

Stuart J. Lipoff

Mr. Lipoff is president of IP Action Partners Inc, a consulting practice in TIME (telecommunications, information technology, media, electronics, and ebusiness) industries and technologies. He draws upon his 50+ years of experience in a wide variety of technologies and industries to assist clients with knowledge based consulting services involving complex business decisions and problem resolution.

Mr. Lipoff was employed 25 years by Arthur D Little, Inc (ADL) as VP and Director of Communications, Information Technology, and Electronics (CIE); 4 years by Bell & Howell Communications Company as a Section Manager, and 3 years by Motorola's Communications Division as a Project Engineer. At ADL he was responsible for the firm's global CIE practice in laboratory based contract engineering, product development, and technology based consulting. At both Bell & Howell and Motorola, he had project design responsibility for wireless communications and paging products.

Stuart Lipoff has Bachelor's Degrees in Electrical Engineering and in Engineering Physics, both from Lehigh University. He also has received a Masters Degree in Electrical Engineering from Northeastern University, and a MBA degree from Suffolk University.

Mr. Lipoff is a fellow of the IEEE Consumer Electronics, Communications, Computer, Circuits, and Vehicular Technology groups. He is a member of the IEEE Consumer Electronics Society National Board of Governors, and was the Boston Chapter Chairman of the IEEE Vehicular Technology Society. He served as 1996-7 President of the IEEE Consumer Electronics Society and as Chairman of the Consumer Electronics Society Technical Activities and Standards Committee, and as VP of Publications; as VP of Industry and Standards Activities for The IEEE Consumer Technology Society (CTSoc); and he currently is the Historian for CTSoc. He has also chaired the search committee for Sony supported Mazura Ibuka Award in consumer electronics. As Vice President and Standards Group Chairman of the Association of Computer Users, he served as the ACU representative to The ANSI X3 Standards group. For the Federal Communications Commission's Citizens advisory committee on CB radio (PURAC), he served as Chairman of the task group on user rule compliance. He has been elected to membership in the Society of Cable Television Engineers (SCTE), The Association of Computing Machinery (ACM) , and The Society of Motion Picture and Television Engineers (SMPTE).

Stuart Lipoff holds a FCC General Radiotelephone License and a Certificate in Data Processing (CDP) from the ACM supported Institute for the Certification of Computing Professionals (ICCP). He is a registered professional engineer (by examination) in The Commonwealth of Massachusetts and The State of Nevada.

Mr. Lipoff holds seven USA patents and has published articles in Electronics Design, Microwaves, EDN, The Proceedings of the Frequency Control Symposium, Optical Spectra, and numerous IEEE publications. He has presented papers at many IEEE and other meetings. In the fall of 2000, he served as general program chair for The IEEE Vehicular Technology Conference on advanced wireless communications technology. He has organized sessions at The International Conference on Consumer Electronics and was the 1984 program chairman. He

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conducted an eight week IEEE sponsored short course on Fiber Optics Systems Design. In 1984, he was awarded IEEE's Centennial Medal and in 2000 IEEE's Millennium Metal.

He has served as a member of the USA advisory board to the National Science Museum of Israel and has presented a short course on international product development strategies as a faculty member of Technion Institute of Management in Israel. He also served as a member of the board of directors of The Massachusetts Future Problem Solving Program.

Mr Lipoff is internationally recognized as an authority and opinion leader in new economy related businesses and technology. Citations supporting his recognition can be found on his web site at <http://www.ipaction.com>.

Some examples of projects he has performed in the telecommunications sector and speech recognition include:

- For Texas Instruments he supported several projects for their semiconductor components division. The first project involved analysis of the market for advanced user interface speech input and output applications and the fit between these applications and TI's DSP products. The project produced technology and market forecasts by application. By matching the current state of the art of DSP speed-power products with the application requirements, he was able to recommend a timeline and roadmap for TI's target market planning for speech and speaker recognition
- For IBM's Thomas Watson Research Center he evaluated their speech to text typewriter test bed technology and applications plans. This project involved benchmarking IBM's technology to other large vocabulary connected speech research projects and suggesting a coordinated timeline matching expected performance and cost against present and future expected applications
- For Sprint's long distance telephone services, he assisted with the development of a speech and speaker recognition system designed to reduce fraud and improve customer convenience for dialup customers to Sprint's long distance telephone bypass service. Before equal access as used today, subscribers to discount long distance services had to first dial an access number, key in their account number, and then key in the number they wanted to call. By using this newly designed speech and speaker recognition system customer's could eliminate the need to key in their account number and merely speak it. Not only did the system recognize and validate the account number, the system also validated that the speaker was the authorized account holder. The system also included the ability to do voice dialing by speaking the number to be called.
- For BBN, he evaluated a prototype speaker recognition application using BBN's proprietary speech recognition technology. The prototype implemented a speaker independent system allowing remote users who dialed into the BBN system over conventional telephone lines to check airline flight schedules and make bookings. The system had unique features that provided high quality, low error rate speech recognition in a dialup telephone environment with limited bandwidth and high background noise levels

- Leadership of the project which developed the series of DOCSIS specifications for high speed residential cable modems. The scope of work included developing a roadmap and strategic framework for evolving the business from simple high speed internet services to multimedia broadband services combining telephony, data, and secure electronic content delivery. This project was performed under contract to the MCNS consortium of cable TV operators representing 85% of the subscriber base in North America and has since been adopted by the United Nations as a global telecommunications standard.
- For a consortium of the major cable TV operators consisting of Comcast, Time Warner, Cox, and Rogers; I developed models for prediction of reliability of alternative HFC architectures and their suitability to provide local exchange voice services competitive with ILECs. The project required understanding the reliability specifications employed in conventional local exchange carrier telephone plant and the contributions between hardware, power, and workmanship failures. Each of three alternative fiber optic architectures for cable delivered voice telephony were studied and modeled to develop reliability predictions and recommendations were made as to which aspects of the three alternatives were the best choice for cable delivered voice telephony.
- For Bellcore (now Telcordia division of SAIC), I evaluated the R&D portfolio of their Applied Research Group. The main components of this portfolio were speech recognition, DWDM technologies for long haul interLATA communications as well as optical multiplexing components for passive optical network applications in cable TV and advanced broadband residential services. I provided R&D planning assistance on the allocation of funding and priorities to the R&D efforts and identified opportunities for securing intellectual property rights to critical R&D efforts.
- For the ViaSat Division of Modern Times Group (Sweden) he developed business plans for the launch of a new service that bundled discounted long distance telephone services with direct to home satellite TV services and other interactive services including gambling via the set-top box.
- For Southern New England Telephone (SNET), he supported the launch of a video dial tone service. His contribution to the project included engineering and cost analysis of system alternatives as well as assisting with the preparing of RFPs for set-top-boxes and other network elements.