



Does Commercial Space Really Need MOA?

Larry W. Bryant
Jet Propulsion Laboratory
California Institute of Technology
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Mission Operations Assurance Objectives

- Improve operational reliability of projects during mission operations
- Assess the mission objectives, spacecraft/payload design & capabilities, and flight operations planning and implementation for compatibility and consistency.
- Facilitate integration of mission operations assurance into the project so that all team members share responsibility for mission success
- Assess the design, implementation, integration, validation & execution of robust processes to successfully accomplish mission objectives
- Facilitate, when appropriate, Software Quality Assurance (SQA) support during post launch software development, Flight Software modifications, and resolution of software related problem reports.
- Provide project manager with visibility into mission operations assurance processes and recommend actions as appropriate
- Provide independent risk assessment to project manager & higher level safety and mission assurance offices.
- Provide direct transfer of knowledge and experience to existing and future projects

Mission Ops Assurance As We Know It

MOA PROCESSES FOR ROBOTIC EXPLORATION

- RISK ASSESSMENT
- PROJECT OPERATIONAL READINESS
- PROBLEM REPORTING
- OPERATIONS TRAINING
- OPERATIONAL REQUIREMENTS
- PROJECT PLANNING
- FLIGHT RULES
- MOA REPORTING
- PROJECT OPERATIONS CONFIGURATION MANAGEMENT
- INTERFACE WITH OTHER QUALITY/OPERATIONS ASSURANCE FUNCTIONS
- LESSONS LEARNED ASSESSMENT

Key MOA Processes for Commercial Space

- **Problem Reporting**

- The benefit of an effective problem reporting system is that problems and their fixes can be well documented and the information easily disseminated within a project or to other projects to avoid a recurrence. The avoidance of problem recurrence is a definite benefit to the profitability of any commercial project. This clearly continues throughout the operational life of a commercial project as well as any follow on projects.

- **Risk Assessment**

- It certainly is beneficial to have a good risk mitigation approach in place, but is an independent assessment of value to a commercial enterprise? This will depend on the cost and the perceived benefit. It is likely that, unless it is funded by an oversight organization, the cost of an independent risk assessment task will not be considered sufficiently value added for a commercial organization.

Shifting the Paradigm to Provide Cost Effective MOA

- **Advanced Decision Support System**
 - Significant benefit of incorporating an effective decision support system is its independence from the project since its knowledge data base is populated by subject matter experts in the field, not specifically associated with a project
 - With an independent decision support system which is sufficiently automated to generate reports on anomalies encountered and responses as well as make recommendations for action that consider risk of various options, core processes of MOA can be incorporated in a commercial space operations system without separate overhead.

Conclusion

- The functions which are currently elements of MOA will certainly benefit commercial space operations, but it isn't clear that all would be immediately value added.
- For advanced decision support systems, the core capabilities exist, but they need to be coalesced into a system that can benefit all commercial space operators.
- Implication is the need for a single agency to take the lead in bringing this to the commercial space community.

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