Space Internet Workshop III
June 4 - 6, 2003

Day 1 Agenda
Wednesday June 4, 2003

Tentative Schedule	Title of Presentation	Presenter/Affiliation	Contributing Authors/Affiliation
7:30-9:00	**Morning Refreshments**		
9:00-9:30	Welcome Moderator GRC Director of Space Technical Chair	Theresa Scott (GRC) Rudolph Saldana (GRC) Calvin Ramos (GRC)	
9:30-9:45	**Network Centric Space Communication Architectures: Status and Trends**		
	Manager, Space Communications Project	Kul Bhasin (GRC)	
9:45-12:15	***Session A: IP-based Missions and Testbeds*** ***Panel Chair: Marjory Johnson (NASA Ames Research Center)***		
9:45	Status of the Chips Mission	Will Marchant (UC Berkeley)	R. Parise (Computer Sciences Corporation)
10:00	CHIPSat – A Node on the Internet	Jeff Janicik (SpaceDev, Inc.)	J. Wolff (SpaceDev, Inc.)
10:15	STS-107 Mission – End-to-End IP Space Communication Results	David Israel (GSFC)	J. Rash (GSFC); K. Hogie, E. Criscuolo, R. Parise (Computer Sciences Corporation)
10:30	Shuttle Payload Ground Command and Control – An Experiment Implementation for STS-107	Dave Carek (GRC)	
10:45	**Break**		
11:00	Demonstrating a Realistic IP Mission Prototype	Art Ferrer (GSFC)	J. Rash, N. Goodman, S. Ghazi-Tehrani (GSFC); K. Hogie, F. Hallahan, E. Criscuolo, R.Parise (Computer Sciences Corporation); L. Johnson (Interface Control Systems, Inc.), G. Menke, B. Miller (Ratheon); J. Polk (Vantage Systems, Inc.)
11:15	Mission Planning for Employing Internet Protocol (IP) Communications on the Local Ionospheric Measurements Satellite (LionSat)	Brendan Surrusco (Pennsylvania State University)	R. Siegel, N. O'Conner, C. Croskey, S. Bilén (Pennsylvania State University); J. Soloff (GSFC)
11:30	Software Architecture Options for True Telescience	Joseph Ponyik (GRC)	
11:45	*Session A Panel: Q and A*	*Moderated by Session Chair*	
12:15-1:15	**Lunch**		
1:15-4:45	***Session B: Space Internet Architecture Concepts, Modeling and Simulation*** ***Session Chair: Steve Horan (New Mexico State University)***		
1:15	Internet Ops Concepts for Future Space Missions	Ed Criscuolo (CSC/GSFC)	J. Rash (GSFC); K. Hogie, R. Casasanta (Computer Sciences Corporation)
1:30	Space-based Networks for NASA Missions	William Ivancic (GRC)	
1:45	The Internet: Beyond Earth Orbit	Stephen Braham (Simon Fraser University)	P. Anderson (Simon Fraser University); B. Glass (ARC); P. Lee (NASA Research Park)
2:00	Flexible Communications and Computing Emulator Enabling Human-Robotic Exploration	Marc Seibert (GRC)	D. Pleva, J. McKim (Verizon); M. Cauley, D. Harter, G. Lindamood, I. Lopez (GRC)
2:15	A Framework for Dynamic and Secure Access from Addressable Spacecraft	Michael Hadjitheodosiou (CSHCN, University of Maryland)	H. Zeng (CSHCN, Univ. of Maryland)
2:30	**Break**		
2:45	Architectural Models of Space Networking	Peter Shames (JPL)	T. Yamada (ISAS)
3:00	An Integrated Prototyping and Simulation Architecture for Space Specific Protocol Developments and Verifications	Marc Emmelmann (Fraunhofer Institut FOKUS)	
3:15	An Internet Protocol-Based Software System for Real-Time, Closed-Loop, Multi-Spacecraft Mission Simulation Applications	Everett Cary (Emergent Space Technologies, LLC)	G. Davis, J. Higinbotham (Emergent Space Technologies, LLC); R. Burns (GSFC); K. Hogie, F. Hallahan (Computer Sciences Corporation)
3:30	Performance Evaluation of Space Networks	Loren Clare (JPL)	J. Gao, E. Jennings, C. Okino (JPL)
3:45	Reversing the Balkanization of Store and Forward Networking	Micah Beck (University of Tennessee)	J. Plank, T. Moore (University of Tennessee)
4:00	Transformational Communications Application of Advanced Design, Visualization, and Space Network Modeling and Analysis Techniques using Integrated STK and OPNET Technologies	Dave Payne (OPNET Technologies Inc.)	J. Clark (OPNET Technologies Inc.)
4:15	*Session B Panel: Q and A*	*Moderated by Session Chair*	
4:45	**Day 1 Wrap-up**		
6:00	***Informal Gathering (hors d'oervres and cash bar)***		

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June 4 - 6, 2003

Day 2 Agenda
Thursday June 5, 2003

Tentative Schedule	Title of Presentation	Presenter/Affiliation	Contributing Authors/Affiliation
7:30-8:30	**Morning Refreshments**		
8:30-12:00	***Session C: Standards Development Activities*** ***Session Chair: Andy Dowen (NASA-HQ/Jet Propulsion Laboratory)*** The NASA Standardization Program		
8:45	Interplanetary Internet: An Architectural Framework for Space Internetworking	Adrian Hooke (JPL)	V. Cerf (WorldCom Inc.)
9:00	User Data Services for Internet Based Spacecraft Applications	Joseph Smith (JPL)	C. Hwang (JPL); S. Fowell (SciSys); C. Plummer (Cotectic, Ltd.)
9:15	CCSDS File Delivery Protocol (CFDP)	Tim Ray (GSFC)	
9:30	Internet Protocol Based Standards for Spacecraft Onboard Interfaces	Joseph Smith (JPL)	C. Plummer (Cotectic, Ltd.); P. Plancke (ESA ESTEC); R. Schnurr (GSFC)
9:45	Standard Spacecraft Interfaces and IP Network Architectures: Prototyping Activities at the GSFC	Jane Marquart (GSFC)	R. Schnurr, G. Menke (GSFC)
10:00	Standard Transport and Network Capabilities	Robert Durst (MITRE Corporation)	
10:15	**Break**		
10:30	Next Generation Space Internet: Standards and Implementation	Keith Scott (MITRE Corporation)	
10:45	Secure Space Networking	Howard Weiss (Sparta, Inc.)	
11:00	Delay Tolerant Networking	Scott Burleigh (JPL)	
11:15	The CCSDS Link Layer Protocol Suite	Greg Kazz (JPL)	
11:30	*Session C Panel: Q and A*		
12:00-1:15	**Lunch**		
1:15-4:15	***Session D: Protocol Development & Characterization*** ***Session Chair: Loren Clare (Jet Propulsion Laboratory)***		
1:15	Dynamic Transport Enhancement for Time Elastic Traffic with Transientware	Javed Khan (KSU)	R. Zaghal, Q. Gu (KSU)
1:30	Fast TCP Kernel: Theory and Experiments	Cheng Jin (California Institute of Technology)	D. Wei , S. Low (California Institute of Technology)
1:45	New Techniques for Making TCP Robust to Corruption-Based Loss	Wesley Eddy (Ohio University)	M. Allman (BBN/GRC); S. Ostermann (Ohio University)
2:00	Progress Toward Achieving Interoperability in Satellite Control Networks	Carl Sunshine (The Aerospace Corporation)	
2:15	Simulation of TCP with Swift Start	Joseph Ishac (GRC)	
2:30	**Break**		
2:45	TCP-Planet: A Reliable Transport Protocol for InterPlaNetary Internet	Ian Akyildiz, (Georgia Institute of Technology)	Ö. Akan, J. Fang (Georgia Institute of Technology)
3:00	RCP-Planet: A Rate Control Protocol for Multimedia Traffic in the InterPlaNetary Internet	Ian Akyildiz (Georgia Institute of Technology)	J. Fang (Georgia Institute of Technology)
3:15	Evaluation of the Digital Fountain Process for Data Delivery in Space-based Communications	Robert Dimond (Verizon FNS/GRC)	
3:30	Ad hoc Networks for Space and Surface Systems	Daniel Oldham (GRC)	
3:45	*Session D Panel: Q and A*		
4:15	**Day 2 Wrap-up**		
4:30-6:30	Dinner (Enjoy Cleveland's Restaurants!)		
6:30-8:00	***TBD: Birds of Feather (BOF) Session(s)***		

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June 4 - 6, 2003

Day 3 Agenda
Friday June 6, 2003

Tentative Schedule	Title of Presentation	Presenter/Affiliation	Contributing Authors/Affiliation
7:30-8:30	**Morning Refreshments**		
8:30-9:00	***Birds of Feather Out-briefs***		
	BOF A		
	BOF B		
9:00-11:45	***Session E: Space Networking Technologies and Services*** ***Session Chair: Calvin Ramos (NASA Glenn Research Center)***		
9:00	Space Internet – What's Missing	Keith Hogie (Computer Sciences Corporation/GSFC)	J. Rash (GSFC); E. Criscuolo, R. Parise (Computer Sciences Corporation)
9:15	Network Hardware for LEO Spacecraft	Jim Joseph (Spectrum Astro, Inc.)	J. Lazbin (Spectrum Astro, Inc.)
9:30	Mobile Routing Technologies for Space	TBD/CISCO	
9:45	Conceptual Design of an IP-based Satellite bus Using Internet Technologies	Rich Slywczak (GRC)	
10:00	Internetworking in the Transformational Communications Architecture	Jeremy Mineweaser (MILSATCOM JPO)	
10:15	**Break**		
10:30	IP Satellite Network	Kathy Newtson (New Mexico State University)	
10:45	NASA TDRSS S-Band IP Service Developments	David Israel (GSFC)	J. Soloff (GSFC)
11:00	LEO to Ground Communications for Earth Science Applications	Frank Chethik (Lockheed Martin)	
11:15	*Session E: Q and A*		
11:45	**Workshop Wrap-up**		