

Randall A. Snyder

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MOBILE TELECOMMUNICATIONS PRODUCT MANAGEMENT, SYSTEM ENGINEERING, TECHNOLOGY, CONSULTING

Mobile telecommunications technology and industry expert, executive manager and leader, designing, developing, marketing and managing mobile telecommunication system and software products.

- 18 years' experience specializing in mobile telecommunication technology, network architecture, design, system engineering, marketing and product management.
- Reputable leader and strategic developer with a successful background building start-ups.
- Skilled presenter, communicator, and educator with success impacting organizational performance, corporate reputation and increasing sales.
- Results-oriented, highly organized and creatively focused on adhering to organizational missions and philosophy while designing best-of-breed mobile technology solutions.
- Extensive travel experience to Asia-Pac, Latin America and Europe supporting engineering, sales and marketing with familiarity with wireless network operators and manufacturers worldwide.
- Several years of wireless standards development with extensive travel throughout Asia-Pac, Latin America and Europe.
- Author of the McGraw-Hill books "Mobile Telecommunications Networking with IS-41," and "Wireless Telecommunications Networking with ANSI-41, 2nd edition" published in 1997 and 2001, respectively.
- Author of several articles and taught several seminars on mobile telecommunications technology.
- Hold several patents on mobile networking technology.
- Member of the Mobile Multimedia Institute.
- Advisory board member for four startups.
- Nominated for a Technology and Engineering Emmy Award for Outstanding Achievement in Advanced Media Technology in 2006.

CORE COMPETENCIES

Technology:	Mobile Network System Engineering, Design and Architecture, Mobile Multimedia Systems, Mobile Internet, Mobile Video, Mobile Marketing, Mobile Telecommunications Standards, 3G, SMS, MMS, WAP, GSM, and ANSI-41 (CDMA) Networking, Signaling System No. 7 (SS7), Communications Protocol Design
Management:	Strategic/Tactical Planning, Product Management, Marketing Management, Operations Management, Competitive Analysis, Problem Resolution, Project Planning, Risk Management
Organizational:	P&L Management, Budget Planning, Expense Reductions and Cost Control
Business Relations:	Seminars, Sales Presentations and Sales Engineering
Legal:	Sales and Vendor Contract Negotiations and Review, Provisional and Patent Write-ups, Patent Validation, Invalidation, Expert Reports and Testimony

PROFESSIONAL EXPERIENCE

Entriq, Inc. • Carlsbad, CA • May 2004 – April 2007

Mobile Pay Media Solutions and Services

Vice President Product Management

As vice president of product management and a member of the executive management team, responsible for the entire product management team, all product management and system architecture for Entriq's products and services. These products encompassed mobile and broadband pay media applications (specializing in video), digital rights management (DRM) and security solutions, e-commerce and m-commerce systems as well as ad management and delivery solutions for both broadband and mobile media services. Responsibilities included system architecture, product requirements, network and protocol analysis, market segmentation and analysis, evaluation of third-party software and services, vendor contract negotiations, RFP responses and overall administrative responsibility for the entire product line. Also responsible for market strategy, network architecture and interconnectivity for Entriq's services. Responsible for directing and managing the technical writing department producing all of the user documentation associated with all of the products. Nominated for a National Television Arts Emmy Award for Outstanding Achievement in Advanced Media Technology for unique mobile technology designed, developed and commercially deployed as part of Entriq's services solution.

m-Qube, Inc. (acquired by Verisign) • Boston, MA • February 2002 – November 2003

Mobile Marketing Solutions and Services

Vice President Product Management and Carrier Marketing

As vice president of product management and carrier marketing for m-Qube, responsible for the entire product management and carrier marketing teams, member of the executive management team and one of the founders. Responsible for all product management, system engineering and product strategy for all business conducted with the wireless industry and carriers. In charge of the market strategy and wireless network architecture for m-Qube's mobile marketing service, a value-added service offering mobile marketing solutions to wireless carriers using short message services (SMS) for GSM and CDMA networks. The service architecture enabled branded companies to deploy promotional marketing and messaging campaign dialogs with mobile subscribers via SMS. The network architecture required definition and design of all aspects of the overall network including SMS technology, interconnectivity to the wireless carriers, signaling, traffic management, market requirements for features and services, network equipment specifications and OA&M.

Bitfone Corporation • Mountain View, CA • April 2001 – February 2002

Mobile Internet Solutions

Vice President Product Management and Marketing

As vice president of product marketing for Bitfone and a member of the executive management team, responsible for the entire product management team and all of the company's product definitions, strategies and positioning. Direct responsibility for market and product requirements, market research, competitive analysis, product strategy and sales strategy. Bitfone's products included the iBroker, a mobile Internet technology infrastructure platform to enhance WAP, MMS, mobile e-mail and wireless messaging. Also responsible for the mProve product (obtained via merger with Digital Transit, Inc.) providing over-the-air firmware and software update technology to mobile devices.

Openwave Systems (via merger of Phone.com and Software.com) • Redwood City, CA •

November 2000 – April 2001

Mobile SMS, MMS, WAP Solutions

Executive Director Emerging Technologies

As executive director of emerging technologies for Openwave Systems, responsible for new 3G technologies and providing market and product plans for those technologies for the entire product line. Primary responsibility for the 3GPP Multimedia Messaging Service (MMS), collecting market requirements from customers, developing corporate strategy for MMS and preparing the organization for

additional development of the product. In addition, taught wireless technology classes to the different departments at Openwave and educated them on wireless service provider strategies and network technologies.

@Mobile and Software.com (via acquisition) • Santa Barbara, CA • March 2000 – November 2000

Mobile Messaging Solutions

Director Wireless Product Management

As director in charge of Software.com's new wireless products group (via acquisition of @Mobile), responsible for the product managers and for all of the wireless internet infrastructure products. Responsibilities include the overall market and product strategy for Software.com's wireless e-mail, short message service, instant messaging and unified messaging products. Responsible for the overall revenues generated from these products based on detailed product plans and internal organizational planning. Much of his time was spent working with the executive management team and the sales directors on corporate market strategy.

FreeSpace Communications, Inc. • Palo Alto, CA • December 1999 – March 2000

Wireless Network Architecture

Consulting Network Systems Engineer

As an engineering consultant, responsible for the complete design of the backbone network architecture for a new broadband fixed wireless data network. This new architecture incorporates DSL as the backbone network technology. The network architecture requires definition and design of all aspects of the overall network plan including DSL technology, IP technology, ATM technology, interconnectivity to the PSTN, operations signaling, traffic engineering, market requirements for network features and services, network equipment specifications and OA&M.

Synacom Technology, Inc. • San Jose, CA • December 1998 – December 1999

Mobile Network Infrastructure Solutions

Executive Director Product Management and Marketing

As Executive Director of Product Management and Marketing for Synacom, responsible for managing the entire product management and marketing department of Synacom Technology, including market research and planning, product management and market communications. Lead the entire design, definition and product direction of all aspects of Synacom's products.

Synacom Technology, Inc. • San Jose, CA • August 1997 – December 1998

Mobile Network Infrastructure Solutions

Director Systems Engineering

As Director of Systems Engineering for Synacom, responsible for coordinating and managing the overall functional and requirements specifications for all Synacom's products as well as the detailed test plans used for alpha system testing of those products. Also responsible for directing and managing the technical writing department producing all of the user documentation associated with all of the products. Provided the primary sales engineering support for sales and marketing and was involved in nearly every aspect of the product lifecycle.

Synacom Technology, Inc. • San Jose, CA • November 1996 – August 1997

Mobile Network Infrastructure Solutions

Director Consulting Services and Principal Engineer

As Director of Consulting Services and Principal Engineer for Synacom Technology, Inc., responsible for obtaining, coordinating and managing all technical consulting projects performed by the company. These projects included wireless network architecture and design for both IS-41 and GSM networks for dozens of client companies (carriers and equipment manufacturers). In this role, continued as a member of both the ANSI/TIA TR45.2 Subcommittee for cellular radio intersystem operations standards and the ANSI/TIA

TR46 Committee for 1900 MHz GSM PCS standards. Major contributor to TR46 in the area of GSM-to-IS-41 network interworking. Also authored, edited and published TIA standard specification IS-93 for cellular network interconnections to the PSTN and ISDN.

Synacom Technology, Inc. • San Jose, CA • April 1992 – November 1996

Mobile Network Infrastructure Solutions

Principal Engineer

As the principal engineer for Synacom Technology, was the lead engineer for many consulting projects. In this position, consulted for McCaw Cellular, AT&T Wireless, AirTouch Cellular, AirTouch Satellite Services, Globalstar, AT&T Bell Laboratories, Nokia, MCI, Sprint PCS, XYPoint, NextWave, NewNet American Personal Communications, CTIA and several other national and international wireless telecommunications companies.

Wrote many wireless network design and analysis papers including HLR specifications, Authentication Center (AC) specifications, PCS network design, short message service (SMS) design, intelligent network applications of wireless technology and comparative analyses of many signaling protocols. Extensive experience with Signaling System No. 7, including both protocol implementation and network design. Authored the Standard Requirements Document for the SS7-based A-interface between the base station and MSC used throughout the TIA. Also involved in the design of the Bellcore WACS/PACS technology, digital cellular network service and feature descriptions, SCPs and HLRs. Extensive experience developing the architecture and design of distributed intelligent networks including, SS7, cellular, PCS, AIN and WIN networks. Key member of the original Cellular Digital Packet Data (CDPD) architecture and design team. Designed the CDPD air interface protocol emulator developed and marketed by AirLink Communications, Inc.

AT&T Bell Laboratories • Whippany, NJ • December 1990 – April 1992

Mobile Network Architecture Solutions

Consulting Member of the Technical Staff

As a consultant to AT&T Bell Laboratories, evaluated wireless technology services for the Wireless Systems Architecture group. Also participated as a system engineer on the design of the Global System for Mobile (GSM) communication architecture and a software engineer developing the base station controller (BSC) for GSM. Also responsible for planning, coordinating, designing and testing the SS7 protocol software for the GSM A-interface between the BSC, MSC and operations and maintenance center (OMC). High-level and detailed design specifications were developed to coordinate the protocol testing between two remote laboratories. Provided the traffic analysis and traffic engineering of call traffic for the BSC. Specifically designed and developed the dynamic traffic overload control subsystem for the BSC. Presentations were given to technical staffs at multiple Bell Laboratories facilities supporting this work.

DGM&S, Inc. • Mt. Laurel, NJ • May 1987 – December 1990

Telecommunications Network Infrastructure Solutions

Senior Staff Consultant

As a Senior Staff Consultant, responsible for the design, development and test coordination of an advanced intelligent network applications platform for a service control point (SCP). Also spent several years as a consulting software engineer for Siemens AG, developing and testing SS7 and call control software for the EWSD digital switching system for international as well as U.S. national network implementations. This work involved extensive travel to both Frankfurt and Munich, Germany for software system design and testing. Also involved in the concept, design and technical marketing of proprietary enabling technology software products for SS7 and ISDN.

ADP, Inc. • Mt. Laurel, NJ • May 1986 – May 1987

Financial and Brokerage Solutions and Services

Senior Software Engineer and Analyst

As a Senior Software Engineer for ADP, Inc., responsible for the design and development of data communications and real time database application software for a host data center that provided real time financial information to large brokerage houses. Data communication protocol expertise in HDLC, RS-232 and IBM BiSync.

C3, Inc. • Cape May, NJ • June 1984 – May 1986
U.S. Coast Guard Shipboard Consulting Solutions

Consulting Systems Analyst and Software Engineer

As a civilian consulting systems analyst and engineer to the U.S. Coast Guard Electronics Engineering Center (EECEN) for C3, Inc., developed sophisticated user-friendly database software for shipboard use including inventory and law enforcement applications. The work included the follow-through of the entire project lifecycle including writing of requirements, functional, design and program specifications, coding, debugging, alpha and beta testing, release, shipboard installation and continuing technical support of the product. Received a personal commendation from Admiral W.F. Merlin, Chief, Office of Command, Control and Communications, for successful efforts on these projects.

EDUCATION

B.A. Mathematics (Astronomy Minor)
Franklin and Marshall College 1984

PATENTS ISSUED

System and Method for Authenticating Cellular Telephonic Communication, US Patent #5799084, Issued August 25, 1998.

Authentication Key Management System and Method, US Patent #5850445, Issued December 15, 1998.

Secure Authentication-Key Management System and Method for Mobile Communications, US Patent #5970144, Issued October 19, 1999.

Authentication Key Management System and Method, US Patent #6128389, Issued October 3, 2000.

PUBLICATIONS

Gallagher, Michael D. and Snyder, Randall A. Mobile Telecommunications Networking with IS-41; McGraw-Hill, New York, NY USA; Copyright 1997 Michael D. Gallagher and Randall A. Snyder.

Snyder, Randall A. and Gallagher, Michael D. Wireless Telecommunications Networking with ANSI-41 Second Edition; McGraw-Hill, New York, NY USA; Copyright 2001 Randall A. Snyder and Michael D. Gallagher.

What Workers Want from Wireless by Randall A. Snyder; April 15, 2004. America's Network, Advanstar Communications, Santa Ana, California USA.

Forecasting SS7 Traffic by Randall A. Snyder; November 1, 2000. Wireless Review, Volume 17, Number 21, Intertec Publishing, Overland Park, KS USA.

IS-41/GSM Interoperability by Randy Snyder; December, 1995, Cellular Networking Perspectives, Cellular Networking Perspectives, LTD, Calgary, Alberta, Canada.