CHRISTOPHER K. WILSON

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Connected Vehicle & Telematics Consultant – Testifying Expert

I have been developing vehicle telematics and safety systems since 1992, mostly for safety and Advanced Driver Assistance Applications (ADAS).   I participated in the early development of key telematics and safety technologies, including radar, positioning, communications and mapping, worked with many automakers, suppliers and government agencies, and was involved in the deployment and assessment of many telematics systems from Automatic Collision Notification to systems for Stability Control and Driver Assistance. I also helped set requirements and requirement testing methodologies for many ADAS systems.

I currently work as a consultant for Connected and Automated Vehicle applications (vehicle and infrastructure), and map databases. I am also an expert witness and I have written over 20 reports for various intellectual property litigations and testified 7 times. I am an industry insider with a gift for explaining complicated ideas in a convincing and easy to understand manner.

Expertise in:

- Vehicle Safety & Safety Systems Assessment
- Navigation, Telematics, Data Science
- Radar, camera, & Lidar sensors
- Vehicle & infrastructure interaction

- Remote diagnostics, Sensor & Software Management (OTA updates)
- Vehicle data collection, analysis & applications
- Positioning, communications & mapping technology
- Vehicle & traffic technology and deployment

AREAS OF EXPERTICE
(with representative dates)

Vehicle Safety Systems

- Developed one of the first Automatic Collision Notification systems based on airbag deployment and biomechanical studies. Worked with first responders & ER physicians. 1994.
- Algorithms for skid protection and dynamic vehicle control, braking & speed systems. 1999.
- Developed predictive safety systems based on map information, speed control. 1998.
- Developed metrics for regulatory evaluation of active safety systems including Forward Collision Warning, Blind Spot Monitoring, Stop Sign Warning, Curve Speed Warning. 2002.
- Litigation support for Various radar-based safety systems. 2016.

Sensors

Radar

- Designed and operated Over-The-Horizon radar. 1984.
- Synthetic Aperture Radar assessment and evaluation. 1989.
- Evaluation of radar algorithms for F16 radar systems (MTI). 1987.
- Automotive radar development for ACC & FCW systems. 1995.
- Assessed various radar-based safety systems. 2002-2017.

Image sensors & algorithms (camera and video)

- Image recognition & processing algorithms for various reconnaissance assets. 1986.

- 3D scene reconstruction from imagery, photogrammetry. 1987, 2017.
- Assessment of image-based FCW, AEB and lane following systems. 2002-2016.
- Photogrammetry for HD mapping applications. 2018.

Lidar

- Evaluated and utilized Lidar systems for Forward Collision Warning. 2003.
- Developed Lidar processing applications for mapping. 2008-2018

Communications

- Developed Vehicle-to-vehicle technologies (DSRC). 1999-2016.
- Extensive use and evaluation of cellular communications for vehicles. 1995-2018.
- Use of paging network for emergency services. 1993.
- Evaluation and development of satellite communications systems. 1984-2016.

Positioning

- Evaluation and use of GPS and many high precision enhancements. 1984-2018
- Requirements specification for GPS III and Galileo. 2004.
- Developed precision location techniques for vehicles. 1996-2018.

Maps

- Responsible for 2nd generation map concepts and specifications for industry (HD Maps). 2000.
- Functional safety for map databases. 2016-2018.
- Developed high precision maps for automated vehicles. 1999-2018.
- Developed tools for incremental updates and quality management. 2000-2018.

Vehicle Diagnostics

- Remote diagnostics of powertrains for warranty and repair planning. 2001.
- Monitored infotainment systems to asses driver preferences and system functionality. 2002.
- Diagnostics of driving style for safety and efficiency evaluations. 2012.
- Telemetry diagnostics of air and space vehicles. 1985.

Cooperative Systems

Insurance- Developed methods and tools for peer comparisons to asses driver risk. 2015.

Transportation Operations- Understanding vehicle movements and implications for traffic and signals based on vehicle probes. 1994-2018.

Outreach

- I was the primary instigator and public advocate for vehicle-to-vehicle communications and grew this effort from "can't be done" to deployment based on my advocacy.
- I have raised money for 4 startups selling a technical vision.
- Park docent leading trips on various nature topics.

PROFESSIONAL EXPERIENCE

Consultant, Intellectual Property and Connected Vehicles.   **2012 – Present**

ATG Risk Solutions, Seattle, WA   **2016 - 2016**

   VP Bus Dev. *(Developing telematics based risk assessment for Insurance)*

Vehicle Data Science Corporation, Redwood City, CA   **2013 - 2016**

CEO   *(Start-up building kinematic maps for automated vehicle applications.)*

TomTom BV, Redwood City, CA   **2008 - 2011**

Director of Program & Product Mgmt., Advanced Driver Assistance Systems (2009 – 2011)
Director of R&D (2008 – 2009)

DaimlerChrysler Research and Technology North America Inc., Palo Alto, CA   **1996 - 2008**

Vice President, ITS Strategy & Programs (2002 – 2007)
Group Manager, Telematics & Safety (1998 – 2002)
Senior Research Scientist (1996-1998)

Information Access Inc., San Francisco, CA   **1995 - 1996**

Director of Product Development (1995-1996)

TRW Inc., Sunnyvale, CA   **1986 - 1995**

Program Manager (1991 - 1995)
Senior Systems Engineer (1986 - 1991)

GTE Government Systems Inc., Mt. View, CA   **1983 - 1986**

Systems Engineer (1983 - 1986)

EDUCATION/TRAINING
PhD Candidate (1982)**,** Astrophysics**,** University of California, San Diego
BA (1981), Physics, Princeton University, Princeton, NJ
Advanced courses in business, strategy, & technology @ Harvard, Stanford, Berkeley, MIT
Training in **Software Forensics** (copyright infringement, software theft).
Collision reconstruction.
Accident Reconstruction. Certificate from Society of Automotive Engineers.

PROFESSIONAL ASSOCIATIONS
Member, Institute of Navigation (ION); Society of Automotive Engineers (SAE); Institute of
Transportation Engineers (ITE); Institute of Electrical and Electronics Engineers, Senior Member
(IEEE); California Association of Accident Reconstruction Specialists (CA2RS).
Board Member, *Inside GNSS* magazine (advisory board); Vice Chair of *IEEE Consultants Network of
Silicon Valley*; ITS California (former), Vehicle Infrastructure Integration Consortium (Founding Director,
previous); Alliance of IEEE Consultants Network Coordinating Committee (AICNCC).

PATENTS AND PUBLICATIONS
7 US patents in vehicle positioning and vehicle data processing and analytics, several applications
pending and numerous foreign patents.
McGraw-Hill *AccessScience* article on "Intelligent Vehicles and Infrastructure", 2017
Chapter on Probe Data in Springer-Verlag's *Handbook of Intelligent Vehicles*, 2012
Widely quoted in publications such as Scientific American and Telematics Update
Many presentations to industry groups, often as a representative of the automotive industry.

LITIGATION EXPERIENCE

Eight depositions, 25+ expert reports, majority patent related (partial listing).

- Expert for BMW (Finnegan) against navigation system complaint. Few hours consulting. 2012
- Supported primary expert (for TomTom) in technology understanding for invalidity and non-infringement. 2013.
- Expert against OnStar in remote diagnostics case. Developed infringement arguments. Case settled in 2013.
- Expert for Hyundai (Finnegan) in remote diagnostics case. Prepared technology tutorial and multiple IPR declarations. Case settled, 2014.
- Expert for Honda (Jones Day) in remote diagnostics case. Multiple IPR declarations. 2014.
- Expert for Toyota in Telematics/ navigation case. IPR declaration. 2015.
- Expert for BMW on remote data processing case. 2015.
- Expert for BMW (DLA Piper) in vehicle safety technology case (radar, occupant sensing). Invalidity and non-infringement reports, deposition testimony. 2015.
- Expert for Wavetronix (Workman Nydegger) in traffic radar case. IPR declaration, deposition. 2016.
- Expert against LA METRO in HOV reporting case. IPR declaration, deposition. 2016.
- Expert for BMW (DLA Piper) on remote infotainment systems. 2017.
- Expert for Domino's (DLA Piper, Australia) on fleet montoring systems. 2017.
- Expert for BMW (DLA Piper) on digital radio systems. 2017.
- Expert for Unified Patents on location-based services. 2017.
- Expert for Velocity on vehicle management system. 2018.
- Expert for Unified Patents on map data management and display system. 2018.
- Expert for Blue Dot Systems against Omnitracks on Fleet Management Trade Secrets. 2018
- Expert on Trademark matter (SuperCruise). 2018.
- Expert on vehicle safety for negligence in personal injury matter. 2019.
- Expert for BMW (DLA Piper) on location-based services patent. 2019.
- Expert for Unified Patents on pairing vehicles with remote devices. 2019.
- Expert for DEI (Cooley) in vehicle remote starter patent. 2019.