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# Architecture-Centric Evolution (ACE) Working Group Session

## SOA (Service Oriented Architecture) based approaches for architecting satellite ground systems in a net-centric environment – where are we today

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## MDAS SOA Activities



- NASA Multimission Ground System and Services (MGSS) includes six program elements, one of them is the Mission Control, Data Management & Accountability, Spacecraft Analysis (MDAS)
- MDAS-Deep Space Information Services Architecture (DISA) Registry and Repository Service is a development task. Its purpose is to procure and install an enterprise class registry and repository service for all future Deep Space Network (DSN) and Advanced Multi-Mission Operations System (AMMOS) SOA implementations
  - Architecture specification is in progress; It will be deployed as part of the Enterprise Infrastructure Service Architecture by end of this calendar year
- MDAS-DISA Accountability Service is a development task. Its purpose is to port Mars Reconnaissance Orbiter's end-to-end Accountability Software to a multimission environment and make it a full SOA service
  - Expected gains are platform independence, language independence, and database independence
- Usage of Other Service-Related Technologies
  - Mission data Processing and Control Subsystem (MPCS) is using JAVA, XML for messages, and a SOA message bus for communication



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## SOA Standards



- Development uses DISA specifications as they become available
  - DISA Specification, Enterprise Specification, Security Specification, Information Architecture and Management Specification, Technology Specification, Infrastructure Services Architecture, Application Services Reference Architecture and Service Development Specification, Governance Framework, etc.
- Participate in development of DISA specifications and standards under the direction of the DISA Chief Software Architect
  - DISA Service Analysis and Design Methodology (Refer to presentation at GSAW09 Tutorial J)
    - Service Modeling (Definition, Surveys, and Techniques), Service Analysis (AS-IS Process Model Analysis, Business Service Identification, Business Service Gap Analysis, Business Service Realization Analysis), Service Design (Service Description, Business Process Specification, Business Service Policy Specification, Service Integration Model), Service Modeling Phase Deliverables
  - DISA Service Portfolio Plan (Refer to presentation at GSAW09 Tutorial J)
    - Service Portfolio Plan Definitions, Service Portfolio Plan Workflow, Architecture background, Service Policies, Domain-Specific Steps (Scope & Domain Overview, Quality Requirements, Conceptual Service View, Service Implementation View, Service Deployment View, Service Descriptions, Development schedule)



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## SOA Training



- GSAW Education
- Training programs offered at JPL
  - Hands-On Unified Modeling Language (UML) by Learning Tree
  - SOA Governance by Everware-CBDI
  - Guest Speakers on SOA Technologies (12 one-hour sessions)
  - Guest Speakers on Information Technology (12 one-hour sessions)
  - Introduction to Software Architecture by David Garlan CMU/SEI
- Developing DISA Education Plan



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