

# David Hilliard Williams

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## Expertise

- Mobile Location-Based Services
  - Wireless 911 (E911); NG911
  - Expert Witness Litigation Support and Patent/Intellectual Property Protection Services
  - GPS Systems; Network-Based Location Determination Systems
  - Indoor Location Systems, incl. Real Time Location Systems (RTLS); RFID and other RF-based Location systems; WiFi-enabled positioning systems (WPS); Beacon-based systems; Hybrids/Combinations
  - Wireless Network Location Design
  - Location Data Privacy Protection and Data Security Design
  - People, Wearables Tracking/Monitoring
  - Asset Tracking/Location Management
  - Telematics/Driverless Car Ecosystem
  - Navigation Systems; PNDs
  - Map Data, Digital Mapping and GIS
  - Vehicle-to-Vehicle; Fleet Management
  - Mobile Social/Business Networking
  - GPS Forensics; Mobile/IT Integration
  - Location-centric Process Design
  - Mobile Product Design/Implementation
  - M2M, Smart Grid/Energy Systems
  - LBS Big Data and Cloud Computing
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## Professional Summary

David Hilliard Williams is an internationally-known expert in the wireless/mobile location field and President and Founder of E911-LBS Consulting. He specializes in wireless location product and technology strategy development and implementation, as well as Intellectual Property (IP)/patent litigation services involving location technologies such as Global Positioning Satellite (GPS) systems, Network-based location determination technologies, Wireless 911 (E911) and Next Generation 911, Real-Time Location Systems (RTLS), Radio Frequency Identification (RFID) and similar RF identification systems, WiFi-based positioning systems (WPS), Near Field Communications (NFC), Beacon-based location systems, Wearable Tags/Sensor tracking systems, and various hybrids and combinations.

Mr. Williams is expert in the full range of business and consumer location-based services (LBS) enabled by these location technologies, including navigation systems, asset management, telematics, wearable tags/sensors, financial/mobile wallet, fleet management, mobile local search, presence/context-aware applications, mobile resource management, supply chain management, family tracking, mobile social and business networking, proximity-based entertainment & leisure, mobile gaming, intelligent transportation systems, safety and security, and other location-aware applications. Mr. Williams has extensive expertise in all aspects of LBS delivery across the mobile location ecosystem including enabling network communications, location technologies/sensors, map data, geospatial platform/Geographical Information Systems, GPS and other location chipsets, location data management, and device, infrastructure and integration providers. His client list includes

Apple, AT&T, General Electric, General Motors, Google, HERE, Kaspersky Internet Security, LOCAID, Nextel, Qualcomm, Peschke, Samsung, Sprint, Toyota, and Verizon.

Mr. Williams has developed and implemented industry-leading product and technology strategies and solutions for numerous LBS applications and markets and provides consulting and research services to some of the leading carriers and enterprises in the U.S., Asia, and Europe. He has provided testimony, consulting research, technical expertise and advisory services in numerous Intellectual Property/Patent cases and other litigation efforts.

In his over thirty years in communications and information technology solutions design, selection, implementation and ongoing management, Mr. Williams has extensive experience in the activities and issues needed to get applications to market, including planning and design at the application, system, interface/integration, network, IT, operational and customer facing levels. Mr. Williams has been published and quoted by leading magazines and newspapers about location-related services, including The New York Times, CBS News.com, The Boston Globe, Computerworld, Directions Magazine, Mission Critical Communications, Popular Mechanics, and RFID Journal. He has authored four books on wireless location, including *The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (two versions)*, *The Definitive Guide to Wireless E911*, and (co-authored) *The Definitive Guide to Mobile Positioning and Location Management*. Mr. Williams has authored dozens of research reports, and tracks and analyzes leading companies in the LBS industry particularly with respect to their product and technology strategies, competitive capabilities and implementation issues. He is expert on all public policy and technology issues related to public safety, location data privacy and LBS privacy protection policies and systems.

## Employment History

From: 2002 **E911-LBS Consulting**

To: Present

Position: *President and Founder*

Provides services across the entire wireless value chain, particularly with respect to technology and business strategic planning and product design and development, plus specialized services such IP/Patent litigation associated with Location Based Services and applications, GPS, E911, RTLS, RFID, NFC, and other location determination technologies and associated ecosystems. Notable projects include:

- Provided expertise, market and technical consulting, and research analysis services with respect to location-based services-related intellectual property/patent protection, licensing, and litigation (details included).
- Developed, implemented, managed, and marketed a portfolio of LBS applications and broader offers for leading North American wireless carrier. Responsible for all dimensions of product lifecycle and associated budgets. Work included the development and launch of several LBS applications including

mobile social networking, family tracking, local search, 411 w/ location, and mobile resource, fleet, and asset management.

- Provided E911 consulting expertise in support of new spectrum regulatory approval and technical implementation issues for nationwide 4G carrier.
- Developed the site map and primary content for the NAVTEQ (now HERE) Network for Developers (N4D) LBS web ecosystem - <http://developer.navteq.com>. Ecosystem targets developers of LBS applications as well as business and operational management. Mr. Williams was responsible for designing and managing the site map and overall content, identifying key contributors and raw materials, and utilizing that and other raw materials to develop broad and deep technical and business content to assist various expertise levels of application developers and business management to become intimately familiar with map data, GIS platforms, and LBS applications and to provide the information and guidance to successfully develop and launch their LBS applications.
- Provided strategic and technical guidance for mobile payments/wallet startup using location as a differentiator. Developed successful patent application.
- Managed the development of the Nextel (now Sprint) Location-Based Services strategy. Efforts included market and technical analysis of likely LBS offerings and integrating those findings with Nextel's broader wireless voice and data strategies. Work included prioritizing applications based on focus group findings, business case attractiveness, ease of implementation, impact on network infrastructure, and synchronization with GPS terminal and E911 mandate rollout plans. Managed network engineering and consulting team to design network modifications to best support the additional demands of LBS applications. Product strategy including researching and incorporating context-aware/presence concepts into product/device and network engineering plans.
- Developed navigation platform strategy for major international auto manufacturer. Assessed direction and technology requirements of in-car and portable navigation device (PND) technologies and developed technology strategy for future in-car navigation platforms.
- Developed numerous LBS company research reports using proprietary multi-point "report card" addressing numerous

business and technology strategy dimensions and issues.

- Authored four books on wireless location, including *The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services* (2005 and 2009 versions; 2016 version in development), *The Definitive Guide to Wireless E911*, and (co-authored) *The Definitive Guide to Mobile Positioning and Location Management*.
- Advised numerous small companies and startups such as LOCAID, Finder Technologies, Orion GPS, and XYVerify on LBS-related issues and alternative business and product strategies to make their business, products and technologies as attractive to possible to mobile carriers, customers, and potential investors.

From: 2009 **AT&T Mobility**

To: 2010

Position: *Senior Product Marketing Manager – Enterprise LBS*

Led the development, implementation, and marketing of numerous enterprise location-based services across all sales, marketing and operational channels. Work included responsibility for all dimensions of product lifecycle and associated budgets. Products managed included telematics, fleet management, asset management, and mobile resource management LBS on a variety of platforms including Telenav.

From: 2007 **AT&T Mobility**

To: 2009

Position: *Consumer LBS Product Realization Manager (Consultant)*

Responsible for the design, development, implementation, and ongoing lifecycle management of several high-profile Consumer LBS applications and associated operational support. Overall application design and implementation responsibilities included AT&T FamilyMap, Loopt Mobile Social Networking, 411 with location, Slifter Local Search, and CaddyHawk Game systems. Work included design, troubleshooting, and implementation of AT&T location-related network, application, and privacy infrastructure (efforts resulted in patent co-invention).

From: 1993 **Accenture**

To: 2002

Position: *Associate Partner - Communications & High-Technology Strategy*

Responsible for development of wireless location practice. Led development of business, technology, and product strategies for numerous communications and technology-centric companies looking to enter new markets. Specialized in new product design, development, and implementation, as well as network infrastructure design.

From: 1991 **Booz Allen & Hamilton**  
To: 1993  
Position: *Senior Associate – Information Technology Practice*  
Provided and led consulting services for communications industry and other Information Technology-intensive companies in developing technology strategies for addressing new marketing opportunities and internal operational issues.

From: 1987 **Deloitte Consulting (Originally Touche Ross)**  
To: 1991  
Position: *Senior Manager*  
Provided consulting services for technology-intensive companies in developing business and product strategies for addressing new marketing opportunities and internal operational issues.

From: 1983 **Hughes Aircraft Company**  
To: 1985  
Position: *Electrical Engineer – Radar Development*  
Microcomputer and digital system design engineer on the F-15 fighter radar system as part of analog to digital platform conversion.

## **Litigation Support Experience**

Date: 2015 **Sterne Kessler Goldstein Fox**  
Case: Google  
Project: Providing expert support for Inter Partes Review (IPR) of several patents on behalf of leading Internet services company subsidiary.

Date: 2015 **Hogan Lovells**  
Case: Apple  
Project: Providing expert support for multiple patent Inter Partes Review (IPR) and infringement proceedings for leading mobile platform, application and services provider.

Date: 2015 **Thompson Hine LLP**  
Case: Macropoint  
Project: Provided expert support for patent litigation effort involving fleet management devices, software, and services.

Date: 2015 **Williams & Connolly**  
Case: State of Maryland  
Project: Provided expert services in assessing validity of GPS tracking bracelet/system in parole violation case.

Date: 2013-2014 **Cravath, Swaine & Moore**  
Case: Qualcomm

Project: Provided expert litigation support, technical consulting, and advisory services in anti-trust case regarding location services technologies, platforms, and standards.

Date: 2013-2014 **Patterson Thuente Pedersen, P.A.**  
Case: Kaspersky  
Project: Provided expert litigation support, technical consulting, and advisory services in patent countersuit involving internet security services.

Date: 2014 **Sullivan & Cromwell LLP, others**  
Case: Peschke  
Project: Provided expert litigation support and technical consulting in location services patent dispute involving interactive mapping applications. Effort included providing deposition testimony.

Date: 2014 **XYVerify**  
Case: Patent Re-Submission  
Project: Rewrote patent application for LBS/financial verification system using multiple location determination methods. Effort enabled patent to be approved after prior rejection by USPTO.

Date: 2013 **Covington & Burling**  
Case: Samsung  
Project: Provided expert litigation support and technical consulting and advisory services in International Trade Commission case.

Date: 2012-2013 **Connolly Bove Lodge & Hutz**  
Case: Enovsys  
Project: Provided expert litigation support and technical consulting and advisory services for pursuit of LBS patent royalties and settlements.

Date: 2011-2013 **Voxson**  
Case: Various  
Project: Provided expert litigation support and technical consulting and advisory services for pursuit of E911 and LBS patent royalties and settlements.

Date: 2010-2012 **Morrison & Foerster LLP**  
Case: Cellco Partnership (dba Verizon Wireless)  
Project: Provided market and technical consulting and advisory services in support of re-examination process of E911 and LBS patents.

Date: 2011-2012 **Dovel & Luner**  
Case: TrackBeam  
Project: Provided market and technical consulting, expertise and research

analysis of numerous LBS patents to identify potential licensing candidates.

- Date: 2011      **SNR Denton**  
Case:      Wavemarket  
Project:      Provided market and technical consulting and advisory services for defense of LBS patent lawsuits.
- Date: 2010      **State of New Jersey**  
Case:      Not Applicable  
Project:      Provided wireless location consulting expertise in development of economic growth strategy for State of New Jersey.
- Date: 2007-2008      **General Electric**  
Case:      Not Applicable  
Project:      Provided consulting research and guidance on LBS and E911 technology, GE-owned patents, prior artwork, and future technology direction.

## Patents

"Method and apparatus for providing mobile social networking privacy." (U.S. Patent Number 8,613,109, issued on December 17, 2013)

## Education

<u>Year</u>	<u>College/University</u>	<u>Degree</u>
1987	University of Texas at Austin (1 <sup>st</sup> in graduating class)	MBA, Information Systems Management
1983	Purdue University, West Lafayette, Indiana (Graduated with top honors)	BSEE, Digital System Design emphasis

## Publications

### Books:

1. The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (2 versions)
2. The Definitive Guide to Wireless E911
3. The Definitive Guide to Mobile Positioning and Location Management (Co-authored)

### Articles:

1. E911-LBS.com May 2012. "The Pacifier Generation – How Wireless is Impacting Our Society"

2. Nbizmag.com. Summer 2008. "How Will The Convergence of LBS Technologies Affect Business?"
3. Directions Magazine. November 30, 2005. "The Deadline for the E911 Mandate Approaches...Where Do Things Stand?"
4. Computerworld. May 23, 2005. "Beyond The Supply Chain: The Impact of RFID on Business Operations and IT Infrastructure"
5. RFID Journal. June 12, 2005. "IT's Impact on RFID"
6. Directions Magazine. July 29, 2004. "The Strategic Implications of the Wal-Mart RFID Mandate"
7. Directions Magazine. February 25, 2004. "RFID-Hot Technology with Wide-Ranging Applications"
8. WirelessDevNet.com. January 30, 2003. "It's The (Location-Based) Applications – Stupid!"

## **Professional Associations and Achievements**

- NENA, APCO
  - Certified in Emergency Management Response (CERT)
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