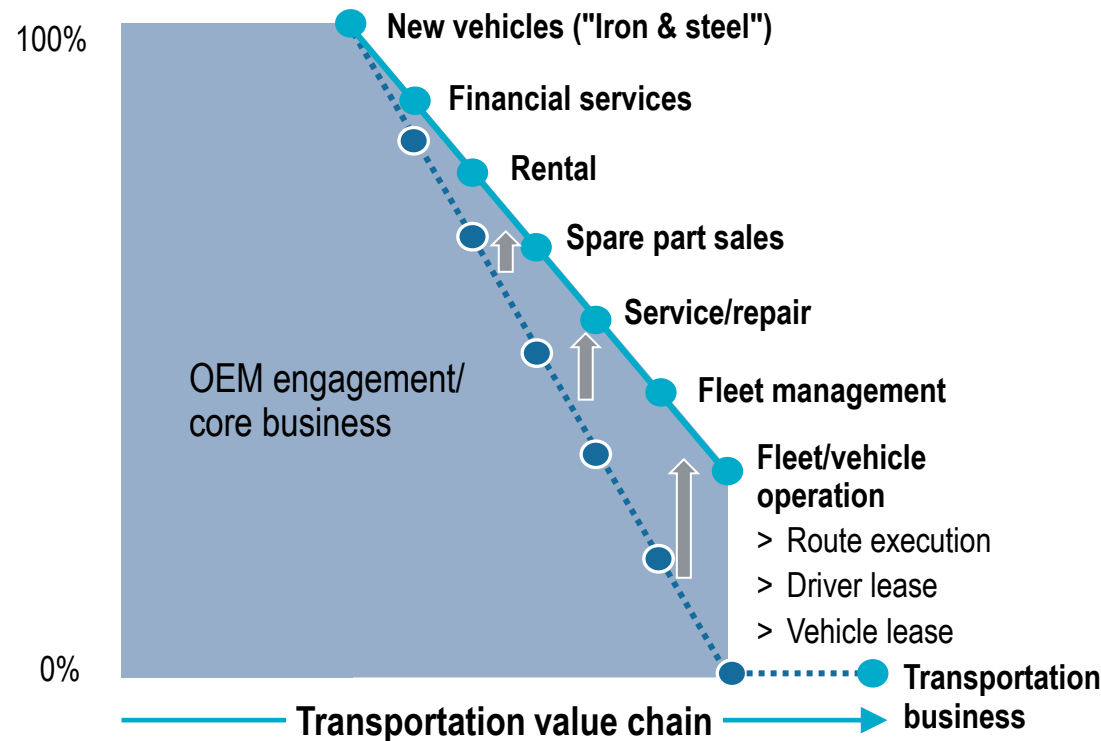
- > Connectivity based solutions enable OEMs to understand their customers' needs and address them with tailored product and service offerings
 - OEMs need to strengthen their aftersales business – Increased customer retention required
 - Moreover OEMs are requested to serve growing customer demand – Extended support and user-specific products and services (e.g. remote diagnostics)

Coverage 2030
 Coverage 2013
 Enabler connectivity



and enables OEMs to differentiate themselves and capture opportunities beyond vehicle sales

OEM engagement along the transportation value chain – Outlook 2030

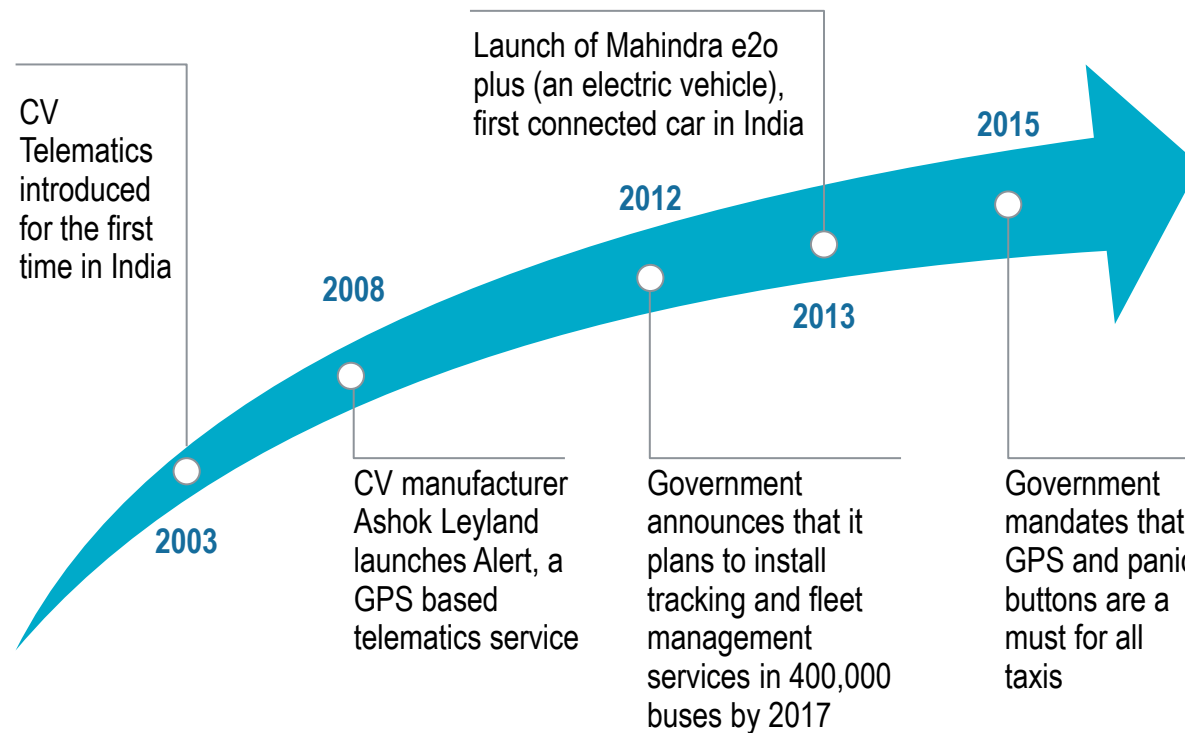


- > There is a higher engagement of **OEMs** along the value chain who are expected to **market themselves as full-service providers**
- > Logistics providers will require extended services and **tailored solutions such as fleet/vehicle operation models**
- > **Logistics companies** will focus on **business contracting** and operation of core routes – maintaining **capacity/cost flexibility** when contracting new business or facing demand volatility and business risks

In India, telematics market is still at a nascent stage; commercial vehicles market dominates the overall market

Indian telematics market: Evolution and characteristics

Evolution of telematics in India



Characteristics of Indian market

1 Dominance of CV sector

- > Adoption low in PV and single truck owners due to prohibitive costs
- > Primary usage by fleet operators and taxi companies

2 Use of basic services

- > Usage of telematics in India is characterized by basic services like fleet tracking and management
- > Optimization of fuel costs as well as safety and security concerns are expected to drive growth in future
 - Apart from CVs, small and medium car segments offer high growth opportunities

Vehicle telematics is gaining popularity mainly due to its advantages such as safety, information, navigation and remote diagnostics

Factors promoting telematics in automotive market



Wireless connectivity

- > With increasing penetration of mobile technology in India, there is an increased demand for V2X connectivity of cars
- > Hands free calling, Bluetooth compatibility and smartphone connectivity are in high demand in urban users



Remote diagnostics

- > Data collected by telematics black box can provide valuable insights into functioning of the vehicle thus providing service reminders
- > Driving behavior had also led to promotion of usage based insurance in India

Telematics in Indian market



Navigation

- > GPS connectivity and navigation services have become high demand due to increasing complexity of road network in cities and availability of real-time traffic information availability through online data



Safety against thefts

- > Telematics provides the car with anti-theft features through tracking the location of the car and an automated interface with law enforcement agencies
- > This reduces the response time, which leads to reduction in vehicular theft

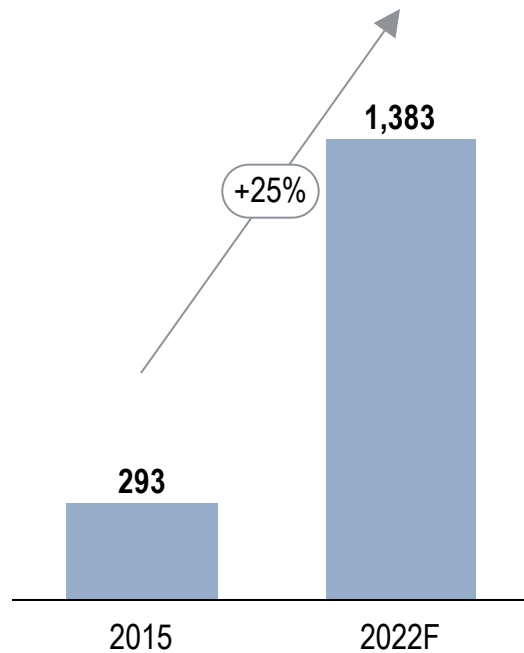




CV telematics market in India is expected to grow at 25% p.a., mainly led by after-market segment and entry level solutions

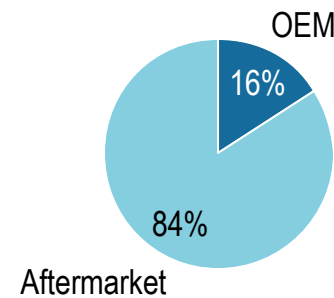
Telematics penetration in CV market in India

Telematics installed base ['000 units]

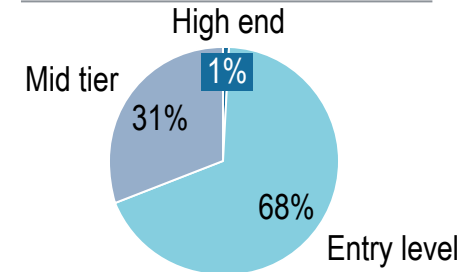


Split of installed base

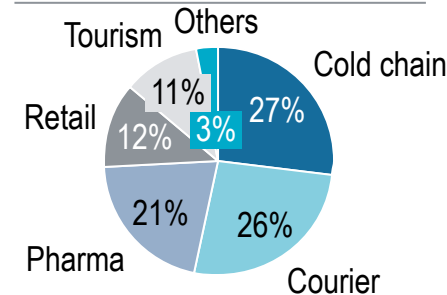
Type of fitment



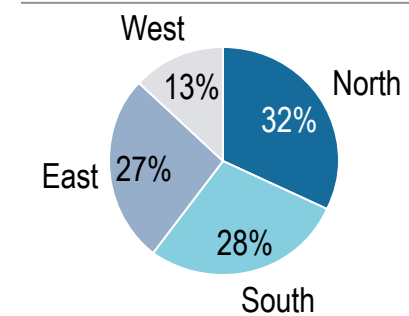
Type of solution



Split by industry



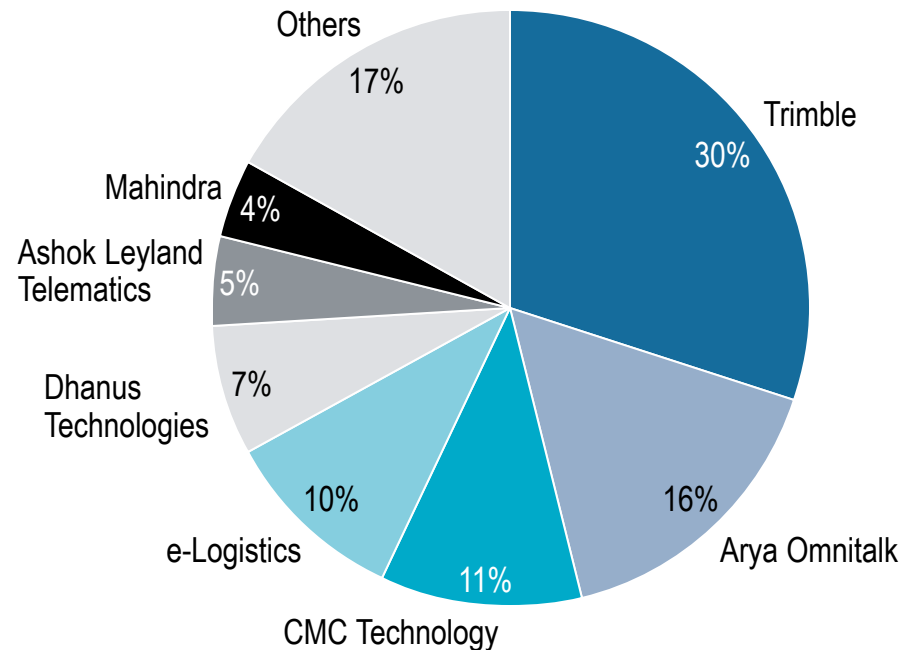
Split by region



There are ~20 players in the domestic market, top 3 account for 60% of the total market

Competitive landscape in CV telematics

CV telematics market share in India [2014]



Comments

- > The Indian telematics industry is highly competitive
- > The competitive environment is further expected to intensify with increasing product extensions, more advanced offerings, technological innovations and M&A
- > Trimble is the market leader with 30% market share. The top three players (Trimble, Arya Omnitalk and CMC Technology) account for ~60% of the total market share
- > To remain competitive in the market, vendors not only have to develop new technologies but also keep abreast of global developments and emerging technologies that could potentially impact their product portfolio

OEMs operating in India are entering partnerships with telematics players to offer integrated fleet management solutions for logistics

Telematics Systems

	<u>Navigation</u>	<u>Fleet Management</u>	<u>Vehicle Mgmt.</u>	<u>Safety & Security</u>	<u>Others</u>
<p>TATA FleetMan Fleet Telematics for higher productivity</p>	Real Time Tracking Geofencing SMS Alerts & Queries	Trip Management Driver Analysis Report Generation	Remote Unit Mgmt. Maintenance Reminders	Anti theft alerts	Mobile App connectivity Infotainment and Passenger Info System for buses
	Real Time Tracking Geofencing SMS Alerts	Driver Analysis Report Generation		Anti theft alerts Collision Warning Systems in school buses	Infotainment and Passenger Info System for buses
	Real Time Tracking Geofencing SMS Alerts	Driver Analysis Report Generation	Remote Diagnostics Maintenance Reminders	Anti theft Immobilizer Emergency SOS button Driver Assistance System	Mobile App connectivity Infotainment and Passenger Info System for buses
	Real Time Tracking Geofencing SMS Alerts & Queries	Driver Analysis Report Generation	Maintenance Reminders	Anti theft alerts Fire Detection and Suppression System for buses	Infotainment System for buses
<p>1)</p>	Real Time Tracking SMS Alerts	Driver Analysis Report Generation	Maintenance Reminders	Multi Drive Mode for driving assistance	Mobile App connectivity Infotainment System

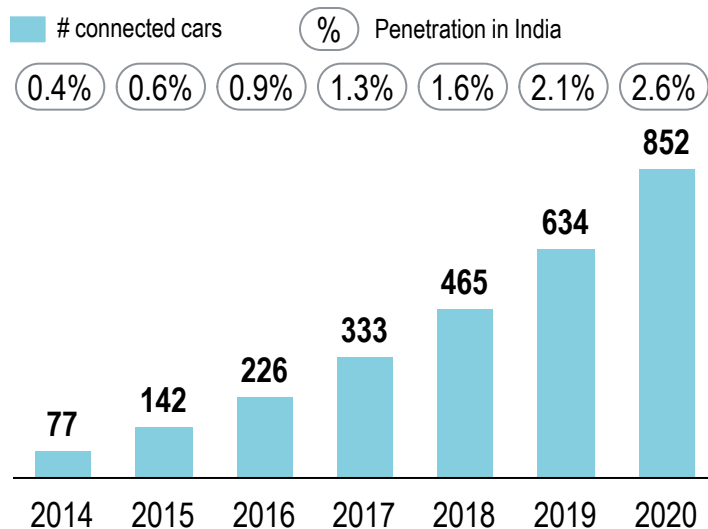
1) Trident Trucking, dealer of Bharat Ben in Karnataka, has partnership with Ormat



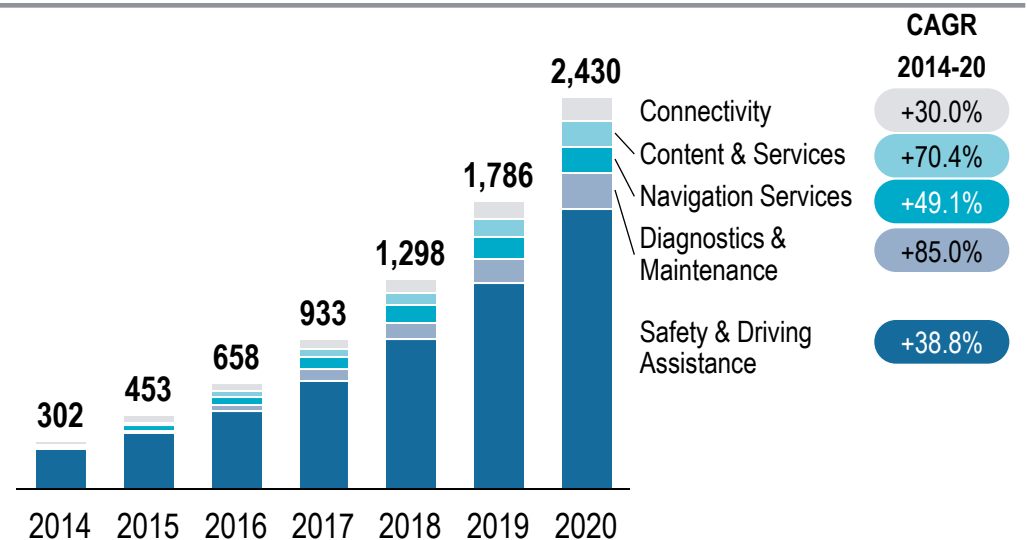
On the other hand, connected cars market in India is still at a nascent stage; reach expected to hit 2.6% in 2020

Connected car market in India

Connected cars in India ['000 units]



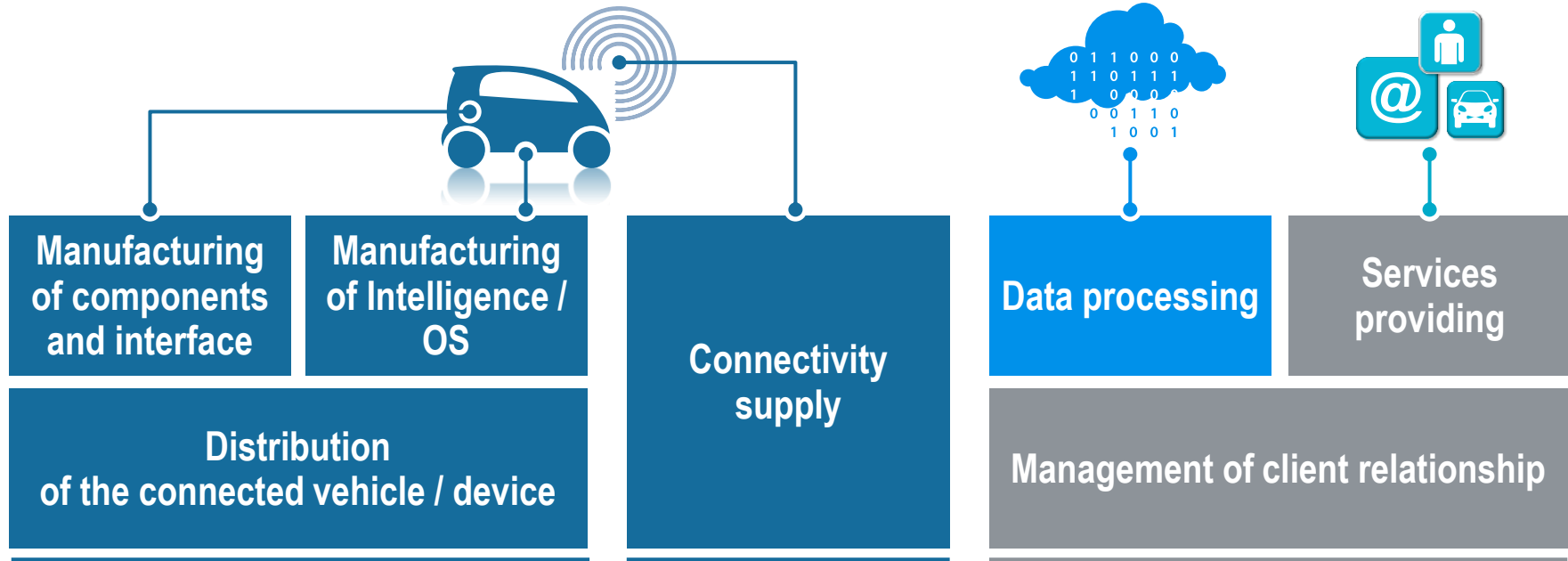
Revenue in the "Connected Car" market [USD m]



- > Connected cars segment include cars with connectivity to the internet (“embedded telematics”), Wi-Fi Hotspots within the car, safety and driving assistance systems, navigation services, location-based advertising, payment, predictive maintenance, usage-based insurance, remote update services, infotainment, productivity services
- > The market's largest segment is the segment "Safety & Driving Assistance" with a market volume of USD 486 m in 2016 and would continue to be the largest in future as well



Telematics ecosystem will involve diversified competencies...



- > Manufacturing of **hardware**: screens, control interface, sound system, measuring elements, modem, connected devices (embedded, aftermarket or brought-in)
- > Development of **operating systems** and connected **intelligence inc. HMI/ IVI¹⁾** (external to core-car onboard computer)
- > **Distribution** of connected vehicle or device

1) In-vehicle infotainment

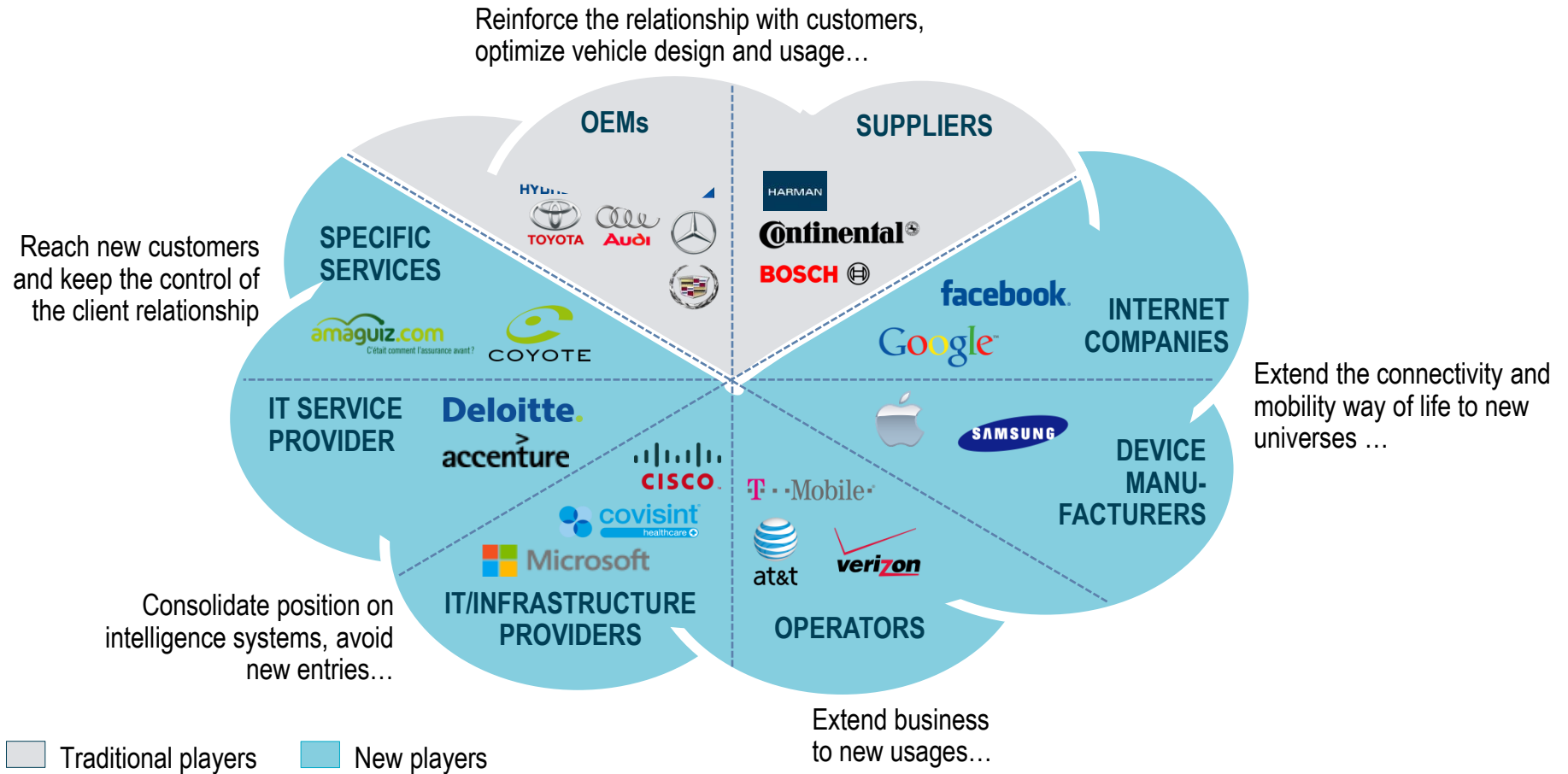
- > Providing of **connectivity hardware** (simcard, Wifi etc.)
- > Providing of connectivity **services** (prepaid, subscription...)

- > **Data analytics and knowledge generation**: local and central data storage, encryption, enrichment, calculation
 - Driver data
 - Personalized cloud data
 - Vehicle data
 - Vehicle health status data
- > Creation and commercialization of **apps and software**



... and greatly expand the playing field by bringing in new players

Major actors of the connected car environment





The changing ecosystem will also lead to new alliances, roles and underlying principles

Changes in the new ecosystem

New Alliances



- > Insurance groups could team up with navigation and emergency call system providers to get access to driver data
- > Network giants such as Google etc. could sponsor mobile internet access from the vehicle

New Roles



- > Automotive companies are becoming software developers
- > Telecom companies are starting to see themselves as automotive suppliers for data transfer channels
- > Hardware companies become analytics provider/operator, for example Octo Telematics

New speed, new principles



- > Automotive industry needs to realign itself – new cycles, partners
- > IT industry development cycles are much faster than those of car manufacturers



As a result, several opportunities open up; Indian players can leverage and monetize these to build successful businesses

Opportunities for Indian players [selection]

Not exhaustive

Sno.	Domain	Potential opportunity description
1	Connectivity solutions <i>(Product (largely hardware) focused)</i>	<ul style="list-style-type: none"> > Providing hardware and software solutions which leverage various communication technologies and enable M2M¹⁾ communication > Common applications include various ADAS sensors such as driver drowsiness detection, parking assist, lane departure warning systems, lane keep assist etc.
2	Driver assistance and related services <i>(Services based on underlying product solutions)</i>	<p>Data processing and services</p> <ul style="list-style-type: none"> > Data analytics services to record various types of vehicle and driver data; some examples include <ul style="list-style-type: none"> – Driver data including his preferences, condition, fatigue, behavior etc. – Vehicle data including vehicle health, GPS location, position, speed etc. – Data from vehicle environment such as traffic lights, weather etc. > Formulation of service modules such as those pertaining to navigation, diagnostics etc. <p>Content providers</p> <ul style="list-style-type: none"> > Providing all relevant data (e.g. social, consumer preferences etc.) from users to vehicles > Development and distribution of various services to different players in the playing field
3	IT services <i>(Supporting software/enabler solutions)</i>	<ul style="list-style-type: none"> > Integration, management and maintenance of entire consumer information stack > Cyber security solutions

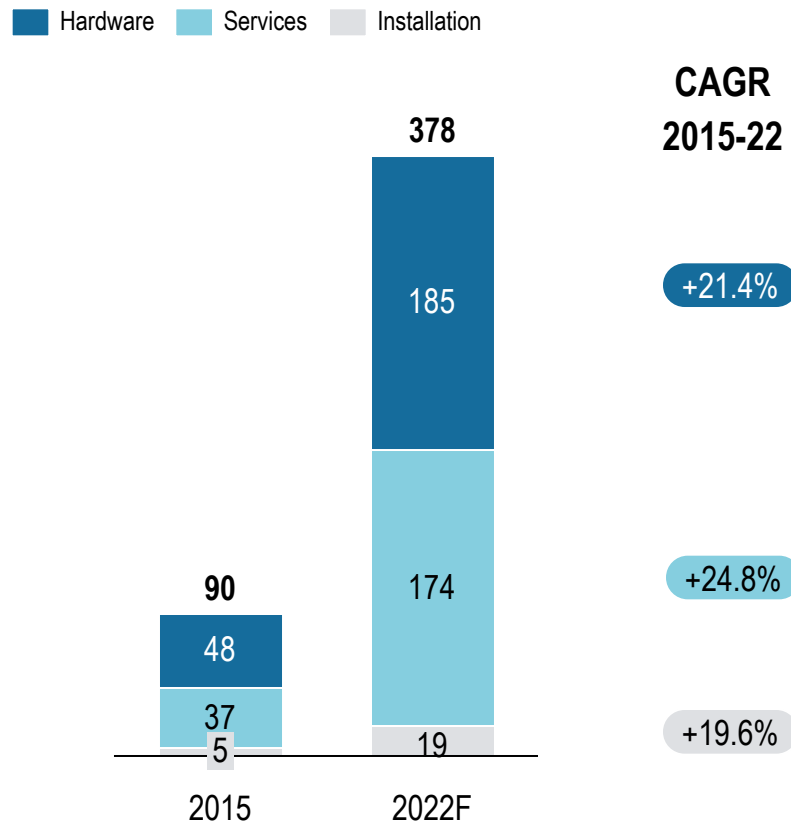
1) M2M – Machine-to-machine



Hardware is a fast-growing segment within telematics market with ~ 21% CAGR till 2022; connectivity solutions are a key component

CV telematics market growth by hardware, services and installation costs

Hardware market growth in India CV telematics[USD m]



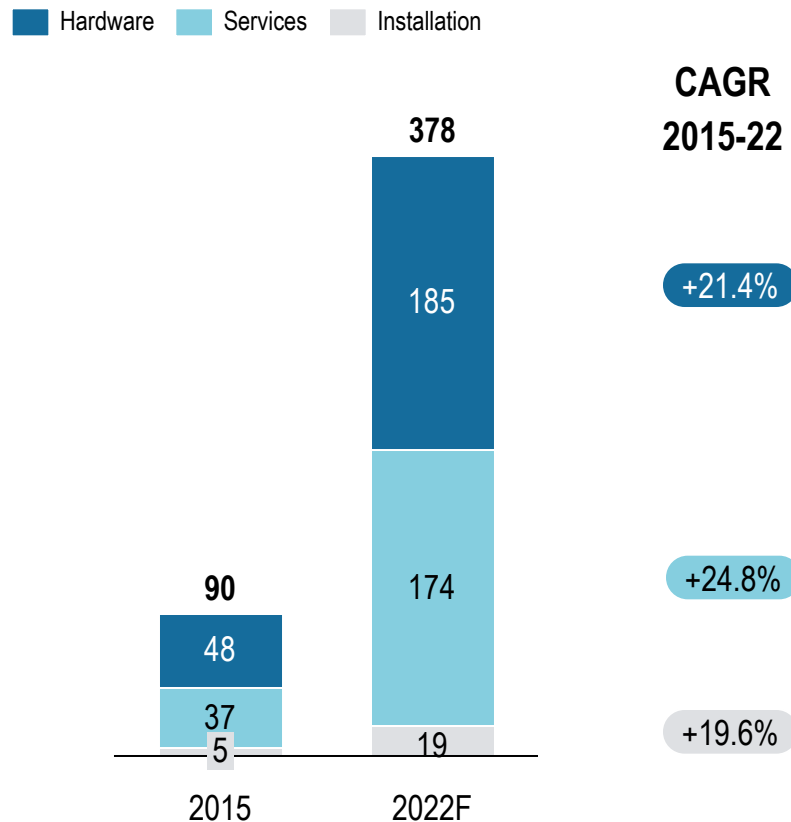
- > Hardware market is an important component of overall telematics market accounting for more than 50% of share in 2015
- > It is expected to grow at CAGR 21% till 2022 to a total market size of USD 185 m within overall CV telematics market; separate potential within other segments such as PV, aircrafts etc.
- > Hardware market includes on-board, off-board units and associated interfaces – both in-vehicle as well as those outside the vehicle
 - Key examples of products include connected devices such as sensors and other devices including ADAS devices which enable machine-to-machine communication
- > Compared to software, hardware complexity in Indian market is still evolving – growth in telematics has made hardware structure more complex and sophisticated which is expected to slow down overall market growth



Services is the fastest growing segment within telematics market with ~ 25% CAGR till 2022; significant potential exists

CV telematics market growth by hardware, services and installation costs

Services market growth in India CV telematics[USD m]



- > Services market is an important component of overall telematics market accounting for ~ 40% share in 2015
- > Services market is expected to grow at CAGR 25% till 2022 to a total market size of USD 174m within overall CV telematics market; separate potential within other segments such as PV, aircrafts etc.
- > Services market value chain includes actors such as content provider, content aggregator, application providers and integrators
 - Key examples of offerings include analytics based services for diagnostics, fleet management, fuel cost optimization, navigation etc. as well as infotainment/entertainment services



Since the market is in a nascent stage, multiple opportunities exist – key is to tailor your offerings to Indian context

Sno.	Solution	Rationale	Potential/existing tapped opportunity
1	Parking solution	<ul style="list-style-type: none"> > Average urban driver spends ~40 minutes to find parking slot > Parking is a major hassle with limited spaces in garage 	<ul style="list-style-type: none"> > PparkE offers parking solutions in the city through few taps on the phone > Phone sensors and applications can inform users of nearby parking spots, pre-book spots, navigate them to chosen spot and pay required amounts
2	Entertainment during commute	<ul style="list-style-type: none"> > Average urban driver spends ~90 minutes driving to and from the workplace, representing a large portion of their entire day 	<ul style="list-style-type: none"> > Potential opportunities include bringing engaging applications such as social media etc. to driver <ul style="list-style-type: none"> – Examples include customized recommendations, alerts on places of interest, friend suggestions enroute etc. > Key point to keep in mind is that all opportunities must be brought in a driver friendly manner which does not hamper driving by distracting drivers > OEMs such as Volkswagen launched IPL edition cars in India, which could connect to Internet and get live cricket feeds on interactive live display screens to cash in on the cricket fever in India

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