Curriculum Vitae

Michael Caloyannides, Ph.D.

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Summary:

- **Track record of expertise in both classical IT issues and data communications.**
- **World class expertise in GPS and non-GPS-based geolocation, and all radio direction finding techniques. Was one of the designers of the original GPS system.**
- **Special expertise (both technological and testifying in court) on advanced cellular systems (4G, 3G, evolving 5G). Protocols, modulations, spectra, MIMO antennas, RFID, NFC, IQ channels, quadrature mixers, superhet and direct conversion receivers, etc.**
- **World class expertise in encryption (symmetric, PKI, Elliptic Curve, etc.)**
- **Expert in both analog and digital telecom, Digital Signatures, Authentication, Networks, VPNs, digital telecommunications, digitized voice processing and analysis, speech recognition, voice commands, and IT security.**
- **Senior Scientist / Chief Scientist at a US Government Agency for 13 years concentrating on telecom and IT issues, networking, VPNs, encryption, etc.**
- **Chief Scientist at I3, Inc. Oversaw IT networking issues of US forces in the Middle East.**
- **Senior Fellow, Mitretek Systems (a "think tank"), 8 years. Chaired the IT networks board.**
- **Adjunct Faculty, Johns Hopkins and George Washington Universities, in Networks, IT security.**
- **"Scientist of the Year" award, US Gov't for Telecom and IT-related developments. "Meritorious officer" and 5 "exceptional accomplishment" awards.**
- **"Excellent in Teaching Award" (Johns Hopkins University) for Graduate-level courses I taught there.**
- **Consultant to NASA/NIAC**
- **Published several IT books and numerous refereed publications**
- **Expert Witness in Telecom and IT technology-related litigation, internationally.**

- **Testified, as "expert witness", in numerous US Federal, State, and Circuit courts, and abroad; also testified twice at the ITC (Washington, DC).**
- **Extensive experience in handling IPR cases at the Patent Office**
- **FAA Licensed Commercial Multiengine pilot for many decades, using GPS and non-GPS geolocation and navigation first-hand**
- **Expert witness in over 100 cases, deposed well over 150 times, written over 200 expert witness reports**
- **For patent cases, testified both as an infringement and invalidity expert**
- **Helped win multimillion dollar judgments for clients ($24M in August 2016 for my client at the Federal Court in the Eastern District of Texas, Tyler Div., and $42M in June 2017 for my client at the Federal Court for the Eastern District of Texas, Texarkana Div.)**
- **Caltech PhD in Electrical Engineering and Applied Math.**

Key Strengths:

- **GPS, and non-GPS geolocation.**
- **In depth expertise (both theoretical and hands-on hardware) in Signal Processing, Telecommunications Technologies, with emphasis on RFID, NFC communications, networks and cellular telephony (4G, 3G, other)**
    - **Technical (Decades of expertise, University professor)**
    - **Regulatory (FCC Panel Chairman)**
    - **Management and strategic planning**
- **Possesses world class Networking and IT competence which requires multidisciplinary expertise: Telecommunications, Encryption, Signal Processing, Infosec and Infotech, Intelligence, Advanced Mathematics, Physics.**
- **In depth expertise on Digital Networks and Computer science (Adjunct professor of Computer Science, prolific author of Infosec books, sought after lecturer) and in particular on digital communications (both wireless and wired), voice control, digital voice processing and analysis.**
- **Extensive experience in Intelligence (SIS-3 position for 14 years) with multiple recognitions and awards, including "Scientist of the Year" and "Meritorious Officer" awards at an Agency of the US Gov't).**
- **Respected in all three sectors of the economy. Held top positions in Government and Industry; taught postgraduate classes at four universities including Johns Hopkins and George Washington Universities.**

Areas of Expertise:

- Expertise in the advanced technical, management, strategic planning, academic, economic, operational, commercial, legal and applied R&D aspects of:

1) Telecommunications
    a. Digital Signatures, Encryption, VPN over cellular networks 4G/LTE, 3G, GSM, CDMA, AMPS, Narrowband AMPS, Nordic. Cellular Caller-ID, Call-waiting, other.
        Quality of Service (QoS)
        Buffer Statue Report (BSR) patents
        Service Request handling (SR)
        Modulation types (FDM, OFDMA, CDMA, etc.)
        Codecs
        Encryption
        Geolocation with and without GPS. Assisted GPS technologies.
    b. Telecommunications (RF, LPI, Wireline, Optical/Laser, Fiberoptic, etc.)
    c. Wireless data communications; VPNs over Wi-Fi, Wi-Max, Ad-hoc networks, RFID, NFC, other.

2) GPS, radio-navigation, direction-finding.
    a. Designed part of the GPS system before the satellites were first launched.
    b. Helped design evolutionary changes to GPS system.
    c. Taught GPS and other radio-navigation at the graduate school level.
    d. Testified numerous times on GPS issues.

3) IT
    a. Has been teaching Computer Science, with emphasis on Encryption, Digital Signatures, Authentication, Networks, VPNs, etc. at Johns Hopkins and George Washington Universities.
        - PPTP, L2F/L2TP, SOCKS-5, other
        - VPN forensics
    b. Information Security
        - Encryption, Digital Signatures, Authentication, Identity Theft. Techniques, consequences, Remedies (legal, technical)
        - Information Technology (Infrastructure protection, Information assurance)
        - Privacy and Network Security; legal basis of privacy in the U.S.
        - Information theft and exfiltration.
        - Computer Forensics. Forensics on non-computer digital devices.
        - Electronic data privacy. HIPAA compliance.

4) Covert Communications
    a. Encryption, Data hiding, Covert channels and Steganography.

b. Hidden communications through the Internet and other channels

5) Security
   a. Physical Intrusion Detection Sensors and their vulnerabilities.
   b. Physical Security.

- Often quoted in the New York Times and other news media on Information Security and Infrastructure Protection issues.

- Experience as a court-qualified testifying expert witness on Telecom and IT issues. Has testified at the Federal Court in DC, VA, CO. Also retained as an expert witness on telecom and IT issues in a number of civil and criminal cases including a major telecom liability case in Australia (Sept-Dec. 2009).

Clearances:

Last clearance held before retiring approx. 3 years ago: TS

Previous clearances held: TS/SCI, Q, and numerous compartments.

Work Experience:

Jan. 2014 – Now:
- CTO, Caloyannides Consulting, LLC, Northern Virginia

Oct '08 – Jan. '14:
- Tech Fellow at Northrop Grumman in classified projects. Then Tech Fellow (highest technical rank) for TASC, Inc., Northern VA.

May '06 – Sept. '08.:
- Chief Scientist, Ideal Innovations Inc. Arlington, VA.
Expanded a military-focused company into one focused on IT and infosec.

June '99 – May '06:
- Senior Fellow" with Mitretek Systems (now renamed to Noblis Inc.), a Washington, DC area "think tank" (ongoing) in DoD information assurance, RF technologies, cellular telecom, network security, VPNs, computer forensics, and related aspects.

- Extensive experience with the "Infosec Research Council", the Interagency board clearinghouse for infosec issues (NSF, National Institute of Justice, DARPA, DoD/SecDef, FAA, NRO and others.)
- Chaired the Infosec Control Board which overseas all aspects of the corporate network, introduces new features, adjudicates requests for changes, etc.
- Led the consulting effort for a proprietary government customer on infosec and telecom issues.
- Chief contributor to numerous ongoing programs in VPN, infosec, biometrics., geolocation.

June '98 – Late 2013.

Independent senior consultant to NASA/NIAC to evaluate advanced technology proposals for work in deep space exploration, mostly IT and telecom.

August 2002 – Now.

Adjunct Professor, Johns Hopkins University, Applied Physics Laboratory

Teaching:
1) VPNs
2) "Enterprise Security"
3) RF
4) Assorted electronic circuits (digital and analog)
5) "Network and Data Communications"
6) "Internet Communications and Issues"

(all graduate level courses).

February 2004 – 2013.

Adjunct Professor, George Washington University, Washington, DC

Teaching: a) IP Networks and b) Information security

2000 – Now.

Expert witness in intellectual property litigation.

Testified in billion-dollar disputes in Federal Court in Alexandria, VA

Invited expert witness at the Australian Federal Court in Sydney, Australia.

Testified at the US Trade Commission Court, in Washington DC.

Wrote over 100 expert witness reports for the courts.

Been deposed over 100 times under oath.

My qualifications were never disputed by any court.

July 2008 – Nov. 2008.

Adjunct Professor, George Mason University, Fairfax, VA

Teaching: Information Technology Security

January 2000- Now.

Technical consultant and testifying Expert Witness to attorneys on technical issues, including: a) Signal Processing, b) VPNs, c) Telecom, d) IT, e) Cellphones, f) VoIP, g) Computer Forensics. h) GPS

2000-2001

Chairman of an FCC NRIC advisory panel on Packet Networks. (2000-2001)

9/98-6/99

Senior Scientist at Boeing Corp., responsible for:

a) Getting Boeing into the commercial information technology business
   Tasked to steer Boeing into the broadband commercial satellite telecommunications business; this involved interfacing with the highest levels of various regulatory authorities, recommending corporate acquisitions in satcom, assessing multi-billion dollar marketing options, working the frequency management issues, interfacing with competitors, and laying the groundwork for this new business for Boeing.
b) Corporate direction on:
   1. The "Ellipso" commercial satcom system. At my recommendation, Boeing pulled out of the "satellite cellular" business. My recommendation was subsequently proved right by the well-known commercial demise of Iridium and ICO.
   2. Technical oversight of US DoD's satellite-based tracking of all Army mobile platforms.
   3. Spearheaded the refocusing of the corporation towards a network-centric approach.

9/84-8/98

Senior Scientist (SIS-3 senior executive level), US Government.

- 7 years in Operations, Supporting the technical support of field ops, and another 7 years as Chief Scientist in Research and Development.
- Headed the development of numerous new technology efforts over a 14 year period.
- Directed contracts of up to tens of millions of dollars.
- Supervised the technical and strategic aspects of most new technical developments in a wide spectrum of fields centered on IT and telecom.
- Led teams that developed state-of-the-art techniques for special Telecommunications, including VPNs.
- Led the strategic planning for the incorporation of new technologies into operations.
- Personally designed numerous pioneering technologies in:
  - Uninterceptable telecommunications.
  - Computer and Data Security.
  - VPN, Encryption. Data Hiding. Effective steganographic techniques.
  - Physical Security and countermeasures.

- Developed and had been personally delivering two highly acclaimed 2-day classified seminars on:
    a) Security aspects of computers and the Internet.
    b) Security implications of modern technologies.

  that were attended by thousands from many US Government offices.

1980-1984.

Chief Scientist for classified Space technologies, Rockwell International Corp.

Pioneered new technologies for space-borne platforms:

Satellite-based Synthetic Aperture Radar and Fourier Transform Spectrometry.

Satellite-based lasers for SAR and for inter-satellite communications.

New functionalities for GPS satellites. Special purpose satellites.

Rockwell International Corp. (now Boeing Corp.), Seal Beach, CA

Program Manager and Technical Director, Strategic Systems, Rockwell International Corp. ('77-'80)

Headed the design of highly complex military systems.

- Analyzed and designed LPI radars using PN spread spectrum.
- Analyzed and designed bistatic radars (geographically separated transmitter and receiver) using indigenous broadcasting transmitters as illuminators.
- Designed and built ground penetrating radars
- Designed and built through-the-wall imaging radars.
- Analyzed and designed point-to-point microwave links, as well as troposcatter and meter scatter links.
- Analyzed and designed means for detecting sidelobes from point to point microwave links

Rockwell Corp. (now Boeing Corp.), Anaheim, CA

Chief Scientist, classified systems, Rockwell International Corp. ('74-'77)

- Headed all technical aspects of the design and deployment of a nationwide signals' interception system for a US ally ($300 million contract).
- Senior Scientist, Research Division, Rockwell International Corp. ('71-74)
- Developed new digital communications systems (awarded a US Patent for one)
- Designed a new automated system for latent fingerprint classification.
- Developed innovative means for missile guidance and missile defense.
- Developed classified telecommunications systems for clandestine operations.

1970 (part time)

Instructor: a) California State University at Pomona: Feedback Control.
b) California Institute of Technology (Caltech): Stochastic Feedback.

'80 – '98

Senior Retained Consultant for numerous US and multinational corporations. Strategic planning for business development. Won multimillion $ contracts for clients.
Senior technical advisor on Inmarsat, Cellular telephony (GSM, AMPS, CDMA), fiber-optics, telecommunications, computer & physical security, RF propagation, Internet, VPN.

7-10 '98
Adjunct Professor, George Mason University (Fairfax, VA, USA) (7/98 – 10/98)
Dep't of Electrical and Computer Engineering.

Education:

Ph.D. Electrical Engineering, Applied Mathematics, and Philosophy,
Caltech 1972
M.Sc. Electrical Engineering, Caltech (California Institute of Technology) 1968
B.Sc. with Highest Honors, Caltech, 1967
"A+" grade point average. Full scholarships throughout all studies.
First in a class of over 1,000 students during both years at Rensselaer Polytechnic Institute (Troy, NY, '63/64 & '64/65). Transferred to Caltech.

Attended multiple seminars on management, and on all aspects of contracting & contract- monitoring, on new trends in business and technology (Brookings Institution, etc.)

Completed numerous specialized courses in clandestine operations taught within the US Government.

Taught numerous courses as adjunct professor, and within the US Gov't. (see above).

Recognitions and Awards:

"Scientist of the Year" (1987, US Gov't)
"Meritorious Officer" (1989, US Gov't).
Five separate "Exceptional Accomplishment Awards". US Gov't. 1984-98
Award for Excellence in Teaching. Johns Hopkins University, April 2008.

Small Sampling from **Numerous Books authored, Publications and Patents:**

”Forensics is so Yesterday”, IEEE *Security and Privacy* magazine, March 2009.

”Desktop Witness: Do's and Don'ts of Personal Computer Security”. John Wiley and Sons, Publishers. Sole author. June 2002. ISBN: 0-471-48657-4

”Computer Forensics and Privacy/Security”. Artech House Publishers (2001). 450-page book. Sole author. ISBN: 1-58053-283-7. Second Edition published in 2004.

“Encryption”, IEEE Spectrum, April and May 2000 issues.

”Computing Correct Results Despite Malice”, Caloyannides et al, International Conference on Dependable Systems and Networks DSN2004, Performance and Dependability Symposium, Florence, Italy, June 28-July 1, 2004. www.dsn.org/pds.html

”Digital Evidence”. Invited article in “*Digital Crime and Forensic Science in Cyberspace”,* P. Kanellis, N. Kolokotronis, E. Kountouzis, D. Martakos, Editors. Publisher: Idea Group Inc. 701 E. Chocolate Avenue, Suite 200 • Hershey PA 17033-1240.

”Reality vs. Hype in Next Generation Cellular and Wireless LAN Services” Proceedings of the Applied Telecommunications Symposium ATS04, Arlington VA, April 21-24, 2004

“Anonymity over the Internet”. 300+ page report for a sensitive government organization. June, 2005.

”The Compromised Insider: a Major Threat to Official Document Issuance”. Keesing *Journal of Documents*, Amsterdam, Holland, Oct. 2005.

”US E-Government Authentication Framework and Programs”. Caloyannides et al, IT Pro (published by the IEEE Computer Society), May/June 2003

”The Internet and Cyberattacks”, Sigma Publication, Winter 2003, Mitretek Systems, Fairfax, VA

“Will Open Source Really Improve System Security?” (Caloyannides, Witten, et al), Software, IEEE Computer Society, September/October 2001 (Vol. 18, No.5), http://www.computer.org/software/so2001/s5057abs.htm.

”Digital Evidence may be Evidence of Nothing”, Keesing *Journal of Documents*, Amsterdam Holland, February 2004.

January 2005: “Information Security”. Article published in the Keesing “Journal of Documents”, Amsterdam, Netherlands.

”Digital Forensics: Operational, Legal and Research Issues”, co-authored with Prof. S. Shenoi, Tulsa State University, January 2004.

“Microcycle Spectral Estimates of 1/f Noise”, *Journal of Physical Review*, 1973.

Small Sampling from **Numerous Presentations**:

"IT Security and VPNs". Invited presentation at NSA Hqs. June 2015
"Economic Espionage", Invited presentation at the Intelligence Conference (Intelcon), May 8 and 9, 2006, Bethesda, Maryland.
"The Limitations of Computer Forensics", Invited presentation at the Intelligence Conference (Intelcon), May 9 and 9, 2006, Bethesda, Marylans,
Privacy in the Information Age", Invited presentation to the Committee on Privacy at the National Academies, Washington, DC. May 8, 2003
"Computer Forensics". Two 2-day seminars presented to senior law enforcement and corporate officials from Indonesia, Malaysia, Singapore, Brunei, and Thailand. UNI, Singapore (www.uninetintelligence.com), December 8-9 and 11-12, 2003, and also Dubai UAE May 9-10, '04.
"Information Security and Infrastructure Protection". Two 3-day seminars to be presented to government officials in Thailand and Dubai, UAE. May 12-24, 2005.
"Detecting Terrorist communications over the Internet". 2-day presentation presented to AFCEA (US Armed Forces Communications and Electronics Association), Fairfax, VA, June 2005, and again September 2005, and again April 2006.

Memberships in Professional Societies

Senior Lifetime Member, IEEE
Member, Communications Security Technical Committee, IEEE
Member, Tau Beta Pi (Engineering Honorary Society)
Member, Sigma Xi (Science Honorary Society)

PhD Thesis Advisor to Students

PhD Thesis advisor to two doctoral students:

a) Tulsa University, Tulsa, Oklahoma
b) George Mason University, Fairfax, Virginia

VPN-Specific Publications and Presentation

Note: During the 1984-1998 period I was employed doing classified work for the Intelligence Community (IC) where no unclassified publication were permitted. My classified publications and classified presentations to security-cleared audiences within the IC included the following (their unclassified titles provided below):

"PPTP VPN Security Weaknesses and Fixes"

"VPN Protocols: PPTP, L2FP, L2F: Which of these VPN protocols support non-IP packets?"

"IPsec: The Perils of Too Much Complexity and their Impact on VPNs"

"One Time Pad (OTP) Symmetric Encryption; Practical Security Weaknesses"

"Pseudorandom is not the same as random in symmetric key generation in VPNs"

Since 1998, I have been teaching unclassified graduate school classes in information security for Johns Hopkins and, before that, at George Washington Universities, which included lectures on VPNs.

Areas of Professional and Research Interest:

- 5G, 4G/LTE, Standards, Patents. MIMO antennas
- Encrypted data communications (VPN, symmetric and PKI encryption, data hiding, steganography, etc.
- Digital communications and networks
- All Cellular technologies. 3G, 4G, LTE, 5G.
- Security (confidentiality, integrity, availability, attributability)
- Telecom Infosec. Defense and offense. All aspects
- Digital forensics on the increasingly diverse spectrum of digital devices besides computers.
- Geolocation technologies. RFID, beacons, GPS, other.
- Advanced Signal Processing Techniques. Kalman filtering, stochastic estimation.
- Substantive infrastructure protection and security.
    - Exploitable weaknesses of intrusion detection systems and sensors.
- EMP Analysis and Shielding Design

- Network survivability, Network Communications, Security, Intelligent Systems, VPN/IPsec, Privacy, Information exploitation, Encryption, Steganography, Data-Mining.

- Radio Frequency technologies used for identification and tracking. Passive and active RFID, transponders.

- VoIP. Encrypted and covert VoIP.

- RF telecommunications: VLF, HF, Microwave, Troposcatter, Satcom. Wireless LANs, Ultrawideband.

- Counterterrorism technologies and operations, Covert communications. Clandestine techniques, technologies and operations, Military communications. C^3I.

- Biometrics. Physical and electronic security. Intrusion sensor vulnerabilities and countermeasures.

- Electronic watermarking of sensitive files so as to be able to trace their source if leaked.

- Virtual intrusion into secure facilities, and protection from such intrusion. (cyber-theft, RF emanations from workstations, remote sabotage, etc.)

Other experience and Licenses

Licensed commercial pilot (also multiengine and instrument-rated), and pilot instructor. 6,000+ hours as pilot-in-command

Summarized Recent past assignments as expert witness

I have functioned as an expert witness since 1998 for a total of over 100 cases, at the rate of approx. 4-5 cases per year. Helped win multimillion dollar cases. Testified in Federal Courts (Virginia, Texas, Colorado), State Courts, as well as at the ITC (twice).

Live testimonies in front of a jury:

a) Maxell v. ZTE & Huawei, Federal Circuit Court for the Eastern District of Texas, Texarkana Division, June 2018. (Verdict for $43.3 Million in favor of the client I supported – Maxell-).

b) CCE v. Apple et al. Federal Court for the Eastern District of Texas, Tyler Division. August 2016 (Magistrate Judge Mitchell). Verdict for $33M (+ triple this for willful infringement) in favor of the client I supported (CCE).

c) Verizon v. Cox, and I supported the plaintiff (Verizon).

Other testimonies in front of judges:

a) ITC case: Patent holding company v. numerous cellphone manufacturers.
b) ITC case: Small manufacturer of a digital TV tuner v. a large competitor.
c) Testimony in front or a Pennsylvania judge in a criminal case involving GPS
d) Testimony in front of a panel of judges at the USPTO on a cellphone matter.
e) Testimony in front of the Federal judge at the Denver Federal Court, who commended me for it.

95% of these cases have been technology intellectual property cases (patents). Both for infringement/noninfringement and invalidity.

Maxell v. ZTE & Huawei, Federal Circuit Court for the Eastern District of Texas, Texarkana Division, June 2018. (Verdict for $43.3 Million in favor of the client I supported – Maxell-).

CCE v. Apple et al. Federal Court for the Eastern District of Texas, Tyler Division. August 2016 (Magistrate Judge Mitchell). Verdict for $33M in favor of the client I supported (CCE).

Verizon v. Cox, and I supported the plaintiff (Verizon).

Also served as an expert witness in an intellectual property case in the Federal Court in Sydney, Australia. Case was won by the side I supported.

<u>Was deposed</u> well over 150+ times, most of them lasting a full day each (one lasted 2 days).

<u>Wrote expert reports</u> in all 100+ cases, some as long as 250 pages.

The remaining 5% of the cases I supported as an expert witness involved:
a) Wrongful termination based on GPS readings
b) Criminal cases based on cellular GPS records
c) Civil cases based on cellular records
d) Civil cases involving product liability

SOME RECENT SPECIFIC CASES I WAS RETAINED AS EXPERT WITNESS:

1) Innovative Global Systems LLC v. Zonar Systems Inc. Claim Construction Report. Case 0:18-cv-03083-JMC. North Carolina District Court, 2019.

2) Maxell v. ZTE & Huawei, US Circuit Court for the Eastern District of Texas, Texarkana Division. Jury awarded $43.3M plus a multiple of this for willfulness in infringing, to the client I supported (Maxell).

3) CCE v. Apple et al, Civil Action No. 6:13-cv-507 in the US Court for the Eastern District of Texas, Tyler Division. Jury awarded $30M + 3x for willfulness in infringement, to the client I supported (CCE)

4) Gemalto v. CPI Card Group, Inc. Infringement case about US Patent 6.786,418. Federal Court, Denver, CO. Civil Action No. 1:16-cv.010067-RBJ. I supported the Plaintiff, Gemalto S.A.

5) Multiple different IPR cases at the Patent Office
    a. IPR2015-01220
    b. IPR2015-01226
    c. IPR review of U.S. Patent No. 8,331,869
    d. IPR2015-01170
    e. Numerous others

6) PATENT CASE: TomTom v. Dr. Michael Adolph (patent infringement case on GPS navigators)
   Vienna, VA
   I supported the Michael Adolph team (plaintiff)

7) LIABILITY CASE: Lidco v. L3 Inc. (2012). Lidco cut L3's fiberoptic cable by mistake.
   Bary Vrevich, partner of law firm.
   San Diego, CA
   I supported the defendant, Lidco Co., against allegations that its trucks dug and cut a fiber optic line.

8) CASE: *Magnum v. AirIQ* [Leaking GPS Mountings of GPS Equipment in Truck Fleet (2011)]
   I provided expert witness support for the user of the faulty equipment, Magnum Co. (plaintiff)

9) PATENT CASE: *TQP Development, LLC, Plaintiff v. Ticketmaster Entertainment, Inc. et al.*, 2:09-cv-279,
In the United States District Court for the Eastern District of Texas Marshall Division.
I provided expert witness support for all the defendants, who included UPS, FedEx, Apple, Motorola, and numerous others named in the complaint.

10) PATENT CASE: *Verizon v. Cox Communications* (2009)
Washington, DC 20036
I provided expert witness support for Verizon (plaintiff).

11) PATENT CASE
United States District Court, Florida. Case No. 08-21496-civ Moreno/Brown.
Roblor Marketing Group, Inc.Plaintiff, v.GPS Industries, LLC,
Proshot Investors, LLC, Cypress GPS, LLC, and
Callaway Golf Co.

12) PATENT CASE (2012)
The plaintiff was Motorola Solutions, Inc. against Round Rock Research, LLC, with respect to patent numbers 5,500,650 5,627,544, 6,459,726, and RE41, 531, Case No. 1:12-cv-53-GBL-IDD in the District Court for the Eastern District of Virginia.

13) CRIMINAL CASE: *Commonwealth of Kentucky v. Robert Drown* (Geolocation of a cellphone). (2009)
I provided expert witness support for the State of Kentucky (the district attorney's office).

14) PATENT CASE: *Avidyne v. L3 Communications* (patent infringement case) 2009.
Grand Rapids, MI 49546
I provided expert witness support for L3 Communications.

15) PATENT CASE: (unknown plaintiff) v. AT&T (2010). Plaintiff accused cellular manufacturer and service provider of having manufactured a cellphone that emitted a loud tone that damaged her hearing.
Oklahoma City, OK
I provided expert witness support for the plaintiff (the injured party).

16) CASE: (Patent case, 2014). Furuno Co. (Japan) v. Raymarine and Garmin (both US manufacturers of marine electronics and radars)
Case was in front of the ITC (Washington), Investigation # 337-TA-900
I supported the plaintiff. Case was settled in favor of the plaintiff.

17) CASE: (Patent case) Case # 6:12-cv-120-MHS-CMC in Texas by Adaptix Inc. v. LG Electronics et al.
Case No. 5:13-cv-02023-PSG
Case No. 5:13-cv-01844-PSG
Case No. 5:13-cv-01778-PSG
Case No. 5:13-cv-01777-PSG
Case No. 5:13-cv-01776-PSG
Against Apple, AT&T. Callco dba Verizon)

18) CASE (same as above, but a Patent Review case in front of the patent office).
(case is ending; I just turned in my last declaration on it)

19) CASE: (Patent case). Single Touch Interactive, Inc. v. Zoove Corp.
Case # 4:12-CV-00831-YGR (US District Court, Oakland Div., California)
On wireless networks for tracking medical items using RFID

20) CASE: (Patent case in front of the ITC- PENDING)
Investigation # 337-TA-910 "Certain RV sets and components thereof".
I support the plaintiff.

21) CASE: CSS v. Fibernet (telephone company had inadequate backups and many customers lost telephone service for a long time) (2009)
Charleston, West Virginia
I provided expert witness support for the defendants (the customers who lost service).

22) ST Microelectronics, Inc. v. TriDNetworks LTD US Patent 8,437,276 at the US Patent Office.

23) Voice Tech Corp. v. Mycroft AI, Inc. Case No. 4:20-cv-00111-RK at the US District Court for the Western District of Missouri.