Air Travel at the Edge of Chaos: How we got here and What to do about it

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Abstract
This talk will describe how we have arrived at an air transportation system that is running at the edge of chaos. A new passenger based Quality of Service (QOS) Metric is introduced that more fully describes today’s network chaotic behavior. The much discussed NextGen air traffic management system will have little effect on either increasing the network capacity or decreasing the current poor Quality of Service. A real Passenger’s Bill of Rights, similar to the European model, will only be feasible when the current federal regulatory problems are solved. The nation needs a system network management tool to spread the network load over more airport hubs to allow operations to work at a safe and predictable rate. Airport arrival time slot auctions are proposed as a new nation-wide network load balancing tool that can both eliminate most flight delays and cancellations. Once the network is load balanced, with airlines using larger aircraft with feasible flight schedule frequencies, the NextGen system technology can be used to increase aircraft fuel efficiency and either further increase system capacity or increase system safety. The apparent paradox of how a new government regulation, leading to fewer flights at major US airports, will produce greater predictable and safer air transportation capacity will be explained. If this problem is not addressed soon, the potential economic impact to the nation’s leisure industry will be discussed. The growth in Very Light Jet (VLJ) affordable air taxi service for business travel will be explored. Donohue’s 3 Rules of Air Travel will be explained.

Dr. George L. Donohue is currently a Professor of Systems Engineering and Operations Research in the Volgenau School of Information Technology and Engineering (since February, 2000), and founding Director of the Center for Air Transportation Systems Research at George Mason University. He was formerly Associate Administrator of Research and Acquisition in the Federal Aviation Administration (1994-98) and has broad experience in managing major research and technology projects in both the public and private sector. Before joining the FAA, Donohue served as Vice President of the RAND Corporation (1989-94), in Santa Monica, California, and was previously Director of the Office of Aerospace and Strategic Technology at the Defense Advanced Research Projects Agency (1988-89). He has held other technical and technical management positions at Dynamics Technology, Inc., the US Navy and NASA. Dr. Donohue has received numerous awards such as the Secretary of Defense Meritorious Civilian Service Medal in 1977, the Air Traffic Control Association Clifford Burton Memorial Award in 1998 and the Embry Riddle Aeronautical University Pinnacle Award for Individual Contribution to the art and science of Air Traffic Control in 2007. He has mentored over 9 PhD students, published over 60 reports and articles, and is currently publishing his new book “Terminal Chaos: Why U.S. Air Travel is Broken and How We can Fix It”, co-authored with Dr. Russell Shaver (AIAA Press, spring 2008).

An informal coffee & cookie reception will be held prior to the lecture at 2:30 p.m. in the John L. Rich Conference Room, ARMS 3326