

Global V2X Market (Vehicle-to-Everything) Communications Ecosystem 2030 Key Players, Opportunities, Challenges, Forecast

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/EINPresswire.com/ -- Global [V2X Market \(Vehicle-to-Everything\) Communications](#)

is a technology that enables vehicles to communicate with other vehicles, infrastructure, and pedestrians. It is part of the broader Internet of Things (IoT) concept and is expected to play a critical role in the future of transportation. The

goal of V2X technology is to improve road safety, reduce traffic congestion, and enhance the overall driving experience.



V2X communication can be classified into two categories: Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I). In V2V communication, vehicles can exchange data with each other to enhance road safety and reduce the likelihood of accidents. For example, vehicles can exchange information about their speed, direction, and location to help prevent collisions. In V2I communication, vehicles communicate with infrastructure such as traffic lights, road signs, and weather sensors to gather information and improve the driving experience.

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The V2X ecosystem consists of various components, including communication devices, network infrastructure, and applications. Communication devices include on-board units (OBUs) installed in vehicles, as well as road-side units (RSUs) installed along the roadside. These devices are connected to a network infrastructure that enables data exchange between vehicles and infrastructure. Applications, such as traffic management systems, collision avoidance systems, and autonomous driving systems, use the data gathered through V2X communication to provide drivers with real-time information and enhance the driving experience.

In conclusion, V2X technology has the potential to revolutionize the way we travel by improving road safety, reducing traffic congestion, and enhancing the overall driving experience. As the technology continues to evolve, it is expected to play a critical role in the future of

transportation.

Topics Covered

The report covers the following topics:

V2X ecosystem

Market drivers and barriers

V2V, V2I, V2P/V2D, V2N and other types of V2X communications

V2X architecture and key elements

V2X transmission modes, message sets and service capabilities

IEEE 802.11p, C-V2X and other enabling technologies for V2X communications

Complementary technologies including ADAS (Advanced Driver Assistance Systems), precision positioning, edge & cloud computing, network slicing, artificial intelligence, machine learning, Big Data and advanced analytics

Key trends including the adoption of V2X as an integral part of automakers' vehicle development roadmaps; commercial readiness of V2X systems capable of supporting both IEEE 802.11p and C-V2X; launch of large scale, city-wide V2X deployments; availability of nationally and transnationally scalable V2X SCMS (Security Credential Management System) service offerings; emergence of motorcycle-specific V2X safety applications; use of V2V communications to support truck platooning systems; and delivery of certain V2X-type applications through wide-area cellular connectivity

Review of more than 160 V2X applications – ranging from safety-related warnings and traffic light advisories to "see-through" visibility and fully autonomous driving

Business models for monetizing V2X applications

Examination of IEEE 802.11p and C-V2X engagements worldwide, including case studies of 22 live V2X deployments

Spectrum availability and allocation for V2X across the global, regional and national regulatory domains

Standardization, regulatory and collaborative initiatives

Future roadmap and value chain

Profiles and strategies of over 330 leading ecosystem players including automotive OEMS and V2X technology & solution providers

Exclusive interview transcripts from eight companies across the V2X value chain: Cohda Wireless, Foresight Autonomous Holdings, Kapsch TrafficCom, Nokia, NXP Semiconductors, OnBoard Security, Qualcomm, and Savari

Strategic recommendations for automotive OEMS, V2X technology & solution providers, mobile operators, cellular industry specialists and road operators

Market analysis and forecasts from 2019 till 2030

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Forecast Segmentation

Market forecasts are provided for each of the following submarkets and their subcategories:

Submarkets

- V2X Terminal Equipment
 - OBUs (On-Board Units)
 - RSUs (Roadside Units)
- V2X Applications
- V2X Backend Network Elements
- V2X Security
- Air Interface Technologies

- C-V2X (Cellular V2X)
 - LTE-V2X
 - 5G NR (New Radio)-V2X
 - IEEE 802.11p
 - IEEE 802.11p-2010
 - IEEE 802.11bd/NGV (Next-Generation V2X)
- Application Categories

- Road Safety
- Traffic Management & Optimization
- Navigation & Traveler/Driver Information
- Transit & Public Transport
- Commercial Vehicle Operations
- Emergency Services & Public Safety
- Environmental Sustainability
- Road Weather Management
- Autonomous Driving & Advanced Applications
- Value-Added Services
- Regional Markets

- North America
- Asia Pacific
- Europe
- Middle East & Africa
- Latin & Central America
- Key Questions Answered

The report provides answers to the following key questions:

How big is the V2X opportunity?

What trends, drivers and barriers are influencing its growth?
How is the ecosystem evolving by segment and region?
What will the market size be in 2022, and at what rate will it grow?
Which regions and countries will see the highest percentage of growth?
What is the status of V2X adoption worldwide, and what is the current installed base of V2X-equipped vehicles?
What are the key application scenarios and use cases of V2X?
How does V2X augment ADAS (Advanced Driver Assistance Systems) to improve active safety, traffic efficiency and situational awareness?
Can V2X improve road safety for pedestrians, cyclists, motorcyclists and other vulnerable road users?
What are the practical, quantifiable benefits of V2X – based on early commercial rollouts and large-scale pilot deployments?
What are the technical and performance characteristics of IEEE 802.11p and C-V2X?
Do VLC (Visible Light Communications)/Li-Fi and other short-range wireless technologies pose a threat to IEEE 802.11p and C-V2X?
Which V2X applications will 5G-V2X and IEEE 802.11bd systems support in the future?
How will V2X enable the safe and efficient operation of autonomous vehicles?
What opportunities exist for mobile operators and cellular industry specialists in the V2X ecosystem?
Who are the key ecosystem players, and what are their strategies?
What strategies should automotive OEMs, V2X technology & solution providers, and other stakeholders adopt to remain competitive?

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List of Companies Mentioned:

01LightCom
3GPP (3rd Generation Partnership Project)
5GAA (5G Automotive Association)
5G-Connected Mobility Consortium
7Layers
A1 Telekom Austria Group
AASA
AASHTO (American Association of State Highway and Transportation Officials)
Abu Dhabi Department of Transport
ACEA (European Automobile Manufacturers' Association)
ADI (Analog Devices Inc.)
AECC (Automotive Edge Computing Consortium)
Airbiquity
Airgain

Alibaba Group
Allgon
Alphabet
Alps Alpine (Alps Electric/Alpine Electronics)
Altran
Amphenol Corporation
Amsterdam Group
Anritsu Corporation
Apple
Applied Information
Aptiv (Delphi Automotive)
ARIB (Association of Radio Industries and Businesses, Japan)
Aricent
ARM Holdings
Arteris IP
ASECAP (European Association of Operators of Toll Road Infrastructures)
Association of Global Automakers
ASTM International
Aston Martin Lagonda
ASTRI (Hong Kong Applied Science and Technology Research Institute)
AT&T
ATA (American Trucking Associations)
ATEC ITS France
Athena Group
ATIS (Alliance for Telecommunications Industry Solutions)
Audi
Auto Alliance (Alliance of Automobile Manufacturers)
Autoliv
Automatic Labs
Autotalks
Aventi Intelligent Communication
BAIC Group
Baidu
Battelle
BCE (Bell Canada)
Beijing BDStar Navigation
BJEV
BlackBerry
BMW Group
BMW Motorrad
Boréal Bikes
Brilliance Auto (Brilliance China Automotive Holdings)
Broadcom

Bureau Veritas
BYD
C2C-CC (CAR 2 CAR Communication Consortium)
CAICT (China Academy of Information and Communications Technology)
CAICV (China Industry Innovation Alliance for Intelligent and Connected Vehicles)
CalAmp
CAMP (Crash Avoidance Metrics Partnership)
Carsmart (Beijing Carsmart Technology)
CAT (Cooperative Automated Transportation) Coalition
CCC (Car Connectivity Consortium)
CCSA (China Communications Standards Association)
CDOT (Colorado Department of Transportation)
CEDR (Conference of European Directors of Roads)
CEN (European Committee for Standardization)
CENELEC (European Committee for Electrotechnical Standardization)
CEPT (European Conference of Postal and Telecommunications Administrations)
Certicom
CEST Co. (Center for Embedded Software Technology)
CETECOM
CEVA
Changan Automobile
Chemtronics
Chery
China Mobile
China Telecom
China Transinfo
China Unicom
Chunghwa Telecom
CICT (China Information and Communication Technology Group)
CiDi (Changsha Intelligent Driving Institute)
Cisco Systems
C-ITS (China ITS Industry Alliance)
Clarion
CLEPA (European Association of Automotive Suppliers)
CMC (Connected Motorcycle Consortium)
CMIoT (China Mobile IoT)
CNH Industrial
Cohda Wireless
Commsignia
Confidex
Connected Signals
Continental
ConVeX (Connected Vehicle-to-Everything of Tomorrow) Consortium

CSTI (Council for Science, Technology and Innovation, Japan)
Cubic Corporation
Cubic Telecom
Cybercom Group
Cypress Semiconductor Corporation
DAF Trucks
Daimler
Daimler Trucks
Danlaw
Datang Telecom Technology & Industry Group
DEKRA
Delphi Technologies
Denso Corporation
Derq
Desay SV Automotive
DFM (Dongfeng Motor Corporation)
DT (Deutsche Telekom)
DT&C
Ducati Motor Holding
DXC Technology
EATA (European Automotive and Telecom Alliance)
Econolite
EFKON
Ericsson
ERTICO – ITS Europe
ERTRAC (European Road Transport Research Advisory Council)
ESCRYPT
eSSys
ETAS
ETRI (Electronics & Telecommunications Research Institute, South Korea)
ETSI (European Telecommunications Standards Institute)
Eurofins Scientific
European Commission
Faraday Future
FAW Group
FCA (Fiat Chrysler Automobiles)
Ferrari
FET (Far EasTone Telecommunications)
FEV Group
Ficosa
Firefly LiFi (Firefly Wireless Networks)
Flex
FLIR Systems

Fluidmesh Networks
Ford Motor Company
Foresight Autonomous Holdings
Forward Electronics
Fraunhofer FOKUS (Institute for Open Communication Systems)
Fraunhofer HHI (Heinrich Hertz Institute)
Fraunhofer IIS (Institute for Integrated Circuits)
Fraunhofer SIT (Institute for Secure Information Technology)
Fujitsu
GAC Group (Guangzhou Automobile Group)
GCF (Global Certification Forum)
Geely Auto
Geely Holding
Gemalto
GENIVI Alliance
Genvict
GM (General Motors)
Goodyear Tire & Rubber Company
Google
Gosuncn Technology Group
Great Wall Motor Company
Green Hills Software
Griip
Groupe PSA
Groupe Renault
GSMA
HAAS Alert
Halla Group
Hancom MDS
Harada Industry
HARMAN International
Helix Technologies
HELLA
HERE Technologies
Hino Motors
Hirschmann Car Communication
HiSilicon
Hitachi
HKT
HNTB Corporation
Honda Motor Corporation
HORIBA MIRA
HSAE/Hangsheng Technology

Huali/iSmartWays Technology
Huawei
Hyundai Mobis
Hyundai Motor Company
Hyundai Motor Group
IAV
IBM Corporation
IDnomic
IEC (International Electrotechnical Commission)
IEEE (Institute of Electrical and Electronics Engineers)
IETF (Internet Engineering Task Force)
IMDA (Info-Communications Media Development Authority, Singapore)
IMT-2020 (5G) Promotion Group
Infineon Technologies
INRIX
Intel Corporation
InterDigital
Intertek
Invengo
IPC (Increment P Corporation)
ISED (Innovation, Science and Economic Development Canada)
ISO (International Organization for Standardization)
ISS (INTEGRITY Security Services)
Isuzu Motors
ITE (Institute of Transportation Engineers)
Iteris
ITRI (Industrial Technology Research Institute, Taiwan)
iTRONICS
ITS America (Intelligent Transportation Society of America)
ITS Asia-Pacific
ITS Australia
ITS Canada
ITS China
ITS Connect Promotion Consortium
ITS Info-Communications Forum
ITS Japan
ITS Korea
ITS Singapore
ITS Taiwan
ITS UK (United Kingdom)
ITT (IT Telecom)
ITU (International Telecommunication Union)
Iveco

JEITA (Japan Electronics and Information Technology Industries Association)
Jin Woo Industrial
JISC (Japanese Industrial Standards Committee)
JLR (Jaguar Land Rover)
JRC (Japan Radio Company)
JSAE (Society of Automotive Engineers of Japan)
Juniper Networks
JVCKENWOOD Corporation
Kapsch TrafficCom
Karamba Security
KATS (Korean Agency for Technology and Standards)
Kawasaki Heavy Industries
KDDI Corporation
Keysight Technologies
Kia Motors Corporation
KOSTAL Group (Leopold Kostal)
KPN
KSAE (Korean Society Automotive Engineers)
KT Corporation
KTM
Kymeta Corporation
Kyocera Corporation
LACROIX City/LACROIX Neavia
Laird
Lear Corporation
Leidos
Lenovo
Leonardo
Lesswire
LG Electronics
LG Innotek
Linux Foundation
LITE-ON Technology Corporation
LMT (Latvijas Mobilais Telefons)
LoJack
Longsung Technology
Lucid Motors
Luxoft
Lyft
Magna International
Magneti Marelli
Mahindra & Mahindra
MAN

Mando Corporation
Marben
Marvell
Mazda Motor Corporation
McCain
McLaren Automotive
Mediatek
MEMA (Motor & Equipment Manufacturers Association)
Mentor
MET Labs (MET Laboratories)
Michelin
Microchip Technology
Microsemi Corporation
Microsoft Corporation
MIIT (Ministry of Industry and Information Technology, China)
MinebeaMitsumi Group
MINI
Mitsuba Corporation
Mitsubishi Electric Corporation
Mitsubishi Motors Corporation
MLIT (Ministry of Land, Infrastructure, Transport and Tourism, Japan)
Mobile Mark
Mobileye
Molex
MOLIT (Ministry of Land, Infrastructure and Transport, South Korea)
Motorola Mobility
Murata Manufacturing
NavInfo
Navistar
Navya
Nebula Link
NEC Corporation
NEMA (National Electrical Manufacturers Association)
Neology
Neoway Technology
Neusoft Reach
NEVS (National Electric Vehicle Sweden)
Nexar
Nexus Group
NGMN Alliance
NI (National Instruments)
NICT (National Institute of Information and Communications Technology, Japan)
NIO

Nissan Motor Corporation
NJR (New Japan Radio)
Nokia
Nordsys
Noris Network
NTT DoCoMo
NXP Semiconductors
NYC DOT (New York City Department of Transportation)
Objective Software
OICA (International Organization of Motor Vehicle Manufacturers)
Oki Electric Industry
Oledcomm
OmniAir Consortium
OnBoard Security
oneM2M
OnStar
OPPO
Orange
P3 Group
PACCAR
Panasonic Corporation
Parsons Corporation
PCCW
Peloton Technology
Penta Security Systems
Phantom Auto
PIARC (World Road Association)
Pioneer Corporation
POLIS (Cities and Regions for Transport Innovation)
Prettl Group
Proximus Group
Pulse Electronics
pureLiFi
Q-Free
Qianxun SI (Spatial Intelligence)
QNX Software Systems
Qorvo
Qosmotec Software Solutions
Qualcomm
Quectel Wireless Solutions
Queensland TMR (Department of Transport and Main Roads)
RANIX
Redpine Signals

Renesas Electronics Corporation
Robert Bosch
Rohde & Schwarz
ROHM Semiconductor
Rolls-Royce Motor Cars
RoyalTek
S.E.A. Datentechnik
SAE International
SAE-China (Society of Automotive Engineers of China)
Safety Spectrum Coalition
SAIC Motor Corporation
Saleen Automotive
Samsung Electronics
Sanjole
Sanyo Techno Solutions Tottori
Savari
Scania
SEAT
Security Innovation
Sensefields
Sequans Communications
SGS
Shanghai Gotell Communication Technology Holdings (roam2free)
Siemens
Sierra Wireless
SIMCom Wireless Solutions
Sinclair Broadcast Group
SiriusXM
SK C&C
SK Telecom
Škoda Auto
Skyworks Solutions
Smart Mobile Labs
Smarteq Wireless
SMARTRAC
Socionext
SoftBank Group
Spirent Communications
SsangYong Motor Company
STAR Systems International
STMicroelectronics
sTraffic
Subaru Corporation

Sumitomo Electric Industries
Sunsea AIoT
Suzuki Motor Corporation
Swarco
Synopsys
TAICS (Taiwan Association of Information and Communication Standards)
Taiwan Mobile
Taoglas
TAPCO (Traffic and Parking Control Company)
TASS International
Tata AutoComp Systems
Tata Elxsi
Tata Motors
TCA (Transport Certification Australia)
TE Connectivity
Telefónica Group
Telenor Connexion
Telenor Group
Telit Communications
Telstra
Telus Corporation
Tencent
Terranet
Tesla
THEA (Tampa-Hillsborough Expressway Authority)
TIA (Telecommunications Industry Association)
TIAA (Telematics Industry Application Alliance)
TIM (Telecom Italia Mobile)
TISA (Travelers Information Services Association)
Tome Software
TomTom
Toshiba Corporation
TowerJazz
Toyota Motor Corporation
TransCore
Transport Canada
TRATON
Trek Bicycle Corporation
TTA (Telecommunications Technology Association, South Korea)
TTC (Telecommunication Technology Committee, Japan)
TTS (Traffic Technology Services)
TÜV Rheinland
TÜV SÜD

U.S. ARPA-E (Advanced Research Projects Agency – Energy)
U.S. FCC (Federal Communications Commission)
U.S. FHWA (Federal Highway Administration)
U.S. FMCSA (Federal Motor Carrier Safety Administration)
U.S. FTA (Federal Transit Administration)
U.S. NHTSA (National Highway Transportation Safety Administration)
U.S. NIST (National Institute of Standards and Technology)
Uber Technologies
U-Blox
UL
UMTRI (University of Michigan Transportation Research Institute)
UNECE (United Nations Economic Commission for Europe)
Unex Technology Corporation
Unicore Communications
Unisoc
USDOT (U.S. Department of Transportation)
Valens
Valeo
VdTÜV (Association of Technical Inspection Agencies)
Vector Informatik
Veniam
Veoneer
Verizon Communications
Verizon Connect
Viavi Solutions
VIIC (Vehicle Infrastructure Integration Consortium)
Vinli
Visteon Corporation
VLNComm
Vodafone Group
Volkswagen Group
Volvo Cars
Volvo Group/Volvo Trucks
VT iDirect
VTT Technical Research Centre of Finland
W3C (World Wide Web Consortium)
Wanji Technology
Waymo
Wayties
Wieson Technologies
WiSeKey
WNC (Wistron NeWeb Corporation)
WSP Global

WYDOT (Wyoming Department of Transport)
Xiaomi Corporation
Xilinx
Yamaha Motor Company
YoGoKo
Yokowo
ZF
Zotye Auto (Zotye Automobile International)
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