Michael D. Kotzin

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Work Experience

2009 – Present President, MDK Consulting, Inc.
Consulting expert on all aspects of wireless systems, products and technology.

1975 – 2009 Motorola, Inc.

2006 - 2009 Vice President of the Technical Staff, Corporate Law Department, Patent Operations
Developed and managed processes and corporate-wide teams related to creating and maintaining a patent portfolio - including decisions related to filing, foreign filing, annuity, acquisition and divestiture
Created technology portfolio strategy across businesses including quantitative goals for new and retained IP assets
Continued driver and innovator of new technology and advanced concepts across all business entities

1998 - 2007 Vice President of the Technical Staff, Office of the CTO, Mobile Devices Business
1989 – 1998 Vice President of the Technical Staff, Director of Research and Advanced Technology, Cellular Infrastructure and Networks Business
(Promoted to VP of the Technical Staff in 1997)
Provided leadership and key strategic directions for adoption and creation of new technology for handheld devices
Responsible to ensure best-of-class performance of Motorola's cellular infrastructure deployments
Directed the activities of three worldwide research organizations developing digital cellular technology
Coordinated, participated and led key setting activities
Worked independently and with others to innovate many new products and techniques enhancing customer satisfaction and reducing cost

1975 – 1989 Various Motorola Research Labs (Communications and Components)
Innovated in new technology developments related to private and public radio communication systems the technology resulting from these activities formed the basis and was essential to several new digital radio systems (cellular, public safety, and private mobile)

Additional Experiences
Taught courses at Northwestern University as an adjunct professor
Served as chairman/member of numerous Motorola patent committees

Patents and Publications
134 Issued US Patents
More than 500 Issued Patents Worldwide
20 published articles and other public conference presentations

Awards and Recognition
Fellow of the IEEE

IEEE VTS “Avant Garde” – “for the pioneering leadership and continuing contributions in promoting new technology in the field of vehicular communications and electronics”
Amateur Radio Extra Class and General Radiotelephone License (w/ ship radar endorsement)
Dan Noble Fellow (the highest recognition Motorola bestows on a technologist)
Member of Eta Kappa Nu and Tau Beta Pi engineering honor societies
Distinguished and Master Innovator Awards (Motorola)
Science Advisory Board Associate (Motorola)
Special Intellectual Property Award for Defensive Contributions in the Interdigital Litigation (Motorola)
Several “Patent of the Year” awards (recognizing inventors of Motorola patents having proven business impact)
Standards impact award for successfully driving TIA adoption of standards key to Motorola’s business success

Education

'77-'81 Ph.D. Electrical Engineering and Computer Science - Northwestern University, Evanston
Dissertation: Short Range Communication Using Diffusely Scattered Infrared Radiation
'75-'77 MSEE - Northwestern University, Evanston
Project: Digital Filter Implementation Using Cascaded Microprocessors
'71-'75 BSEE - University of Illinois, Urbana
'71-'75 BSChem - University of Illinois, Urbana

Dr. Michael D. Kotzin – Papers and Presentations

- Kotzin, M.D. and A.P. van den Heuvel, "Dead Reckoning Vehicle Location Using a Solid State Rate Gyro", IEEE Vehicular Technology Conference Proceedings, Vol. 28, Denver, March 1978.
    - This paper describes a design and prototype for a vehicular location system utilizing a vibrating bar rate gyroscope to determine the vehicle's direction of motion. The odometer provided distance traveled. The prototype was field tested and the vehicle's location was tracked at a central location using real time telemetered data via a radio link.
- Kotzin, M.D. and A.P. van den Heuvel, "Short Range IR Telephone", Second Workshop - Electromagnetic, Propagation and Communications Affiliates Program, Univ. of Il., Urbana, Il., April 1980.
    - This presentation described the physics of infrared radiation in an enclosed space. In addition, the design and prototype of a four time slot full duplex voice communication system for short range applications was described.
- Kotzin, M.D. and A.P. van den Heuvel, "Tracking Phase Locked Oscillator", Motorola Technical Developments, Vol. 1, No. 1, August 1980.
    - This paper describes a circuit design for a phase locked loop system that provided an improved drive signal for the sensing element of a vibrating bar rate gyroscope.
- Kotzin, M.D., Short Range Communication Using Diffusely Scattered Infrared Radiation, University Microfilms, 1981.
    - This is a publically published version of my doctoral thesis.
- Marhic, M.E., M.D. Kotzin, A.P. van den Heuvel, "Reflectors and Immersion Lenses for Detectors of Diffuse Radiation", J. Opt. Soc. Am., Vol. 72, No. 3, pp. 352-355, March 1982.
    - This journal article describes the physics and use of optical lenses specifically optimized for the purpose of collecting scattered light.
- Kotzin, M.D. and A.P. van den Heuvel, "A Duplex Infra-Red System for In-Building Communications", IEEE Vehicular Technology Conference Proceedings, Dallas, May 1986.
    - This conference paper describes the design and prototype of a four time slot full duplex voice communication system for short range applications.
- Cohn, Jona and Michael Kotzin, "The Impact of Technology on Future Land Mobile Radio Spectrum Requirements", Spectrum 20/20, (A symposium on: Spectrum Usage - Future Directions in Canada), May 12 & 13, 1987, Montreal, Quebec, Canada.
    - This paper describes various new system, circuit and component technologies that would have a profound impact on the design, deployment and functionality of future spectrally efficient mobile radio systems.

- Kotzin, M.D. and L. Mohl, "Integrating Secure Communications into 800 MHz. Trunked Systems", IEEE Vehicular Technology Conference Proceedings, Tampa, June 1-3, 1987.

    - This paper describes a methodology and prototype for adding digital speech encryption capability to an existing analog land mobile trunking system.

- Presentation: Trends in Digital Cellular Technology, IEEE/VTS Sponsored Seminar, Tel Aviv, Israel, September, 1989.

    - This presentation described the current state of global digital cellular developments as well as likely trends and future evolution. The presentation included a detailed description of the technologies used in each of the then proposed systems.

- Stimple, J., P. Bocci, M.D. Kotzin, and A. P. van den Heuvel, "The Future Noise Environment at 800 MHz.", IEEE Vehicular Technology Conference Proceedings, Vol. 28, Denver, March 1978.

    - This paper describes the results of a radio signal measurement campaign to better understand the sources of noise and their impact on proposed communication systems anticipated to be implemented using newly allocated spectrum.

- Cohn, Jona and Michael Kotzin, "The Impact of Technology on Future Land Mobile Radio Spectrum Requirements", Spectrum 20/20, (A symposium on: Spectrum Usage - Future Directions in Canada), May 12 & 13, 1987, Montreal, Quebec, Canada.

    - This paper describes various new system, circuit and component technologies that would have a profound impact on the design, deployment and functionality of future spectrally efficient mobile radio systems.

- Kotzin, M.D. and L. Mohl, "Integrating Secure Communications into 800 MHz. Trunked Systems", IEEE Vehicular Technology Conference Proceedings, Tampa, June 1-3, 1987.

    - This paper describes a methodology and prototype for adding digital speech encryption capability to an existing analog land mobile trunking system.

- Kotzin, M.D. and M. Needham. "Synchronization for a Spectrally Efficient Modulated Signal". Motorola Technical Developments, Vol. 10, March 1990.

    - This paper describes a methodology for establishing receiver synchronization for a new radio communication system employing a very efficient and unique orthogonal multi-frequency air interface.

- Freeburg, T. and M. D. Kotzin. "Technology Trends Impacting Land Mobile Radio Systems and Spectrum", XXIIIrd General Assembly of the URSI, Prague, Czechoslovakia, August/September 1990.

    - This paper describes various new system, circuit and component technologies that would have a profound impact on the design, deployment and functionality of future spectrally

efficient mobile radio systems. This paper is an update of a presentation made several years prior to its publication.

- Customer Sales Book: "An Introduction to the Pan-European Digital Cellular Network - Groupe Special Mobile (GSM)", Motorola ECID, 1990.

    - This is a customer brochure that contains a system description with technology details of the (yet to be deployed) GSM cellular system. A discussion of the benefits of the Motorola offering in the context of the basic system requirements is included.

- A.P. van den Heuvel, M.D. Kotzin, and D. Hong. "A Spectrum Efficient, Combined Speech and Channel Coding Method Providing High Voice Quality for Land Mobile Radio Systems", Colloquium on Future Mobile Radio Trunking and Data Systems, IEEE, February 27, 1991.

    - This paper describes a fundamentally new proposal to enable very efficient use of spectrum for providing speech communication over radio. A unique speech coding and channel modulation scheme is described.

- Kotzin, M.D., A.P. van den Heuvel, and D. Hong. "A Novel Spectrum Efficient Land Mobile Radio Communication System", IEEE Vehicular Technology Conference Proceedings, St. Louis, May 19-21, 1991.

    - This paper describes a fundamentally new proposal to enable very efficient use of spectrum for providing speech communication over radio. A unique speech coding and channel modulation scheme is described.

- D. Hong, M.D. Kotzin, and A.P. van den Heuvel. "Spectrum Efficient Speech Processing Method for Land Mobile Radio Systems", IEEE Vehicular Technology Conference Proceedings, St. Louis, May 19-21, 1991.

    - This paper provides technical details of the aforementioned speech coding and channel modulation system. The description of a prototype system, as well as results of testing, is described.

- "The Pan-European Digital Cellular (GSM) System: Overview and Update", Proceedings of the Workshop on Advanced Network and Technology Concepts for Mobile, Micro, and Personal Communications, NASA-JPL, Pasadena, Ca., May 30/31, 1991.

    - This paper provides a tutorial overview of GSM system operation and technology. An update on standards progress and deployments is offered.

- Kotzin, M.D. and J. Kay. "Cellular Systems Technology: Narrow Band Development and Digitally Enhanced Cellular Services", Proceedings of the Pacific Telecommunications Council Fourteenth Annual Conference, Honolulu, HI, Jan. 12-15, 1992, pp. 917-921.

    - This paper describes the methodology, implementation and field test results of a unique analog narrowband cellular communication system developed by Motorola.

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