
# HOPE-5

# Question and Answer Telcom

May 12, 2015

NASA SMD/OCE/APPEL

David Pierce/ SMD
Kevin Magee /OCE/APPEL
Victor Lucas/SOMA
Tricia Jewell/ESSP PO

# HOPE-5 TO Q&A Agenda

- Introduction to the HOPE Training Opportunity
- The Vision for HOPE
- HOPE-5 TO Basic Facts, Goals, Emphasis & Logistics
- Proposal Format and Schedule
- Evaluation Process Summary
- Overview of the HOPE-5 TO Elements
  - Training,
  - Science/Technology
  - TMC
- ESSP-PO Overview
- Questions and Answers

# HOPE-5 Solicitation Team

- SMD
  - David Pierce, SMD/HOPE-5 TO lead
- OCE/APPEL
  - Roger Forsgren, OCE/APPEL Director
  - Kevin Magee, OCE/APPEL
- LaRC/SOMA
  - Victor Lucas, TMC subpanel lead
- LaRC/ESSP Program Office
  - Greg Stover, Acting, ESSP Program Manager
  - Tricia Jewell, ESSP/HOPE Mission Manager
  - Randy Regan, ESSP Systems Engineer

# *The Vision for HOPE*

"In my career as a scientist, astronaut, NASA's Chief Scientist, and AA/SMD, I often reflect back on the strength of the foundation upon which I was trained."

**HOPE provides employees with the complete scientific experience, going from concept to hardware, observations, and scientific analysis of the results**. All in the time frame of 18 months. **HOPE not only enables quality science, but is also crucial as a training ground for the Scientists/Engineers who will be the project leaders of tomorrow**.

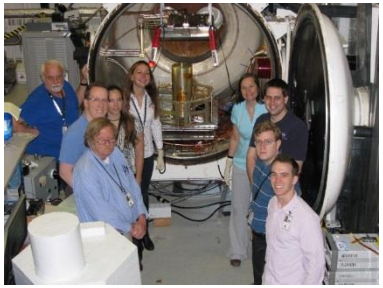
John M. Grunsfeld
AA/SMD, Astronaut

# History of HOPE TO

- Established in 2008
- SMD/OCE has completed 4 cycles of HOPE with 6 teams including:

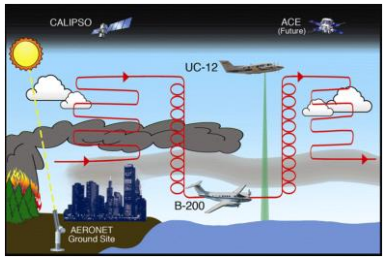
- 2010-2011
  - TRaiNed (JPL)
- 2011-2012
  - COAST (ARC)
  - DEVOTE (LARC)
- 2012-13
  - HEROES (MSFC / GSFC)
  - CHARM (JPL / ARC)
- 2013-2014
  - RaD-X (LARC / ARC)

**HEROES** (High Energy Replicated Optics to Explore the Sun)

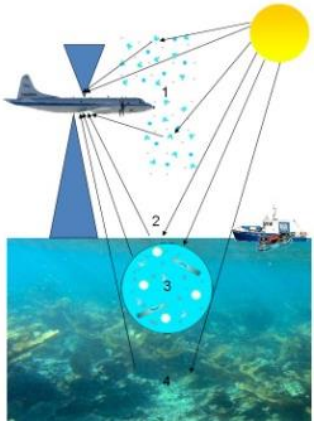


**RaD-X** (Radiation Dosimetry Experiment)

**TRaiNED** (Terrain Relative Navigation)




**DEVOTE** (Development and Evaluation of Satellite Validation Tools by Experimenters




**COAST** (Coastal and Ocean Airborne Science Test bed )

# HOPE-5 TO Basic Facts

- HOPE is a training flight project sponsored by SMD and OCE/APPEL
- Proposal Process based on “Standard SMD AO”
- SMD/OCE TO funding = $800K RY (FY16/17 funding)
- No limit on Center/Lab Contributions
- 18 month development
  - Project to define its project phases (e.g., A, B, C, D, E)
  - Clock starts from Project Initiation Conference (~ December 2, 2015)
- Launch Readiness Date NLT ~ June 1, 2017
- Final report to SMD/OCE ~ 3 months after the flight is completed
- SMD/OCE expects to select up to 2 projects for development

# HOPE-5 TO Goals

The primary goal of HOPE is:

- To provide a hands-on Training project to enhance the technical, leadership, and project knowledge, skills and abilities for the selected NASA in-house Project Team.

The secondary goal of HOPE is:

- To fly a science payload having a useful purpose for the Science Mission Directorate, or to mature or develop a space related technology having a useful purpose to SMD.

# HOPE-5 TO Emphasis

**What is the Target participant?**

- "Early Career Hire" employees who are either in the early, or transitional stage of their career at NASA. A stretch assignment with increased responsibility for a team member with evidence of some past experience serving in a similar or lower-level role. (Sect 2.2.2)

| Fresh-out/Apprentice | ECH/Junior-level | Expert | Senior-Level/Mentor |
|---|---|---|---|

**Is there a greater emphasis on training than the science/technology investigation?**

- The primary goal (training) is more important than the secondary goal (project). (FAQ 19)
- The sponsors are looking for a well-balanced project, and believe the ability to execute (TMC Feasibility) a meritorious project with a valuable purpose (Science/Technology Merit) contributes to training as much as the quality of the training plan itself (Training Merit).

**Is there greater emphasis/value for a science investigation than a technology investigation?**

- No. Both Science and Technology merit are assessed equally. The Science /Technology investigation should have a useful purpose to SMD. (Sect. 1.4)

**Is there an emphasis on tailoring requirements of 7120.5E to fit a suborbital investigation?**

- Yes. Requirements in NPR 7120.5E apply, however, they should be appropriately tailored. There are tools to assist in tailoring your project.

# Suborbital-Class Platforms

- SMD Sounding Rockets [1]
  - Terrier-improved Orion
  - Others
- SMD Balloons
  - 11-39 MCF
- SMD Aircraft (piloted)
  - Dozens listed
- SMD Aircraft (unpiloted)
  - Global Hawk, Ikhana, SIERRA
- STMD/ FOP Suborbital Reusable Launch Vehicles (sRLVs) [2]
  - Multiple STP/FOP sources
- CubeSats
  - Launch through CSLI, must deliver within 18 months

***See APPENDIX A: Suborbital Platform Capabilities***

See Appendix A
*Suborbital Platform Capabilities*

[1] $200 K supplement available; [2] Will now charge against budget

# HOPE-5 TO Logistics

*HOPE TO website:* The HOPE TO, its appendices, as well as additional HOPE TO information, including links to previously-selected projects, lessons learned, HOPE Survey, and Frequently Asked Questions (FAQs) are available at:

See Appendix G
*HOPE TO Library Listing*

http://appel.nasa.gov/developmental-programs/hope/

*UPDATES* to Frequently Asked Questions on Fridays.

# HOPE-5 TO Logistics

- **Notice of Intent (NOI) to propose:** All prospective proposers are required to submit a NOI by **June 2, 2015**. Material in a NOI is deemed confidential, and will be used for planning purposes only. Those who submit NOIs will receive via email any TO updates or TO amendments that may occur.

- NOIs are to be submitted in a short PDF document by email to the HOPE TO POC. Each NOI must provide the following requested information to the extent that it is known:

(a) Name, address, telephone number, and email address of the designated Center POC.

(b) A list of any participating Centers and, to the extent known, the participating individuals including principal investigator (PI), project manager (PM), and Center training professional.

(c) A brief abstract (250 words or less) summarizing the following:

(i) the objective(s) of the proposed SMD-aligned science and/or technology mission;

(ii) any new technologies that may be employed as part of the mission; and

(iii) any relationship of the mission to other prior or planned projects.

(d) A summary of the anticipated investigation, including the launch/flight services to be used.

# HOPE-5 TO Logistics

**Proposal Deadline:** Electronic proposals may be received until the August 4, 2015 close date at 11:59 P.M. via email to david.l.pierce@nasa.gov.

**Submission instructions:** All proposals submitted in response to this TO must be emailed to the HOPE TO POC. Proposals received after the response date and time will not be considered. Contact the HOPE TO POC for secure transmission requirements. Files must be submitted in a single bookmarked and searchable PDF of less than 20 MB. SMD/OCE will notify proposers that their proposals have been received.

# HOPE-5 TO Proposal Format

**Sect 4.1: Proposal Structure**

- A proposal shall consist of a single PDF file with readily identifiable sections
- Proposals shall conform to a limit of 32 pages, excluding table of contents, cost tables, and appendices.
- A project schedule covering all phases of the investigation shall be provided on a foldout page(s).

See Appendix F
*Compliance Checklist*

| Section | Page Limits |
|---|---|
| A. Cover Page and Abstract Combined | 1 |
| B. Table of Contents | No page limit |
| C. Hands-On Project Experience Personnel Training<br>D. Science/Technology Investigation and Implementation | 6<br>8 |
| E. Mission Implementation<br>F. Schedule Narrative, and Schedule Foldout(s)<br>G. Management and Risk Management | 7<br>2<br>No page limit<br>2 |
| H. Cost and Cost Estimating Methodology<br>Cost Tables (see Appendix C, Tables C-3 & C-4) | 3<br>No page limit |
| I. Appendices: (no others permitted)<br>• Letter(s) of Commitment<br>• Resumes<br>• ECH Assessments<br>• Equipment List (EL)<br>• Suborbital-Class Platform Description<br>• Heritage<br>• List of Abbreviations and Acronyms<br>• References | No page limit unless noted but brevity is encouraged.<br>No limit<br>1 page / resume<br>1 page / ECH<br>No limit<br>No limit<br>No limit<br>No limit<br>No limit |
| The proposal may also contain three additional pages to be distributed among Sections C through H at the total discretion of the proposer. | 3 |

# HOPE-5 Solicitation Schedule



| | |
|---|---|
| TO Release Date | April 29, 2015 |
| Q&A Telecon | May 12, 2015 |
| Notice of Intent to Propose Deadline | June 2, 2015 |
| Proposal Submittal Deadline | August 4, 2015 |
| Compliance Check | |
| Sub-Panels Meetings | Mid-August |
| Clarification Step | |
| Selections Announced (target) | October 23, 2015 |
| Debrief Proposers | November, 2015 |
| Project(s) Initiation Conference | December 2, 2015 |
| Launch Readiness | June 1, 2017 |

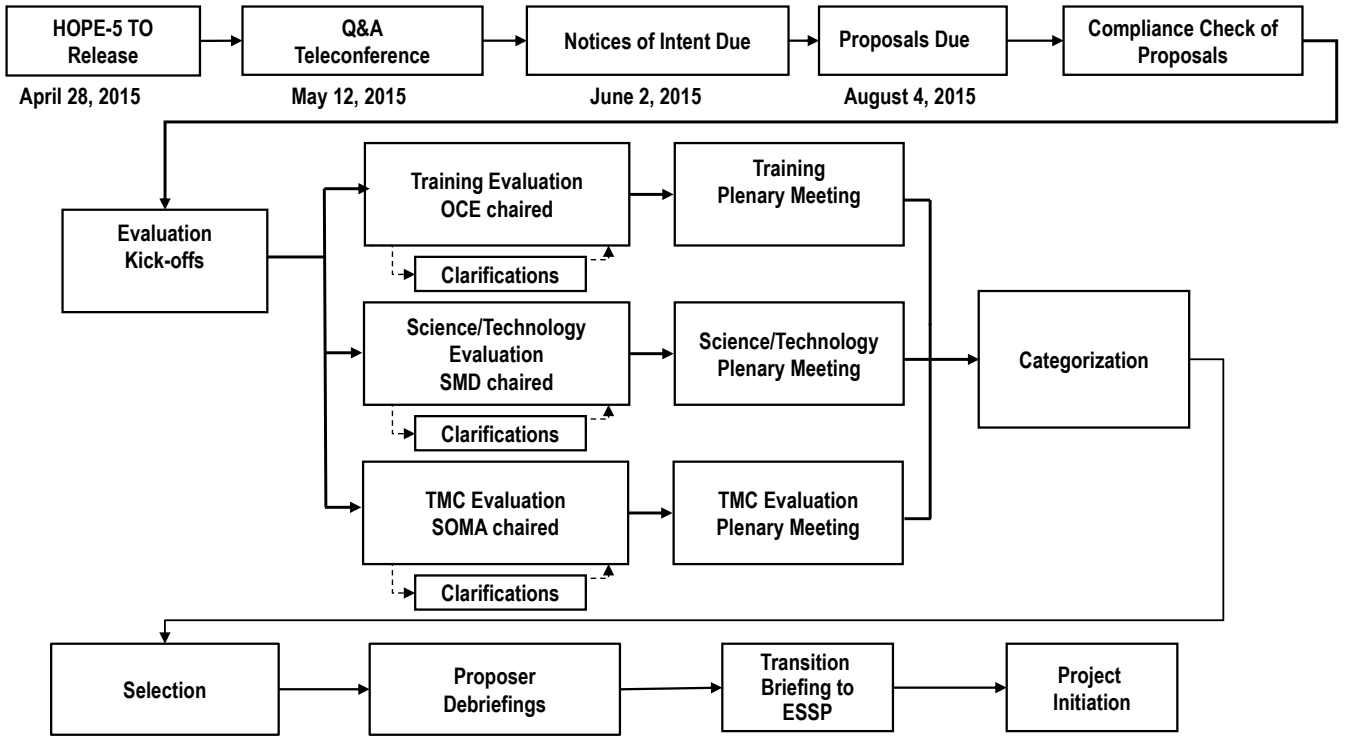
# Evaluation Process Summary

- The proposals will be evaluated by an internal NASA review panel divided into three separate panels, each evaluating one of the three following criteria:
  1. The merit of the proposed project for personnel (training)development
  2. The scientific merit and feasibility of the proposed investigation
  3. The TMC feasibility of the proposed approach for mission implementation, including carrier compatibility
- Training criteria will be weighted more than Science & TMC.
- The information provided in proposals will be used to assess the intrinsic merit and feasibility of the proposed investigation.

# HOPE Proposal Evaluation Flow



- After Proposals Received:
- Compliance Check
  - Appendix F
- 3 Evaluation Sub-Panels
  - Training
  - Science/Technology
  - TMC
- Categorization Committee



# Hands-On Project Experience (HOPE) - 2015

## Training Overview

Kevin Magee / HOPE Training Lead
Office of Chief Engineer/ APPEL

May 12, 2015

# Training

- **Primary goal**

  - To provide a hands-on training project to enhance the technical, leadership, and project skills for the selected NASA in-house (Jr. level) project team.

- **Target**
  - Early Career Hires (ECH) and Transitional Stage Professionals
  - Not based on Years of Service, but Acquired Experience
  - Stretch Assignment
  - Guided by Center Training Professional (member of project team)
    - Should have a Training & Development Background
    - Oversee Development of Training Plan
    - Oversee Formal/Informal Training of Team Members
  - Sr. Level Mentors Assigned to Each ECH Team Member (well defined mentoring plan)
    - Ensure regular, frequent Mentor/ECH interaction
    - Active Coaching Throughout Project Lifecycle
  - Centers are encouraged to embrace this opportunity and interleave it with the Center's own training program

# (Sect. C)HOPE Personnel Training

- **Identify Team Members by Name**
  - Team Members
  - Training Professional
  - Mentors
- **Training Requirements (Requirements # 2 – 9)**
  - Qualifications and Experience for all Key ECH Team Members
  - Mentoring Plans for ECH Team Members/Approach/Interaction
  - Provide Mentors Relevant Experience
  - Describe Training & Development Plan
    - Summary of Initial Skills Assessment
    - Identify customized, formal, Informal training
  - Resumes/Individual Development Plans/Skill Assessment for Key ECH Team Members,
  - Resumes for Training Professional and Mentors
  - Describe Training Courses/Relevancy to Learning Goals
- Training Opportunity for Project Personnel in all Areas of Centers Business, Including Non-Technical Areas

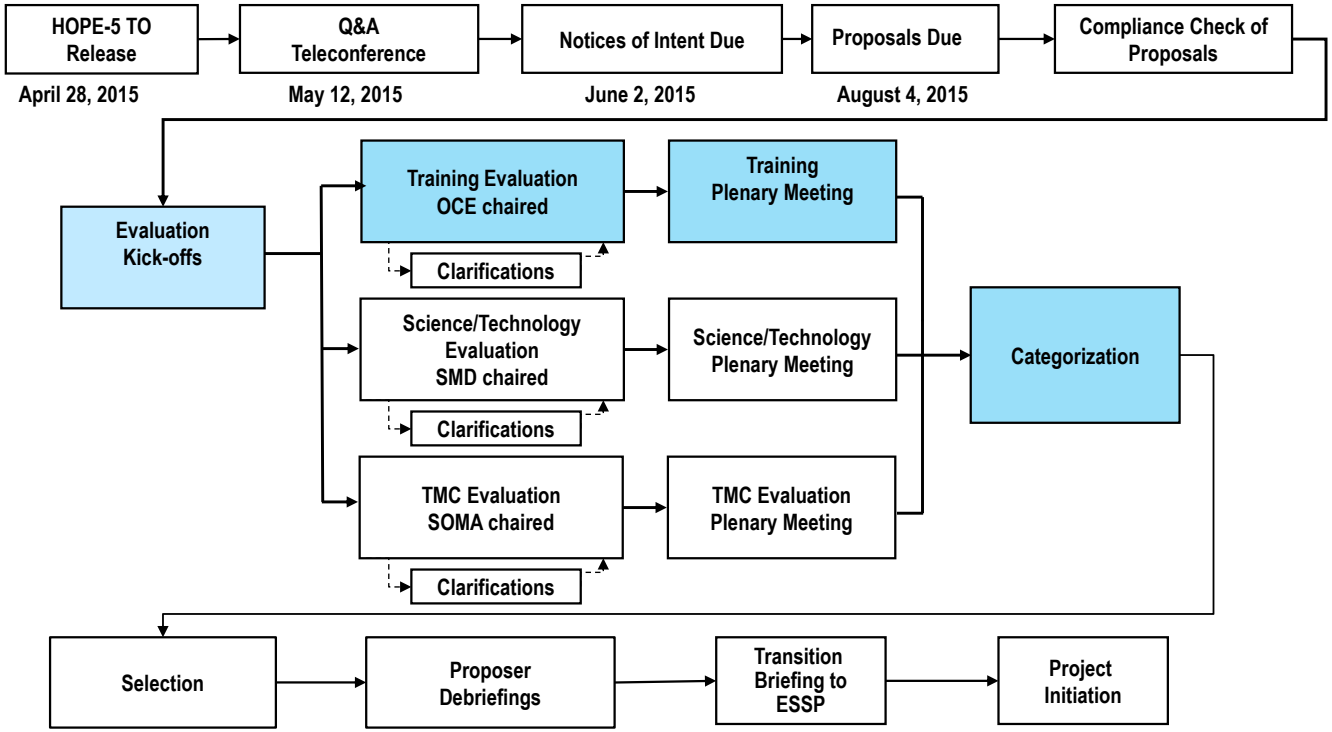
See Appendix B
*Training Guidelines and Best Practices*

# Training Evaluation

## Evaluation Criteria

– **The merit of the proposed project for personnel training, weighted 40% at selection;**

**Training Evaluation:** The purpose of the Training evaluation is to assess the merit of the investigations' training plan (see Section C, Table 1).



# Training Evaluation

## Training Evaluation Factors:

Criterion A: Training

- Factors from HOPE-2015 TO Section 5.2.2
  - Factor A-1. Identification and readiness of key (ECH) team members. The factor includes the professional history of each key team member's qualifications demonstrating that they have the appropriate technical background and experience.
  - Factor A-2. Benefit to the key (ECH) team members. This factor includes a demonstration of how each individual will benefit from participating in the project in the assigned position.
  - Factor A-3. Benefit to the Center. This factor includes a demonstration that the Center has a need for additional personnel to be trained in the positions proposed in the project and show how this training will support those needs in the future.
  - Factor A-4. Center support to the project team. This factor includes how well the Center will monitor, guide, and/or maintain oversight of the project by the assigned mentors and training professional in order to support the ECH team members

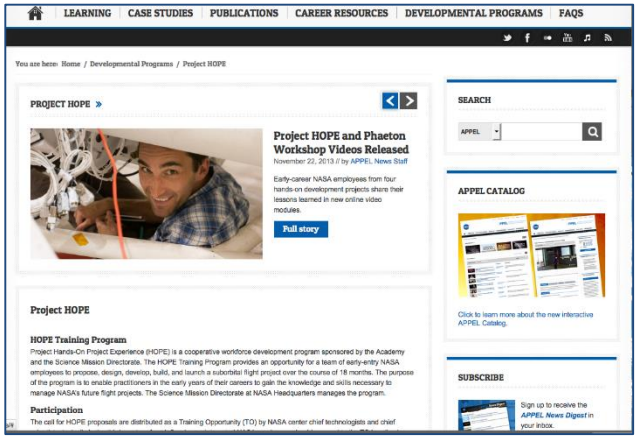
## Training Evaluation Findings:

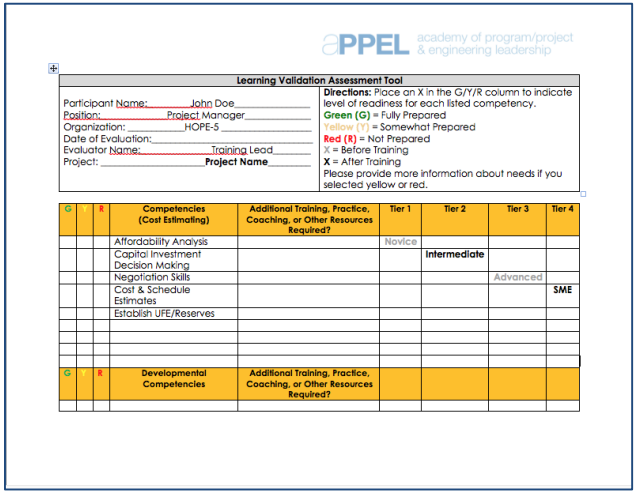
| Summary Evaluation | Basis for Summary Evaluation |
|---|---|
| Excellent | A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the TO as documented by numerous and/or significant strengths and having no major weaknesses. |
| Very Good | A fully competent proposal of very high merit that fully responds to the objectives of the TO, whose strengths fully out balance any weaknesses. |
| Good | A competent proposal that represents a credible response to the TO, having neither significant strengths nor weakness and/or whose strengths and weaknesses essentially balance. |
| Fair | A proposal that provides a nominal response to the TO but whose weaknesses outweigh any perceived strengths. |
| Poor | A seriously flawed proposal having one or more major weaknesses (*e.g.*, an inadequate or flawed plan of research or lack of focus on the objectives of the TO). |

# Training Resources



- HOPE-5 TO Website (http://appel.nasa.gov/developmental-programs/hope/)
- **Library**
  - **Strategic Documents**
    - NASA 2014 Strategic Plan
    - 2014 NASA Science Plan
  - **Specific Documents (Links to:)**
    - APPEL Course Catalog
    - Airborne Science
    - Balloon Program
    - Sounding Rockets
    - CubeSat
    - NASA Directives/SE Handbook
    - Frequently Asked Questions
    - Good/Better/Best
    - TO Requirements
    - Compliance Checklist
    - Tables/Tools



# Hands-On Project Experience (HOPE) - 2015

## Science / Technology Overview

David Pierce / HOPE Lead
Science Mission Directorate

May 12, 2015

# Science/Technology Evaluation

- **Secondary goal**

  - Fly an Earth or space science and/or technology investigation beneficial to SMD.

- **Target**
  - Develop an Earth or space science and/or (SMD related) technology investigation on a suborbital-class platform (sounding rocket, balloon, aircraft, CubeSat, or commercial suborbital reusable launch vehicle (sRLV).

  - ***All Investigations must address*** a science strategic objective identified in the NASA Strategic Plan and the science goals in the SMD 2014 Science Plan. http://science.nasa.gov/about-us/science-strategy/

    (i)Providing useful (new or complementary) science data in support of SMD science goals

    (ii) Advancing the development of technology in support of SMD science goals, e.g., by providing re-flights of instruments or components, demonstrating a proof of concept, providing flight calibration, or enabling TRL advancement of sensors or technologies for future use.

# (Sect. D) Science/Technology Investigation

- **Identify The Investigation**
  - Science (aligned to NASA Strategic Plan/2014 Science Plan)
  - Technology
  - Mixed Science and Technology

See Sect 3.2 *Science and Technology*

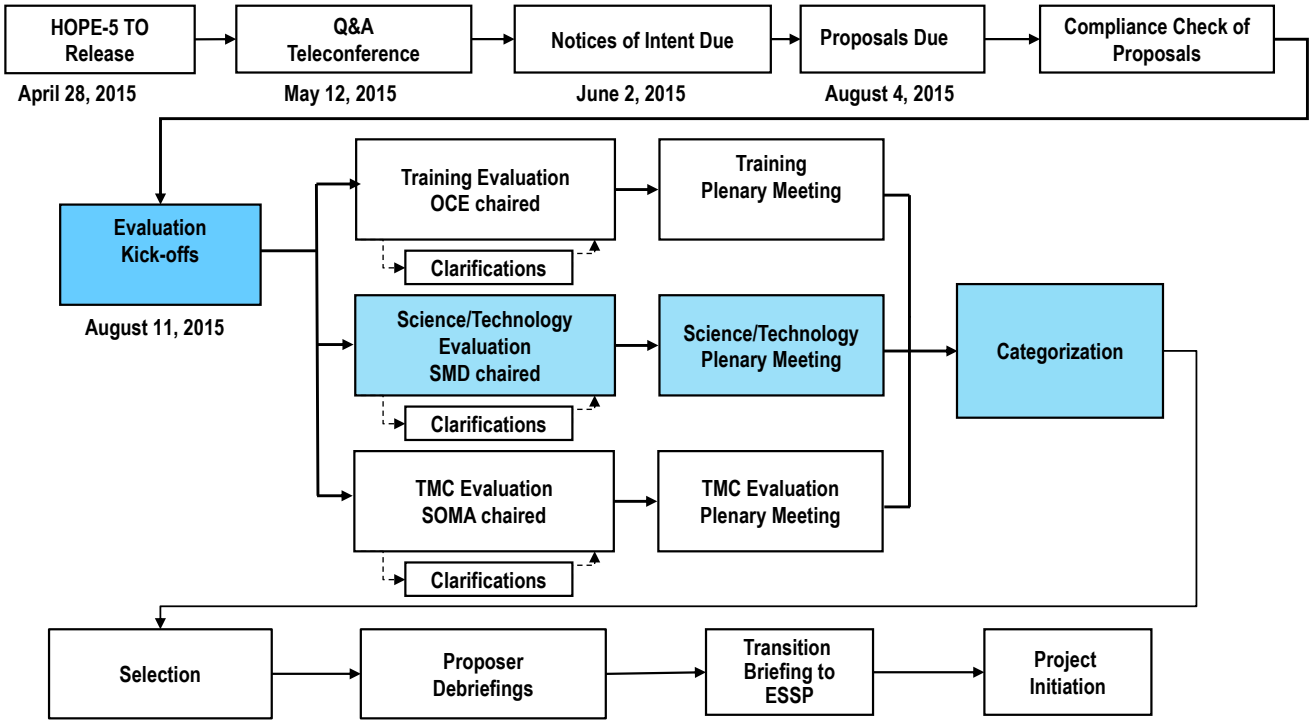
- **Science/Technology Requirements (Requirements # 10 – 15)**
  - Describe the Investigation's goals and objectives; show alignment to NASA Strategic goals;
  - Describe the types of measurements to be made; instruments (precision & performance)
  - Show Science Traceability (Objectives ->Mission->Measurements->Data products->closure)
  - Describe Data Plan ( Calibrate, analyze, publish, *communicate results*, archive data)
  - Describe 'Baseline' and 'Threshold' investigation requirements.

# Science/Technology Evaluation

## Evaluation Criteria

- **The science/technology merit and implementation feasibility of the investigation, weighted 30% at selection;**

**Science/Technology Evaluation:** The purpose of the Science/Technology evaluation is to assess the intrinsic science/technology merit and the science/technology implementation merit and feasibility of the proposed investigation.



# Science/Technology Evaluation

## Science/Technology Evaluation Factors:

Criterion B: Science/Technology

- Factors from HOPE-2015 TO Section 5.2.3
  - Factor B-1. Science/Technology value and/or Science/Technology utility of the proposed investigation's goals and objectives. This factor includes the clarity of the goals and objectives; how well the goals and objectives reflect SMD priorities.
  - Factor B-2. Likelihood of scientific/technological success. This factor includes how well the anticipated scientific measurements or technology development support the goals and objectives.
  - Factor B-3. Probability of technical success. This factor includes the plan for technical readiness of the scientific or technology payload; the adequacy of the plan to develop the payload within the proposed cost and schedule.
  - Factor B-4. Probability of project team success. This factor includes the qualifications and organizational structure of the project team and the investigation/development design in light of proposed goals and objectives.

# Science/Technology Evaluation

## Science/Technology Evaluation Findings:

| Summary Evaluation | Basis for Summary Evaluation |
|---|---|
| Excellent | A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the TO as documented by numerous and/or significant strengths and having no major weaknesses. |
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| Poor | A seriously flawed proposal having one or more major weaknesses (*e.g.*, an inadequate or flawed plan of research or lack of focus on the objectives of the TO). |

# Hands-On Project Experience (HOPE) - 2015 Training Opportunity Technical, Management and Cost Evaluation Overview: Q&A Teleconference/WebEx

Victor Lucas
NASA Science Office of Mission Assessments

May 12, 2015

# (Sects. E,F,G,H) Mission, Schedule, Management, Cost

See Sects 3.3 – 3.7

- **Technical (Requirements # 16-21)**
  - Proposals for complete Missions (all phases); Mission Traceability
  - Describe Mission Design/Concept of Operations
  - Describe Payload, Interface with Carrier, Development approach/I&T
  - Describe the Carrier/suborbital-class platform, services, Test and Verification approach
- **Schedule (Requirements # 22-23)**
  - Provide Schedule narrative, foldout(s) covering all phases of project; Identify Critical Path; reviews
- **Management (Requirements # 24-29)**
  - Describe Management approach; define team roles; identify team members
  - Describe plans to tailor requirements; risk management, descope plans
- **Cost (Requirements # 30-35)**
  - Provide Total Project Cost (Requested plus Contributed) in provided cost tables
  - Provide costs for the Suborbital-Class Platform/Carrier and services
  - Provide a Work Breakdown Structure(WBS) and Master Equipment List(MEL).
  - Identify methods used to validate costs (models, grass roots, analogy); margins, reserves

# TMC Evaluation

# TMC Evaluation

## Evaluation Criteria

Evaluation Criteria:

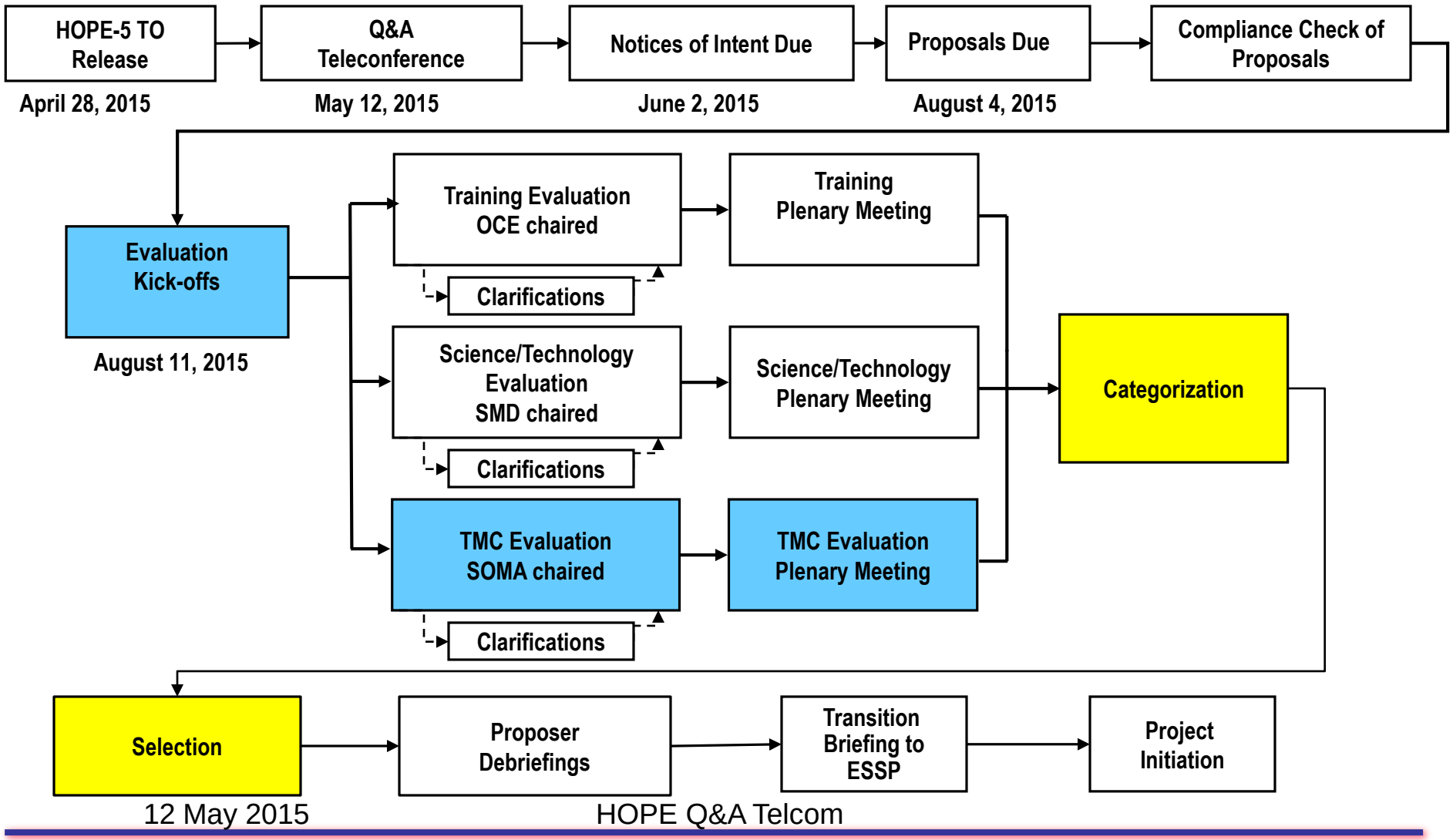
- Personnel Training Merit of the Proposed Investigation
- Science/Technology Merit and Implementation Feasibility of the Investigation
- **TMC Feasibility of the Investigation Implementation, including Suborbital Carrier Compatibility**

Weighting: the first criterion is weighted approximately 40%; the second and **third criteria are weighted approximately 30%** each.

**TMC Evaluation: The purpose of the TMC evaluation is to assess the likelihood that the submitted investigations' technical and management approaches can be successfully implemented as proposed, including an assessment of the likelihood of their completion within the proposed cost and schedule.**

# TMC Evaluation

## Proposal Evaluation Flow



# TMC Evaluation

## Evaluation Principles

- Basic Principles:
  - It is assumed that the proposer is the expert on his/her proposal.
  - Proposer's task is to demonstrate that the investigation implementation risk is low.
  - TMC panel's task is to try to validate proposer's assertion of low risk.

- Merit is to be assessed on the basis of material in the proposal. All Proposals are evaluated to identical standards and not compared to other proposals.

- TMC Panels consist of evaluators who are experts in the factors that they evaluate.

- TMC Panels develop findings for each proposal - Findings: "As expected" (no finding), "above expectations" (strengths), "below expectations" (weaknesses). Risk Ratings should reflect the written strengths and weaknesses.

- The Cost Analysis is integrated into overall Risk Rating.

- Proposal Risk Assessment: Proposals are based on Pre-Phase-A concepts; TMC Risk Assessments give appropriate benefit of the doubt to the Proposer.

# TMC Evaluation

## TMC Evaluation Factors:

Criterion C: TMC Feasibility, including Suborbital Platform Compatibility

- Factors from HOPE-2015 TO Section 5.2.4
  - Factor C-1. Adequacy and robustness of the technical plan.
  - Factor C-2. Adequacy of the management approach including the capability of the management team and their approach to risk management.
  - Factor C-3. Adequacy and robustness of the cost plan and schedule.
  - Factor C-4. The risk of flying the particular investigation on the selected carrier.

## TMC Evaluation Findings

Major and minor strengths and weaknesses are defined as follows:

- **Major Strength:** A facet of the implementation response that is judged to be well above expectations and can substantially contribute to the ability of the project to meet its technical requirements on schedule and within cost.

- **Minor Strength:** A strength that is worthy of note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.

- **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its technical objectives on schedule and within cost.

- **Minor Weakness:** A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.

**Note:** Findings that are considered "as expected" are not documented.

## TMC Evaluation Clarifications

SMD will request clarification of potential major weaknesses and significant cost findings (statements that the proposer's estimate for a WBS element could not be validated) identified during the evaluations of Science/Technology Implementation Merit and Implementation Feasibility and TMC Feasibility of the Investigation Implementation, Including Suborbital Platform Compatibility.

- SMD will request such clarification uniformly, from all proposers.
  - PIs whose proposals have no potential major weaknesses or significant cost findings will receive an email informing them.
  - All requests for clarification from SMD, and the proposer's response, will be in writing.
- The form of the clarifications is strictly limited to a few types of responses:
  - Identification of the locations in the proposal (page(s), section(s), line(s)) where the potential major weakness is addressed.
  - Acknowledge that the major weakness is not addressed in the proposal.
  - Stating that the potential major weakness is invalidated by information that is common knowledge and is therefore not included in the proposal.
  - Stating that the analysis leading to the potential major weakness is incorrect and identifying a place in the proposal where data supporting a correct analysis may be found.
  - Stating that a typographical error appears in the proposal and that the correct data is available elsewhere inside or outside of the proposal.

The PI will be given at least 24 hours to respond to the request for clarification. Any response that does not correspond to any of the options above, or does not conform to guidelines provided with the the request, will be redacted or deleted, and will not be shown to the evaluation panel.

## TMC Evaluation Risk Ratings Definitions

The purpose of the TMC evaluation is to assess the likelihood that the submitted investigations' technical and management approaches can be successfully implemented as proposed, including an assessment of the likelihood of their completion within the proposed cost and schedule.

Based on the narrative findings, each proposal will be assigned one of three Risk Ratings:

- **LOW Risk:** There are no problems evident in the proposal that cannot be normally solved within the time and cost proposed. Problems are not of sufficient magnitude to doubt the Proposer's capability to accomplish the investigation well within the available resources.
- **MEDIUM Risk:** Problems have been identified, but are considered within the proposal team's capabilities to correct within available resources with good management and application of effective engineering resources. Mission design may be complex and resources tight.

- **HIGH Risk:** One or more problems are of sufficient magnitude and complexity as to be deemed unsolvable within the available resources.

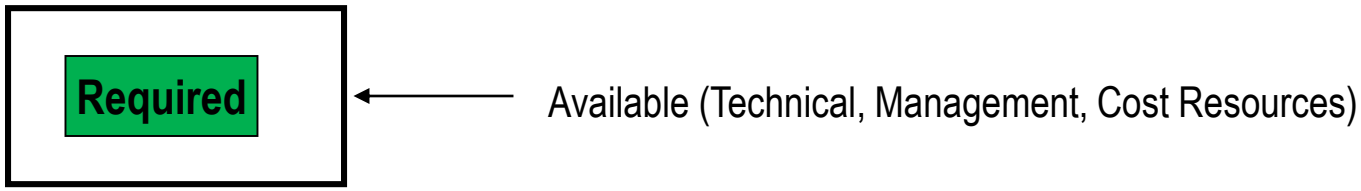
*Note: Only Major Findings are considered in the Risk Rating.

# TMC Evaluation

## TMC Evaluation Risk Ratings: Envelope Concept

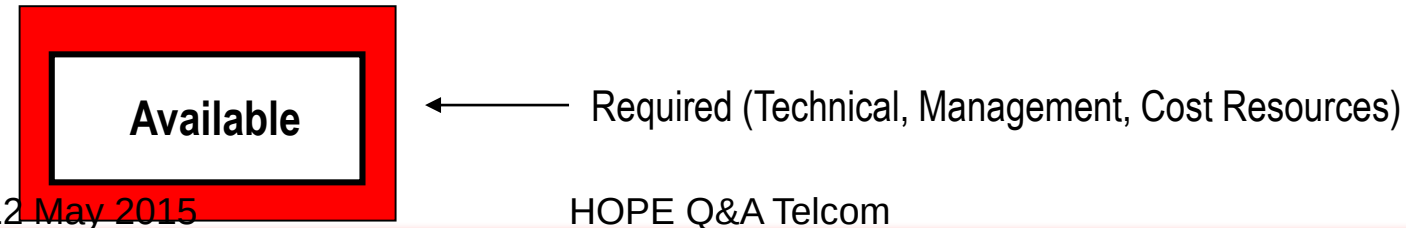
Envelope: All TMC resources available to handle known and unknown development problems that occur. Includes schedule and funding reserves; reserves and margins on physical resources such as mass, power, and data; descope options; fallback plans; and personnel.

**Low Risk:** Required resources fit well within available resources




**Medium Risk:** Required resources just barely inside available resources.


**High Risk:** Required resources DO NOT fit inside available resources.



# References

## HOPE Library

It is incumbent upon the proposer to ensure that the documents used in proposal preparation are of the date and/or revision as listed in the Program Library web site at http://appel.nasa.gov/developmental-programs/hope/

A Change Log has been implemented, and will document any further updates to the documents.

## Questions

**All questions pertaining to the HOPE TO MUST be addressed to:**

**David Pierce**
**SMD/Senior Program Executive for Suborbital Research**
**NASA/Headquarters**
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**(subject line to read " HOPE TO")**

# Hands-On Project Experience (HOPE) - 2015

## ESSP-PO Overview

Tricia Jewell / HOPE Mission Manager
Earth System Science Pathfinder (ESSP) Program Office
May 12, 2015

## NASA Oversight of HOPE

- SMD / OCE/APPEL intend to maintain an essential degree of oversight into mission development of the selected HOPE project(s) throughout the project lifecycle.
- The AA SMD, in collaboration with OCE, has designated the Earth System Science Pathfinder (ESSP) Program Office (PO) at NASA Langley Research Center (LaRC) to be responsible for project oversight.
- The ESSP PO will represent SMD/OCE and serve as the principle project management interface with the selected Center project team(s) throughout the project.
- Ms. Tricia Jewell will serve as the HOPE Mission Manager and will be the primary POC for the HOPE project(s) after selection.

## ESSP Value Added-Role to Assist the HOPE Teams

- Responsibilities
  - Programmatic Execution – ESSP PO and PE
  - Technical Oversight – ESSP PO and PE pull in experts as needed
  - Requirements development and verification – PI and PM
  - Management of the details of the Investigations – PI and PM

- ESSP PO Responsibilities
  - Support the project to help them to succeed.
  - Resolves issues and concerns that are outside of the project and Center jurisdiction
  - Review and evaluate risk mitigation approaches to PM/PI-identified risks
  - Act as the interface between the selected project and NASA HQ (SMD/OCE)
  - Assess schedule/cost performance
  - Assess budget reserve usage
  - Capture and then pass along lessons learned for HOPE
  - Attends selected investigation lead reviews

## ESSP Value Added-Role to Assist the HOPE Teams

- The ESSP PO will work with the selected project(s) and the Center's independent technical authority at the lead-implementing Center on the establishment of the Standing Review Board (SRB). ESSP PO will develop Terms of Reference (TOR) for reviews in concert with the Project and Center ITA.
    - HOPE projects shall have a minimum of 4 independent reviews: the System Requirements Review (SRR), the Preliminary Design Review (PDR), the Critical Design Review (CDR), and the Flight Readiness Review (FRR) or equivalent reviews that perform the same functions.

## SMD, OCE/APPEL, and ESSP PO to host Project Initiation Conference

**Project Initiation Conference (PIC) -** SMD/OCE/APPEL and the ESSP PO will host a PIC with the selected project team(s). Topics to be covered at the PIC include:

- Overview of HOPE and introduction to key ESSP leadership
- Fundamentals of a successful project (Safety, Planning, Tailoring, and Organizing)
- Value of the Mentoring Process
- Value of focused Informal and Formal Training
- A Systems Engineers' perspective
- Suborbital Platform Specifics
- Budgets, Reporting and Reviews
- Lessons Learned from previous HOPE Projects
- A panel discussion with previous HOPE participants

# Hands-On Project Experience (HOPE) - 2015

## Submitted Questions

# Submitted Questions

## Question #1

**Q1:** The TO mentions that STMD is no longer part of the call. Does the removal of STMD as a supporting organization substantively change the value of technology vs. science objectives? In other words, are science enabling technologies just as well supported as they were in previous calls, or should we expect a shift in emphasis?

**A1:** There is no shift in emphasis of science and technology and no change in the value of technology, but rather there is a change in the scope of the technology investigation. Previously when STMD was a co-sponsor, technology investigations had to have been either relevant to SMD science goals (e.g., a new detector) or STMD technology goals. In HOPE-5, the technology focus is solely on SMD application, thus a proposed technology investigation must have a useful purpose toward the goals of one or more of the SMD Science Divisions as called out in the 2014 NASA Science Plan.

# Submitted Questions

## Question #2

**Q2:** As before, the TO requires descriptions of ECH team members mentoring plans, qualifications, etc., and it encourages teams with a large number of ECH personnel. If a team has a large number of ECH personnel, it may not be possible to adequately describe individual mentoring plans and qualifications for each individual ECH person within the allotted number of pages. To mitigate this issue,

- Is it acceptable to describe general mentoring plans that apply to more than 1 individual without getting dinged for failing to meet Req. 4 that we describe a mentoring plan for each individual?
- Can the resumes required in Req. 6 satisfy Req. 3 if the resumes demonstrate the qualifications and experience of the individual, or must the qualifications and experience of each individual ECH team member be specifically stated in the text of the proposal?
- Can a "selected" number of ECH individuals meet these requirements while the rest can be provided upon request, or in an Appendix, due to lack of space in the proposal text?

## Question #2

**A2:** The TO does not encourage teams with large number of ECH personnel, rather the TO requires ECH members be in key project leadership positions. Team size is up to the proposer. Further, the proposer is free to propose their own mentoring processes, but have the burden to show plans will be customized for the learning needs of the ECH. The intent of Req# 4 is the proposer must describe a mentoring plan that ensures each ECH project member is mentored by a senior-level employee with a relevant background. One can provide resumes, IDP and learning assessments in the appendices, without impact to the page limit, which addresses requirements 3 and 6, a long as the information needed to evaluate those requirements is included.

# Submitted Questions

## Question #3

**Q3:** Can an instrument supplied by another Government agency be used in a HOPE project if it's used to accomplish NASA science goals, and if working with the instrument accomplishes HOPE training objectives?

**A3:** Yes. (also see FAQ question #30 regarding university provided hardware). However, the burden for the proposing team is to describe an exciting hands-on project for the Project Team members, and a mission for your team that shows the team will develop the hands-on skills needed at your center.

## Question #4

**Q4:** Are all team members in leadership roles expected to be ECH, or is it understood that it may not be possible to fill all of the roles with ECH individuals? (Example: a senior instrument developer or systems engineer who's not ECH serving in a leadership role.)

**A4:** Yes. All key project team personnel (PI, PM, SE, etc) are expected to be ECHs. The intent of HOPE is that key team members of the project team are identified as beneficiaries of the training opportunity. Senior level personnel are not eligible to serve in key project team roles. (Also see FAQ #9).

# Submitted Questions

## Question #5

**Q5:** Is there any incentive in the evaluation criteria for multi-Center efforts that might offset the added complexity and risk associated with a geographically distributed team?

**A5:** No. Multi-Center efforts are encouraged in HOPE, but there is no incentive or advantage for Multi-Center teams versus single-Center teams within the Evaluation Criteria.

# Hands-On Project Experience (HOPE) - 2015

## Questions From the Telecom?

# BACKUP SLIDES

# HOPE Survey

A total of 83 HOPE participants from the first 5 projects were were asked to complete an online survey about their experiences. Fifty-three surveys were returned, for a 64% response rate.

| Aspect | Rated of "Some" or "Great" Value |
|---|---|
| Overall Rating | 95% |
| Value in Helping Advance the Understanding of Project Management | 90% |
| Value of the Mentoring Process | 87% |
| Overall Value in Helping Advance Career Goals | 85% |

83% or respondents said they received the right amount of mentoring with:
- 41% receiving 1 hour/week
- 30% receiving 2 hours/week
- 16% receiving 3 hours/week
- 14% receiving 4 hours/week or more

Of those:
- 66% rated mentoring of "Great" value
- 27% rated mentoring of "Some" value

Comparing HOPE to other learning experiences:

| Comparison | % |
|---|---|
| Best I Ever Had | 24.5% |
| Better then Others | 47.2% |
| About the Same as Others | 13.2% |
| Worse than Others | 11.3% |
| No Response | 3.8% |

# Top Benefits reported by Participants

- Gives early-career staff a chance to lead an end-to-end project in a stretch assignment within their discipline.
- Gives responsibility to early-career hires that helps to build confidence.
- The ability to grow and make mistakes without jeopardizing a major program.
- Cultivates center-to-center cooperation which improves the efficiency and success of efforts.
- Train young engineers and scientists with real exposure.

# HOPE Lessons Learned

- SOMA (TMC) Lessons Learned
  - Look out for aggressive schedules or large amount of scope because need to make sure there is time for learning
    - Need 1-2 month for staffing
    - 1 month for team building and process building
    - Time to attend classes and workshops
    - Time to redo work
  - Key team members should attend APPEL classes preferably before start of project:
    - Project Management
    - Systems Engineering
    - Resource management
- ESSP Program Office Lessons Learned
  - Mentors need roles defined to ensure involvement
    - Assessment at major reviews and description of involvement
    - Regular meetings with team members and attend meetings
    - Help develop team processes with partners – start at kickoff retreat
    - Work with team to tailoring 7120.5 and identifying risks

# HOPE Lessons Learned

- Promote Centers holding a kickoff retreat with the team, training professional and mentors to outline roles, responsibilities, processes and interaction.
  - Make sure all necessary 7120.5 reviews are performed, but may be able to make some reviews less formal.
- Project Lessons Learned
  - Ensure mentors are involved, performing center could consider some sort of reporting or formal interactions
  - Hold a kickoff retreat to understand roles, responsibilities and processes right after team is formed
    - Training Professional and Mentors should help facilitate this meeting
  - Make sure partners scope of work is well understood and is acceptable
  - Start staffing the team early because it will take time
  - Work with Mentors to tailor 7120.5E
  - Make sure learning is built into the schedule
  - Project planning at a detailed level is good project management, ensuring that the project has an appropriate schedule that represents the total project and is manageable