GSAW2007 Tutorial H:

Open Source Software Methods in Ground Systems

**Length:** Half Day

**Overview:**

Open Source and Standards, Emerging ground system technologies, Ground Systems supporting major space programs have software baselines that consist of several million lines of code. Historically, these systems are delivered years late, over budget and with less functionality that originally planned. Clearly, alternatives to the current acquisition approach need investigation.

In this tutorial, we will explain the alternative of Open Source Software (OSS) and the software development methods evolved by OSS developers. We will discuss what OSS is and is not, why ground system architects need to be aware of it, identify low overhead software development techniques, and how they can be applied to ground systems projects. In addition, we will explain, review the progress of, and present initial results from an Aerospace Corporation enterprise-level open source effort – “Aerosource,” recently funded by an Aerospace internal Innovation Grant.

Open Source Software is software, which allows users to access, modify, and redistribute the source code. OSS may be used by itself or part of a larger product. Many OSS products such as the Linux operating system or the Apache web server are used directly. Some are incorporated into commercial software. For example OpenSSH ships with MacOS X and Solaris. OSS products are also incorporated into commercial hardware such as routers and storage devices. Juniper routers run FreeBSD as do some NetApp network attached storage products.

**Instructors:**

Michael Gorlick, Brooks Davis, Sam Gasster, Jorge Seidel, Mark Thomas, Stuart Kerr, The Aerospace Corporation

**Biography:**

Bios for presenting instructors:

Brooks Davis - Brooks Davis is a Senior Member of Technical Staff in the High Performance Computing Section of the Computer Systems Research Department at the Aerospace Corporation. He earned a Bachelors Degree in Computer Science from Harvey Mudd College in 1998. His computing interests include high performance computing, networking, security, mobility, and open source software. He has been a FreeBSD committer since 2001 and was elected to the FreeBSD Core Team in 2006. He also contributes to the Sun Grid Engine and Ganglia projects.
Sam Gasster - Dr. Gasster received his BS degree in mathematics from MIT (1977) and a Ph.D. in Physics (1985) from the University of California, Berkeley. Dr. Gasster has worked the fields of Earth remote sensing and Space Systems Engineering since 1985 while employed at the Aerospace Corporation and TRW. He has supported major programs such as the Defense Meteorological Satellite Program (DMSP) and the National Polar-orbiting Operational Environmental Satellite System (NPOESS). Dr. Gasster's research interests include radiative transfer modeling, remote sensing simulations, systems and software engineering, high performance distributed computing, sensor webs, and quantum computing. He has taught remote sensing and computer courses at UCLA Extension and The Aerospace Institute. Dr. Gasster is currently a Sensor Engineering Specialist in the Computer Systems Research Department, The Aerospace Corporation.

Jorge Seidel - Jorge Seidel received his BSEE from the University of Utah and an MSEE (Computer Engineering) from USC. He did PhD work at USC on parameterized module libraries for synthesis and was hired by Xilinx to complete that work as part of their synthesis products. Mr. Seidel has done work in neural networks, HDL synthesis, hardware modeling and simulation. He has taught the Introduction to Digital Logic and Computer Systems Organization classes in the EE Systems Department at The University of Southern California. Mr. Seidel is currently an Engineering Manager in the Computer Systems Research Department at The Aerospace Corporation.

Mark Thomas - Mark Thomas has been working at the Aerospace Corporation as an Associate Member of the Technical Staff since 2005. Prior to joining Aerospace, he graduated with a Bachelors Degree in Computer Science from UC Berkeley. His interests include high performance and grid computing, human-computer interaction, and open source software.

Who Should Attend: