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> **ISTEC** Information Science & Technology Center

The 4th Biennial Future Visions Symposium

Thursday, April 12, 2012 8:30 a.m. - 3:30 p.m. Lory Student Center, Colorado State University

FutureVisions Symposium Objective – Provide a look into the near future (2012-2022) of Information and Communication Technology (ICT) to give CSU students and other conference attendees a preview of trends in cutting-edge and high-growth areas in ICT and related fields.

- 8:30 8:45 a.m. Welcome Reception Coffee, tea
- 8:45 9:00 a.m. Welcome Patrick Burns, Vice President for Information Technology Program Introduction – Pete Seel, JTC
- 9:00 10:00 a.m. Opening Plenary Session "The Future of Direct Brain-Computer Interface"

Chuck Anderson, CSU Computer Science Department "Can Augmented Reality Be Our Future Mobile Medium"

Frank Biocca, Syracuse University M.I.N.D. Lab

"The Future of Computer-Assisted Visualization" Bruce Blaho, Hewlett Packard Fellow

10:10 – 11:10 a.m. Session 1

Visualization Futures

"3-D Modeling for Everyone" - Aidan Chopra, Google

"Geographic Visioning" – with a demonstration of Google Liquid Galaxy in widescreen dimensions - Melinda Laituri, CSU

"The Pixar Way and the Future of Animation (or as much as I can say without getting fired)" - Duncan Ramsay, Pixar

Future of the Cloud

"The Cloud of Things & Things in the Cloud" - Shrideep Pallickara, CSU "The Ever-Changing Cloud Experience: Why the UX will be Constantly Shape-Shifting" - Daniel Russell, Google

Digital Communication Futures

"The Future of Unified Communication Networks" - Rusty Searle, Hewlett Packard "Scaling the WAN" - Nasser El-Aawar, Level 3 "Cognitive Wireless Networking" - J. Rockey Luo, CSU

North Ballroom

Room 230

East Ballroom

East Ballroom

11:20 – 12:20 p.m. Session 2

Digital Game Futures

"Games as a Mechanism for Gathering User Sentiments in a Social, Mobile World" – Vasa Dasan, WayIn "The Future of Using Video Games to Learn About Human Behavior" - Rosa Mikeal Martey, CSU "Mobile Learning is the Future" – James Folkestad, CSU

Future of Cyber-Security

"Re-thinking Cyber Security and Other Failed Endeavors" - Steve Gosnell, MITRE "Evolving Security Policy to Meet the Complexities of Tomorrow" – Dan Thomsen, SIFT "Significant Chains of Trust" – Bill Worley, Secure 64 "Secure Personal Data Servers: Restoring User Control Over Own Information" – Indrajit Ray, CSU

Social Network Futures

"Social Media and News Overabundance: How Journalist Information Filters Will Be More Vital Than Ever" - Dan Petty, *The Denver Post*

"Connecting and Communicating: Future Perspectives on Social Networks" - Elizabeth A. Williams, CSU "Social Media and Marketing: Creepy or Cool?" - Joe Cannon, CSU

GIS – GPS Futures

"Spatial Analytics" - John Calkins, Esri "GIS Gets Personal" - Michael E. Goss, Google, "GPS-GIS applications in Agriculture: Precision Agriculture" - Raj Khosla, CSU

12:30 – 1:30 p.m. Speakers and Sponsors Luncheon (by invitation with ticket) West Ballroom

1:30 – 2:40 p.m. Closing Plenary Session

"A Conversation on the Future of Artificial Intelligence" David Ferrucci, IBM - Hosted by Bruce Draper, Computer Science, CSU

> "Being Smart Enough to Ask the Right Questions" John Calkins, Esri

"The Future of Intelligent Devices" David Pogue, The New York Times

"Why You Still Need to Think When You Search"

Dan Russell, Google

2:40 – 3:30 PM Dessert Session - sponsored by Scott and Janette Evans West Ballroom An opportunity for students to meet informally over dessert with session speakers and ISTeC Industrial Advisory Council company representatives.

The FutureVisions Symposium is co-sponsored by the **Information Science and Technology Center (ISTeC)** at Colorado State University and members of its Industrial Advisory Council: Agilent, Cablelabs, Covidien, Hewlett-Packard, Intel, Kroll Factual Data, Level 3, Microsoft, Otterbox, and Scott and Janette Evans.

Center/East Ballroom

North Ballroom

East Ballroom

Room 230

Room 216

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The *FutureVisions Symposium* is a biennial project of ISTeC – the Information Science and Technology Center at Colorado State University. The planning is completed mostly by faculty and staff volunteers of ISTeC's Education Advisory Committee. They have invested hundreds of hours over the past year in planning and coordinating this event that directly benefits our students and faculty.

Lauren Kalash – convener for the GIS-GPS Futures session	Nancy Hunter – convener for the Cyber-Security and The Cloud tracks	
J. Rockey Luo – convener for the Digital Communication and Social Network tracks	Pete Seel – FutureVisions chair	
Jim Bieman	Edwin Chong	
Cathy Cranston	Michael De Miranda	
David Gilkey	Karen Kaminski	
Sophia Linn	Iuliana Oprea	
Sudeep Paschicha	John Plotnicki	
Candace Ryder	Jeff Bullington	
Steven Fassnacht – EAC co-chair	Jim Folkestad – EAC co-chair	

The Director of ISTeC is Dr. H.J. Siegel – our fearless leader

Administrative support was provided by the indomitable **MaryAnn Stroub**, without whose crucial support this event could not have been held.

Video conference support provided by the talented **Tony DeNardo** of Academic Computing and Networking and A-V support in the Lory Student Center was supervised by **Jason Rogien** and his crew.

Thanks to Lory Student Center staff for providing the room assignments, catering, and beverage service.

Video recording of the sessions was coordinated by **Deric Swanson** of Journalism and Technical Communication with his crew of **Elly Collins**, **Kaitie Huss**, **Casey Nimmer**, and **Adam Walsh**.

The FutureVisions poster was designed by **Carl Kichinko** of CSU's Communication and Creative Services Department. Press relations were managed by **Emily Wilmsen** of CSU's Public Relations Office.

Thanks to our sponsors and the many helping hands who made this symposium possible.

	Opening Plenary Session – Center/East Ballroom, Lory Student Center, CSU				
8:45-10:00	The Future of Human Computer Interface with Chuck Anderson of Computer Science; Frank Biocca of Syracuse University's M.I.N.D. Lab (V); and Bruce Blaho, HP Research Fellow.				
10:00-10:10	Coffee Break North Ballroom, Duhesa Lounge				
	Track A	Track B	Track C	Track D	
	North Ballroom	East Ballroom	LSC room 230	LSC room 216	
Session 1	Visualization Futures	Future of The Cloud	Digital Communication		
10:10-11:10			Futures		
	Aidan Chopra – Google	Shrideep Pallickara – CS	Rusty Searle – HP		
	Melinda Laituri – FRWS	Dan Russell Google	Nasser El-Aawar – Level 3		
	Duncan Ramsay – Pixar		Rockey Luo – ECE		
11:10-11:20	Coffee Break North Ballroom, Duhesa Lounge				
Session 2 11:20-12:20	Digital Game Futures	Future of Cyber-Security	Social Network Futures	GIS-GPS Futures	
	Vasa Dasan – Wayin	Steve Gosnell – MITRE	Dan Petty – Denver Post	Mike Goss – Google	
	Rosa Martey – JTC	Dan Thomsen – SIFT	Elizabeth Williams – CommSt	Raj Khosla – CAS	
	Jim Folkestad – SoE	Bill Worley – Secure 64	Joseph Cannon – CoB Mkt	John Calkins – Esri	
		Indrajit Ray – CS			
12:20-12:30	Short Break				
12:30-1:30	Speaker's Lunch by invitation (tickets required) – West Ballroom				
	Closing Plenary Session – Center/East Ballroom, LSC				
1:30-2:40	The Future of Intelligence Amplification with David Ferrucci, IBM (V); John Calkins, Esri;				
	New York Times technology writer David Pogue (V); and Dan Russell, Google				
	Dessert Session – West Ballroom				
2:40-3:30					

V – appearing via video conference.

Lory Student Center



Opening Plenary Session

LSC East Ballroom

"The Future of Direct Brain-Computer Interface"



Chuck Anderson has been a faculty member in the Department of Computer Science at CSU since 1991. He teaches courses in programming, problem solving, web application development, artificial intelligence, and machine learning. His research involves machine learning algorithms for discovering patterns in data for purposes of modeling, prediction, classification, and adaptive control. Application areas include problems in computational neuroscience, biomedical signal processing, brain-computer interfaces, and reinforcement learning for control of

complex systems such as wind turbines. He is a member of two interdisciplinary programs at CSU, the Molecular, Cellular and Integrated Neuroscience (MCIN) program and the School of Biomedical Engineering. He works closely with faculty and students in the departments of mathematics, biomedical sciences, psychology, electrical and computer engineering, occupational therapy, and atmospheric sciences.

"Can Augmented Reality Be Our Future Mobile Medium?"



Frank Biocca is the Newhouse Endowed Chaired Professor of Communication with appointments in Computer Science and Information Studies at Syracuse University and is also Professor of Interaction Science at Sungkyunkwan University in Korea. He directs the Media Interface and Network Design (M.I.N.D.) Labs, an international, multiuniversity, human-computer interaction and communication lab. Dr. Biocca is interested in how mind and media can be coupled to extend human cognition and enhance human performance. His current projects include research on mobile, collaborative, augmented reality systems, the

design of health communication interactive environments, and research on psychology of presence in virtual and game environments.

"The Future of Computer-Assisted Visualization"



Bruce Blaho is an HP Fellow and Chief Technologist for their Commercial Solutions business. He works closely with HP Labs and other product divisions to spur research and harvests new intellectual property and technologies that drive innovation and the state-of-the-art in the industry. Bruce has worked in many different technical areas at HP, including human-computer interfaces, 3D computer graphics, client virtualization, high performance professional displays, and robotics. He is a graduate of The Ohio State University where he earned his B.S. in Electrical

Engineering in 1983 and an M.S. in Electrical Engineering in 1985, doing his thesis research in robotics.

Session 1, Track A – Visualization Futures LSC North Ballroom

"3-D Modeling for Everyone"



Aidan Chopra works at Google as the Product Evangelist for Google SketchUp, a 3D modeling tool used by design professionals, engineers and 3D enthusiasts all over the world. His most recent book is "Google SketchUp 7 For Dummies," published this year by Wiley. Aidan holds an undergraduate degree from NSCAD University in Halifax, and a Master of Architecture degree from Rice University in Houston. At Google, his job is to be an advocate for the everyday communication of concepts, ideas and

places in 3D. Aidan is based in Boulder, Colorado, even though he is what many would consider to be the diametric opposite of a world-class endurance athlete.

"Geographic Visioning" – with a demonstration of Google Liquid Galaxy in widescreen dimensions



Melinda Laituri received her PhD from the University of Arizona, Tucson, Arizona in geography. Her dissertation research focused on environmental equity and groundwater resources in the American Southwest and the US-Mexico border. Her other degrees are in Hydrology (M.A., California State University, 1985) and Geography (B.A., University of California, Berkeley, 1979). Dr. Laituri accepted a post-doc at the University of Auckland, New Zealand where she then served as a lecturer in a tenure track position for

three years. She is a Fulbright Scholar and a Rachel Carson Fellow. Dr. Laituri is the Director of the Geospatial Centroid @ CSU (gis.colostate.edu) that provides information about GIS activities, education, and outreach at CSU and in Colorado



"The Pixar Way and the Future of Animation" (or as much as I can say without getting fired)"

Duncan Ramsay, 2007 Journalism Technical Communication graduate, is a Ft. Collins native and fan of New Belgium beer. After working at Walt Disney World in 2008, he moved to the San Francisco Bay Area to work on the feature film 'Toy Story 3'. He currently lives in Oakland, California and is the art production coordinator for Pixar's 2013 film 'Monsters University'. While not at work, he can be found celebrating California's snowless winters and eating Nutella.

Session 1, Track B – Future of the Cloud LSC East Ballroom

"The Cloud of Things & Things in the Cloud"

Shrideep Pallickara is an Assistant Professor in the Department of Computer Science at CSU. His research interests are in the area of large-scale distributed systems and stream processing. He is the creator of two systems: Granules which is a distributed stream processing system, and the NaradaBrokering system for the scalable dissemination of voluminous streams. These have been harnessed by systems in domains such as brain computer interfaces, earthquake science, high energy physics, environmental and ecological monitoring, epidemiological modeling, defense applications, geosciences, GIS, and commercial internet conferencing systems.

"The Ever-Changing Cloud Experience: Why the User Experience will be Constantly Shape-Shifting"



Daniel Russell, Google, is the Über Tech Lead for Search Quality and User Happiness in Mountain View. He earned his PhD in computer science, specializing in Artificial Intelligence until he realized that magnifying human intelligence was his real passion. Twenty years ago he foreswore AI in favor of HI, and enjoys teaching, learning, running and music, preferably all in one day.

Session 1, Track C – Digital Communication Futures LSC Room 230

"The Future of Unified Communication Networks"



Rusty Searle attended CSU and earned an undergraduate degree in Organization Management and a master's degree in Computer Information Systems. After graduation, Rusty interned at Agilent Technologies where he later was hired as a member of the enterprise architecture team for 5 years. He then transitioned to HP and helped drive the application retirement program followed by a transition into the planning area. In his current position, he serves as chief of staff and lead planner for the VP of the IT department

under the Imaging and Printing group (IPG) at HP. One of his many roles includes managing the internship program for the group. He also actively recruits at the CSU campus and participates on the ISTeC and Computer Information Systems advisory committees.

"Scaling the WAN (Wide Area Network)"



Nasser E-Aawar is a Principal Network Architect at Level 3 Communications in Broomfield, Colorado, where he manages the Level 3 network architecture team. Mr. El-Aawar and his team are responsible for setting and streamlining Level 3's technology roadmap for Infrastructure, Transport, IP, Voice and Video services, as well integration planning for acquired companies networks. With Level 3 for 14 years, Nasser has held a number of positions within the company including Principal Architect Data services; Director of Data

Architecture, Engineering and Test; Principle Architect; Access engineering Manager and Senior Engineer. Nasser has over 20 years of experience within the Internet and telecommunications industry. Previously, he worked for the Merit Networks, ANS and AOL

"Cognitive Wireless Networking"



J. Rockey Luo is an Assistant Professor in the Electrical and Computer Engineering Department at Colorado State University. His research focuses on cross-layer design of wireless communication networks, with an emphasis on the bottom several layers. His general areas of research interests include wireless communications, wireless networks, information theory and signal processing.

Session 2, Track A – Digital Game Futures LSC North Ballroom

"Games as a Mechanism for Gathering User Sentiments in a Social, Mobile World"



Vasa Dasan, is the CTO for WayIn. He is a recognized expert in web architecture and cloud technology. Prior to joining WayIn, Vasa was a Sun Distinguished Engineer and served as Chief Technologist for Sun's Cloud Computing practice, responsible for worldwide business development with enterprises, telcos, and Internet service providers. Prior to that, Vasa was the Chief Technologist for Sun's \$5.1 billion Services business unit, where he led the effort to automate Sun's service technologies over 10 years. He also

helped lead Sun's software division, developing core Solaris technologies such as network file systems, kernel and cluster software. Before joining Sun in 1992, Vasa held key engineering posts at Intergraph and Hewlett Packard.

"The Future of Using Video Games to Learn About Human Behavior"



Rosa Mikeal Martey is an Assistant Professor in the department of Journalism & Technical Communication at Colorado State University. Dr. Martey's research focuses on social interaction in online contexts, from virtual worlds and games to Facebook and online information. She conducted a 3year, federally funded study examining communication and behavior in custom games built in Second Life and in World of Warcraft. Dr. Martey is also part of a multidisciplinary team researching and developing a video

game to train people to reduce their reliance on specific cognitive biases. Prior to her graduate work, she did corporate and community research in advertising and non-profit organizations, as well as strategic planning and website design. Recent publications can be found in New Media & Society, Popular Communication, the International Journal of Communication, and Information, Communication & Society.

"Mobile Learning is the Future"



James Folkestad is an associate professor in the School of Education at CSU. Dr. Folkestad is currently teaching educational technology courses within the teacher licensure program and is conducting research on creativity, collaboration, and digital media and learning.

Session 2, Track B – Future of Cyber-Security LSC East Ballroom

"Re-thinking Cyber Security and Other Failed Endeavors"



Steve Gosnell is a Senior Principal Information Systems Engineer within the MITRE Corporation's Center for Intelligence Information Systems. He currently serves as MITRE's Cyber Chief Engineer supporting Air Force Space Command. Steve has over 16 years of experience in information technologies, information systems management, systems integration, systems engineering, security engineering and enterprise security management.

"Evolving Security Policy to Meet the Complexities of Tomorrow"



Dan Thomsen's twenty-five year career focus on creating high assurance technology. Mr. Thomsen has worked on the LOCK high assurance platform, multi-level secure databases, firewalls and policy management. His most recent work includes looking at keystroke dynamics for user authentication and identification. Mr. Thomsen has been the conference and program chair for the Annual Computer Security Applications Conference, and well as numerous other computer security program

committees. He is a senior member of IEEE.

"Significant Chains of Trust"



Bill Worley is the principal inventor of SourceT, for which the company holds U.S. and international patents. He retired from Hewlett-Packard in 2002 as HP Fellow, Distinguished Contributor, and Chief Scientist. At HP, Bill was the technical director and principal architect of both the PA-RISC and PA-Wide Word (the basis for Itanium) processor architectures. Subsequently, Bill conceived and led research programs on secure system architectures. He was instrumental in establishing HP's trusted systems

strategy and program. Prior to HP, Bill spent 13 years at IBM in architecture, research, and technology positions. He is credited with 16 patents. Bill holds M.S. degrees from the University of Chicago in Physics and in Information Science and a Ph.D. degree from Cornell University in Computer Science.

"Secure Personal Data Servers - Restoring User Control Over Own Information"



Indrajit Ray is an Associate Professor in the Computer Science Department at CSU. His main research interests are in the areas of security models and protocols, privacy, database and network security and computer forensics. Dr. Ray's research has been supported by the U.S. National Science Foundation, the U.S. Federal Aviation Administration, U.S. Air Force Research Laboratory and the U.S. Air Force Office of Scientific Research. He currently serves / has served on the editorial board of several journals, on the program committees of international conferences, and on many

proposal review panels. He was one of the founding member and the first Chair of the IFIP TC-11 Working Group 11.9 on Digital Forensics.

Session 2, Track C – Social Network Futures LSC Room 230

"Social Media and News Overabundance: How Journalist Information Filters Will Be More Vital Than Ever"

Dan Petty is The Denver Post's social media editor, responsible for creating conversation and community around Denver Post news. Like many of his peers, he signed up for on Facebook in 2005 while in college and somehow turned all of that procrastinating on homework into a job working with Facebook (and other social networks). He trains, teaches and evangelizes social media and digital storytelling tools within the newsroom, oversees the institution's main social media accounts and coordinates strategy. He also oversees social media efforts for the central region of Digital First Media, which oversees operations for The Post and dozens of other newspapers. He continues to practice what's otherwise known as "traditional journalism" -- writing, photography and video. He graduated in 2009 from the University of Richmond, where he majored in journalism and biology.

"Connecting and Communicating: Future Perspectives on Social Networks"



Elizabeth A. Williams (Ph.D., Purdue University) is an Assistant Professor in the Department of Communication Studies. Her research interests include identification and leadership in a variety of organizational contexts, including distributed teams, multiteam systems, organizations experiencing change, and health organizations. Her work has been published in Journal of Communication, Journal of Health Communication, Health Communication, and various edited volumes. She has conducted communication workshops in a variety of corporate and academic settings and has been recognized for

excellence in teaching.

"Social Media and Marketing: Creepy or Cool?"



Joe Cannon is a fount of practical marketing knowledge. He creates, procures, and disseminates practical marketing knowledge to marketing students, teachers, and managers everywhere. Joe is a professor of marketing at Colorado State University. He authors two marketing text books, *Basic Marketing* and *Essentials of Marketing*. He writes for and manages two social media families, *Teach the 4 Ps* and *Learn the 4 Ps* which include blogs, a Facebook site, Twitter feeds and Pinterest boards.

Session 2, Track D – GIS – GPS Futures LSC Room 216

"Spatial Analytics"



John Calkins has been with ESRI for 22 years and focuses on special projects that cut across the diversity of GIS applications and solutions around the world. Throughout the years he has focused on natural resources (forestry, petroleum), government, defense, intelligence, and science solutions. In 2000-01, he also consulted to CBS for the television series "The District" which was the first ever prime time television series utilizing a geographic information system. Other notable projects include establishing GIS in Antarctica at McMurdo Station and producing ESRI's

User Conference plenary sessions. Prior to joining ESRI, Mr. Calkins worked for Tenneco Oil Exploration and Production as a geological engineer.

"GIS Gets Personal"



Michael E. Goss works as a Software Engineer at Google, putting 3D buildings into Google Maps and Google Earth. Since joining Google in 2005, he's also worked on geo-modeling features in Google SketchUp. Previous GIS-related projects include research as a computer science faculty member at Colorado State University, development of mapping and flight simulation software at a small start-up company, Merit Technology, and several years at E-Systems. Mike also spent ten years as a researcher at

HP Labs. Mike has a Ph.D. and a master's in computer science from the University of Texas at Dallas, and a bachelor's in computer science from Michigan State University. Before he found out about Google Earth, Mike was known to sometimes spend long periods of time browsing the National Geographic Atlas just for fun.

"GPS-GIS applications in Agriculture: Precision Agriculture"



Raj Khosla is the Professor of Precision Agriculture. In addition, Dr. Khosla is a Visiting Professor in Saudi Arabia and China. In 2011, Dr. Khosla was appointed by NASA to the US "*Presidential Advisory Committee on Positioning, Navigation and Timing*" for a period of two years. Dr. Khosla has established a multi-disciplinary, nationally and internationally recognized, comprehensive research, teaching and extension program in the area of Precision Nutrient Management at Colorado State University.

Closing Plenary Session

LSC Center/East Ballroom

"A Conversation on the Future of Artificial Intelligence" -- Hosted by Bruce Draper -- CSU Computer Science

David Ferrucci is a Research Staff Member and leader of the Semantic Analysis and Integration Department at IBM's T.J. Watson's Research Center. His team of 25 researchers focuses on developing technologies for discovering knowledge in natural language and leveraging those technologies in a variety of intelligent search, data analytics, and knowledge management solutions. In 2007, Dr. Ferrucci began exploring the feasibility of designing a computer system that can rival human champions at the game of *Jeopardy!*. Dubbed DeepQA, the project focused on advancing natural language question answering using massively parallel evidence-based computing. After winning support, Ferrucci has set and driven the technical agenda for *Jeopardy!* The IBM Challenge.

"Being Smart Enough to Ask the Right Questions" John Calkins

"The Future of Intelligent Devices"



David Pogue writes the tech column for the New York Times every week, and in Scientific American every month. On TV, you may know him from his funny tech videos on CNBC every Thursday, or his stories for CBS Sunday Morning, or the NOVA miniseries he hosted on PBS, called "Making Stuff." With over 3 million books in print, David is one of the world's bestselling how-to authors. He wrote or co-wrote seven books in the "for Dummies" series (including Macs, Magic, Opera, and Classical Music); in 1999, he launched his own series of complete, funny computer books called the

Missing Manual series, which now includes 120 titles.

David graduated summa cum laude from Yale in 1985, with distinction in Music, and he spent ten years conducting and arranging Broadway musicals in New York. He's won an Emmy, a Loeb award for journalism, and an honorary doctorate in music. He's been profiled on "48 Hours" and "60 Minutes." He lives in Connecticut with his three children.

"Why You Still Need to Think When You Search" Dan Russell