

David Hilliard Williams

203-423-9015; dwilliams@LBSGlobe.com

Expertise

- Mobile Location-Based Services
 - Wireless 911 (E911)
 - Expert Witness Litigation Support and Patent/Intellectual Property Protection Services
 - GPS Systems; Network-Based Location Determination Systems
 - Indoor Location Systems, incl. Beacon-based Location Systems; WiFi-enabled and RTLS Location Systems; Radio Frequency Identification (RFID); Radio Frequency Pattern Matching (RFPM); Hybrids/Combinations
 - Location Data Privacy Protection and Data Security
 - Presence/Context-aware Apps
 - Mobile Network Infrastructure
 - Location-Tracking Software
 - People/Asset Location Tracking
 - Digital Mapping and GIS
 - Mobile Product Development, Marketing and Management
 - Telematics and Fleet Management
 - Mobile Social/Business Networking
 - Mobile/IT Integration
 - 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 communications field and President and Founder of E911-LBS Consulting. He specializes in wireless location business, product, and technology strategy development, implementation, and Intellectual Property (IP)/patent services involving technologies including Global Positioning Satellite (GPS) systems, Network-Based location determination technologies, Wireless 911 (E911), Beacon-based location systems, Radio Frequency Identification (RFID), Near Field Communications (NFC), location-enabled Wireless Fidelity (Wi-Fi), Real-Time Location Systems (RTLS), Radio Frequency Pattern Matching (RFPM), and various hybrids and combinations. He is expert in the full range of business and consumer location-based services (LBS) that utilize these technologies, including navigation, telematics, financial applications/mobile wallet, fleet management, mobile local search, presence/context-aware applications, asset management, 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 wireless location ecosystem including enabling network, map data, geospatial platform/Geographical Information Systems, GPS and other location chipsets, location data management, and device, infrastructure and integration providers.

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* (2005 and 2009 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 location data privacy and LBS privacy protection policies, processes, 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 Network for Developers (N4D) LBS web ecosystem - <http://developer.navteq.com>. This ecosystem targets developers of LBS applications as well as business and operational management with a deep interest in LBS. 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 looking to use location as a differentiator. Provided expert opinion instrumental in getting patent application approved.
- Developed numerous research reports on a variety of LBS companies and/or their LBS-related offerings including Microsoft, TCS, WaveMarket/Location Labs, Openwave, PTV and Webraska for a variety of competitive analysis purposes. This research analyzed these companies on a multi-point “report card” basis addressing numerous business and technology strategy dimensions and issues.
- 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 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.
- 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; 2015 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 LOC-AID, Finder Technologies, and Orion GPS on the major issues to address and alternative business and product strategies to consider to make their business, products and technologies as attractive as 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 wireless and wireline carriers looking to enter new markets.

From: 1991 **Booz Allen & Hamilton**
 To: 1993
 Position: *Senior Associate – Information Technology Practice*
 Provided and led consulting services for communications industry and other IT-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 Radar.

Litigation Support Experience

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: Provide 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 **Confidential**
 Case: Confidential
 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 st 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 (2005 and 2009 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, 2015. "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
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