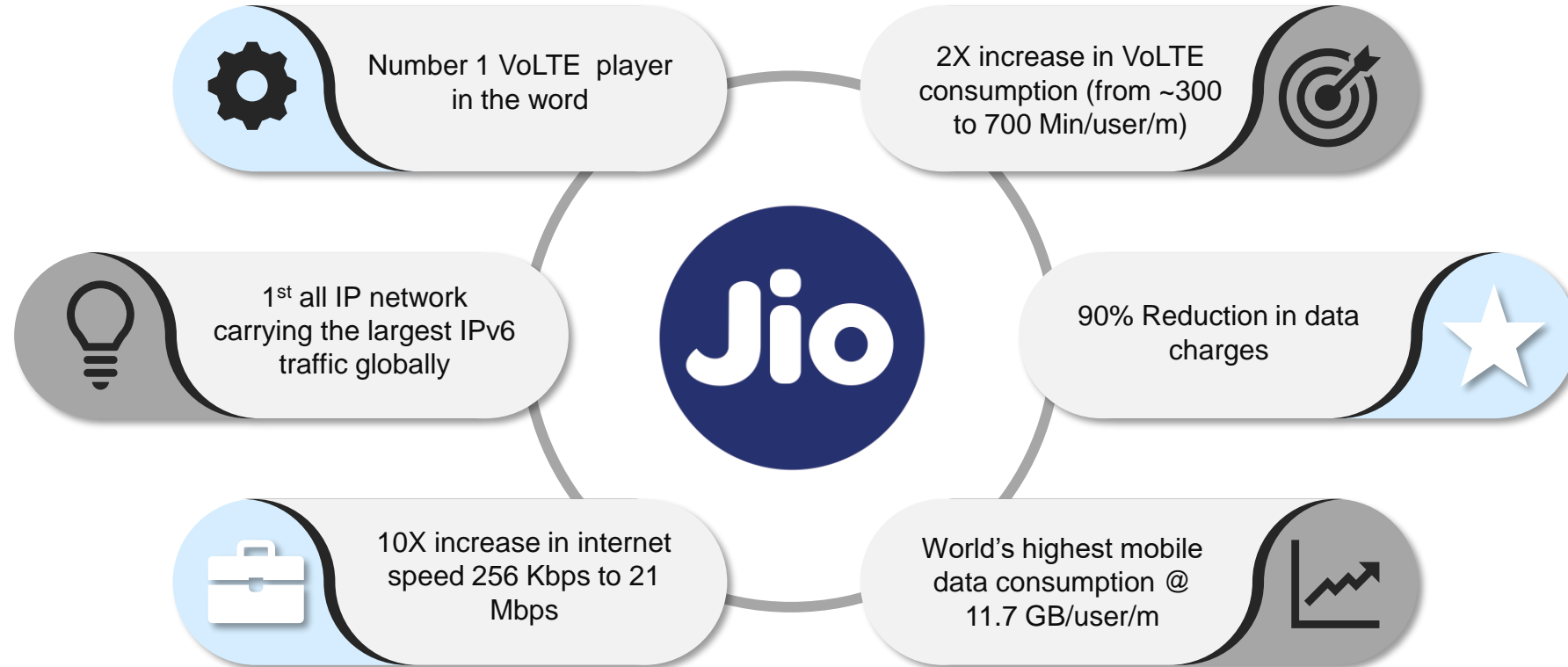


5G & Smart Mobility



Jio - India's largest telecom service provider

403+ Million subscribers & counting...



Network Presence in all 29 states

97% Population Coverage | 100% Town Coverage | 87% Village Coverage | 90% Highway Coverage

Jio – More than just a Telco, but rather a Digital Lifestyle enabler



JioChat



MyJio



JioMoney



Jio4GVoice



JioNet



JioGarden



JioCloud



JioSecurity



JioSchool



JioHealthHub



JioNewspaper



JioBusiness



JioMags



JioMusic



JioCinema



JioTV



JioXpressNews



JioFiber



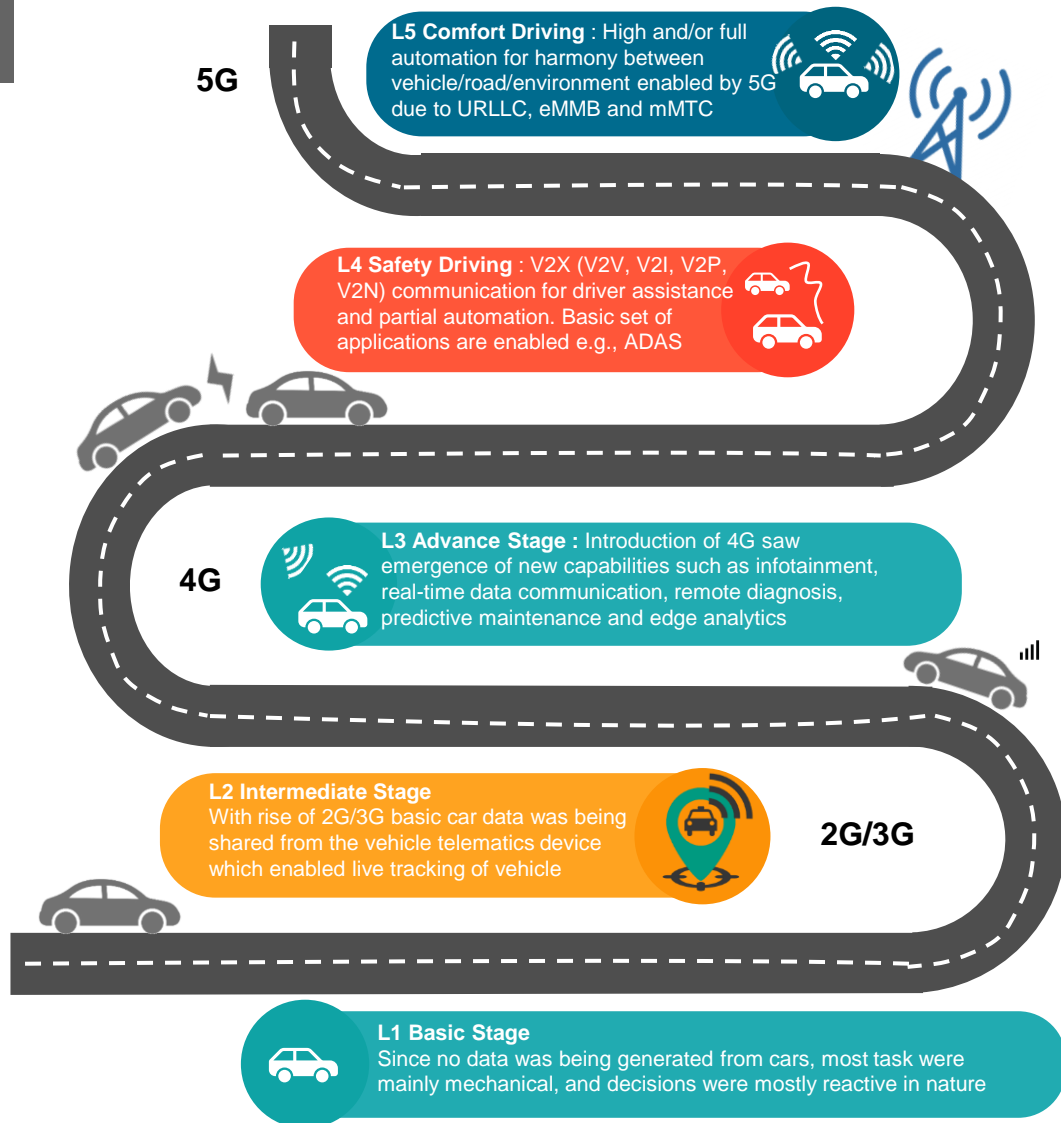
JioMotive



JioHumsafar

Jio Smart Mobility Platform – Bringing the digital automobile revolution to India by providing mobility services to every Indian at every corner of the nation

Connected Car Communication Technology Evolution



It is predicted that there will be **2 Bn cars** on the world's roads by 2025, with 500 Mn of them boasting different connected features. It is also estimated that an autonomous car will create up to **4,000 gigabytes (GB)** of data per day, which is over **1,400 terabytes (TB)** of data per year.

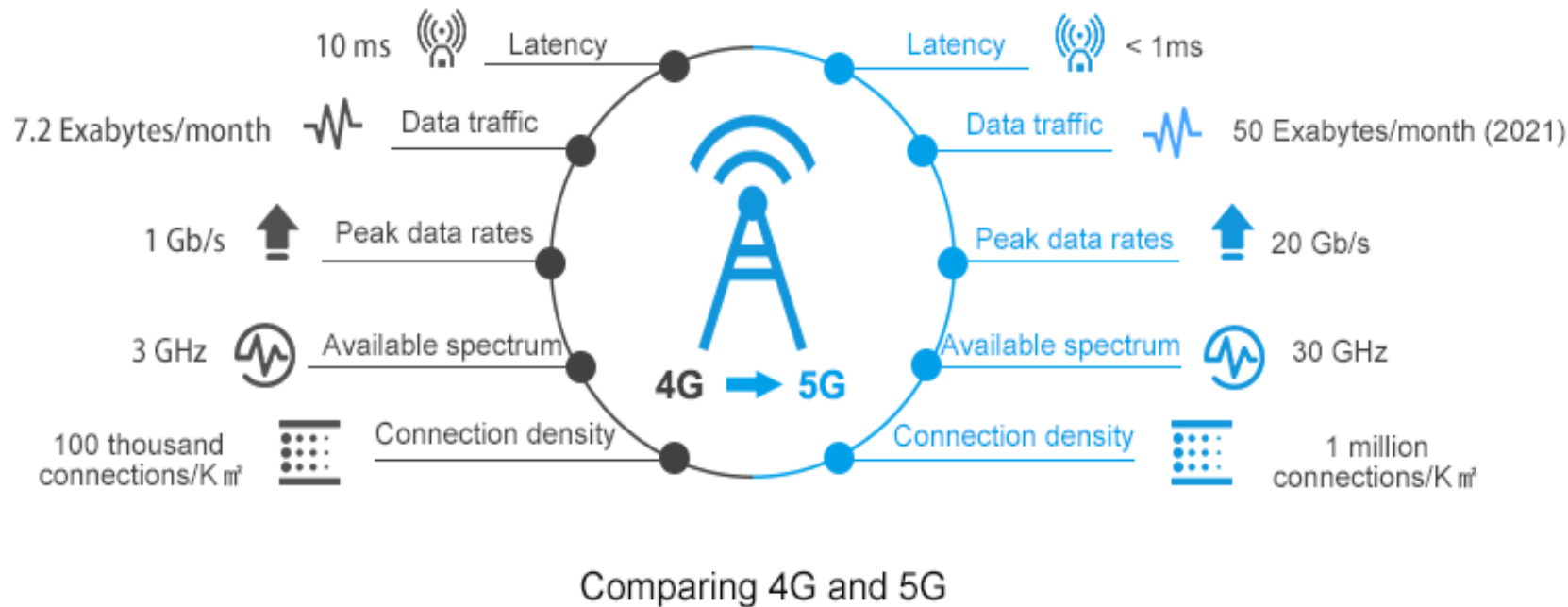
Jio's role in the connected car communication technology evolution

- Jio has understood the overall connected car communication journey and is already prepared for **the next phase of connected car communication technology**
- Jio has already developed the building blocks by leveraging its digital capabilities on its **4G network** and now **Jio can enable 5G use cases** since it is a platform approach to all solutions

5G Takes Connected Mobility to the Next Level

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra low latency, more reliability, massive network capacity, increased availability, and a more uniform user experience to more users. Higher performance and improved efficiency empower new user experiences and connects new industries.

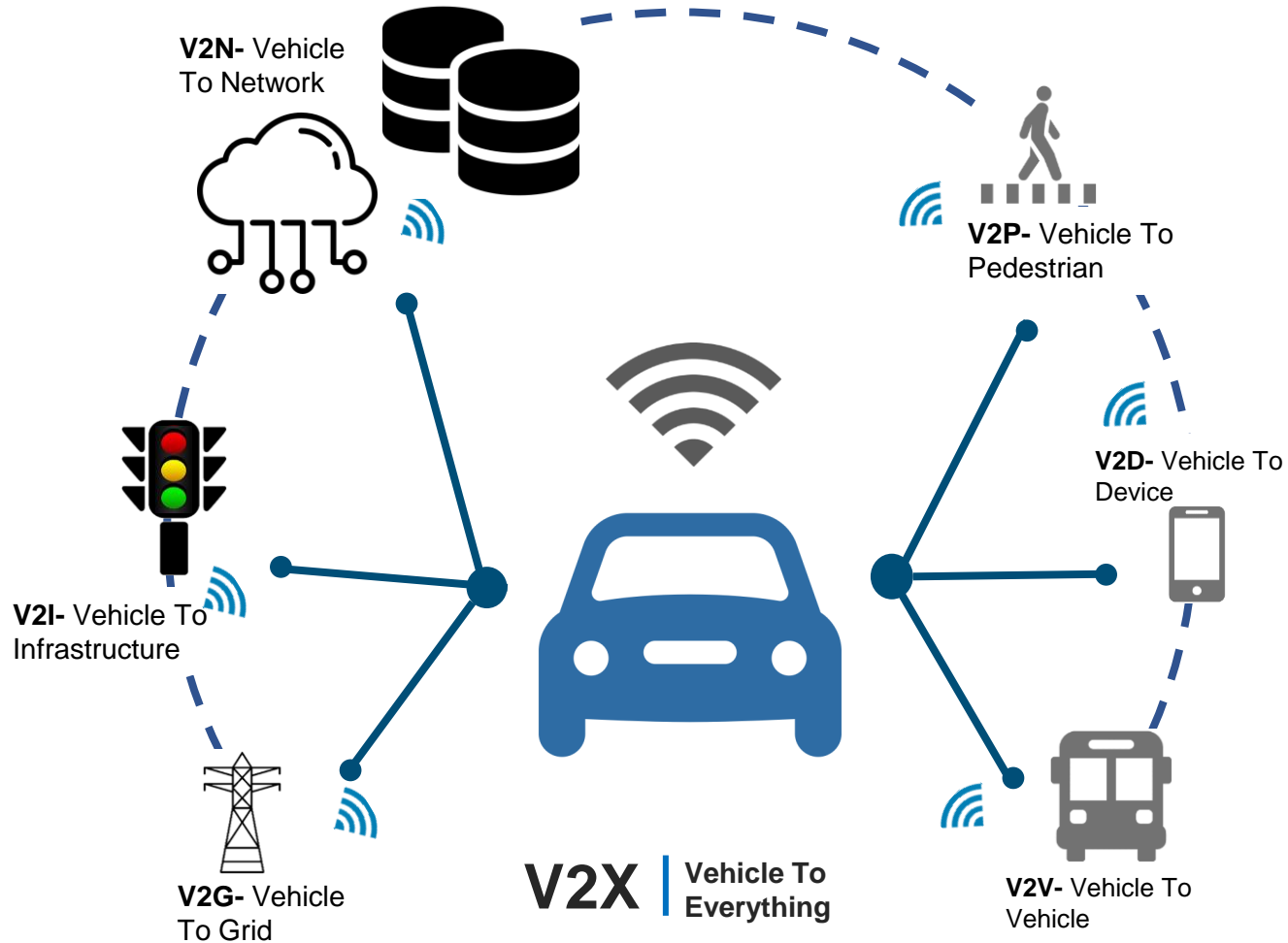


Importance of 5G from automotive perspective

- Mission-critical communications like V2X requires very ultra reliability low latency (uRLLC) of less than 1ms
- Since data transferred will be huge in size (e.g., real-time videos from ADAS cameras), 5G will enable enhanced mobile broadband (eMBB) with a peak speed of 20 Gb/s
- To enable fully autonomous driving, data points will be collected from multiple sensors (cars, telematics device, traffic signals, road sensors, etc.) massive machine to machine communications (mMTC) will be enabled by 5G with 1Mn devices / km²

V2X – Vehicle To Everything

For achieving complete V2V communication current standards are not efficient as the different types of V2X applications require extreme connectivity performances: Very low latency for real time applications requiring <1ms delay, high security, ultra-reliable connectivity for safety issues and enhanced Mobile Broadband to support Augmented Reality (>1Gb/s).



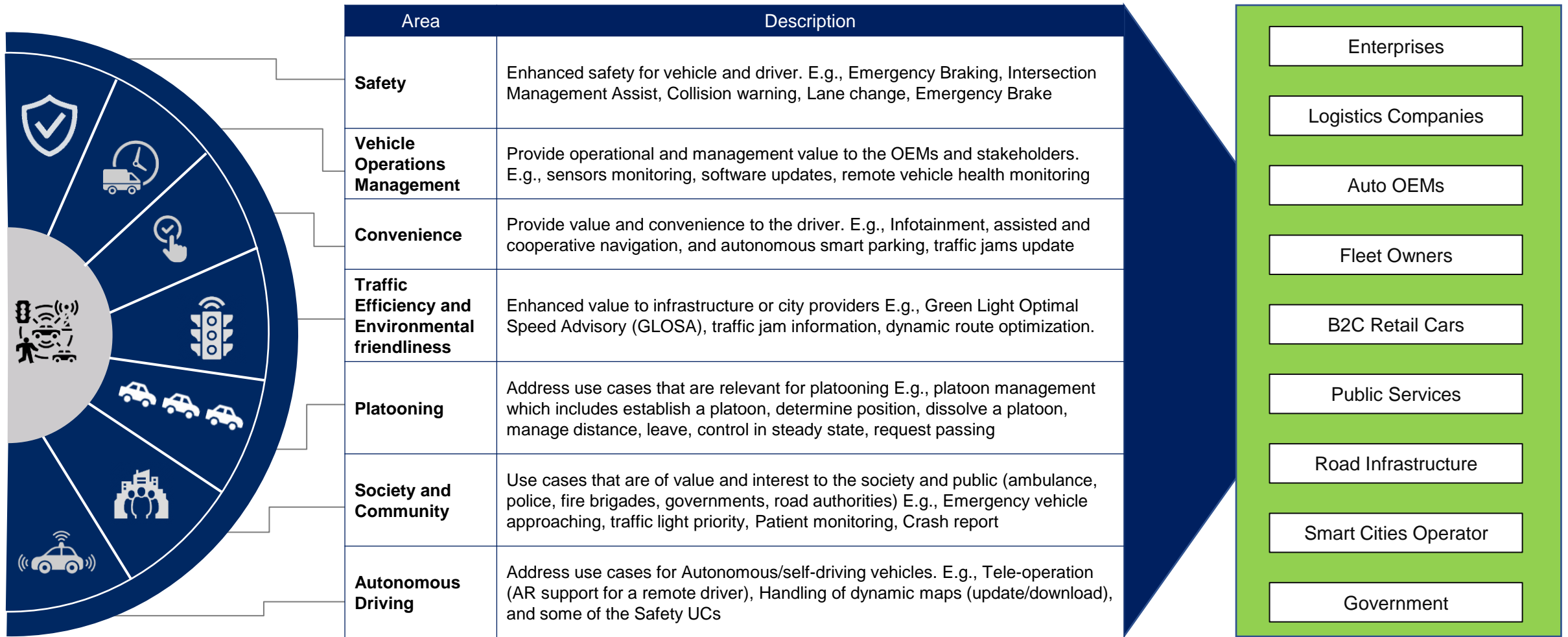
Vehicle to Everything(V2X) can be enabled through two ways

- Direct interaction between peers e.g., V2G, V2I, V2N, V2P, V2D, and V2V
- Can enabled through Cellular Vehicle to Everything Communication (C-V2X) which allows peer to peer communication over a cellular network e.g., 5G would allow communication between Vehicle to Vehicle through a cellular network. Due to low latency and high bandwidth 5G can enable this use case.

Communication between peers through C-V2X is cheaper and faster due to existing infrastructure. Additionally, lot of processing can be enabled on the server side ultimately reducing the roundabout time

Specific V2X use cases enabled through 5G

Jio has identified some V2X use cases which are beneficial to OEMs, Logistics service providers, Fleet management companies, individual car owners and other ecosystem players.



Enhancing ADAS through 5G

Jio ADAS solution offers vision-based safety camera system which uses cutting-edge technologies in AI, ML, and Edge Computing to create a new safe driving standard for commercial vehicles. The solution reduces driving incidents, protects against false claims, and empowers drivers by providing awareness of risky driving behavior and rewarding safe driver decision-making

Key ADAS Features

- Real-time actionable insights to keep driver safe
- Driver would be able to see past next / immediate vehicle through integrated connected camera in vehicles (front view, side view, rear view, etc.)
- In-cab audio alerts so that drivers are immediately made aware of risk (Max Vehicle Speed, Following Distance, Distracted Driving)
- Clear on demand visibility, including details such as license plates
- Highly accurate AI recognizes speed limit signs, stop lights, stop signs, pedestrians and objects
- Capturing and analyzing 100% of drive time provides a more complete safety picture, removing the guesswork for fleet managers and revealing the true cause of driving events.
- Automated performance coaching & recognition based on driver score



Role of 5G :



- ADAS is a steppingstone towards full autonomous driving (AD) by complementing on-board sensors (RADARs, LIDARs, cameras, etc.)
- 5G will deliver real-time, reliable information between vehicles and Jio's cloud platform, which in turn gather data from other vehicles and road infrastructure

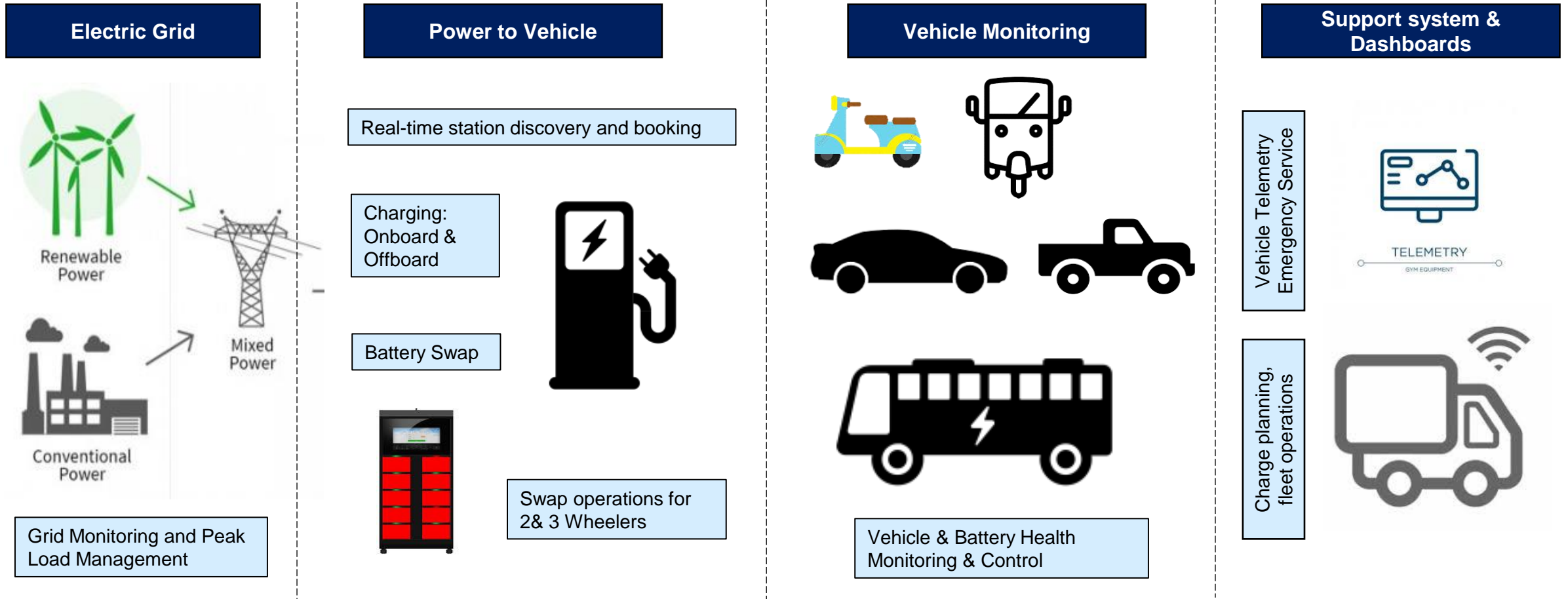
Digital Capabilities



- Jio Platform is already working with one of the partner company, Netradyne, on ADAS solutions, and has implemented ADAS use cases
- With 5G these offerings will be enhanced further to provide an enriching experience to the driver

Role of 5G in electric vehicle ecosystem

- Jio Smart Mobility solutions is enabling end consumers, enterprise and utility providers towards an all-encompassing service & solution portfolio
- Jio has already built its capabilities on 4G network, once 5G is implemented, all the EV solutions can be integrated and provided as an extension to enhance the V2X services
- V2X solutions will be improved with the help of 5G as real-time information of electric vehicle, charging station and grid will be updated on Jio platform



Jio Smart Mobility Solutions – Enabling to harness the power of 5G



Thank You

Mohan Raju
VP & Business Head – Smart Mobility, Jio
Mohan1.raju@ril.com

