

Enabling the C-V2X Ecosystem

ENGINEERING YOUR JOURNEY

ACCELERATE | INVENT | TRANSFORM



Accelerating outcomes from existing engineering initiatives and investments of customers by applying levers of efficiency, rigor, and productivity



Partnering with customers in bringing new engineering products and IP to the market to create competitive advantage and differentiation



Driving transformation in enterprise business models in alignment with dynamic market requirements, while traversing toward a sustainable future

Numerous Connected Vehicle Opportunities

Requires a flexible, scalable and adaptable connected ecosystem

Connected Vehicle Data Use Cases

Current Trends



Use cases

Benefits

Vehicle Data- internal use case

Warranty Reduction /Quality

Specialized Data Collection

Root Cause/Recall Exposure

Over the Air Software Update

Cost reduction

Third party APIs

Lean Innovation / Revenue Oppty

Fleet Management

Elim. aftermarket hardware

Driver scoring

Usage Based Insurance

Future Mobility Solutions



Use cases

Benefits

C-V2X OBU's

Safety, improved perception

Vehicle Sharing

Utilization beyond 4%

Prognostics

Vehicle health

Multi-modal Trans.

Last mile support

Smart Grid Development

Location/smart charging

C-V2X RSUs

Smart Cities, Traffic, Safety

Internal

External

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On-Board

- Vehicle Integration
 - Integration Framework with *RTI ConnexDrive*
 - V2X stack Integration on T-Box / Gateway
 - V2X Apps development
- Functional & System Testing (including HIL) with *Danlaw MX-Suite*

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Road-Side

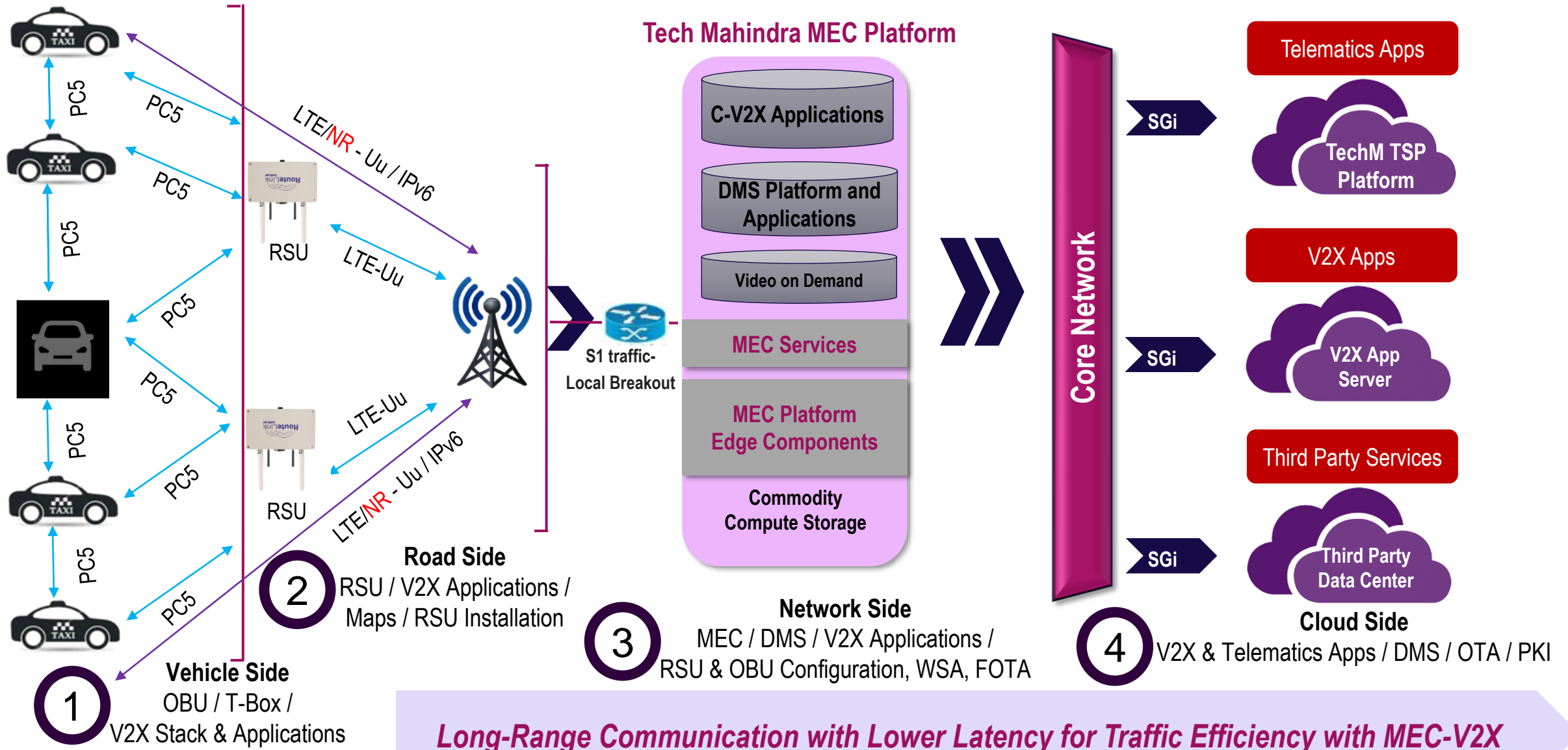
- RSU Installation & Maintenance
 - RSU Configuration & License
 - Backhaul Connection
 - Small Cells Integration for 5G
- Systems Integration & Testing
 - Map message creation
 - Traffic Signal Controller
 - Data Center / MEC / DMS
 - V2X Apps / messages

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Network

- MEC Capacity Planning, Configuration & Integration with eNB and Data Center
- SW library creation for hosting features
- DMS hosting on MEC
- RSU & OBU/TCU Configuration, WSA, FOTA through DMS
- V2X Application development & Integration with MEC
- PKI Integration through DMS

Tech Mahindra C-V2X Ecosystem Offering



Long-Range Communication with Lower Latency for Traffic Efficiency with MEC-V2X

#	Use Case	Mode	Category
1	Forward Collision Warning(FCW)	V2V	Security
2	In-section Collision Warning (ICW)	V2V/V2I	
3	Left Turn Assist(LTA)	V2V/V2I	
4	Blind Spot Warning/Lane Change Warning(BSW/LCW)	V2V	
5	Do Not Pass Warning(DNPW)	V2V	
6	Emergency Brake Warning(EBW)	V2V-Event	
7	Abnormal Vehicle Warning(AVW)	V2V-Event	
8	Control Loss Warning(CLW)	V2V-Event	
9	Hazardous Location Warning(HLW)	V2I	

#	Use Case	Mode	Category
10	Speed Limit Warning(SLW)	V2I	Security
11	Red Light Violation Warning(RLVW)	V2I	
12	Vulnerable Road User Collision(VRUC)	V2P/V2I	
13	Green Light Optimal Speed Advisory(GLOSA)	V2I	Efficiency
14	In-Vehicle Signage(IVS)	V2I	
15	Traffic Jam Warning(TJW)	V2I	
16	Emergency Vehicle Warning(EVW)	V2V	
17	Vehicle Near-Field Payment(VNFP)	V2I	Information Service

Creating a Robust Connected Vehicle Offering



Flexible, Scalable and Adaptable Technology Solutions
Internal Light Weight Rapid Delivery Platform, High Availability Production Systems



System Thinking
Connected vehicle involves many different layers. Designing the right flexibility will allow fast innovation



Services and Markets
Focus on future Enablers not just features



Org Model & New Ways of Working
Define organizational model and implement new ways of working



KPI Tracking
Define KPIs and create methodology for tracking them, incl. value generation



Workforce planning & allocation
Define resourcing model & talent management approach



Training Program
Develop and implement training program to support capability building, learning syndication



Partnership Management
Create approach for managing system, vendor dependencies & partnerships

THANK YOU

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