JPL SE Development Programs

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SE Development Activities

- **Leadership Program**
  - On-the-Job Training (OJT) for mid-career SEs
- **Technical Knowledge Training and Capture**
- Systems Engineering Workshop
- Classes covering the SE functions (e.g. requirements, V&V, interfaces)
- Classes covering application of SE in technical domains (e.g. avionics, telecommunications, propulsion)
- Videos and presentations on SE website for easy access
- **Phaeton Program**
- Rapidly train early career hires (ECH's) through JPL hand's on project experiences

SE Leadership Program:
SE On-the-Job Training (OJT)

- **Objective:** To provide focused SE training and professional development to 10 engineers per class with potential for future SE leadership roles.

- **Activities and Accomplishments**:
  - Program is customized to meet participants' career development goals.
  - Key elements:
    - Mentoring
    - 360 deg feedback evaluation
    - Wide exposure to project reviews
    - SE classes in technical domains
    - Field trips to Dryden to tour SOFIA aircraft, Kepler launch and Goldstone
    - Monthly chats with lead system engineers on various topics (i.e. fault protection, model based engineering)
    - Participation in proposal activities
- Five classes completed

Technical Knowledge Training:
Systems Engineering Workshop

- **Objective**: To provide in-depth exposure in systems thinking and analysis to mid-career system engineers at all levels (Project, System and Sub-system)

- **Activities and accomplishment**
  - Use **case studies** based on JPL missions augmented with **talks** on key system engineering functions, **storytelling,** and **panels** by experienced JPL project managers and systems engineers
  - Workshop is in high demand
  - Extremely positive feedback from Workshop participants
    - Previous Workshops received high marks (4.9 out of 5)

"The System's Engineering Workshop that I attended last week was hands down the best course I've taken at JPL. The format was refreshing from any other JPL course in that attendees were expected to come prepared to discuss the cases with peers"   (By Gary Glass)

Phaeton Program Overview

- **Objective**: to rapidly train early career hires (ECH's) through JPL hand's on project experiences
- **Approach:**
  - Design, build, test and fly small payloads in the range of $2 to $8 million
  - Development life cycles of 1 to 3 years
  - Start dates separated by about one year.
  - Projects are organized and implemented as flight projects, usually Class D.
  - JPL Flight Project Practices apply and participants learn how to apply them and how to seek waivers as applicable for small class D projects.
  - Key project positions are filled by ECHs: PM, PI, MAM, CAMs, SEs
  - Each ECH is assigned a mentor to help guide the ECH, both technically and programmatically
  - Participate in NASA HOPE (Hand's on Project Experience) program and internal JPL developed projects.

Phaeton Project Summaries

- **Project:** PMD
- **Objective:** Measure flexible body dynamics of LEO Host

- **Project:**TRaiND
- **Objective:** Validate hazard avoidance algorithms via sounding rocket

- **Project:** OPALS
- **Objective:** Optical telecon on ISS

- **Project:** ASTRA
- **Objective:** Validate instruments in Mars analog environment from balloon