



Principal Investigator (PI) Team Masters Forum #2 Group Activity

1. What were the lessons learned today?
2. Share the most important thing you've heard today that you didn't hear before.

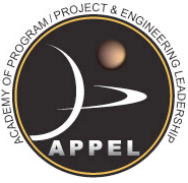
Share your key lessons and the information you want to take back and share with your team.

- People and team building
- Have fun
- Communicate
- ITAR is a problem
- Testing, testing
- Tailor the notes
- PI doesn't know all
- Some FBC worked
- EPO is not PA
- Everyone is an SE
- We're doomed by S/W!!
 - (Complexity of system[s])
 - Both S/W, H/W and human
- Interfaces and the management of
- Maintain flexibility
- Test like you fly is being driving lower into system and not always possible
- Expect the unexpected
- Surprised by low impact of Phase B investment
- Despite the best intentions of all involved parties the number of reviews keeps increasing but everything is negotiable
- Better understanding of roles of PE, PM, Mission Manager, etc.
- Examples of skunk-works approach to projects
- Testing is critical-or two separate validations
- Importance of systems engineering
- If foreign participant, then consult
- JCL-start early to keep easy (integrated schedule)
- Problems born in Φ -A&B show up in D
 - In many cases problems identified in Φ -B but not acted on
- Push back on reviews that do not add value or increase cost
- Get help from program office
- TRL advancement
- "Major COBE risks were social." J. Mather
- Communication!!!
- Takes a village
- Roles have being articulate tool PI, PS, PM
- "Not more science, but best science." Ed Weiler
- "you can deter tests, but do NOT eliminate"
- "Need diversity of personalities on the team" J. Mather
- "If you suspect that something is not right, it is not." O. Figueroa
- "Lessons learned are not learned if no one listens." J. Mather
- "Build alliances." Ed Weiler



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- Focus meetings on issues and problems
- Importance of people and teamwork
- Explosion of S/W
 - Is it essential complexity or creeping requirements?
- PI in charge of personnel...
 - If really a PI led mission
- Problems rarely get better by themselves or with age
- Early management decisions can swamp everything else
- You can overcome problems-but not if initial constraints are too tight
- Willingness to recognize and admit when wrong
- Teamwork is critical
- Sweat the details
- Work with the rules
- Don't trust S/W
 - Trust and verify
- What can't we do without?
- Pay attention to the interfaces:
 - Interpersonal
 - Hidden
 - Technical
- Use leadership wisely to focus on importance
- Early, clear plan for validation
- It's the team
- Even though it's complex, risky, do it!
- Compliance is a full-time task. Then schedule it.
- Load must be shared and coordinated within the team
- Controlling cost growth is not just adding funds early
- Communication
- PI doesn't know everything
- It's a team effort
- ITAR is difficult to navigate but it's the law
- Problems that start in A/B not felt D/E, after de-scopes no longer an option
- Communicate to the team
 - Science
 - Implementation/Engineer
 - Management
- Program/NASA
- External/Public
- Team Building
 - Deliberate activity
 - Face to face
 - Shared experience
 - Inclusive
- Establish requirements early
 - Controlling costs
- Understand risks
- Manage risks
 - Control costs
- Understand flow/implication of requirements through the system
- Avoid sci. creep



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- Interfaces
 - Human
 - Contractual
 - Cultural
 - Institutional
 - Hardware components
 - Software (!)
- Team Relationships
 - Communication
- Dealing with ITAR is still very painful
- Understanding the relationship between different program elements (MSFC/HQ) was useful
- EVM provides useful metrics but still requirements management follow-up