



# V2XE Product Suite

An integrated test bed for V2X validation

Tata Elxsi's V2X Emulator is a comprehensive Test Solution for V2X Testing. It is capable of generating GNSS & CAN signals in real-time, which mirrors real-world scenarios.

## Why V2XE?

Addresses the challenges which may occur during a real-world field testing

-  **High Cost**  
Connected Car testing involves huge costs in setting up of test tracks and real vehicles
-  **Scenario Creation/ Repeatability**  
Creation of all possible traffic scenarios is a challenging exercise in real world
-  **Safety Concerns**  
Creation of collision scenarios at high speeds on a difficult terrain is a dangerous exercise
-  **Spectrum Availability**  
Non-availability of specific spectrum for civilian use becomes a deterrent to testing on real roads
-  **Simulation of High Traffic**  
Creation of high density traffic scenarios is financially unviable and practically challenging

## V2XE - Variants

Tata Elxsi has developed comprehensive & customizable suite of products for Functional & Performance validation of V2X systems

**V2XE - DSRC**  
Tata Elxsi's V2XE-DSRC for Functional & Performance validation of V2X ECUs leverages real-time GNSS & CAN signals for replicating the real-world conditions. The product is readily available.

**V2XE - Cellular (C-V2X)**  
Tata Elxsi's C-V2X Simulator for C-V2X Software in loop testing can cater to the customers who are awaiting C-V2X hardware.

Tata Elxsi is also working towards migrating C-V2X simulator to an equipment based V2XE-Cellular.

## V2XE – Cellular

With an aim to help customers with C-V2X aspirations, Tata Elxsi has launched the Simulator version of V2XE - Cellular (C-V2X) at MWCA 2018.

There is no denying the fact that automotive communication is moving towards C-V2X from DSRC, owing to coverage and infrastructure aspects offered by V2XE-Cellular.

### Why V2XE - Cellular?

- Provides a head-start for C-V2X application development and testing
- Support for V2N (Uu) will be included as the standards evolve
- Simulates vehicular traffic & data traffic between vehicles

Tata Elxsi's C-V2X Simulator can cater to Tier 1/ Tier 2 suppliers, research institutes, standard bodies, and traffic authorities.

# Highlights

Tata Elxsi's V2X Emulator addresses the possible challenges which might occur during real-world field testing. Performing an emulator based testing before field testing would significantly benefit the testing in terms of Cost, Time and Quality.

-  **Real-Time Emulation**  
Real-time scenario emulation on embedded platform, capable of emulating 50 cars using a single DSRC hardware platform
-  **Actual Road Topologies**  
Integrated with Google Maps and OSM to emulate road traffic conditions
-  **Real-Time GPS Emulation**  
Integration with GNSS simulator helps emulate real-time GPS signals for the Device under Test (DUT)
-  **Multiple Standards Supported**  
Supports both ITS-G5 and WAVE standards

-  **In-vehicle CAN Network Emulation**  
Integration with CAN Simulator emulates in-vehicle CAN network for the DUT
-  **Wireless Channel Emulation**  
Enables modeling of channel impairments such as Doppler, Multipath fading etc.
-  **Security Testing**  
Testing for Sybil attack, time-elapsed certificates, Data playback, Data alteration and GNSS spoofing
-  **User Friendly GUI**  
Creating complex scenarios through an intuitive UI reducing the need for writing complex test scripts

## Business Benefits

### Cost

Significant reduction in field testing and associated logistical costs

### Time

Faster time-to-market as it reduces field testing time & efforts

### Quality

Comprehensive test coverage for functional & performance parameters

## Patents

V2XE solution is based on Tata Elxsi's unique test methodology, patented both in Europe and US



### Partners



### Consortiums



Tata Elxsi is a design company that blends technology, creativity and engineering to help customers transform ideas into world-class products and solutions.

A part of the \$100 billion+ Tata group, Tata Elxsi addresses the communications, consumer products, defence, healthcare, media & entertainment, semiconductor and transportation sectors. This is supported by a network of design studios, development centers and offices worldwide. Key services include embedded product design, industrial design, animation & visual effects and systems integration. Tata Elxsi is a listed company and headquartered in Bangalore, India.

For more information, visit us at [www.tataelxsi.com](http://www.tataelxsi.com)

To leverage our V2XE Product Suite Solutions and other capabilities contact us at [info@tataelxsi.com](mailto:info@tataelxsi.com)