Gary R. Lomp, PhD

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Positions

- Jan 2006-Present: **President**, The TekTactiks Group, Inc., an Expert Services Company
- Feb 2016–Present: **Adjunct Professor** – NYU Tandon School of Engineering, Electrical and Computer Engineering Dept. (ECE)
- Feb 2016-Feb 2020: **Senior Research Scientist and Business Development Lead**, Center for Advanced Technology Telecommunications (CATT), NYU Tandon
- 2003-2015: **Subject Matter Expert, Radio Communications –** BAE
- 2000-2002: **Founder, President and Chief Technology Officer**- LayerOne Wireless Technologies, Inc. (private – start - up)
- 1999-2000: **Vice President for Wireless Technology** – Symbol Technologies
- 1997-1999: **Executive Vice President and Chief Technology Officer –** InterDigital Communications Corporation
- 1994-1997: **Senior Vice President and General Manager –** InterDigital Communications Corporation, B-CDMA Business Unit (Founded)
- 1992-1994: **Vice President, Technology–** InterDigital Communications Corporation
- 1987-1992: **Vice President of Research and Development** – SCS Telecom (private, acquired by InterDigital Communications Corporation)

Other Recent Professional Experience

- 2005-Present: Numerous expert appearances before the US Federal Court, US Patent and Trademark Office (PTO) and the International Trade Commission (ITC).
- 2020-2021: Advanced Space Radar System Design Consultant, Lockheed Martin
- 2018-Present: Digital Radio Communications Expert, BAE Systems
- July 2016-July 2018: Technology/Strategy Advisor, NanoThings Inc., (A start-up in the Wireless IoT space)
- Oct 2015 – Oct 2016: Technical Consultant, High Precision Control Systems, North Atlantic Industries Inc.
- 2012-2013: Market and Technical Consultant for Eden Rock Communications, a Seattle based start-up (successfully sold to Nokia).
- 2008-2010: Patent Consultant at IPotential

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Communication Systems Expertise and Experience

- All aspects of Radio Frequency (RF) Communication Theory and Practice
- Complete system design through Requirements-Specifications-Optimization-Implementation-Test
- Physical Layer:
  - Modulation, Coding, Detection, Estimation, Channel Characterization and Equalization, Adaptive and Intelligent Antenna Techniques, Multi-Input-Multi-Output (MIMO).
  - Signal Space Optimization for Low Probability of Intercept (LPI) and Low Probability of Exploitation (LPE) Applications
  - Robust Receiver Techniques
    - Signal Acquisition and Tracking
    - Severe Jamming Environments
    - Low SNR Operations
    - Advanced Protocols for Connectivity
- MAC and Data Link Layer
  - Multiple Access Protocols
    - WIFI
      - 802.11 a,b,g,n,ac,ax,be
    - CDMA
    - OFDMA
    - SC-FDMA
    - Hybrid CDMA/OFDMA/SC-FDM
  - QoS
  - Flow Control
  - Random Access
- Network Layer
  - Address Generation and Adaptive Routing
  - Authentication and Security (Encryption)
- Transport Layer
  - Data Buffering and End-to-End Delivery
    - Created entire operating system for data transmission in Satellite Deprived early warning radar system for North Warning Territory.

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Signal Processing Expertise

- Statistical Processing Algorithms
  - Detection and Estimation Algorithms
  - Stochastic Algorithms
  - Adaptive Algorithms

Control Systems Expertise

- Wiener-Hopf Optimization
- Stability Analysis
- Digital Computer Implementations

Computer Systems Expertise

- Queuing Systems
- Distributed Control Systems
- Adaptive Learning Systems

Government/Military/Defense Systems Expertise

- RADAR Systems
  - Space Radar
  - Ground Radar
  - MIMO Radar
- Jam Resistant Systems
- LPI/LPE Systems

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Expert Appearances

Venues

United States District Court
Federal Circuit Court
United States International Trade Commission (ITC)
United States Patent and Trademark Office (USPTO)

(Approximately 100 Depositions)

Clients

Law Firms (Client Indicated in Underline and Bold)

- Prince Lobel (2024)
  - Intellectual Ventures I LLC, et. al. v. Zebra Technologies Corporation
  - Intellectual Ventures I LLC, et. al. v. Lenovo Group Limited
  - Civil Action Nos. 6:23-cv-00307 and 6:23-cv-00292
    - Ongoing

- Wilmer Hale (2023)
  - On behalf of Intel (respondents) in the matter of certain 802.11 patents asserted against Intel
    - Settled

- Sterne Kessler (2023 Settled)
  - NEO Wireless v Volkswagen et al
  - Litigation – 6 Patents

- Volpe and Koenig (6/22 – 7/23)
  - **Intellectual Ventures**
  - 5 IPR's
    - Case IPR2022-00974 - US Patent 8,953,641 B2
      - METHODS AND APPARATUS FOR MULTI-CARRIER COMMUNICATIONS WITH VARABLE CHANNEL BAND-WIDTH
    - Case IPR2022-01130 - US Patent US 8,811,356 B2
      - COMMUNICATION IN A WIRELESS NETWORK
    - Case No. IPR2022-01355 - US Patent 10,292,138

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- DETERMINING BUFFER OCCUPANCE AND SELECTING DATA FOR TRANSMISSION ON A RADION BEARER
- Case IPR2022-00971 - US Patent 7,382,771
  - MOBILE WIRELESS HOTSPOT SYSTEM
- Case IPR2022-00972 - US Patent 9,681,466
  - SELECTING TRANSMISSIONS ON CHANNELS IN A WIRELESS NETWORK

- Ropes and Gray (2/22 – 12/22)
  - **IP Bridge** v. Ericsson; **IP Bridge** v. Nokia
  - 5G Patent Litigation
  - Subject Matter: LTE/5G CQI Signaling, ACK/NACK Signaling, Subcarrier Management, PUCCH Signal Structure

- Fisch Sigler LLP (3/22 - Current)
  - Samsung Electronics Co., Ltd. v. **5G IP Holdings LLC**
  - IPR on behalf of PO regarding 5G cellular patents
    - Subject Matter: 5G Numerology for Resource Management; Subcarrier Frequency Management

- Wolf Greenfield (6/20 - 12/2021)
  - **MediaTek** v. NTT
  - IPR and Litigation (against PO NTT)
    - Testified in Deposition
    - Subject Matter: MIMO Technique Employing Channel Matrix Inverse

- Volpe Koenig (2/21 – 12/2021)
  - *In Re* Reexamination of U.S. Patent No. 9,854,577IPR on behalf of PO
  - Subject Matter: Carrier Aggregation in an OFDM System

- Noroozi PC (5/2020)
  - TCT Mobile, Inc. et al v. **Wireless Protocol Innovations, Inc.**
  - IPR on behalf of PO
    - Testified in Deposition
    - Subject Matter: Flow Control Protocol for Allocating Slots in Point to Multipoint Communication System

- Sussman Godfrey
  - **Barkan Wireless IP Holdings, LP** v. Sprint Corporation et al
  - Patent Infringement Case on behalf of patent owner (6/2019 -- 12/2020)
    - Testified in Deposition

        - Subject Matter: LTE: Aspects of Control Channel Signaling, Resource Mapping and Assignment, Synchronization, Cell Search
    - Patent Infringement Case on behalf of patent owner (10/18 – 12/20)
        - Testified in Deposition
        - Subject Matter: Microcell and Femtocell Technology

- Oblon, McClelland, Maier & Neustadt, L.L.P. (8/2018 – 5/2019)
    - **BlackBerry Corporation et al** v. Maxell, Ltd. f/k/a Hitachi Maxell, Ltd.
    - IPR – on behalf of Petitioner
        - Testified in Deposition
        - Subject Matter: Mobile Phone Transmit Power Control

- Heim, Payne & Chorush, L.L.P.
    - LG Electronics, Inc. et al v. **Wi-LAN Inc. et al**
    - 6 separate IPR's involving 4 patents, on behalf of patent owner (1/2018 – 6/2020)
        - Expert reports/declarations
        - Testified in Deposition
        - Subject Matter: Requesting and Allocating Bandwidth in a Wireless Communication System; QoS and Transmit Buffer Management in a Wireless Communication System; Management of Random Access Channel Identifiers
    - **Wi-LAN Inc. et al** v. LG Electronics, Inc. et al
    - Patent Infringement Case 1 on behalf of patent owner – US District Court 6/2018 – 12/2020
        - Testified in Deposition
        - Subject Matter: Requesting and Allocating Bandwidth in a Wireless Communication System; QoS and Transmit Buffer Management in a Wireless Communication System; Management of Random Access Channel Identifiers
    - **Barkan Wireless IP Holdings, LP** v. Sprint Corporation et al
    - Patent Infringement Case 2 on behalf of patent owner – US District Court 10/2018 – 12/2020
        - Testified in Deposition
        - Subject Matter: Microcell Technology

- Stradling Yocca Carlson & Rauth, P.C.
    - **Wireless Protocol Innovations, Inc.** v. TCL Corporation et al
    - Patent Infringement Case – (WiLAN) US District Court, Eastern District of Texas

- Procopio, Cory, Hargreaves & Savitch LLP
    - TCT Mobile, Inc. et al v. **Wireless Protocol Innovations, Inc.**

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- Inter Partes Review – (WiLAN) USPTO, Before the Patent and Trial and Appeal Board

- Volpe and Koenig, P.C.
  - LG Electronics v. **Wi-Lan**
  - Inter Partes Review – (WiLAN) USPTO, Before the Patent and Trial and Appeal Board
  - Patent Reexamination (1) – (WiLAN) USPTO
  - Patent Reexamination (2) – (WiLAN) USPTO
- Latham and Watkins LLP
  - **InterDigital Communications Inc.** et al v. ZTE Corporation et al
  - **InterDigital Communications Inc.**, et. al. v. Huawei Technologies Co., Ltd., et. al.
  - **InterDigital Communications Inc. et al** v. Samsung Electronics Co. Ltd. et al
  - Patent Infringement Case (1) – (InterDigital) US District Court, District of Delaware
  - Patent Infringement Case (2) – (InterDigital) US International Trade Commission, Washington DC

- Vinson and Elkins LLP
  - Patent Infringement Case – (WiLan) US District Court, Eastern District of Texas

- McKool Smith, P.C.
  - Patent Infringement Case – (WiLAN) US District Court, Eastern District of Texas

- Finnegan, Henderson, Farabow, Garrett & Dunner LLP
  - Patent Infringement Case (1) – (InterDigital) US International Trade Commission, Washington DC
  - Patent Infringement Case (2) – (InterDigital) US International Trade Commission, Washington DC

Technical and Commercial Clients

- AuresTech (12/22 – Present) Beyond 5G: Waveform Design for LPI and AJ

- Lockheed Martin (2021) Ground Radar for Detection of Geostationary Objects

- Telebyte (2020) Phased Array Antenna System

- BAE Systems (2017-2021) Navy NTCDL Receiver Design

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- NanoThings, Inc.
- North Atlantic Industries Inc.
- Eden Rock Communications
- Matrix Test Inc.
- IPotential LLC

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Professional Bio and Resume' of Career Development

Embracing rigorous scientific thinking in both the creation and application of engineering discipline, Gary Lomp has worked for 45 years in the Advanced Systems, Digital Signal Processing (DSP) and Electronic Communications fields, in particular wireless. Always invested in the newest ideas and combining university-caliber research skills with consistently accurate and perceptive market understanding, he has operated at every level of the advanced electronics industry, from basic R&D to business founder and senior executive. With a technical focus on advanced product development – from requirements and opportunity analysis to mathematical conceptualization and theory to detailed implementation – his philosophy of technical superiority and clear value articulation as the cornerstones of business, management and marketing success has been consistently proven sound and effective.

On a personal level, Dr. Lomp believes that the best results come from the best preparation and that true excellence in the art of engineering is based on a philosophy of maximum knowledge, competently applied. His affinity for continuous learning and love of teaching resonates in his manner of interaction with colleagues and clients as a source of confidence and determined effectiveness.

Dr. Lomp is a prolific and efficient inventor presently holding approximately 100 US patents. He can readily switch from a theoretical context to a practical one while maintaining a clear connection between the two. In parallel with actual technology development in the laboratory, Dr. Lomp has been extensively involved in Intellectual Property (IP) development and the delivery of value derived from patented technology through licensing and embedding of IP in working, concrete deliverables such as chip sets and associated software. His patents have led to revenues totaling over two billion dollars.

In addition to his technical skills and experience, Dr. Lomp has had management and strategic business success as an architect of corporate business models and corporate identity, driver of corporate re-engineering (turnaround) and new venture enabler. In private practice, Dr. Lomp has also served effectively as an expert witness in numerous high-profile technology matters and has testified in Federal Court and before the U.S. International Trade Commission (ITC) on multiple occasions. With his outstanding communication skills he has the ability to establish a deep rapport with audiences having backgrounds spanning a diverse range, including jurors, investors and board members and ranging from customers to rank and file employees.

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Career Track

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FOUNDER AND PRESIDENT **2006-Present**

Founded The TekTactiks Group in 2006 as a New York corporation providing expert technical and business services, including expert witness services and patent prosecution and litigation support, specialized to the wireless telecommunications industry and related technologies. The company's core capabilities derive from a long history of Research and Development, and associated Sales, in the wireless communications and signal processing arena. In addition to his deep technical roots, as the company's principal, Dr. Gary Lomp brings a proven track record of innovation, vision realization and value delivery. With more than 100 U.S. patents issued his inventions have generated billions in licensing and royalty revenue. TekTactics offers a range of professional services ranging from small, high intensity technical penetrations to broad system design, evolution and optimization. Another of the company's primary areas of business has been to provide expert testimony, forensic technology analysis and patent analysis for both prosecution and litigation.

A recent new invention is a precoding algorithm for a generalization of OFDM to provide robust communication in the presence of channel dispersion including Doppler as well as time delay spread. The algorithm allows signaling even in the presence of dispersion that would normally block OFDM signals completely.

Second most recent new invention provided design of architecture and algorithm for multi-antenna ground radar system capable of detecting and tracking objects as high as GEO orbit (related to The Deep Space Advanced Radar Capability (DARC) Program). The inventive aspect of the work includes achieving a coherent combining gain equal to N^3 (improved over N^2, where N is the number of ground dishes). This gain is achieved utilizing a closed loop focusing algorithm that is optimized to compensate for the link round trip delay. Other features include rapid efficient acquisition of frequency (Doppler). The algorithm differs from so called Multiple Hypothesis Test (MHT, also known as Generalized Likelihood Ration Test) in that it is much less computationally expensive with a footprint approximately 1/100 to 1/10 of the MHT approach.

As a typical example of technical work product, the most recent production-ready research and development project entailed providing all design and implementation details for an advanced communications receiver for the US Navy (NTCDL).

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This work included design of the receiver DSP and all related statistical algorithms for signal acquisition (antenna and carrier aspects) as well as a novel architecture for carrier tracking that permits operation at negative EbNo even in severe Doppler environments. All theoretical aspects were addressed and comprehensive bit-exact and cycle exact Matlab models were created and used to guide hardware and firmware design.

Most recent patent cases involved MIMO processing, WiFi, LTE and 5G.

Other current research activity includes signal coding for constant modulus (or constant envelope) modulation and improved emitter location finding via multilateration techniques.

New York University, Tandon School of Engineering, Brooklyn, NY
(Formerly Brooklyn Polytechnic)

Jan 2016-Present

ADJUNCT PROFESSOR, ELECTRICAL AND COMPUTER ENGINEERING (SIGNAL PROCESSING AND WIRELESS COMMUNICATION)

New York University, Tandon School of Engineering, Brooklyn, NY
(Formerly Brooklyn Polytechnic)

Jan 2016-Feb 2020

SENIOR RESEARCH SCIENTIST (WIRELESS COMMUNICATIONS)
ADJUNCT PROFESSOR, ELECTRICAL AND COMPUTER ENGINEERING

In the capacity of research scientist, lead or contribute technical expertise toward the solution of the most challenging problems impeding the design and development of new technologies and technology intensive products. Drawing on 41 years of experience in creating new advanced technologies, this role supports the primary function of the school's Center for Advanced Technology in Telecommunications (CATT), which is to assist client companies in the development of new business by creating new products and targeted technology solutions. As a representative example, a recent project required the creation of a precision control system that is capable of controlling a critical signal generator for real-time bearing measurement systems. The generator is intended to interoperate with an extraordinarily wide range of equipment that presents a correspondingly wide range of electrical loading to the generator. Maintaining both stability and accuracy of the system across this range was a dominant obstacle to the success of

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the system and product. The problem was solved by utilizing advanced control system techniques coupled with a digital computer implementation. The new solution is expected to enable the client company to deliver a new product this year to a major aircraft manufacturer.

Highlighted Wireless and RF System Research Topics

- ***DARC (Deep-Space Advanced Radar Capability)*** **–** Developed novel signal processing for Ground-based multi-antenna (MIMO) Radar System. The new technique provides additional gain over known MIMO radar technologies, namely a coherent processing gains equal to N^3 instead of N^2, where N is the number of ground antenna dishes. The work was based on advanced control system optimization by Wiener Hopf method and was particularly effective in providing closed loop detection and tracking of deep space objects (GEO, MEO and LEO orbits) in the presence of large signal delays characteristic of space radio systems. The work also introduced new methods of rapid target acquisition and Doppler estimation.

- ***Phase Coded Modulation for Nonlinear Amplifier Applications*** **–** A new geometric approach to the design of spherical codes, which are codes based on tessellation of the sphere in D-dimensional Space. The new codes are designed in complex space and have the characteristic property that each vector component has a common modulus. The codes are geometrically defined via unitary transformation groups, and also admit an algebraic description.

- ***Power Efficient MIMO*** **–** This research combines MIMO concept with efficient RF amplifier operations based on phase codes. It provides a method for achieving both power and bandwidth efficiency in lightweight implementations.

- ***Robust Signal Design for Radar and Communications in Doubly Dispersive Channels*** **–** This research is directed toward the Hilbert space design of signals that are suitable for transmission through channels that exhibit both time and frequency dispersion (Doppler). Such channels are the norm, not the exception, and usually required complex receiver processing (Equalization) in order to produce usable demodulation outputs. By applying the new design approach it is possible to simplify the receiver considerably. The use of the results in communications offers advantages similar to the advantages of OFDM has enjoyed in purely time dispersive channels, generalizing that idea to time and frequency dispersive channels (in which OFDM breaks down). Radar applications include mitigating the distortion due to clutter in a radar imaging environment.

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- ***Adaptive Equalization and Wideband MIMO*** – A new theory for equalization of multipath that is useful in the vector channel case (MIMO) and particularly well suited for application in power constrained communications in which amplifier limitations force wideband constant envelope signal formats.

- **A PHY/MAC Philosophy for All Digital Antenna/Transceiver Architectures in Millimeter Wave Communications** – Recent advances in antenna array techniques provide all-digital processing starting at the individual antenna element outputs. The potential for extremely rapid signal acquisition and Gigabit rate multiple access protocols exceeds conventional architecture capabilities by at least one order of magnitude. In this research new PHY and MAC models and algorithms are developed in which the PHY/MAC sublayer of the OSI Model is given an enriched abstraction. The new point of view permits highly adaptive signal processing constructs to be provided, allowing a common RF front end architecture to support a diverse range of applications in a common package.

BAE Systems – Greenlawn, NY and Wayne, NJ

SUBJECT MATTER EXPERT, RADIO COMMUNICATIONS 2003 – 2015

Joined BAE in an advanced technology development role and internal expert at large after 15 years in the commercial telecommunications business, returning in a core technical leadership role in keeping with the wide range and depth of both technical and management experience. Key responsibilities and contributions include identifying critical needs and relevant business-enhancing opportunities, leading the development of various communication system architectures and technologies for advanced radio systems, and providing top-level direction and several necessary course changes on high-visibility programs. Recipient of Chairman's Award four times. Recognized on multiple occasions for outstanding achievement in a technical capacity. Noted for critical contribution to WNW Program (US army, Ground Mobile Radio) and identified, both by the Prime (Boeing), the US Government and internally (BAE) as key-man for continuation and success of the program.

Highlights:

- **Wideband Networking Waveform (WNW) - Completely revamped advanced waveform and receiver processing for Cluster 1 Radio WNW-AJ waveform, guiding the development team in the correct design approach leading to optimized performance within limits of platform resources. Within this effort a new theory of equalization particularly suited to offset modulation (e.g., O-QPSK) was created and implemented. In addition to providing comprehensive System Engineering**

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foundation elements (especially Theory of Operation documents) that had been missing, took responsibility for architecture, signal processing flow and algorithm specification as well as bit-exact implementation management and direction. Directed development of several critical technology blocks in the form of working code and bit-exact simulation of both VHDL and DSP subsystems.

- **Provided senior technical liaison with customer and provided interdepartmental support activity.**
- **Extended MIMO concept to wideband single carrier signal format (as opposed to OFDM) with application to O-QPSK modulation. The new technique was demonstrated via mathematical analysis and computer simulation. In particular, an extension of WNW capabilities from SISO to MIMO, with a corresponding improvement in capacity and range, was shown to be possible founded on this work.**
- **Designed new adaptive antenna processing system to combat multipath fading. The new technology operates without knowledge of the underlying communication signal except for spectral characteristics and is suitable as an enhancement to any wireless system. The algorithm combines adaptive processing with optimal filtering in the time and space domains.**
- **New signal detection technique for signal interception based on optimal statistical methods in a game theoretical setting. The new technology provides a substantial increase in performance compared to conventional detectors, with SNR requirements for detection as much as 10 to 30 dB lower than in conventional (radiometric) techniques. The technology has applications to Signal Intelligence (SIGINT) Systems and Low Probability of Detection (LPI) Systems.**
- **Took over and completed an Army research Lab (ARL) research project for Non-Line-of-Sight (NLOS) Ultraviolet Laser Communication for sensor network applications. Developed asynchronous low level protocol for efficient multiple access at absolute minimum node complexity. Introduced new modulation and coding techniques as well as robust decoding based on an optimized bit-by-bit information metric and new iterative techniques that extend the turbo principle.**
- **Created Blind Equalization Appliqué for CDL waveform based on a new adaptive detection algorithm.**
- **Developed a new waveform concept to address efficiency in nonlinear RF amplifiers. The technique (patent application filed) entails the use of newly invented and optimize phase codes that have been shown to admit optimal receiver processing through linear techniques. The new signals are thus constant envelope and tolerant of amplifier nonlinearity while allowing optimal detection. Of special interest is the geometry of the signal set, which compares favorably with signals designed without an amplifier constraint.**
- **Development of a novel parameter estimation algorithm for estimation of channel parameters at the output of a Multichannel Satellite Receiver employing highly dispersive (time and frequency domain) adaptive processing in each arm. The algorithm operates using only the composite output of the receiver even though the**

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constituent sub-channels introduce independent unknown time, phase and Doppler parameters.

incNETWORKS – West Long Branch, NJ

VICE PRESIDENT, CHIEF TECHNOLOGY OFFICER **2002 – 2003**

Joined incNETWORKS, a start-up venture spun out from AT&T, in its first year of engineering operations as a key member of the technology development and corporate development team. Elected Officer of the company and appointed to the company's Results Management Team (RMT). Responsible for core technology design for incNETWORKS' multi-protocol wireless access and transport system. The system supports both Cellular and high speed wireless LAN services on a common Software Defined Radio (SDR) Platform that interworks with standard network interfaces. Technology features of the system include enhancements of 802.11 PHY and MAC processing and the addition of a Radio Link Control (RLC) Layer to transform conventional contention access into a more efficient, secure, managed QoS controlled access service paradigm. Other key technical ingredients are custom Digital Radio Processing chips for flexible Digital IF processing, DSP realization of Cellular protocol stacks, all-IP transport, internetworking, distributed packet signaling and control over IP-based VPN's, multi-band radio architecture and smart antenna processing.

Opened and managed a second site R&D center on Long Island to perform core development of unique technology elements associated with the radio access subsystem, including the RF subsystem, DSP subsystem and 802.11 technology adaptation. The Long Island operation was also responsible for HW and SW integration of the Network Access Port (similar to 802.11 AP in deployment). The NAP is a Cellular Pico-Cell as well as a WLAN Access Point and represented the company's bread and butter product. Other system elements required to realize a turn-key system solution were integrated using third party technologies such as soft-switch technology and signaling gateway software.

LayerOne Wireless Technology – Melville, New York

FOUNDER, PRESIDENT, CTO **2000 – 2001**

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Offered bold and aggressive new company to the wireless arena. Created and marketed novel, dual track business plan comprising all aspects of comprehensive wireless technology development and marketing, including rapid development of critical technologies for 3G and forward-looking inventions for 4G wireless. Integrated Software, Systems and Hardware Engineering skills with emphasis on IP-Blocks and Technology Suites. Positioned business as key supplier to both

equipment manufactures and semiconductor suppliers, addressing critical customer time-to-market and development needs as well as value enhancement through enriched technology integration. Built full spectrum organization to meet technical, organizational and marketing objectives in minimum time. Entire cross-functional organization stood up within 6 months. First comprehensive 3G technology development contract with leading international semiconductor company (executory) within 9 months.

- **Raised $4M in seed capital to launch company.**
- **Developed 40-person organization including 30 advanced engineers and 4-person marketing team with an company-wide average experience level of 15 years. Designed organization and personally recruited and hired most of the staff in a highly competitive talent market, at well below industry average cost, resulting in an immediately recognized and reliable team for engagement in high-stakes development with world class telecommunications companies.**
- **Gained immediate recognition and acceptance of the new company within the first 6 months of existence.**
- **Accounts developed included ST Microelectronics, Siemens AG, National Semiconductor and Texas Instruments.**
- **Successfully negotiated $8M in first-year contracts.**
- **Successfully created and marketed both short-term and long-term strategic technology value proposition.**

Symbol Technologies – Holtsville, New York

VICE PRESIDENT – WIDE AREA WIRELESS TECHNOLOGIES 1999 – 2000

Evaluate corporate position and opportunity in wireless, particularly wide area networks (WAN's). Consolidate existing technology platforms for uniformity, vendor and customer product clarity and cost efficiency. Integrate the mobile communications-computing convergence concept into new business initiatives and product concepts. Introduce new CDMA engineering capability. Investigate new (3G) technology impact

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on company product position and identify opportunity for expansion of Symbol's wireless offering from LAN and niche WAN into the full next-generation mainstream.

- **Proposed service consolidation in conjunction with Aether Systems, Inc. Offered a unified user medium for mobile communications and commerce by using umbrella service interface technology from Aether to harmonize disjoint wireless technologies including CDPD, Mobitex, GSM. Proposal accepted and partnership successfully implemented.**

- **Negotiated advanced technology joint development with Sierra Wireless for the purpose of creating in-house sourcing of CDMA modem technology. Created Joint Venture paradigm in which technology transfer and development arrangements minimize risk to Symbol without reducing benefit to product cost, performance and universality.**

InterDigital Communications Corporation – King of Prussia, Pennsylvania

EXECUTIVE VICE PRESIDENT/CHIEF TECHNOLOGY OFFICER 1998 – 1999

Continuing as the Company's primary exponent of technology value in the top echelon of the wireless industry, combined market cognizance with laboratory expertise and proactive, practiced business sense. Championed continuous evolution of technology. Drove business development. Spearheaded strategic marketing and technology agreements throughout Europe and Asia.

- **Advanced Third Generation (3G) Technologies for UMTS and IMT-2000; Leveraged accomplishments of newly developed (see below) Technology Business Unit to create respected and desired 3G wireless technology capacity.**
- **Won $40,000,000 critical strategic technology development and sourcing contract with Nokia in Finland.**

SENIOR VICE PRESIDENT / GENERAL MANAGER / VICE PRESIDENT – RESEARCH & DEVELOPMENT 1992 – 1998

Wireless Products and Technology Business Unit (BUSINESS UNIT **FOUNDER**)
Melville, New York

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Incubated, developed and marketed a new Wireless Technology Strategic Business Unit that propelled InterDigital into the highest tier of the international telecommunications market as a provider of cutting edge strategic technology and intellectual property. Held concurrent responsibilities, progressing in emphasis from Technology R&D to General Management. Headed all Engineering aspects from System Specification through Design for Manufacture for a $100M multi-phase wireless product development. Devised and propelled strategies to meet performance goals. Directed Systems Engineering, Hardware and Software, Program Management, Marketing, HR, MIS, and Business Relations. Managed $20M annual R&D budget. Anticipated emerging 3G wireless technologies; energized core technology and air interface design. Established policies, guidelines and priorities; identified needed resources; monitored progress; evaluated outcomes.

- **Grew new wireless product and technology business unit from 12 to 130 engineering staff, establishing what is now the primary operating business unit within the company.**
- **Achieved strategic agreements, valued over $60,000,000, with Siemens in Munich, Alcatel in Madrid and Samsung in Seoul**
- **Developed full-scale, designed-for-manufacture advanced turnkey wireless local loop (WLL) system.**
- **Promoted and Implemented ASIC, DSP, Mixed Signal and System on Chip architecture semiconductor technology, and SDL/SDT highly structured system approach in SW technology.**
- **Developed core B-CDMA Technology (begun at SCS Telecom); designed, patented and implemented signal design and signaling protocol, adaptive multipath processor, waveform generator and signal tracking processor.**
- **Developed basic system protocols and operating systems**
- **Attained numerous patents; achieved highest integration and lowest cost; optimized functionality.**

SCS Mobilecom – Port Washington, New York

HEAD OF RESEARCH AND DEVELOPMENT 1987 – 1992

Fueled aggressive expansion of special product offerings. Grew small engineering operation to staff of over 40. Developed and promoted new technology based on spread spectrum techniques that led to acquisition by InterDigital. Designed and performed experiments to develop processes with industrial value. Ensured integrity of processes. Demonstrated technical prowess and an understanding of its impact in areas of responsibility. Established quality control parameters.

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- **Designed high speed data modem for CATV, spread spectrum modem for Navy Command and Control system, and elements of CDMA system based on spread spectrum product.**
- **Designed high speed signal analysis and CDMA overlay systems; invented new FM modulation and coding technique; designed trial system based on Meteor Burst Communications.**
- **Designed Advanced Meteor Burst Communication protocol and system, including all modulation and coding, scheduling and link management protocols and algorithms.**

Previous Positions

Hazeltine Corporation – Greenlawn, New York

SENIOR SYSTEMS ENGINEER, RESEARCH LABORATORY • 1982 –1987

SYSTEM ENGINEER, COMMUNICATION SYSTEMS PRODUCT LINE • 1979 – 1982

ADJUNCT PROFESSOR OF ELECTRICAL ENGINEERING

Polytechnic Institute of New York (1983-1992)

New York Institute of Technology (1988-1990)

LEARNING CREDENTIALS

DOCTOR OF PHILOSOPHY ELECTRICAL ENGINEERING 1987
Focus: Systems, Statistical Signal Processing, Mathematics
Dissertation: Contribution to Nonlinear Detection and Estimation in Dependent Noise

MASTER OF SCIENCE ELECTRICAL ENGINEERING 1983

BACHELOR OF SCIENCE ELECTRICAL ENGINEERING (cum laude) 1979

All degrees: Polytechnic Institute of New York (formerly Brooklyn Poly, now NYU Poly) Brooklyn, New York

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Memberships

IEEE, AMS, WHO'S WHO

Gary R. Lomp, PhD

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New York University

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LIST OF US PATENTS ISSUED TO GARY LOMP

(ACTIVE USPTO HYPERLINKS)

9,564,963	Automatic power control system for a code division multiple access (CDMA) communications system
9,264,082	System and algorithm for multipath mitigation
8,976,837	Low probability of detection (LPD) waveform
8,824,523	Setting a transmission power level for a mobile unit
8,737,363	Code division multiple access (CDMA) communication system
8,659,989	Method and apparatus for waveform independent ranging
8,553,816	Setting a transmission power level for a mobile unit
8,477,890	Geometric detector for communicating through constant modulus (CM) interferers
8,340,228	Setting a transmission power level for a mobile unit
8,009,636	Method and apparatus for performing an access procedure
7,961,822	Setting a transmission power level for a mobile unit
7,929,498	Adaptive forward power control and adaptive reverse power control for spread-spectrum communications
7,903,613	Code division multiple access (CDMA) communication system
7,873,328	Subscriber unit for performing an access procedure
7,756,190	Transferring voice and non-voice data
7,706,830	Method and subscriber unit for performing an access procedure
7,706,332	Method and subscriber unit for performing power control
7,697,643	Setting a transmission power level for a mobile unit
D602,904	Lyric displaying music device
7,593,453	Efficient multipath centroid tracking circuit for a code division multiple access (CDMA) system
7,535,874	Method and apparatus for adaptive power control for spread-spectrum communications
7,502,406	Automatic power control system for a code division multiple access (CDMA) communications system
7,437,177	Method employed by a base station for controlling initial power ramp-up using short codes
7,406,120	Transmission channel impulse response estimation using fast algorithms
7,286,847	Method and apparatus for performing an access procedure
7,190,966	Method and apparatus for performing an access procedure

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7,145,893	Communication station having an improved antenna system
7,123,600	Initial power control for spread-spectrum communications
7,117,004	Method and subscriber unit for performing an access procedure
7,085,583	Communication unit for access
7,072,380	Apparatus for initial power control for spread-spectrum communications
7,050,418	Modem for processing CDMA signals
7,020,111	System for using rapid acquisition spreading codes for spread-spectrum communications
6,985,467	Rapid acquisition spreading codes for spread-spectrum communications
6,983,009	Median weighted tracking for spread-spectrum communications
6,940,840	Apparatus for adaptive reverse power control for spread-spectrum communications
6,904,294	Subscriber unit for controlling initial power ramp-up using short codes
6,885,652	Code division multiple access (CDMA) communication system
6,879,841	Method employed by a subscriber unit for controlling initial power ramp-up using short codes
6,873,645	Automatic power control system for a code division multiple access (CDMA) communications system
6,839,567	Method employed by a base station for controlling initial power ramp-up using short codes
6,831,905	Spread spectrum system assigning information signals to message-code signals
6,816,473	Method for adaptive forward power control for spread-spectrum communications
6,801,516	Spread-spectrum system for assigning information signals having different data rates
6,788,662	Method for adaptive reverse power control for spread-spectrum communications
6,778,840	Method of controlling initial power ramp-up in a CDMA system by using short codes
6,744,809	Efficient multipath centroid tracking circuit for a code division multiple access (CDMA) system
6,721,350	Spread spectrum adaptive power control using a base station
6,721,301	Centroid tracking for spread-spectrum communications
6,707,805	Method for initial power control for spread-spectrum communications
6,697,350	Adaptive vector correlator for spread-spectrum communications
6,674,791	Automatic power control system for a code division multiple access (CDMA) communications system
6,674,788	Automatic power control system for a code division multiple access (CDMA) communications system
6,671,308	Spread spectrum adaptive power control
6,633,600	Traffic lights in a code division multiple access (CDMA) modem
6,611,548	Multipath processor

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6,606,503	Apparatus for controlling initial power ramp-up in a CDMA system by using short codes
6,584,091	CDMA base station having an improved antenna system
6,577,876	Base station for controlling initial power ramp-up using short codes
6,571,105	Method employed by a base station for controlling initial power ramp-up using short codes
6,519,474	Subscriber unit for controlling initial power ramp-up using short codes
6,507,745	Apparatus for controlling initial power ramp-up in a CDMA system by using short codes
6,493,563	Method of controlling initial power ramp-up in CDMA systems by using short codes
6,490,462	Method of controlling initial power ramp-up in a CDMA system by using short codes
6,466,567	CDMA base station having an improved antenna system
6,456,608	Adaptive vector correlator using weighting signals for spread-spectrum communications
6,452,918	CDMA subscriber unit having an improved antenna system
6,418,135	Communication station with multiple antennas
6,381,264	Efficient multipath centroid tracking circuit for a code division multiple access (CDMA) system
6,330,272	Receiving a spread spectrum data signal using determined weights
6,272,168	Code sequence generator in a CDMA modem
6,259,687	Communication station with multiple antennas
6,229,843	Pilot adaptive vector correlator
6,226,316	Spread spectrum adaptive power control communications system and method
6,215,778	Bearer channel modification system for a code division multiple access (CDMA) communication system
6,212,174	Capacity management method for a code division multiple access (CDM) communication system
6,181,949	Method of controlling initial power ramp-up in CDMA systems by using short codes
6,175,586	Adjusting a transmitter power level for a spread spectrum transmitter
6,157,619	Code division multiple access (CDMA) communication system
6,049,535	Code division multiple access (CDMA) communication system
5,995,538	Spread spectrum multipath processor system and method
5,991,332	Adaptive matched filter and vector correlator for a code division multiple access (CDMA) modem
5,991,329	Automatic power control system for a code division multiple access (CDMA) communications system

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5,920,590	Variable bandwidth spread spectrum device
5,912,919	Efficient multipath centroid tracking circuit for a code division multiple access (CDMA) system
5,862,155	Trellis coded FM digital communications system and method
5,841,768	Method of controlling initial power ramp-up in CDMA systems by using short codes
5,835,527	Spread spectrum adaptive power control system and method
5,799,010	Code division multiple access (CDMA) communication system
5,796,776	Code sequence generator in a CDMA modem
5,740,206	Adaptive nonlinear equalizer for digital FM signals
5,673,286	Spread spectrum multipath processor system and method
5,661,734	Trellis coded FM digital communications system and method
5,574,747	Spread spectrum adaptive power control system and method
5,563,907	Variable bandwidth spread spectrum device and method
5,535,238	Spread spectrum adaptive power control communications system and method
5,481,696	Communication apparatus operative to switch dynamically between different communication configurations by indexing each set of configurables with a unique memory address
5,461,632	Trellis coded FM digital communications system and method
5,384,780	High speed modem, method and system for achieving synchronous data compression
5,351,249	Trellis coded FM digital communications system and method
5,345,467	CDMA cellular hand-off apparatus and method