

FPPD-LL Database Entry: 0001

Lesson Info

- **Lesson Number:** FPPD-LL-0001
- **Lesson Date:** 29-jun-2000
- **Submitting Organization:** GSFC (400)
- **Submitted by:** Bryant Cramer

Subject/Title/Topic(s):

Skill Requirements for Technology Validation Missions

Description of Driving Event:

The New Millennium Program's first Earth-Observing mission (EO-1) is a technology validation mission designed to flight-validate advanced imaging technologies applicable to a Landsat follow-on mission. It includes a pushbroom multispectral imager, a hyperspectral imager, an atmospheric corrector, and several spacecraft technologies applicable to future remote sensing missions. The EO-1 advanced technologies are reflected in Figure 1.

EO-1 Technologies

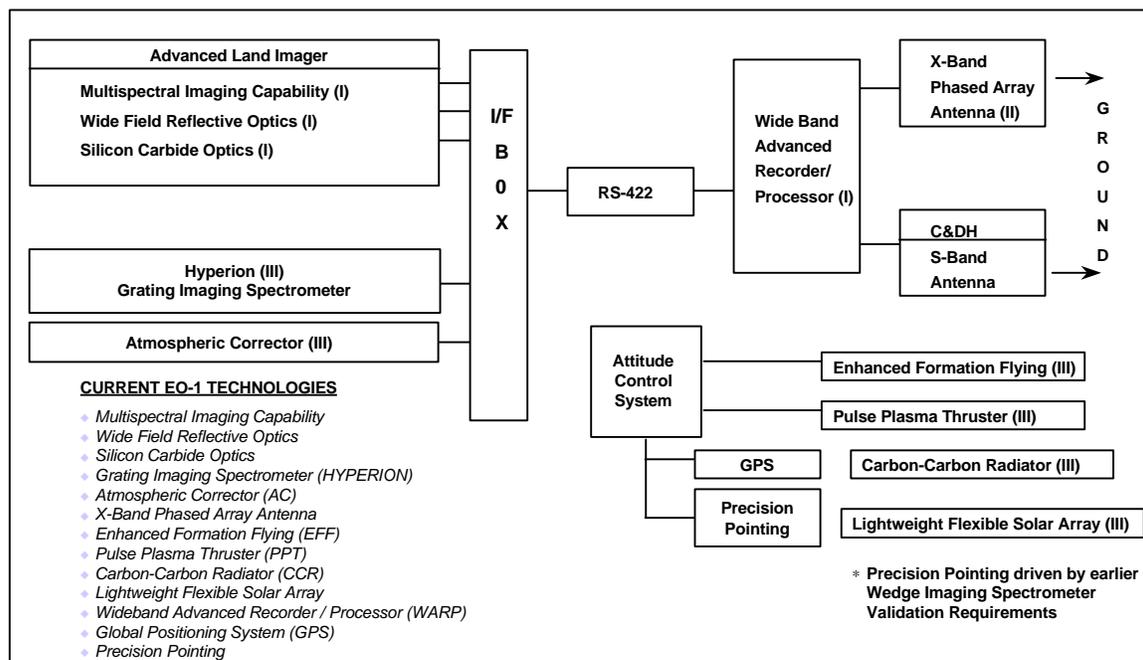


Figure 1

Lesson(s) Learned:

Due to the risky nature of the advanced technologies to be flight-validated, we determined that our traditional project organization was not well suited to deal with this new kind of mission. More specifically, we identified the following shortfalls in our organization:

1. We needed someone with insight into these new technologies who could devote all of their time to managing their maturation to flight status and to define the best way to validate them once on orbit.
2. We needed additional help for the Mission Systems Engineer to devise a system and subsystem architectures to minimize the interaction between the advanced technologies and thereby maximize the likelihood of flight-validating them while remaining within the mission cost cap.
3. We needed risk management well beyond what we would expect for a small science mission.

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Recommendation(s):

Based on the above lessons learned, we make the following recommendations for future technology validation missions:

1. Provide a full-time Mission Technologist to manage the technologies assigned to the mission for flight-validation.
2. Provide sufficient system engineering to develop a cost-effective architecture that minimizes the interaction between the advanced technologies.
3. Provide a Risk Manager to develop a more robust risk management than we typically employ.

Evidence of Recurrence Control Effectiveness:

Subsequent experience with other missions within the New Millennium Program has served to reinforce applicability of these recommendations.

Applicable NASA Enterprise(s):

Earth Science
Space Science

Applicable Crosscutting Process(es):

Manage Strategically
Provide Aerospace Prods & Capabilities: Formulation

Additional Key Phrase(s):

Flight Equipment
Risk Management/Assessment
Spacecraft

Can this lesson be included in the International Safety Lessons Learned (ISLL) Database? Yes

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