Title:	Tram-global Mission Architect ures
Topic:	Ground Segment 1 ngineering and Architectures
Alternate Topic:	Operations Autonation
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Abstract:

Operations includes the utilization of both space and ground resources to achieve mission objectives. Architectures of the future must also apply to both space and ground components to create a mission architecture. In reality the "global" view will become too small! The nextgeneration will make the spacecraft a node on a distributed system, expanding our vision beyond the merely global.

Spacecraft design was the cost driver for past missions. The realities of life cycle cost constraints now drive the use of capability-driven concurrent design to trade spacecraft, mission science, and mission operations costs. '1'0 contain operations costs, systems will not only be largely automated, but limited human and system resources will bc reserved for science or engineering events and anomalies rather than the routine. To further contain costs, the operability of the spacecraft must be considered. To accomplish this we will employ a standardized mission architecture with parallel layering of peer space and ground functions will include interfaces and control to facilitate "plug and play" selection and integration of old and new technology components from disparate sources into varied, affordable and exciting mission systems.

Work in progress addresses the concurrent engineering of flight systems avionics and ground systems where major functional elements such as navigation, maneuver control, or science planning may be accomplished in either ground or flight elements with high levels of autonomy. The value of modularity, standard interfaces and re-use has been demonstrated in ground systems. The evolution of global heterogeneous distributed operations systems now in progress is enabled by standards and open systems architectures 1 Extension of these concepts to space will enable expanded exploration of the next century in a cost-constrained world.