

Curriculum Vitae of Jerry A. Kaufman



Mr. Kaufman is a noted patent analyst, expert witness, technologist, author, product developer, educator, and consultant specializing in mobile, cellular, and wireless technologies, networks, phones, standards, services, and systems.

CAREER SUMMARY

Mr. Kaufman began his career in telecommunications in 1970 as a communications consultant/network planner, designing complex multi-node, private networks for large commercial and government organizations. Since 1990, all his work has focused on mobile, cellular, and wireless technologies, standards, spectrum, networks, and services. As an expert witness, he has authored numerous expert reports and been deposed numerous times in cases ranging from cellular technologies and usage to theft of trade secrets. As a patent analyst, he has performed claims analysis on hundreds of patents for patent litigation, patent infringement, and patent validity. He has authored numerous analytical reports on cellular carriers, emerging wireless technologies and related markets. And, as an educator, he teaches courses covering mobile, cellular, and fixed wireless technologies, networks, and services.

SELECTED ACCOMPLISHMENTS

- Designed a wireless in-building Location Information System (LIS) using interactive IR transceivers for real time tracking of people and equipment.
- Developed a traffic analysis program (using Erlang & Poisson theorems) to automate the process of network design, call routing, cost reduction, and improved QoS.
- Developed specifications (design, performance, functions, and capabilities) for various in-building single-cell, multi-cell and multi user (SC/MU & MC/MU) wireless business communications systems and associated wireless phones.
- Developed a system for automated traffic routing and queuing using LCR.
- Designed a web-based system to host and produce e-tradeshows: scheduled, live, online interactive, industry focused B2B tradeshows.
- Designed and implemented multi-hop/node regional and national communications networks.
- Designed and developed a system for real time capture of network traffic.
- Developed specifications for advanced, private voice and data business communications systems.
- Developed specifications for Wireless Local Exchange Services (WILES) in PCS, LMDS, Cellular, Satellite, GSM, and WLL Networks.

TECHNOLOGY EXPERTISE - Cellular/Mobile and Wireless Technologies, Standards, Systems, & Networks

- 2G, 3G and 4G Cellular/Mobile:
 - 3GPP, GSM, GSM MAP, UMTS including GPRS, EDGE, WCDMA, HSPA, HSDPA, HSUPA, HSPA+, and LTE
 - 3GPP2, IS-95, CDMA, CDMA2000, & EV-DO
 - iDEN
 - IEEE 802.16/WiMAX

- IMT-2000
- IS-41C & WIN
- IS-54 and IS-136
- Other Networks
 - IEEE 802.11/Wi-Fi/WLAN
 - IEEE 802.15.1 Bluetooth
 - IEEE 802.15.4 Zigbee
- Email, SMS, EMS, MMS, voice mail, text/instant messaging, picture/video messages, ringtones, ringback tones, and answer tones: functions, billing, systems, technologies and services
- Billing Systems & Practices including billing and invoice accuracy, errors and analysis
- Cell phone usage, timing, location, phone records and Call Detail Record information accuracy, errors and analysis
- Cell phone triangulation and location determination, accuracy, errors and analysis
- Cellular/mobile phones, smartphones and modems: architecture, functions, Operating Systems/OS, Graphical User Interfaces (GUI), text input, SIM cards, USIM cards, UICC smart card, activation, registration, authorization, Web browsers, filters and access control
- Digital Rights Management (DRM)
- Fixed Wireless Access (FWA) & Wireless Local Loop
- Location Based Services
- Mobile & Wireless VoIP
- Multiple Access Technologies:
 - Code Division Multiple Access (CDMA)
 - Direct Sequence Spread Spectrum (DSSS)
 - Frequency Division Multiple Access (FDMA)
 - Frequency Hopping Spread Spectrum (FHSS)
 - Frequency/Time Division Duplexing (FDD/TDD)
 - Long Term Evolution (LTE)
 - Orthogonal Frequency Division Multiple Access (OFDMA)
 - Time Division Multiple Access (TDMA)
 - Time Division Synchronous Code Division Multiple Access (TD-SCDMA or UTRA/UMTS-TDD)
 - Wideband Code Division Multiple Access (WCDMA/UMTS/CDMA Direct Spread)
- Unlicensed Mobile Access (UMA) & Fixed Mobile Convergence (FMC)
- Cellular alarm system functions, signaling, and technologies.

MARKETS & INDUSTRY EXPERTISE - Cellular/Mobile and Wireless Services & Markets

- Location Based Services
- Mobile/Cellular Communications Services (Voice & Data)
- Mobile TV & Mobile Video
- Ring tones, ringback tones & answer tones
- SMS, MMS & Text Messaging
- Wireless Internet
- Wi-Fi, WiMAX & Wireless LANs

SPECTRUM & REGULATORY EXPERTISE - Cellular/Mobile and Wireless Spectrum, Rules, & Regulation

- Advanced Wireless Services (AWS)
- Broadband Radio Service (BRS)
- Commercial Mobile Radio Services (CMRS): Parts 1, 22 & 24 Rules
- Personal Communications Services
- Spectrum Leasing
- Secondary Spectrum Markets
- Specialized Mobile Radio (SMR)
- Unlicensed IMS/Part 15
- Unlicensed National Information Infrastructure (U-NII)
- Wireless Communications Service (WCS)

Mr. Kaufman’s professional activities and services have been focused in five areas: **Expert Witness/Subject Matter Expert, Patent Analysis, Consulting, Teaching, and Market and Technical studies and publications.**

Expert Witness/Subject Matter Expert/Litigation Support

In addition to his consulting, research, publishing, and teaching activities, Mr. Kaufman serves as an expert witness - providing testimony, research, and analysis on a wide spectrum of civil and business matters/litigation involving wireless communications networks, products, and services. He manages all expert witness engagements and the research and production of all expert reports and testimony. He has been deposed six times.

Some of his past expert witness engagements have included:

Case:	Asian Communications and Tegic Communications vs. Zi Corporation
Client:	Morrison & Foerster
Subject of Litigation:	Text input technology for cellular phones
Cause:	Infringement of a patent for cellular phone text input software
Work Product/Service Provided:	<ul style="list-style-type: none"> • Technical analysis of related patents and text input technology for cellular phones • Expert Report On Factors Affecting Tegic’s Business • Industry Analysis: Analysis of the key issues, characteristics, issues, trends, and developments in the U.S., European and Asian mobile telephone markets • Deposition • Analysis of the "Amended Expert Report of Matthew R. Lynde, Ph.D." • Affidavit

Case:	Thomas Everett vs. Verizon Wireless, Inc. et al Campbell et. al vs. Airtouch Cellular et al.
Client:	Murray & Murray
Subject of Litigation:	Cellular phone service billing errors & overcharges
Cause:	Class action against Verizon relating to overcharges on consumer cellular services
Work Product/Service Provided:	<ul style="list-style-type: none"> • Economic and Technical Arguments for Class Certification and Calculation of Damages • Analysis of related business, competitive and industry practices • Supplemental Affidavit • Opposition to Proposed Settlement • Affidavit

Case:	Unisys Corporation v. L-3 Communications
Client:	Pepper Hamilton
Subject of Litigation:	Point to multipoint fixed wireless networks/Fixed Wireless Access/Wireless Local Loop
Cause:	Breach of contract covering sales and marketing of wireless systems
Work Product/Service Provided:	<ul style="list-style-type: none"> • Responsive Expert Report • Analysis of related business, competitive and industry practices • Assess, evaluate and critique Defendant's market, product, competitive and business practices • Affidavit

Case:	Martino v. Motorola
Client:	Maddox, Hargett & Caruso, P.C. Starr, Austen, Tribbett, Meyers & Miller David P. Meyer & Associates Co., LPA
Subject of Litigation:	Cellular phone antennas
Cause:	Class action against Motorola relating to consumer purchases of defective cellular phones
Work Product/Service Provided:	<ul style="list-style-type: none"> • Develop discovery requirements • Analysis of related business, competitive and industry practices • Develop interrogatories • Assess extent of problem & damages • Formulate settlement objectives • Calculate damages and class relief • Affidavit

Case:	Pas-Com, Inc. v. Allied Products, Inc., et al.
Client:	Goodell, Devries, Leech & Dann, LLP
Subject of Litigation:	Point to multipoint fixed wireless networks/Fixed Wireless Access/Wireless Local Loop
Cause:	Recovery of the value of wireless communications systems damaged in a fire
Work Product/Service Provided:	<ul style="list-style-type: none"> • Technical analysis of point to multipoint fixed wireless networks/Fixed Wireless Access/Wireless Local Loop systems • Critique & counter Plaintiff's assertions and claims • Develop market value of system • Assessment and evaluation of Plaintiff's market, product, competitive and business practices • Deposition • Affidavit

Case:	Sendo v. Microsoft
Client:	Winston & Strawn
Subject of Litigation:	Smartphones and cellular phones
Cause:	Patent infringement, misappropriation of trade secrets, common law misappropriation, conversion, unfair competition, fraud, breach of fiduciary duty, negligent misrepresentation, breach of contract, fraudulent inducement and tortious interference
Work Product/Service Provided:	<ul style="list-style-type: none"> • Technical analysis of related patents • Technical analysis of smartphone and 2G cellular phone technologies, functions and capabilities • Critique & counter Plaintiff's assertions and claims • Develop market value of system • Assessment and evaluation of Plaintiff's market, product, competitive and business practices • Deposition and trial preparation

Case:	Sharon Fried et al. v. ADT Security Services, Inc.
Client:	Lieff, Cabraser, Heimann & Bernstein, LLP
Subject of Litigation:	Class action against ADT relating to consumer's purchase of cellular analog alarm systems.
Cause:	Violation of Florida's Deceptive and Unfair Trade Practices and Unjust Enrichment
Work Product/Service Provided:	<ul style="list-style-type: none"> • Expert report on analog and digital cellular network, system and device technologies, standards and related FCC rules and regulations; the decline of analog cellular service in the U.S.; the growth of digital cellular services in the U.S.; the efforts of U.S. cellular carriers to discontinue analog services and eliminate the FCC's analog service requirement. • Deposition

Case:	United States of America v. American Society of Composers, Authors and Publishers (ASCAP)
Client:	American Society of Composers, Authors and Publishers (ASCAP) and Lovells, LLP
Subject of Litigation:	Subscriber license fees for ringtones and ringback tones
Cause:	Application for the Determination of Reasonable License Fees for Performances via Wireless Transmissions and Internet Transmissions by: AT&T Wireless f/k/a Cingular Wireless Cellco Partnership d/b/a Verizon Wireless
Work Product/Service Provided:	<ul style="list-style-type: none"> • Provide declaration in connection with ASCAP's Opposition to AT&T Mobility LLC's Motion for Summary Judgment on Ringtones <ul style="list-style-type: none"> ○ Determine if ringtones sold and ringtones offered for preview by AT&T to their subscribers are capable of contemporaneous perception on cellular phones used by AT&T's subscribers. Also, assessment of AT&T's roles in the transmission, download, use, purchase, preview, storage and playing of ringtones. • Provide declaration in connection with ASCAP's response to Verizon Wireless' Motion for Summary Judgment on Ringtones <ul style="list-style-type: none"> ○ Determine if ringtones sold and ringtones offered for preview by Verizon to their subscribers are capable of contemporaneous perception on cellular phones used by Verizon's subscribers. Also, assessment of Verizon's roles in the transmission, download, use, purchase, preview, storage and playing of ringtones.

Patent Analysis

As a patent analyst, Mr. Kaufman has assisted many leading law firms and corporate clients in defending against or asserting claims of patent infringement and patent validity. This work encompasses review and analysis of patent claims, preparation of claims charts, and preparation of validity and infringement opinions.

Mr. Kaufman has analyzed hundreds of 3G, 4G, CDMA, cellular, GSM, mobile phone, smartphone, UMTS, WCDMA, and related wireless patents covering technologies, networks, spectrum, devices, phones, services, business and billing practices. Specifically, his patent work has encompassed all:

- Second, third and fourth generation 3GPP GSM/UMTS, and 3GPP2 IS-95/CDMA2000 cellular standards, systems and technologies.
- IEEE 802.11/Wi-Fi/WLAN standards, systems and technologies
- IEEE 802.15.1/Bluetooth standards, systems and technologies
- IEEE 802.15.4/Zigbee and standards, systems and technologies
- IEEE 802.16/WiMAX standards, systems and technologies

Industry Consulting

Mr. Kaufman's business consulting engagements focus on planning, development, research, and analysis of mobile, cellular, and wireless technologies, systems, markets, companies, products, and services. Specifically:

- Product Planning & Development: Product and service design and specification, analysis of customer requirements, product analysis, and competitive advantages and disadvantages.
- Research & Analysis: Forecasting products and service demand, identifying vulnerabilities in a client's and competitor's product, determining market shares, segmenting target markets to optimize marketing strategies, identifying and evaluating issues and trends that affect a client's products and services, evaluating the potential impact of current and future market trends on a client's market position, evaluating and identifying the buying behavior, needs and product usage of a specific group of customers, appraising the effect of competitor's activities on a client's market position, and assessing a client's strengths, strategies, tactics, market position and market performance.
- Strategic recommendations and plans: Development of strategic recommendations and plans over a broad range of issues relating to a client's revenue, profitability and market share including business plan development, sales and marketing programs, market entry and exit, pricing and discount plans, distribution planning and development, and strategic partnerships.

Reports and Publications

Mr. Kaufman is the author of various studies and research reports on mobile and wireless communications networks, markets, companies, products, services:

- *"Sprint Wireless: A Critical Analysis of Key Financial and Market Performance Issues, Challenges and Successes"*
- *"Opportunities In The U.S. Wireless In-Building Business Communications Market"*
- *"Wireless Local Exchange Services: Opportunities, Competition and Strategies"*
- *"Wireless Business Communications Systems: Customer Requirements and Marketing Strategies"*
- *"Wireless Business Telephone Markets: 1998 to 2003"*

- *“Customer Demand and Requirements for Mobile Internet and Third Generation Wireless Products and Services”*

- Mr. Kaufman’s expert opinions, interviews and articles have appeared in:

<i>America's Network</i>	<i>Information Week</i>	<i>Telecommunications Alert</i>
<i>Arizona Republic</i>	<i>Investor's Business Daily</i>	<i>Teleconnect</i>
<i>Business Communications Review</i>	<i>Los Angeles Times</i>	<i>Telephony</i>
<i>Business Week</i>	<i>Microwaves & RF Technology</i>	<i>TotalTele.com</i>
<i>CFO Magazine</i>	<i>NBC5/KSAS-TV</i>	<i>Wired Magazine</i>
<i>Communications Daily</i>	<i>New York Times</i>	<i>Wireless Data News</i>
<i>Dallas Morning News</i>	<i>RCR</i>	<i>Wireless Week</i>
<i>Forbes</i>	<i>Scientific American Newsletters</i>	<i>Wireless World</i>
<i>Fortune</i>	<i>TR Wireless News</i>	<i>USA Today</i>

Teaching and Lecture Activities

Mr. Kaufman’s seminars and lectures cover a wide variety of mobile and wireless technologies, networks, markets, products and services.

- Developed and teaches public and private seminars:
 - *“Understanding New Mobile and Cellular Networks, Technologies and Services”*
 - *“Understanding RFID Systems, Technologies, Markets & Opportunities”*
 - *“New Mobile and Fixed Wireless Networks and Services”*
 - *“Wireless Business Telephone Systems”*
 - *“Making Money in The U.S. Wireless Internet Market”*
 - *“Wireless Local Exchange Services”*
 - *“Third Generation Wireless: Promises and Realities”*
- Engaged by various organizations to conduct private, on-site executive & technology seminars:
 - Association of Finnish Telecom Software companies, Bellcore, Best Buy, Bouygues Telecom, Christensen O'Connor Johnson Kindness PLLC, Florida Dept. of Management Services, NextiraOne Federal, LLC, (Black Box Network Services), Sprint PCS, Tescoco, and U.S. Dept. of Defense.
- Organized and produced industry conferences on emerging opportunities in wireless communications:
 - *“PCS and Local Exchange Services Conference”*
 - *“Wireless Business Communications Systems Conference”*
- Lectured on wireless communications at industry conferences sponsored by:
 - Tele-Communications Association
 - Business Communications Review
 - International Communications Association
 - TRILabs
 - Multi Media Telecommunications Association.

CAREER ACHIEVEMENTS

◆ **President - ALEXANDER RESOURCES** **1990 to Present**

- Alexander Resources is a professional services firm providing consulting, expert witness, patent analysis, research, and analytical services focused on mobile, cellular, and wireless technologies, standards, phones, networks, services and markets. Since its founding in 1990, it has served over 200 of the world's leading mobile, cellular, and wireless carriers, developers, manufacturers, and law firms. I founded the company in 1990 and have since served as its president. As president, I direct all research, publishing, seminars, conferences, consulting projects, patent analysis, and expert witness engagements.

◆ **President & CEO - INVANCE CORP.** **1999 to 2000**

- Founded and funded InVance Corp., an e-commerce business-to-business startup developing new live, online interactive marketing services. Created a web-based system to host and produce e-tradeshows: scheduled, live, online interactive, industry focused B2B tradeshows.
- Formulated business concept, plans, strategies and designed system architecture. Recruited senior management team and developed relationships with potential customers and investors.

◆ **President and CEO - ALEXANDER LIFESYSTEMS** **1989 to 1990**

- Designed and developed the world's first active badge, on-premises, wireless Location Information System (LIS) using infrared technology. The system was designed for healthcare facilities and hazardous/high risk environments. In addition to founding the company and securing initial funding, I had full management and financial responsibilities, designed the LIS, and formulated the company's business, marketing, product and distribution plans. I also recruited the engineering, product management, and sales teams.

◆ **VP of Sales & Marketing - EXECUTONE INFORMATION SYSTEMS** **1988 to 1989**

- Full management and P+L responsibility for sales and marketing of specialized internal communication systems for hospitals and healthcare facilities. Systems sold worldwide through networks of 197 independent and direct sales and service offices. 1988 revenues: \$20,000,000. Directly managed fifteen people responsible for National Sales, National Accounts, Distributor Relations, Customer Service, Product Management, Advertising, Promotion, Product Development, and Technical support. Indirectly managed field sales and sales support staff of 35.
- Overcame declining sales, re-established Executone as the market leader, rebuilt customer and distributor confidence and increased sales 25%, gross margin 40% and pre-tax 50% by:
 - Instituting market driven pricing
 - Rationalizing product line and lowering product costs
 - Launching new advertising and promotion programs
 - Implementing new discount and incentive programs
 - Reorganizing the field sales organization
 - Correcting product quality, delivery and performance problems
 - Rebuilding and expanding staff
 - Improving customer service and support
 - Redirecting and initiating new product development
 - Reactivating the National Accounts program.

- ◆ **Vice President of Product Development - VODAVI COMMUNICATIONS 1987 to 1988**
 - Responsible for product development and planning for new wireless and wired business communications systems.
 - Developed specifications (design, performance, functions, and capabilities) for various in-building single-cell, multi-cell and multi user (SC/MU & MC/MU) business communications systems and associated wireless phones.
 - Developed specifications for advanced, private voice and data business communications systems.

- ◆ **President - APPLIED MARKETING TECHNOLOGIES, INC. 1984 to 1987**
 - The firm specialized in marketing consulting (product development, pricing, distribution, and promotion) and business consulting (business planning and client audits) for manufacturers and marketers of communication and information based products and services. I founded the company, had full management and financial responsibilities, and generated all of the firm's sales in addition to performing specific consulting engagements.
 - Selected client accomplishments:
 - For a leading manufacturer of communications products, developed strategies to optimize the market position for its consumer telephone products and central office management systems. Included an analysis and forecast of the U.S. Central Office market.
 - Identified and established a \$110 million U.S. market niche for an \$11 billion foreign supplier of communications systems.
 - Assisted a communications switching system manufacturer to obtain \$17 million in new funding.
 - Evaluated opportunities for Tandem switching systems in the U.S. telecommunications market.
 - Developed guidelines and marketing programs for the marketing of a business communications system in the U.S.
 - Developed product plans and marketing strategies for a line of commercial communications terminals.
 - Developed marketing and distribution plans for an integrated messaging/communications system.
 - Developed product specifications and marketing programs for an integrated switching system.
 - Clients included AT&T, General Electric Co. (England), Rockwell International, C. Itoh & Co. Ltd., Conrac Corp., Dataquest Inc., G.E. Credit Corp., NT&T, Samsung Telecommunications Ltd., Nippo Communications Industrial Co. Ltd., Semicon Industries pte Ltd., Telrad Ltd., and Vodavi Corp.

- ◆ **Assistant Vice President, Market Development - NORTHERN TELECOM (Nortel Networks) 1983 to 1984**
 - Identified and developed improvements to the marketing functions of various Corporate, Group, and Division organizations that increased pricing, profitability, customer satisfaction, and market penetration. Identified competitive responses and actions needed to improve Northern Telecom's market position. Responsible for identifying new market opportunities.

- ◆ **Director of Market Management for Integrated Office Systems - NORTHERN TELECOM (Nortel Networks) 1981 to 1983**
 - Responsible for the design and development of the new Meridian business communications systems - a \$100+ million development program. Additional responsibility for business, product,

and market plans and strategies. The new system increased sales by 20% and restored Northern's leadership position in the marketplace.

◆ **Director of Market Research and Product Planning - SIEMENS CORP. 1979 to 1981**

- Responsible for design and managing the development and introduction of Siemens' next generation business communications system. The new system increased overall revenues and restored the company's competitive position. Additional responsibilities included key telephone system development and managing a major study that identified market opportunities for private switching networks in the U.S.

◆ **Product Manager - COMMUNICATIONS GROUP, INC. 1975 to 1979**

- Designed, developed, and introduced new communications products and systems that grew the company's systems business from \$0 to \$2,000,000 over three years. Managed the groups responsible for product management, project management, R&D, marketing, administration, and support of communications switching and management systems (PBX, ACD, Networks and SMDR).

◆ **Communications Consultant - COMMUNICATIONS GROUP, INC. 1974 to 1975**

- Responsible for the analysis and design of complex multi-node, private networks for large commercial and government organizations. Developed the first automated and interactive network design and analysis software program utilizing traffic flow, busy hour and grade of service inputs and measures.

◆ **Product Manager - COMPUTOLL, INC. 1972 to 1974**

- Transitioned the company from consulting services to systems supplier by establishing the Product Engineering and Development groups. Responsible for the product design, development, and manufacturing of the industry's first Station Message Detail Recorder/Call Detail Recorder (SMDR/CDR) systems and peripheral Least Cost Routing (LCR) system.

◆ **Communications Consultant - COMPUTOLL, INC. 1970 to 1972**

- Responsible for the design of complex multi-node, private voice and data networks for large commercial and government organizations. Analyzed and evaluated client's PBX/Network usage in order to reduce costs, improve traffic capacity and operation.

EDUCATION

Mr. Kaufman's bachelor's degree in Communications from Brooklyn College of the City University of New York in 1970 was followed by marketing programs at Columbia University, the American Management Association, and the American Marketing Association.