WTS 2007

Wireless Telecommunications Symposium 2007

The Future of Wireless Communications

April 26 - 28, 2007

California State Polytechnic University, Pomona

Kellogg West Conference Center

WELCOME TO WTS 2007

Welcome to the sixth annual Wireless Telecommunications Symposium. We hope that WTS 2007: The Future of Wireless Communications will be a stimulating and enjoyable experience for you.

The future of wireless communications is bright. Mobile augmented reality, large-scale wireless sensor networks, mime speech recognition, and wearable telephone handsets that use the hand as part of the receiver are among the many innovations in wireless communications' future. The future of wireless communications is being shaped in industry, government, and universities around the world. As a result, the subject is an excellent one for an interdisciplinary, global wireless communications conference like WTS. During the next three days WTS 2007 will explore the future of wireless communications in depth - in the many presentations and panel discussions of the invited speaker program, in the Portable Communications Networks tutorial and the Wireless Network Security workshop, and in the seven tracks of the accepted paper program: Global Trends, Governmental Policies and Cultural Implications; Wireless Services: Business Models, Investments and Ventures, and Market Analyses; Wireless Communications and Network Technologies; Algorithms, Methods, Simulations, and Software; Wireless Communications: Military Aspects and Satellite Applications; RFID and Sensor Networks; and Standards and Platforms.

The WTS 2007 Program Committee received 135 paper submissions from authors representing 31 different countries. We thank all the authors who submitted papers and proposals to WTS 2007, the many reviewers who reviewed them, and the co-chairs, track chairs, and session chairs for coordinating the paper and proposal evaluation and selection process. We also thank the WTS Administration and Operations Committee and support personnel for their tireless efforts behind the scene. Producing an event like WTS 2007 is not an easy task, and they did a marvelous job.

WTS 2007 is fortunate to have three first-rate international professional organizations as co-sponsors. We thank the IEEE Communications Society for its financial and technical co-sponsorship of WTS 2007, and the INFORMS Telecommunications Section and ACM SIGMOBILE for their technical support.

Finally, special thanks go to the more than 40 distinguished invited speakers from the wireless telecommunications industry that are participating in WTS 2007 and to the many organizations that have

contributed to the effort or lent it financial support. Notable among the contributors and donors are Cal Poly Pomona's College of Business Administration and College of Engineering, its Computer Information Systems Department, Electrical and Computer Engineering Department, and Computer Science Department, and its Division of Instructional and Information Technology; SWIFT - Cal Poly Pomona's IEEE Communications Society student chapter; Google; Microsoft; Verizon (sponsor of the Outstanding Student Paper Awards); the IEEE Foothill Section; MESAQIN; the IEEE Communications Society's Foothill and Los Angeles chapters; the IEEE Foothill AP/MTT Chapter; and Innovation Village Research Park.

On behalf of the WTS 2007 Committee -- Welcome to WTS 2007!

Dr. Steven Powell
WTS General Chair

Dr. Thomas Ketseoglou
WTS Assistant Chair

WTS 2007 Program

Thursday, April 26		
7:30 am - 8:30 am	Registration and Continental Breakfast	
	Kellogg West Auditorium	**Kellogg West Mountain Vista**
8:30 am – 10:15 am	Wireless Network Security Panel Discussion	Wireless Communications Business Strategy Panel Discussion
10:15 am – 10:30 am	Networking Break	Networking Break
10:30 am – 12:15 pm	Future Directions In Wireless Communications Research Panel Discussion	Mobile Wireless Communications Services and Business Panel Discussion
12:15 pm - 1:30 pm	Buffet Lunch (Kellogg West Dining Room)	
1:30 pm –	The Future of Deep Space	Wireless Communications New

3:15 pm	Communications Panel Discussion (Organized by NASA's Jet Propulsion Laboratory)	Ventures and Investments Panel Discussion
3:15 pm – 3:30 pm	Networking Break	Networking Break
3:30 pm - 5:15 pm	Advances in Satellite Communications Panel Discussion (Organized by the Satellite Industry Association)	
5:30 pm – 6:30 pm	WTS Organizers' Meeting Kellogg West Mountain Vista	
6:30 pm – 9:00 pm	Networking Session and Welcoming Dinner Co-Hosted by the IEEE Communications Society (Kellogg West Dining Room) Guest Speaker: **Dr. Vinton G. Cerf**, "a Father of the Internet" VP and Chief Internet Evangelist, Google	
Friday, April 27		
8:00 am - 9:00 am	Registration and Breakfast	
	Executive Session (Kellogg West Auditorium)	
9:00 am – 9:15 am	Welcoming Remarks **Dr. J. Michael Ortiz** – President, California State Polytechnic University, Pomona	
9:15 am – 10:00 am	**Dick Lynch** - Executive Vice President and CTO, Verizon Wireless	
10:00 am – 10:15 am	**Networking Break**	
10:15 am - 11:00 am	**Kristin Rinne** – Senior Vice President Architecture & Planning, AT&T	
11:00 am – 11:45 am	**Ali Tabassi**, Vice President, Technology Development, Sprint Nextel	
	Buffet Lunch (Kellogg West Dining Room)	

12:00 pm - 1:30 pm	WTS 2007 Co-Sponsor Recognition Guest Speaker: **John Muleta** CEO and Co-Founder, M2Z Networks Former Chief of the FCC Wireless Telecommunications Bureau
1:30 pm – 2:00 pm 2:00 pm – 3:45 pm	The Future of Wireless Communications (Organized by Bell Laboratories) Speaker: **Dr. George Rittenhouse**, VP – Technology Integration Bell Laboratories, Alcatel-Lucent Portable Communications Networks Tutorial **"911-NOW: A Network On Wheels for Emergency Response, Disaster Recovery and HotSpot Coverage"** Speaker: **Dr. Thierry Klein**, Wireless Networking Research Group Bell Laboratories, Alcatel-Lucent
3:45 pm – 4:00 pm	Free Time
4:00 pm - 5:00 pm	Bus Travel to Universal Studios Hollywood
5:00 pm – 9:30 pm	Tour of Universal Studios Hollywood Visit to Universal CityWalk and Reception at Café Tu Tu Tango Guest Speaker: **Marc Rivett** NBC Universal Media Works
9:30 pm – 10:30 pm	Bus Travel to Kellogg West
Saturday, April 28	
8:00 am - 9:00 am	Registration and Breakfast
9:00 am – 10:30 am	Accepted Paper Sessions (I)
10:30 am - 10:45 am	Networking Break
10:45 am - 12:15 pm	Accepted Paper Sessions (II)
	Buffet Lunch (Kellogg West Dining Room)

12:15 pm - 1:15 pm	Student Paper Award Ceremony Guest Speaker: **Michael Gallagher**, Partner, Perkins Coie LLP Former, Assistant Secretary of Commerce for Communications and Information Former Administrator of the National Telecommunications and Information Administration
1:15 pm - 1:45 pm	Doctoral Students Session/Poster Paper Session
1:45 pm - 3:15 pm	Accepted Paper Sessions (III) Wireless Network Security Workshop (I) Speakers: **Dr. Tulin Mangir** and **Dr. Burkhard Englert** College of Engineering, CSULB (Sponsored by CSULB and the NSF)
3:15 pm - 3:30 pm	Networking Break
3:30 pm - 5:00 pm	Accepted Paper Sessions (IV) Wireless Network Security Workshop (II)

Panel Discussions, Tutorials, and Workshops

Panel Discussion: Future Directions in Wireless Communications Research

Dr. George Rittenhouse
Vice President – Technology Integration, Bell Laboratories
CTO - Lucent Corporate Strategy

Dr. Avneesh Agrawal
Senior Vice President, Office of the CTO
QUALCOMM Inc.

Dr. Jason Redi
Division Scientist
BBN Technologies

Devabhaktuni ("Sri") Srikrishna
Founder & CTO
Tropos Networks

Panel Discussion: Advances in Satellite Communications

David Cavossa
Executive Director
Satellite Industry Association

Peter Hadinger
Vice Chair, FCC WRC Advisory Committee
Director, East Coast Engineering and Initiatives
Northrop Grumman Space Technology

Tom D. Soumas, Jr.
President and CEO
AGIOSAT Global Communications

Gary Hatch
President and CEO
ATCi

Panel Discussion: Wireless Communications New Ventures and Investments

Jonathan Atkin
Managing Director, Equity Research Division
RBC Capital Markets

Tom Roderick
Principal
Thomas Weisel Partners

Dr. Daniel Docter
Senior Investment Manager
Intel Capital

Panel Discussion: Mobile Wireless Services and Business

Dr. J. P. Shim
Professor of MIS and Director of the International Business Strategy

Program
Mississippi State University

Peter Neill
Senior Vice President, Wireless Markets
Level 3 Communications

Edward Valdez
Chief Operating Officer
Parrot Inc.

John M. Baker
Leader, Wireless Applications Practice
IBM Global Services

Panel Discussion: Wireless Communications Business Strategy

Rory Altman
Director and Co-Founder
Altman Vilandre & Company

Jay Highley
CEO
Integrated Mobile Inc.

Rodger Desai
President, CEO and Co-Founder
Rave Wireless, Inc.

Vijay Venkateswaran
Vice President, Product Development & Management
Mobile Satellite Ventures

Panel Discussion: Wireless Network Security

Brandon R. Brown
Managing Consultant
Nexus Integration Services

Dr. Francois Cosquer
Chief Security Architect
Alcatel North America

Kevin Moncrief
Principal, West Coast Security and Technology Solutions Practice
Ernst and Young

Robert J. Brown
Director of Enterprise Security
WesCorp

Panel Discussion: The Future of Deep Space Communications

Dwight P. Holmes
Telecommunications and Mission Systems Program Manager
Interplanetary Networks Directorate
Deep Space Mission Systems
NASA Jet Propulsion Laboratory

Jack Wallick
Deputy Director ITT Operations
NASA Deep Space Network, Monrovia, CA

Joe Statman
Program Manager
NASA Deep Space Network Large Array
Adrian Hooke
Chairman International Engineering Steering Group
Consultative Committee on Space Data System Standards (CCSDS)

Dr. Hamid Hemmati
Supervisor, JPL Optical Communications Group

Tutorials & Workshops

Portable Communications Networks Tutorial

Dr. Thierry Klein
Member of the Technical Staff
End to End Wireless Networking Research Department
Networking and Network Management Center
Bell Laboratories, Alcatel-Lucent

Wireless Network Security Workshop

Dr. Tulin Mangir
Professor, Department of Electrical Engineering
CSU Long Beach

Dr. Burkhard Englert
Associate Professor, Department of Computer Engineering and Computer Science
CSU Long Beach

WTS 2007 Accepted Paper Sessions and Wireless Network Security Workshop
Saturday April 28, 2007

Track 1 - Global Trends, Governmental Policies and Cultural Implications

Track Chair: Dr. Michael Bartolacci (Penn State - Berks, US)

9:00 AM - 10:30 AM
Session A1 – Chair: Michael Bartolacci (Penn State – Berks)

Public Display of SMS: Beyond Personal Social Networks and into the Realm of Public Discourse Linda Yoon (Art Center College of Design, Pasadena, US)

Fast & Secure Roaming For Heterogeneous Multi-Operator Wireless Networks
Oscar Salazar (Ecole Nationale Superieure des Telecommunications, FR); Jacques Demerjian (Altran, FR); Samir Tohmé (Université de Versailles, FR)

Implementations of Location Awareness Technologies and their Applications
Khaled Elleithy (University of Bridgeport, US); Arif Maqbool (University pf Bridgeport, US)

News Corp: Preparing for the Wireless World of 2050
Vassiliki Cossiavelou (Aegean University, GR); Michael Bartolacci (Penn State - Berks, US)

10:30 AM - 10:45 AM **Networking Break**

Track 2 - Business Models, Investments and Ventures, and Market Analyses

Track Chair: Dr. Katia Passerini (New Jersey Institute of Technology, US)

10:45 AM – 12:15 PM
Session B2 – Chair: Katia Passerini (New Jersey Institute of Technology)

PDA-based Wireless Food Ordering System for Hospitality Industry – A Case Study of Box Hill Institute
Keyurkumar Patel, Umesh Patel and Andrew Obersnel (Box Hill Institute of TAFE, AU)

International Expansion of Wireless Telecommunications Service Providers: A Comparative Analysis
Steven Powell (California State Polytechnic University, Pomona, US)

Wireless Internet Competition: Municipal Wireless vs. 3G Mobile Service
JP Shim (Mississippi State University, US); SeungJae Shin (Mississippi State University, US); Martin Weiss (University of Pittsburgh, US)

Small and Medium Enterprises and the Mobile Revolution: Looking Forward
Katia Passerini (New Jersey Institute of Technology, US); Karen Patten (University of South Carolina, US); Michael Bartolacci (Penn State – Berks, US)

12:15 PM - 1:15 PM
Buffet Lunch - Kellogg West
Student Paper Award Ceremony

Guest Speaker: Michael Gallagher, Partner, Perkins Coie LLP
Former, Assistant Secretary of Commerce for Communications and Information
Former Administrator of the National Telecommunications and Information Administration

1:15 PM – 1:45 PM **Doctoral Students Session/Poster Paper Session**

Doctoral Student Session:

Efficient Loop Filter Design in FPGAs for Phase Lock Loops in

High-Data Rate Wireless Receivers – Theory and Case Study
Yair Linn (University of British Columbia, CA)

Track 3 - Wireless Communications and Network Technologies

Track Chair: Dr. Hussain Al-Rizzo (University of Arkansas at Little Rock) and

Dr. Santosh Nagaraj (San Diego State University)

9:00 AM - 10:30 AM
Session A3 – Chair: Dr. Santosh Nagaraj (San Diego State University)

A Comparative Study on the Modified Max-Log-Map Turbo Decoding by Extrinsic Information Scaling
Mustafa Taskaldiran; Richard Morling; and Izzet Kale (University of Westminster, UK)

Throughput Analysis of Adaptive MIMO-OFDM Systems: from Single to Multiple Users
Fu-Hsuan Chiu (Texas Instruments, US); Sau-Hsuan Wu (National Chiao Tung University, TW); C.C. Jay Kuo (University of Southern California, US)

Maximum-Likelihood Carrier-Frequency Synchronization and Channel Estimation for MIMO-OFDM Systems
Soheil Salari; Mahmoud Ahmadian; Mehrdad Ardebilipour (K.N. Toosi University of Technology, IR); Vahid Meghdadi; Jean Pierre Cances (University of Limoges, FR)

Rate Identification in Multirate CDMA
Kunal Kala and Santosh Nagaraj (San Diego State University, US)

10:30 AM - 10:45 AM **Networking Break**

10:45 AM - 12:15 PM
Session B3 – Chair: Thomas Ketseoglou (California State Polytechnic University, US)

A Function Modulation Method for Digital Communications
Subhendu Das (CCSI, US); Avtar Singh (San Jose State University, US); Nirode Mohanty (CCSI, US)

Security in User-Assisted Communications
Tong Zhou (Sprint Nextel, US); Lein Harn (University of Missouri-Kansas City, US)

Performance Evaluation of EVRC-Encoded Voice Traffic over CDMA EVDO Rev. A
Fulu Li (Massachusetts Institute of Technology, US), Ivan Vukovic, Igor Filipovich, Eric Chan (Motorola Inc.), Andrew Lippman (Massachusetts Institute of Technology, US)

Optimized Iterative MAP ARQ for OFDM over Rapidly-Varying Frequency-Selective Channels
Thomas Ketseoglou (California State Polytechnic University, US)

12:15 PM - 1:15 PM
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1:15 PM - 1:45 PM **Doctoral Students Session/Poster Paper Session**

Doctoral Students Session:

Efficient Loop Filter Design in FPGAs for Phase Lock Loops in High-Data Rate Wireless Receivers – Theory and Case Study
Yair Linn (University of British Columbia, CA)

1:45 PM - 3:15 PM
Session C3 – Chair: Qing-An Zeng

The Amplitude-Locked Loop System of Co-channel Interference in AWGN Channel
Yu Chen; Gwo-Jiun Horng; Gwo-Jia Jong; Te-Jen Su (National Kaohsiung University of Applied Sciences, TW)

A Scalability Analysis of GST and SST MANET Multicast Routing Algorithms
Sang-Chul Kim (Kookmin University, KR)

Efficient Resource Management of Multiple Traffic in Integrated

Wireless and Mobile Networks
Wei Shen (University of Cincinnati, US); Qing-An Zeng (University of Cincinnati, US); Cheng Zhu (University of Cincinnati, US)

Analysis of the Statistical Time-Access Fairness Index under a Scheduler Exploiting Multiuser Diversity
Fumio Ishizaki (Nanzan University, JP); Chikara Ohta (Kobe University, JP)

3:15PM - 3:30 PM **Networking Break**

Track 4 - Algorithms, Methods, Simulations, and Software

Track Chair: Dr. Roger Whitaker (University of Cardiff) and

Dr. Izabella Lokshina (SUNY Oneonta)

9:00 AM - 10:30 AM
Session A4 – Chair: Roger Whitaker (University of Cardiff)

A Low Complexity and Energy Efficient Dynamic Channel Allocation Algorithm for Multiuser OFDM
Adil EL Bourichi (Kyushu University, JP); Hiroto Yasuura (Kyushu Univ., JP)

Finite Automata for Evaluating Testbed Resource Contention
Lei Liu (Sun Microsystems, Inc., US)

Sensitivity of Service Coverage Evaluation for WCDMA Systems
Roger Whitaker (University of Cardiff, UK)

Seed node deployment for wireless mesh networks with uncertain subscription
Stuart Allen (University of Cardiff, UK); Roger Whitaker (Cardiff University, UK); Steve Hurley (University of Wales, Cardiff., UK)

10:30 AM - 10:45 AM **Networking Break**

10:45 AM - 12:15 PM
Session B4 – Chair: Dr. Izabella Lokshina (SUNY Oneonta)

Delay Effect on Conversational Quality in Telecommunication Networks: Do We Mind?
Jan Holub (WTS, CZ); Martin Kastner (OPTICOM GmbH, DE); Ondrej Tomiska (WTS, CZ)

Experiences with the ns-2 Network Simulator - Explicitly Setting Seeds Considered Harmful
Martina Umlauft (Vienna University of Technology, AT); Peter Reichl (Telecommunications Research Center Vienna, AT)

Energy-Efficient Reference Broadcast Synchronization
Sana Jan; Hassan Qureshi; Anam Ghaffar (National University of Sciences and Technology, PK); Hajra Asghar (NUST, PK); Saad Kiani (Kyung Hee University, KR)

Modeling of Media Gateway Nodes for Next Generation Networks Based on Markov Reward Models
Dimitar Radev (University of Rousse, BG); Izabella Lokshina (SUNY Oneonta, US)

12:15 PM - 1:15 PM
Buffet Lunch - Kellogg West
Student Paper Award Ceremony

Guest Speaker: Michael Gallagher, Partner, Perkins Coie LLP
Former, Assistant Secretary of Commerce for Communications and Information
Former Administrator of the National Telecommunications and Information Administration

1:15 PM - 1:45 PM **Doctoral Students Session/Poster Paper Session**

Doctoral Students Session:

Efficient Loop Filter Design in FPGAs for Phase Lock Loops in High-Data Rate Wireless Receivers – Theory and Case Study
Yair Linn (University of British Columbia, CA)

1:45 PM - 3:15 PM
Session C4 – Chair: Dr. Jan Holub

Performance of a Novel Power-Loading Algorithm Over Uncoded and Convolutionally Coded OFDM systems
Divya Ravichandran (San Diego State University, US); Santosh Nagaraj (San Diego State University, US)

Bluetooth-3G Wireless Transmission System for Neural Signal Telemetry
Cristina Tarín Sauer; Lara Traver Sebastià; Juan Felipe Santamaria Gomez; Paula Martí Rocafull; Narcis Cardona Marcet (ITEAM, Technical University of Valencia, ES)

Use of Non-monotonic Utility in Multi-attribute Network

Selection
Farooq Bari (Cingular Wireless/ University of British Columbia, US); Victor Leung (The University of British Columbia, CA)

--- Low Complexity Demodulator for M-ary QAM
Hen-Geul Yeh; HongSeok Seo (California State University, Long Beach, US)

3:15PM - 3:30 PM **Networking Break**

Track 5 - Wireless Communications: Military Aspects and Satellite Applications

Track Co-Chair: Dr. Ehsan Sheybani (Virginia State University) and

Jan Holub (WTS, CZ)

10:45 AM - 12:15 PM
Session B5 – Chair: Santosh Nagaraj

Optimizing Satellite Broadcast Scheduling Problem Using the Competitive Hopfield Neural Network
Yu-ju Shen (National Cheng Kung University, TW); Ming-Shi Wang (Department of Engineering Science, National Cheng Kung University, TW)

Bit Error Rate Analysis of Jamming for OFDM Systems
Jun Luo (Florida International University, US); Jean H. Andrian (Florida International University, US); Chi Zhou (Illinois Institute of Technology, US)

Adaptive Virtual Queue Random Early Detection in Satellite Networks
Do Byun (University of Maryland at College Park, US); John S. Baras (University of Maryland College Park, US)

A Policy-Based Approach for Reconfiguration Management and Enforcement in Autonomic Communication Systems
Jie Chen (BUPT, CN); Di Qu (China Telecommunication Technology Labs, CN); Kai Yu (Beijing University of Posts and Telecommunications, CN); Yongjing Zhang (Beijing University of Posts & Telecommunications, CN); Zhiyong Feng (Beijing University of Posts and Telecommunications, CN); Ping Zhang (WTI-BUPT, CN)

12:15 PM - 1:15 PM
Buffet Lunch - Kellogg West
Student Paper Award Ceremony

Guest Speaker: Michael Gallagher, Partner, Perkins Coie LLP
Former, Assistant Secretary of Commerce for Communications and Information
Former Administrator of the National Telecommunications and Information Administration

1:15 PM - 1:45 PM **Doctoral Students Session/Poster Paper Session**

Doctoral Students Session:
Efficient Loop Filter Design in FPGAs for Phase Lock Loops in High-Data Rate Wireless Receivers – Theory and Case Study
Yair Linn (University of British Columbia, CA)

Track 6 - RFID and Sensor Networks

Track Chair: Dr. Qing-An Zeng (University of Cincinnati)

9:00 AM - 10:30 AM
Session A6 – Chair: Dr. Qing-An Zeng (University of Cincinnati)

The Cayley Graph Implementation in TinyOS for Dense Wireless Sensor Networks
Lei Wang (Stony Brook University, US); Wendy Tang (Stony Brook University, US)

A New Collision Resolution Protocol for Mobile RFID Tags
Jaewook Yu (SUNY at Stony Brook, US); Eric Noel (AT&T Laboratories Research, US); Wendy Tang (Stony Brook University, US)

Consumed-Energy-Type-Aware Routing for Wireless Sensor Networks
Shinya Ito and Kenji Yoshigoe (University of Arkansas at Little Rock, US)

A Framework for Pipeline Infrastructure Monitoring Using Wireless Sensor Networks
Imad Jawhar (United Arab Emirates University, AE); Nader Mohamed (United Arab Emirates University, AE); Khaled Shuaib (UAEU, AE)

Track 7 - Standards and Platforms

Track Chair: Dr. Rose Qingyang Hu (Mississippi State University)

12:15 PM - 1:15 PM
Buffet Lunch - Kellogg West
Student Paper Award Ceremony

Guest Speaker: Michael Gallagher, Partner, Perkins Coie LLP
Former, Assistant Secretary of Commerce for Communications and Information
Former Administrator of the National Telecommunications and Information Administration

1:15 PM - 1:45 PM **Doctoral Students Session/Poster Paper Session**

Doctoral Students Session
Efficient Loop Filter Design in FPGAs for Phase Lock Loops in High-Data Rate Wireless Receivers – Theory and Case Study
Yair Linn (University of British Columbia, CA)

1:45 PM - 3:15 PM
Session C7 – Chair: Dr. Thomas Ketseoglou (California State Polytechnic University)

Efficient Resource Utilization Scheme with Dynamic Cooperative Transmission in Mobile Multihop Relay Networks
Anxin Li (DoCoMo beijing Labs, CN); Mingshu Wang (DoCoMo Beijing Communications Laboratories, CN); Xiangming Li (DoCoMo Beijing Communications Labs, CN); Hidetoshi Kayama (DoCoMo Beijing Labs, CN)

A Delay Constraint Energy Saving Algorithm in IEEE 802.16e Wireless MAN
Dinh Thi Thuy Nga (Information and Communications University, KR); MinGon Kim (Information and Communication University, KR); Minho Kang (Information and Communication University, KR)

Unified Protocol Stack for NEXT GEN Mobile Terminals to Support Multiple Radio Access Technologies
S.Vijay Anand and Rajesh Tyagi (Sasken Communication Technologies Limited, IN)

Local Fast Re-authentication protocol for 3G-WLAN interworking architecture
Ali Al Shidhani (University of British Columbia, CA); Victor Leung (The University of British Columbia, CA)

3:15PM - 3:30 PM **Networking Break**

Track 8 – Wireless Telecom Symposium

Track Chair: Dr. Thomas Ketseoglou (Cal Poly)

3:30 PM - 5:00 PM
Session C8 – Chair: Dr. Thomas Ketseoglou (Cal Poly)

A Point-Process Analysis of Spencer's Space-Time Extension of the IEEE 802.15.3a UWB Channel Model
Kei Hao (University of Wisconsin-Madison, US); John Gubner (University of Wisconsin-Madison, US)

Transformation Matrix Algorithm for Reducing the Computational Complexity of Multiuser Receivers for DS-CDMA Wireless Systems
Syed Rizvi (University of Bridgeport, US); Khaled Elleithy (University of Bridgeport, US); Aasia Riasat (Old Dominion University, US)

Autonomic Joint Radio Resource Management in B3G environment using Reinforcement Learning
Yongjing Zhang (Beijing University of Posts & Telecommunications, CN); Jie Chen (BUPT, CN); Zhiyong Feng (Beijing University of Posts and Telecommunications, CN); Ping Zhang (WTI-BUPT, CN)

A Heuristic Method for Clustering a Large-Scale Sensor Network
Takehiro Furuta; Hajime Miyazawa; Fumio Ishizaki; Mihiro Sasaki; and Atsuo Suzuki (Nanzan University, JP)

Track 9 – Wireless Telecom Symposium

Track Chair: Dr. Michael Bartolacci (Penn State - Berks, US)

3:30 PM – 5:00 PM
Session C9 – Chair: Dr. Michael Bartolacci (Penn State - Berks, US)

FER Regression Analysis of DS-UWB-based WPAN
F. De Rango, F. Veltri, P. Fazio, A. F. Santamaria, M. Tropea, Salvatore Marano (D.E.I.S. Department, University of Calabria, Italy)

Radio Jamming Attacks in Wireless Sensor Networks: Countermeasures and the Hermes II Node Approach
Aristides Mpitziopoulos (University of the Aegean, GR); Damianos Gavalas (University of the Aegean, GR)

Speed and Area Analysis of Memory Based FFT Processors in a FPGA
Hen-Geul Yeh; Gerald Truong (California State University Long Beach, US)

A Comparative Analysis of Pilot Placement Schemes in Frequency-selective Fast Fading MIMO Channel
Xueyuan Zhao, Roger S. K. Cheng, and Danny C. Y. Ong (Hong Kong Applied Science and Technology Research Institute (ASTRI)

Effects of Non-ideal Pre-distorter High Power Amplifiers in WCDMA Using Multi-user Detectors

Siavash Ghavami and Bahman Abolhassani (Iran University of Science and Technology, Iran)

Wireless Network Security Workshop

Wireless Network Security Workshop
Speakers: **Dr. Tulin Mangir** and **Dr. Burkhard Englert**
College of Engineering, CSULB
(Sponsored by CSULB and the NSF)

1:45 PM - 3:15 PM Wireless Network Security Workshop (I)

3:15 PM - 3:30 PM **Networking Break**

3:30 PM – 5:00 PM Wireless Network Security Workshop (II)

Speaker Biographies

Dr. Vinton G. Cerf is vice president and Chief Internet Evangelist for Google. He is responsible for identifying new enabling technologies and applications on the Internet and other platforms for the company.

Widely known as a "Father of the Internet," Vint is the co-designer with Robert Kahn of TCP/IP protocols and basic architecture of the Internet. In 1997, President Clinton recognized their work with the U.S. National Medal of Technology. In 2005, Vint and Bob received the highest civilian honor bestowed in the U.S., the Presidential Medal of Freedom. It recognizes the fact that their work on the software code used to transmit data across the Internet has put them "at the forefront of a digital revolution that has transformed global commerce, communication, and entertainment."

From 1994-2005, Vint served as Senior Vice President at MCI. Prior to that, he was Vice President of the Corporation for National Research Initiatives (CNRI), and from 1982-86 he served as Vice President of MCI. During his tenure with the U.S. Department of Defense's Advanced Research Projects Agency (DARPA) from 1976-1982, Vint played a key role leading the development of Internet and Internet-related data packet and security technologies.

Since 2000, Vint has served as chairman of the board of the

Internet Corporation for Assigned Names and Numbers (ICANN) and he has been a Visiting Scientist at the Jet Propulsion Laboratory since 1998. He served as founding president of the Internet Society (ISOC) from 1992-1995 and was on the ISOC board until 2000. Vint is a Fellow of the IEEE, ACM, AAAS, the American Academy of Arts and Sciences, the International Engineering Consortium, the Computer History Museum and the National Academy of Engineering.

Vint has received numerous awards and commendations in connection with his work on the Internet, including the Marconi Fellowship, Charles Stark Draper award of the National Academy of Engineering, the Prince of Asturias award for science and technology, the Alexander Graham Bell Award presented by the Alexander Graham Bell Association for the Deaf, the A.M. Turing Award from the Association for Computer Machinery, the Silver Medal of the International Telecommunications Union, and the IEEE Alexander Graham Bell Medal, among many others.

He holds a Ph.D. in Computer Science from UCLA and more than a dozen honorary degrees.

Michael D. Gallagher is a Partner at Perkins Coie LLP where his areas of emphasis are government relations, telecommunications, technology, spectrum policy, and Internet policy. From 2003 to 2006 Mr. Gallagher served as Assistant Secretary of Commerce for Communication and Information for the U.S. Department of Commerce and Director of the National Telecommunications and Information Administration, in 2003 as Deputy Chief of Staff for Policy & Counselor to Secretary Donald L. Evans, and from 2001 to 2003 as Deputy Assistant Secretary.

Among his duties and accomplishments at the Department of Commerce were the following: serving as the Bush Administration's lead on telecommunications policy; co-managing the radio-frequency spectrum with the FCC; leading an inter-agency effort to host the first China-America Telecom Summit (CATS) on U.S. soil; managing the administration of the Institute for Telecommunications Science; leading the Administration drive to pass the Commercial Spectrum Enhancement Act of 2004; leading a coordinated effort with the telecommunications industry, the Department of Commerce and the FCC to authorize broadband data services over power lines; producing President Bush's Spectrum Policy for the 21st Century, which involved working with all 56 federal agencies, the FCC and the private sector to develop 24 recommendations for institutionalizing pro-

innovation spectrum policies while protecting critical government systems; overseeing ICANN's relationship with Department of Commerce; developing and delivering the Bush Administration principles for international Internet governance which frame the U.S. government's international positions on management of the domain name system, spam, spyware, and cyber-security; leading NTIA's opening of 70-90 GHz frequency bands for gigabit-per-second fix data links in cooperation with the Department of Defense and the FCC - the first-ever availability of federally coordinated spectrum assignments to the public over the Internet; leading the Administration's authorization of Ultrawideband (UWB) devices; leading the Administration's successful effort to allocate 90 MHz of spectrum for third-generation mobile spectrum; and leading the Administration's efforts to open up 255 MHz of spectrum in the GHz band for WiFi applications.

Prior to serving at the Department of Commerce, Mr. Gallagher was affiliated with Verizon Wireless, where he served as Staff Vice President for State Public Policy from 2000 to 2001, and with AirTouch Communications as Managing Director, Government Relations from 1998 to 2000. He was an Administrative Assistant/Chief of Staff for Congressman Rick White from 1995 to 1997.

Mr. Gallagher is a recipient of the Department of Commerce's Redfield Award, the Wireless Communications Association's Leadership in Government Award, and the inaugural recipient of the Telecommunications Industry Association's Spirit of Innovation Award. He holds a J.D. from the University of California, Los Angeles (1989) and a B.A. (Economics and Political Science) from the University of California, Berkeley, B.A. with high honors, summa cum laude, Phi Beta Kappa (1986).

John B. Muleta , is co-founder of M2Z Networks Inc. - an organization that is proposing free wireless broadband to consumers across the U.S. Previously, Mr. Muleta was a Partner in the law firm Venable LLP, and from 2003 to 2005 he served as Chief of the Federal Communications Commission's Wireless Telecommunications Bureau (WTB), which handles all FCC domestic wireless telecommunications programs and policies--except those involving satellite communications or broadcasting--including licensing, enforcement, and regulatory functions.

Prior to becoming WTB Chief Mr. Muleta was founder and Executive Vice President of OI Systems, Inc. - a firm providing

outsourced business, IT, and network planning services. From 1998 to 2000 he held positions at PSI Net as Senior Vice President and President, Global Facilities Development and IMEA (India, Middle East, Africa), Vice President of Capacity Planning and Service Delivery, and Vice President, Office of the General Counsel.

From 1994 to 1998 Mr. Muleta served at the FCC as Deputy Bureau Chief of the Common Carrier Bureau, Chief of the Enforcement Division, and Attorney-Advisor of the Office of Plans and Policy. Previously, he was with Coopers & Lybrand Consulting, LLC and GTE Corporation.

Mr. Muleta holds a BSc. in Systems Engineering from the University of Virginia and a JD/MBA from the Darden Graduate School of Management at the University of Virginia.

Dick Lynch, is executive vice president and chief technical officer for Verizon Wireless, the premier wireless provider with the nation's most reliable wireless network. Lynch is responsible for the technology, architecture, planning, design and operation of the company's coast-to-coast wireless voice and data network covering more than two million square-miles. Under his leadership, Verizon Wireless launched the nation's first wireless broadband wide-area network.

In his prior assignment, he was executive vice president and chief technical officer for Bell Atlantic Mobile. Lynch has been at the forefront of wireless data solutions, starting with Cellular Digital Packet Data (CDPD) in 1995 when he led Bell Atlantic Mobile's build of one of the largest CDPD networks in the country--delivering the first application for mobile data for public safety and ultimately paving the way for mass market wireless data services. He led the industry to advance Code Division Multiple Access (CDMA) into a commercial wireless offering, launching the nation's first commercial CDMA service. In 2004, Lynch again drove technology direction with the decision to deploy EVDO service broadly throughout Verizon Wireless' national footprint. Building on these core technology decisions, he has led the implementation and widespread adoption of key innovative services including wireless broadband access via laptop and PDAs, V CAST Music (a rich-featured, over-the-air music download service), IP-based Push-to-Talk, and turn-by-turn navigation on cell phones.

Lynch is a Fellow of The Institute of Electrical and Electronics

Engineers, Inc. (IEEE). He has served as a charter member of the executive board of the CDMA Development Group, an organization responsible for promotion, advancement, deployment and future developments of CDMA. Lynch is a member of the Federal Communications Commission's Technical Advisory Council. He has also been awarded patents for advances in the area of wireless technology.

In the early years of wireless data development, Lynch served as chairman of the Wireless Data Forum, an organization dedicated to promoting the benefits of wireless data to end-user communities, the telecommunications industry, the media, and the information technology industry. Under his guidance, the forum was restructured and affiliated with the Cellular Telecommunications & Internet Association to insure focus on its efforts within the larger wireless industry. For this accomplishment, Lynch was honored with the CTIA President's Award.

Recognized as a leader in advancing wireless technology and in building and operating vast wireless networks, Lynch frequently provides expert commentary for a variety of leading business and trade publications. He is a frequent guest lecturer in academia and industry on wireless technology and trends.

Throughout his career, Lynch has held a variety of positions in all aspects of planning, operations and engineering, beginning with New England Telephone in 1972. Prior to joining Bell Atlantic Mobile, he was general manager of operations for Bell of Pennsylvania's Central Area, based in Harrisburg, Pennsylvania.

Lynch is a 1970 graduate of Lowell Technological Institute (now UMass) where he received bachelor's and master's degrees in electrical engineering. He has also completed postgraduate work at the Wharton School of the University of Pennsylvania and the Johnson School of Management at Cornell University.

Kristin S. Rinne, is responsible for the IT and Network architecture and planning for AT&T. She is also responsible for Product Development for AT&T products and services. Additional duties include the wireless network infrastructure and device technology for new wireless products and services.

Prior to this position, Rinne served as Cingular's chief technology officer with similar responsibilities.

She earlier served as vice president-Technology and Product Realization, responsible for new product development from a technology standpoint, handset certification, and infrastructure vendor coordination.

Prior to joining Cingular, she was vice president-Technology Strategy for SBC Wireless, responsible for new product development and network operations support. She has worked for Southwestern Bell Mobile Systems as managing director-Operations.

Ali Tabassi is vice president of technology development for Sprint Nextel, responsible for leading the development of technology, network, systems architecture and evolution strategies. He also oversees evaluation of emerging technologies that enable delivery of differentiated products and services in pursuit of new business opportunities. Mr. Tabassi ensures that Sprint Nextel is at the forefront of technology innovation, in particular contributing to the development and implementation of Sprint Nextel's next generation wireless broadband network.

Mr. Tabassi has more than 20 years of experience in the development, integration, and operation of wireless solutions in the communications, networking, and IP industries. Prior to joining Sprint Nextel in 2002, Mr. Tabassi was the chief technology and development officer for MobileStar, a provider of wireless broadband access. Prior to MobileStar, Mr. Tabassi was vice president of engineering and operations for SkyTel, a leader in wireless messaging, managing network planning, system design, project management, implementation, maintenance, and operations of SkyTel's Nationwide Traditional and Advanced Messaging Networks. Mr. Tabassi also served as director of engineering services for both Alltel Mobile, the cellular division of ALLTEL Corporation, and for LCC International, one of the world's leading telecommunication consulting firms.

Mr. Tabassi holds two Bachelor of Science degrees, in Electrical Engineering and Mathematics and a Master of Business Administration.

Dr. George Rittenhouse is Vice President of Bell Labs Technology Integration Group. This group has a primary mission of maximizing the impact of Bell Labs research across all of Lucent's products and services. This is accomplished by creating broad research programs and focusing their execution into both current and next-generation products and services. In this role

Gee is closely connected with all of Lucent's business units, interlocking their needs and strategies with Bell Labs' research activities, priorities, and innovations areas.

He has the additional role of Chief Technology Officer for Corporate Strategy and Intellectual Property within Lucent's Strategy group. In this position Gee acts as technology advisor to the CSO as they build Lucent's convergence strategy across a broader market view, which includes government and enterprise opportunities in addition to addressing the service provider markets on a global level.

Prior to heading up the newly formed Technology Integration group, Gee was Vice President, Bell Labs Wireless Research. He received his Bachelor of Science degree in physics from the University of California, Los Angeles in 1986. Then in 1993 received his Master of Science and Ph.D. degrees in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology. He joined Bell Laboratories as a member of technical staff in 1993 where he worked on high-speed circuits using X-ray lithography for optical networking applications. He later joined the Wireless Research Laboratory at Bell Laboratories where his research focused on RF frontend radio architectures and cellular system engineering. In 2003 he was promoted to Vice President Wireless Research and led several projects including MIMO system development, cellular network optimization, wireless IP networks, and fourth generation wireless systems. In 2002 he received the Bell Labs Fellow award. He has numerous publications and patents in the areas of wireless systems and circuits.

Dr. Avneesh Agrawal is senior vice president of the Office of the CTO for QUALCOMM Incorporated. In this capacity, he executes on QUALCOMM’s technical strategy with respect to next-generation wireless technologies, focusing primarily on EV-DO Rev. C and OFDMA. Prior to his current position, Dr. Agrawal co-led QUALCOMM’s Corporate R&D efforts where he researched new technologies in the field of wireless communications. He also led the QUALCOMM Technology and Ventures (QTV) group where he researched outside innovations and endeavors that coincided with QUALCOMM’s philosophy.

Dr. Agrawal began his career at QUALCOMM in 1994 as a computer systems engineer for Globalstar within the QUALCOMM Wireless Systems division. In 1996, he became the modem systems lead for Globalstar. In 1998, he joined the QUALCOMM

CDMA Technologies (QCT) division, where he later became the WCDMA project lead for the first MSM5200 chipset solution. Following an academic leave of absence from 2001-2002, Dr. Agrawal rejoined the company in the QTV group.

Dr. Agrawal holds a bachelor of science degree in computer systems engineering and master of science and Ph.D. degrees in electrical engineering, all from Stanford University.

Dr. Jason Redi, received a BS from Lehigh University, and an MS and PhD from Boston University in 1998. He is currently a Division Scientist at BBN Technologies. He has been the principal investigator on a large number of programs focused on the research, design, and field testing of ad hoc and sensor networks. Recent projects include the first demonstration of ad hoc networks fully utilizing directional antennas, and the first demonstration of an ad hoc network using MIMO technology. Most recently he has been focused on the DARPA Connectionless Networks program which is designing sensor network technology that uses orders of magnitude less energy than current sensor networks.

Dr. Redi is author of over 30 papers and patents in the area of mobile communications. He is the Vice-Chair of ACM SIGMOBILE, General Chair of ACM SenSys, and has been on a wide number of technical program committees including those for MobiCom, MobiHoc, and SECON. He was previously the Editor-in-Chief of ACM Mobile Computing and Communications Review (MC2R), and is on the editorial board of Ad Hoc Networks Journal, Wireless Communications and Networking Journal, and the International Journal of Ad Hoc and Sensor Wireless Networks. Dr. Redi is a senior member of the IEEE, member of ACM, Sigma Xi, Tau Beta Pi, and Order of the Engineer.

Devabhaktuni ("Sri") Srikrishna, is founder and Chief Technology Officer of Tropos Networks. Mr. Devabhaktuni designed and developed Tropos Networks' core intellectual property to build the industry's first wireless mesh architecture for metro-scale networks. Prior to founding Tropos, he led the development of the common network management interface for optical transport and switching products at Sycamore Networks. Areas of expertise include wireless communications, routing in large-scale networks, and parallel computer architecture. Mr. Devabhaktuni holds a BS in Mathematics from the California Institute of Technology and an MS in Electrical Engineering and

Computer Science from the Massachusetts Institute of Technology.

David Cavossa is the executive director of the Satellite Industry Association has been with the organization since 2001, originally as the Director of External Relations. In his current role, he helps coordinate the education, outreach, regulatory and legislative strategies for the commercial satellite industry on a broad range of issues ranging from regulatory, trade, export controls, space transportation, broadband, and the protection, planning, and acquisition of commercial SATCOM by the U.S. Government. As one of the chief advocates for the commercial satellite industry he deals with a wide range of commercial, civil and military space issues on a daily basis.

During his tenure at SIA Mr. Cavossa has re-focused the efforts of the association on educating the public, press, policy-makers, and the government users of commercial satellite services of the critical role satellites play in our national, economic, and homeland security.

Before joining the SIA Mr. Cavossa worked at NASA Headquarters, first in the Office of External Relations and then in the Office of Legislative Affairs where he was exposed to a variety of NASA programs and their impact and perception on the American public. While at NASA he participated in NASA's education and outreach campaign for Congressional Staff as well as staffing the NASA "War Room" during the 2001 NASA Appropriations floor votes in Congress.

David obtained a Masters Degree in Science, Technology and Public Policy from the George Washington University (GWU) Space Policy Institute as a Space Policy Fellow. David also holds a Bachelors Degree in Physics/Astronomy and Political Science from Wheaton College, in Norton MA.

Peter Hadinger is Director, East Coast Engineering and Initiatives at Northrop Grumman Space Technology. He leads the company’s East Coast Engineering organization as well as the Communications Initiatives team in Satcom business development. East Coast Engineering provides critical mission engineering, simulation and program skills in Virginia and Maryland to Northrop Grumman Space Technology while Communications Initiatives develops new lines of civil, commercial and military satcom business including strategic development, regulatory activities, advanced architecture R&D

and management of small programs, including classified and cross-sector activities. Mr. Hadinger is also Vice-Chair of the FCC's WRC-07 Advisory Committee.

Recently, Mr. Hadinger has served as Vice-Chair of the Satellite Task Force for the President's National Security Telecom Advisory Commission, as corporate lead during early government development studies leading to Transformational Communications and as Director of Telecom Services in TRW Ventures. He is past chairman of the Satellite Industry Association and worked in the staff of the U.S. Senate as a Congressional Fellow with the Brookings Institute in Washington, DC.

Joining the company as TRW in 1981, Mr. Hadinger has led engineering teams in developing high technology restricted space programs for the US Government, managed the company's Signal Processing and Synthesis Department and developed the signal processing core of the first Milstar satellites. His technical background is in adaptive signal processing. He has a BSEE from California State Polytechnic University and MBA with emphasis in finance and strategic planning from George Mason University.

Tom Soumas is the President and Chief Executive Officer of Agiosat (Ah-gee-oh-sat) Global Communications.

Headquartered in Burbank, California – Agiosat provides satellite connectivity solutions to government and industry over Company owned proprietary VSAT, Inmarsat and Iridium networks. Mr. Soumas founded this Company in 1997, as SatCom Systems – one of the original licensees for the North American MSAT System. He leads a team of satellite professionals who operate four earth station facilities and 8 sales engineering facilities on three continents. Prior to Agiosat, Mr. Soumas founded Skysite Communications, an American Mobile Satellite Value Added Reseller and one of the original Iridium Service Providers.

His previous background was 20 plus years in the aviation industry, having created regional carrier Gem State Airlines at age 21, then founding and operating aviation management and global logistics enterprise Zephyr Aviation Services - providing among other things, rapid response and recovery services. Having a background in this "response" style business has created a skill set aptly suited to today's rapidly changing satellite services environment and the global events that challenge us on a daily basis.

Gary Hatch has professionally analyzed the satellite communications and electronic media industries since 1981. He is a noted consultant, public speaker, conference moderator, CEO, analyst and investor.

As a recognized industry leader in satellite communications, Mr. Hatch has extensive experience in satellite communications, cable television, broadband, telephone, Internet, and the broadcast entertainment industries with vast experience in the international multimedia entertainment markets. He has been involved throughout his career in domestic and international satellite digital television, voice, Internet and data communications projects.

Mr. Hatch speaks or moderates on a number of different topics and can also represent any position in any panel. His areas of expertise and his recent speaking engagements have focused primarily on the following topics: Cable Versus Satellite, How to Launch a Satellite TV Channel, Secure Content Creation and Management, Channel Finance Modeling, Business Modeling for Media Ventures, Making Money in Media Markets, Next Generation Business Modeling, Teleport Formation, New Market Opportunities, Mobile/Temporary Satellite Communications, Teleport Operators Building Value Add Businesses around their Teleport Infrastructure, Satellite Marketplace Consolidation/Competition, Satellite-Delivered Consumer Services, DTV, DSL, HDTV and Profitable Teleport Niche Services.

Mr. Hatch currently serves as President and CEO of ATCi and its predecessor company ATC, a satellite-engineering firm, from 1986 to the present. In 1997 he negotiated a buyout and became The Company's principal shareholder prior to a recent multi-million-dollar equity investment he brought into ATCi. Mr. Hatch serves on the board of ESI (an Asian satellite direct-to-home entertainment network) and SkyWay Connect a multi media entertainment company.

Prior to joining joining ATCi, Mr. Hatch served as an international executive and engineer for Motorola, an electronics company and Telecommunications Inc./Liberty Media, one of the largest entertainment companies in the world.

A sought-after speaker, fluent in both Spanish and Portuguese, Mr. Hatch has addressed leading international conferences such as NAB, ViaSat World Satellite Conference, ISCe, IBC, ITU,

NATPE, MIPCOM, The Paris DTH World Summit, Cable Labs Conference and Cable Tec Expo, to name just a few.

Jonathan Atkin , a Managing Director in the Equity Research Division, has been with RBC Capital Markets since 2000. Previously, he held equity research positions with Alex Brown, Toronto Dominion, and Ferris Baker Watts, covering wireless, wireline, and Internet service providers. Previously, Jonathan was a senior consultant at BIA Companies, worked in corporate strategy at Daimler-Benz AG, and was a policy analyst with the United States Congress. Jonathan has BS and MS degrees in mechanical engineering from Stanford University and an MBA from Columbia University.

Tom Roderick , is a Principal at Thomas Weisel Partners, where he covers Communications & Applications Software. Mr. Roderick has been with Thomas Weisel Partners since 2002, previously covering the industry as an Associate. Prior to joining TWP, Mr. Roderick was a Director of Business Development with Critical Path, a publicly held messaging software company. Mr. Roderick graduated from the University of Notre Dame with a Bachelor of Business Administration degree and a major in finance.

Dr. Daniel Docter, is a Senior Investment Manager with Intel Capital where he has worked for nearly six years. Daniel covers the southern California region for Intel Capital (San Diego to Santa Barbara), and also supports the worldwide investment activities of the Intel Communications Infrastructure Group, which includes broadband access, enterprise and telecomm network, and semiconductor investments. Daniel received his PhD. from the University of Bradford, England in 1993 in solid-state physics, and spent more than 11 years working on components and systems for optical and RF communications applications at AT&T Bell Labs (6 yrs) and Hughes Research Labs (5 ½ yrs). He has more than 50 journal publications and more than 10 patents to his credit in areas of material science, semiconductor fabrication, optoelectronic integration, and microwave device and circuit applications. Prior to joining Intel Capital, Daniel worked for Merrill Lynch in the Private Wealth Management Group where he advised clients involved in initial public offerings, mergers and acquisitions. Daniel lives in Los Angeles and is active in supporting the southern California entrepreneurial and venture capital communities.

Dr. J. P. Shim, John Grisham Faculty Excellence recipient, is Professor of MIS and Director of the International Business

Strategy Program at Mississippi State University. He received his Ph.D. from University of Nebraska, MBA from Seoul National University, and completed the Harvard Business School Executive Education Program. Professor Shim won MSU's prestigious 2006 Ralph E. Powe Research Excellence Award and received numerous grants and awards, including NSF, DOE, Microsoft, Booz-Allen & Hamilton, U.S. EPA, Mississippi Institution of Higher Learning, Korea Sanhak (school-industry) Foundation, and is a eight-time recipient of outstanding faculty awards. Professor Shim has authored and co-authored over 150 research articles, including Communications of the ACM, IEEE, Journal of AIS, Decision Support Systems, Interfaces, CAIS, Computers & Operations Research, Journal of the Operational Research, and other leading journals. He consulted with Booz-Allen & Hamilton, EPA, and several other ICT companies. He was a keynote speaker at International Conference on Ubiquitous Computing, a frequent speaker at companies and universities in 15 different countries. He currently serves as Senior Editor and Editorial Board Member for numerous journals. His current research interests are DMB, wireless telecommunications, DSS, podcasting, and blog.

Peter Neill, is Senior Vice President of Wireless Markets for Level 3 Communications. a role giving him overall responsibility for Level 3's wireless customer and technology strategies and aligning Level 3's core competencies with the unique needs of the wireless industry. Peter has held a variety of executive positions in the wireless industry and has extraordinary expertise in wireless business operations and finances. Prior to joining Level 3, he was the founder of PT Wireless (a Distributed Antenna System Business), and more recently TowerCloud, providing site infrastructure solutions with Odyssey Telecorp. Before joining Odyssey, he was Vice President, Central Region Operations, for AT&T Wireless/Cingular. He joined McCaw Cellular in 1994 (the predecessor to AT&T Wireless) and became one of its fastest-rising executives. While there, he helped the company grow from under $1 billion to over $30 billion in annual revenue, building networks that supported over 300 billion minutes of use annually, in addition to wireless data services. Before joining McCaw, Peter spent five years with Sprint in sales support and back-office systems production. Mr. Neill holds a BBA from the University of San Diego, with an emphasis in finance and communications.

Edward Valdez, Chief Operating Officer of Parrot Inc., leads Parrot's North American subsidiary. He has 25 years of broad industry experience that spans marketing, sales, product management and executive positions in the telecommunications

and IT industries. He is recognized for the key role he played in the development of Motorola's RAZR™ platform and the launch of this highly acclaimed line of mobile phones which now includes PEBL™ and SLVR™ platforms. Most recently, Edward served as Vice President of Integrated Solutions Marketing at Sun Microsystems. In this role, he was responsible for new enterprise customers and customer-driven solutions for several global vertical markets. He also led Sun's telecommunications customer engagements for top-tier wireless equipment manufacturers, service operators and content providers for the Asia Pacific market. Edward graduated from Massachusetts Institute of Technology (MIT) with a Bachelors degree in electrical engineering, and earned an MBA at the University of Texas in Austin, Texas.

John M. Baker, is the leader of the Wireless Applications Services Practice at IBM Global Services. He is responsible for the successful operations management of the organization. This team develops solutions for businesses across North America using various wireless and mobile technologies. Mr. Baker was one of the founders of an Emerging Business Opportunity (EBO) organization in IBM for wireless in 1999. As part of that organization he helped set the direction that IBM would take in this hyper-growth area. The team that Mr. Baker leads focuses on a number of solutions that include Secure Identity using Smart Cards, Food Safety using RFID and Hand Held devices, Remote Diagnostics using Telematics, and many others. These solutions are created for a customer by extending assets to meet the customer's specific requirements.

Mr. Baker's experience includes a deep technical background in general software engineering, methodology, and object technology. He has acted as engagement manager, architect, and domain modeler on a number of projects that have ranged from real time process control to enterprise level business transformation modeling. Mr. Baker has helped clients in transition management from traditional systems based on centralized platforms running software developed using procedural languages to more advanced distributed systems using object technology. Many of the issues facing the client are not with the new technology but in organizational and process changes.

Mr. Baker has published papers and delivered talks on a number of topics. He received a B.S. in Engineering degree from University of Tennessee, Knoxville in 1973 and an M.S. in

Computer Science degree from University of Tennessee, Knoxville in 1975.

Rory Altman is a Director at AV&Co. a company that he founded with Ed Vilandrie in 2002, after serving as Principal and management team member at CSMG, a telecom strategy firm. Rory and Ed founded AV&Co. to focus exclusively on the communications, media and related technology and investor sectors. Rory's key areas of expertise include competitive dynamics, marketing strategy, converged communications products, mergers and acquisitions, wireless entry, and channel strategy.

At AV&Co., Rory works with clients on a range of issues such as balancing new product development with short-term retention and acquisition investments; selecting the most impactful converged services for investment; perfecting the channel mix amid changing customer needs and increasing product complexity; maintaining value in wireline voice; defending against video bypass; and efficiently managing a diverse competitive landscape by segment, geography and product availability.

Rory holds an M.B.A. from the Kellogg Graduate School of Management at Northwestern University and a B. Eng. in Civil Engineering from McGill University.

Jay Highley, is Chief Executive Officer of Integrated Mobile, Inc. He has over 25 years of executive experience in the telecommunications industry.

Highley was formerly affiliated with Sprint where he held numerous executive positions, including President of Business Sales for the wireless division. In this role Highley led Sprint's direct and indirect business sales organization of over 1200 employees nationwide. He also served as Corporate Vice President of Marketing, where he reshaped the Sprint PCS division's business marketing and sales strategy. His efforts resulted in explosive triple digit customer growth from 1999 through 2002 while at the same time significantly improving the profitability of the business unit. Highley's marketing team was a leader in the development and launch of Sprint PCS's third generation wireless product portfolio. Highley also served on the Sprint Executive Steering Committee and played a lead role in the recent transformation and reorganization of Sprint's business sales and marketing organizations. Before joining Sprint Corporation, Highley was with ComDev, Inc. and 3M Company.

Highley's role as a change agent and visionary in the wireless enterprise marketplace are acknowledged by leading industry analysts and technology forums. He is frequently asked to speak at the largest industry conferences throughout the U.S to share his views and visions of the future. Highley has been quoted in technology and vertical industry publications and has written and contributed to several articles on the subject of wireless technologies and the role it will play in re-shaping how the world does business. He has also been quoted in leading business publications including Business Week, Fortune, Forbes, Wireless Week and the Wall Street Journal.

Highley has served on Advisory Boards at Hewlett Packard and EDF Ventures and is currently a Board Member for the Indiana Chamber of Commerce. Highley has completed graduate studies at Avila University and received a Bachelor of Business Administration Degree from the Kelly School of Business at Indiana University.

Rodger Desai is president, chief executive officer and co-founder of Rave Wireless, Inc. Since co-founding the company in November 2004, Desai has helped build Rave Wireless into the leading provider of mobile phone applications for college students, offering technologies that strengthen campus communities, enhance learning and increase safety at universities.

Prior to starting Rave Wireless, Desai served as co-founder and chief executive officer of Vettro Corporation, a leading enterprise mobile application company. He also served in the United States Agency for International Development where he leveraged his industry expertise to manage mobile technology initiatives for the Department of Defense in Iraq. In addition, while working as an executive at Accenture, he oversaw more than $240 million in projects. Desai began his career at Digital Donations, leading entrepreneurial non-profit ventures for well-known clients, including Grameen Bank.

A graduate of Rensselaer Polytechnic Institute in Troy, N.Y., Desai holds a Bachelor of Science degree in engineering. He is on-leave from the Master of Business Administration program at Harvard Business School.

Vijay Venkateswaran is Vice President of Services Development and Management at MSV where he is responsible for managing

the development of MSV's Next Generation MSS and ATC (Ancillarary Terrestrial Component) network products, services. Prior to joining MSV, Mr. Venkateswaran was Director of New Value Added Product and Services Development for Verizon's Broadband Solutions Group. In this role, he was responsible for creating and executing Verizon's broadband strategy, product development and management for new, digital value-added services. Prior to joining Verizon, Venkateswaran was a Senior Manager at Accenture (formerly Andersen Consulting), serving in the Communications and High Technology Strategy Practice. Mr. Venkateswaran holds a Masters of Business Administration from the Darden School of Business at the University of Virginia, and a Master's degree in Electrical Engineering from the University of Virginia in Charlottesville.

Francois Cosquer is Chief Security Architect for Alcatel North America where he currently coordinates the security effort for Alcatel Strategic Solutions. Francois is acting chair of the ATIS TOPS Council Focus Group on Network Security. He has been speaker and chair for security sessions at USTA Telecom, Supercomm, VON, CTIA Tower Summit, Global Mobile Enterprise, Wireless Industry Congress, Globecom and Broadband Services Forum. Francois came to Ottawa in 2001 to lead Alcatel's Corporate Security Research Center.

Prior to joining Alcatel, he worked in Europe for a number of Research Institutions, Equipment Vendors and Telecom Operators. Francois' 15 years experience covers networking, operating systems, middleware and multimedia applications. He is author of several international publications and co-author of LNCS book on Advances in Distributed Systems. He is Advisory Board Member at the Concordia Institute of Information Systems Engineering and for the European Security & Dependability Task Force. Francois graduated in Electronics and Computing and holds an MSc in Computer Science and Ph.D. in Computer Engineering.

Kevin W. Moncrief is an Ernst and Young Principal leading the West Coast Security and Technology Solutions (STS) Practice. His areas of expertise include Information technology consulting and services. Mr. Moncrief has consulted with major corporate clients in the use of advanced technologies for business applications. He has over 25 years of experience assisting clients with the selection of information systems technology and application solutions in the pharmaceutical, medical device, and chemical industries. He is also a former Information Security Officer for the United States Air Force and Military Policeman for the U.S. Army

National Guard. He has spoken at major conferences such as the 2005 Computer Associates CIO Compliance Conference and 2005 Microsoft Computer Security Summit on computer security issues and concerns. He is currently pursuing his PhD on ERP II.

Brandon Brown is currently the Managing Consultant of Orange County, CA and Nevada for Nexus Integration Systems. In this role, he is ultimately responsible for the design check and implementation of large scale deployments to include traditional TDM, IP Telephony, Network Infrastructure, Network Solution Security and Wireless Communications Architectures. He manages a team of highly skilled engineers, technicians, and project managers and consultants. Mr. Brown was previously engaged as Manager of Network Engineering for eTelecare Global Services where he was responsible for the design and deployment of data and VoIP networks in their Asian Call Center Practice. Mr. Brown is a Veteran of the United States Marine Corps where he graduated from that institutions Computer Science School's Networking Systems Program and participated in many deployments around the world in which he was responsible for the design, deployment and support of both non-secure and secure networks no matter what the environmental conditions. Mr. Brown's industry credentials include the Certified Information Systems Security Professional (CISSP) Cisco Systems Network Professional (CCNP) and Cisco Systems Design Professional (CCDP). Mr. Brown is a graduate of Cal Poly Pomona's MSBA IT-Audit program class of 2003 with accreditation thru the Committee on National Security Systems (CNSS) and holds his Bachelors in CIS from Campbell University in North Carolina.

Robert J. Brown is the Director of Enterprise Security for WesCorp, the nation's largest Corporate Credit Union with $25B in assets and more than 1,000 member/owner credit unions located throughout the United States and Guam. Mr. Brown has overall responsibility for identifying, assessing, and managing risks to WesCorp information and systems. This includes strategic and tactical security planning, policy development, IT risk assessment, and implementation and administration of security technology. He joined WesCorp in 2005 from the Security and Privacy practice at PricewaterhouseCoopers where he was responsible for managing key client projects in the areas of compliance, governance, and risk. He was also a founding Partner of an INC 500 security services firm and was a Senior Consultant for one of the first commercial firewall vendors.

Mr. Brown has more than 10 years' experience in the information

security field and is a regular speaker at conferences and events for organizations such as SANS and ISSA as well as industry-specific groups including the Los Angeles County Bar Association, the Association of Certified Fraud Examiners, Hospitality Financial and Technology Professionals, and others. He holds the Certified Information Systems Security Professional (CISSP) and Certified Information Systems Auditor (CISA) certifications as well as numerous technology-specific credentials.

Dwight Holmes received a BS in electrical engineering from Rutgers University, and a MS is space technology and physics from Johns Hopkins University before joining JPL in 1978. Mr. Holmes will obtain an EMBA from the Drucker School of Management in May of 2007. Since joining JPL, Mr. Holmes has participated in numerous deep space projects, most notably the Voyager outer planets mission. His role on the Voyager flight team as the Radio Science support team leader, and later a similar role for the Galileo mission, brought him in close contact with the operation of Deep Space Network. Most recently, Mr. Holmes has been the DSN Telecommunications and Mission Systems manager for several international cooperative projects, including Mars Express, Venus Express, Rosetta, and Integral. Because of his prior experience, Mr. Holmes has maintained close ties with the Mars Express and Venus Express international radio science teams, enabling the collection of scientifically important data on the atmospheres and surface features of our two closest planetary neighbors.

Jack Wallick is Deputy Director, ITT Operations, for the NASA Deep Space Network. For the past three years he has been responsible for 217 staff performing all functions of Network Engineering, Network Operations and Mission Planning for the NASA Jet Propulsion Laboratory DSN at its Monrovia and Pasadena locations. Prior to his current position he spent two years as Systems Integration Manager for the ITT Spacelift Range System Contract, responsible for 72 staff performing Requirements Analysis, Specification Development, Test & Evaluation, Verification & Validation, Operational Systems Integration and Integrated Program Schedule for launch and test range modernization at Cape Canaveral, FL and Vandenberg AFB, CA. Por twenty years previously he was a United States Air Force officer serving as Program Manager, Space Command and Control, Chief System Engineer and Mission Controller. Mr. Wallick's educational background includes an MS Administration, Central Michigan University; BSEE, Auburn University; and BA Physiology, University of Illinois, Champaign-Urbana.

Joe Statman joined the Jet Propulsion Laboratory (JPL) in Pasadena, California in 1980 and has worked primarily in the Deep Space Network (DSN) in the areas of communications and navigation. He received B.Sc. in Mathematics and Physics from the Hebrew University, Israel in 1972, B.Sc. in Electrical Engineering from the Technion, Israel, in 1977 and the M.Sc. in Electrical Engineering from UCLA in 1978. He is currently the project manager for the Microwave Array Project (aka DSN Array).

Adrian Hooke serves dual roles within the CCSDS, both as Chairman of the CCSDS Engineering Steering Group (CESG) and as Manager of the NASA Data Standards Program. Currently, he is on the staff of the Interplanetary Network Directorate at NASA's Jet Propulsion Laboratory.

From 1966-1969 Adrian worked in US industry as a member of the Kennedy Space Center launch team for the Apollo 9, 10, 11 and 12 Lunar Modules. Joining JPL in 1969, he was a member of the flight control teams for the Mariner 9 and 10 missions to Mars, Venus and Mercury. After working on the Voyager onboard data system and leading the design of the SEASAT end-to-end data system, he became a staff member of the European Space Agency in 1976 to work on the flight operations architecture for the Shuttle-SpaceLab program. Rejoining JPL in 1977, he focused on the development of new technology in the area of standardized space data communications protocols. He is one of the founders of the CCSDS and has led the development of international standards for Packet Telemetry, Packet Telecommand, Advanced Orbiting Systems and the "SCPS" extension of the terrestrial Internet protocol suite into space. He also chairs the US Technical Advisory Group to ISO TC20/SC13, "Space Data and Information Transfer Systems".

Adrian holds a B.Sc. (Honours) in Electronic and Electrical Engineering from the University of Birmingham, England. He is registered as a Chartered Engineer (C.Eng.) with the IEE in London and as a European Engineer (Eur. Ing.) with FEANI in Paris. He has been awarded two NASA Exceptional Service Medals.

Hamid Hemmati received his M.S. in Physics from University of Southern California, and his Ph.D. in Physics Colorado Univ. in 1981. Prior to joining JPL in 1986, he worked at NASA's Goddard Space Flight Center and at NIST (Boulder, CO) as a researcher.

He is now the Supervisor of the JPL Optical Communications Group, which is developing laser-communications technologies and systems for deep space and satellite communications. Dr. Hemmati holds seven patents and has received 33 NASA certificates of appreciation. He has taught optical communications courses at the UCLA Extension, and was a lecturer at George Washington Univ. He is the author of a book on Deep Space Optical Communications and has a second book on Near-Earth Laser Communications under preparation.

Dr. Hemmati's active area of research: Systems engineering for electro-optical systems, particularly for Optical Communications from Space; solid-state laser, particularly pulsed fiber lasers and microchip lasers, flight qualification of optical and electro-optical systems and components; low-cost multi-meter diameter optical ground receiver telescope; active and adaptive optics; novel deformable mirrors; free-space laser communication systems for short range to planetary distances; coherent optical communications; and laser beam acquisition, tracking ad pointing.

Marc Rivett is Director of Voice Operations for NBC Universal. He is responsible for providing seamless voice telecommunications to all NBC Universal businesses including NBC Television, Universal Pictures, Universal Studios Hollywood, CNBC, Telemundo, iVillage, and a host of other related businesses. Primary services include PBX operation and engineering, voice mail services, operator services, audio conferencing, wireless services, call center application design and implementation, broadcast and production support, and VOIP strategy.

Marc has spent over two decades specializing in entertainment business telecommunications, holding Manager- and Director-level positions at A&M Records, PolyGram Inc., Universal Music Group, Vivendi Universal Entertainment, and most recently NBC Universal. Prior to that, he served a brief stint at NASA's Jet Propulsion Laboratory supporting telecommunications requirements for the Deep Space program. Marc began his career in this field as a Telecommunications Operations Specialist in the U.S. Air Force from 1982-1986.

Thierry E. Klein is a Member of Technical Staff in the End to End Wireless Networking Research Department in the Networking and Network Management Center at Bell Laboratories – Alcatel-Lucent in Murray Hill, New Jersey.

From 1990 to 1992, he attended the "Classes Préparatoires" at Lycée Louis-Le-Grand in Paris, France, in preparation for the National Admission Contest for Ecole Centrale. He received both B.S. and M.S. Degrees in Mechanical Engineering from the Université de Nantes in 1993 and 1994, respectively and the Electrical Engineer's Degree in Automatics (ranked first in class) from Ecole Centrale de Nantes in Nantes, France in 1995. From 1995 to 2000, he was a Research Assistant in the Laboratory for Information and Decision Systems (LIDS) at the Massachusetts Institute of Technology, Cambridge, MA working on his doctoral dissertation under the supervision of Prof. R. Gallager. He received the Ph.D. Degree in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology in 2000.

Since then Dr. Klein has been with Bell Laboratories, where his research interests include information and communication theory, mobility management and resource allocation in wireless networks and end-to-end data performance analysis and cross-layer optimizations. More recently he has worked on distributed network architectures and self-configuring networks. He has initiated and is leading a Bell Labs project on portable wireless networks for public safety and emergency response operations.

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