NMP IPDT Forum

IPDT Interface to The Flight Team

Group 3

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Charge

- How do we make sure that the objectives of both parties are met?
- How so we mesh or recognize common goals?
- How do we transition from NMP flights to operational missions?

Process

- Interview with the flight team
  - DS1, DS2, EO1
- Formulate issues
- Analyze issues
- Develop themes
- Formulate recommendations

Issues

- Not enough coordination between IPDT, ADT & Flight Team
  - Interface between science & flight teams & IPDT (e.g. mission def., selection, validation)
  - Project needs requirements form flight teams to IPDTs
  - Insufficient information to the flight team during selection
  - Costing guidelines have not been clear as to who pays for what, resulting in uncosted and duplicated items

Issues cont.

– Define role for IPDT during implementation

- CAT III experiments are expendable at Project level but vital at NMP level
- Validation plan should be part of technology selection process
- Electronic information exchange tools need improvement (e.g. CAD)
- There is a perception that NMP is providing operational products rather than demonstrating technologies

Issues cont.

- How are validated technologies disseminated & implemented in further missions?
- No process in place to promote business opportunities (including science) created by NMP technologies
- How do we evolve validated technology?

Themes

- System engineering (e.g. definition of objectives, requirements & validation for flights & technologies)
- Role of IPDTs
- Tools for information exchange
- Transition to operational missions

1. System Engineering Recommendations

- More detailed mission definition by Science WG/ADT
- ADT provide detailed mission design requirements to IPDT (iterative process)
- Lead system engr. for mission (on ADT) should be selected early in mission definition to work with IPDTs to define and understand requirements (e.g. obtain initial technology complement, validation approach, cost, interface, dependencies, accommodation)

System Engineering Recommendations cont.

- System engr of flight team should work with IPDTs to define technology implementation plan, cost of technology including integration, validation (operations and data assessment)

2. Role of IPDTs Recommendations

- Expand of IPDT co-lead, IPDT member and technology provider roles
  - Co-lead responsible for:
    - Communication between ADT and IPDT members
    - Technology assessment
    - Technology advocacy during selection
    - Technology implementation
      - Technology category assessment
      - Technology gates and review

Role of IPDTs Recommendations cont.

  - Define descope options for technology (e.g. avoid deletion of CAT III technologies to control cost)
  - Help solve technical and resource problems
- Technology validation
  - Lead development of validation plan
  - Ensure validation plan provided for selection
  - Closely coordinate participation of Science Advisory Team and Flight team in validation preparation

Role of IPDTs Recommendations cont.

- Transition of technology to science/operational mission
  - Present results of NMP mission (technology value) at scientific & technical meetings
  - Encourage participation of “user” organization in IPDT technology assessment and provide technology “needs” of future science missions

3. Tools for Information Exchange Recommendations

- Use of ISX tool to communicate technology inf. to ADT (make roadmaps useful to the ADT)
- Tools to enable mission implementation with distributed flight team (connectivity and compatibility)
  - CAD file sharing
  - Configuration management
  - Telecon/FAX vs. videocon

Tools for Information Exchange Recommendations cont.

- Electronic whiteboard
- PMS/scheduling
- Web use for communication, conf. mgt., inf. dissemination, requirements

4. Transition to Operational Missions Recommendations

- Partner with future missions to fund technology validation
- Disseminate validation results through professional, technical & scientific organization/meeting/journals and other opportunities
- Select industry participants for their potential involvement in future missions
- Target technologists, scientists and future mission managers for technology briefings

Transition to Operational Missions Recommendations cont.

- Technology providers should supply mission managers w/information (viewgraphs, web pages etc.) about objectives & benefits (e.g. science enables, advances in the technology, cost reduction)
- Where future operational requirements are known, NMP must ensure that the validation missions capability is directly scaleable to those requirements

Summary Recommendations

- Have a preliminary planning phase “phase A/B” for NMP missions where requirements, selection criteria, preliminary design, costs, risk mitigation plan and validation plan are defined
- Select a mission system engineer, as a member of the ADT, who transitions to the flight team
- IPDTs must work more closely with the flight teams and the science community throughout the validation life cycle
- Enable distributed engineering by improving internet whiteboard and CAD tool data exchange