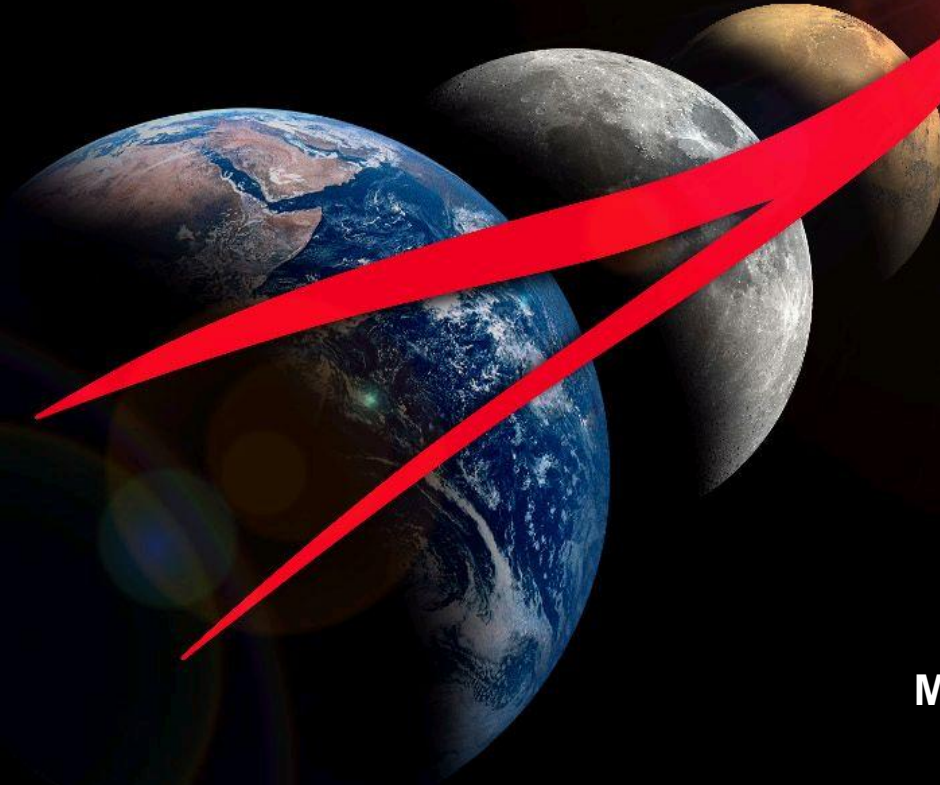




# Lunar Lander Project

## Initial Implementation



May 10, 2007

# CONSTELLATION



# Background

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- ◆ **The Constellation Program is standing up a new project office, the Lunar Lander Project Office**
- ◆ **Initial project implementation will consist of an in-house design team**
- ◆ **The project will periodically post status updates to the following website. [www.exploration.nasa.gov](http://www.exploration.nasa.gov)**



# Goals for in-house design team

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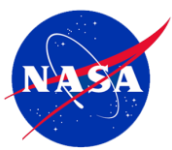


## ◆ Two main goals for in-house design team:

- Get smart on design and be able to produce and validate a good set of requirements
  - Provide integration with other projects to ensure architecture closes
  - Increased confidence in design, cost and schedule estimates
  - May allow us to pull long term development schedule to left
- Try out a different approach for early project development that will hopefully allow a more streamlined Phase A/B

## ◆ Long Term Vision:

- By the time we let a major Lander contract
  - have a government design team that is smart enough to know what is needed
  - to have written excellent requirements for it
  - to get there in as streamlined a manner as possible

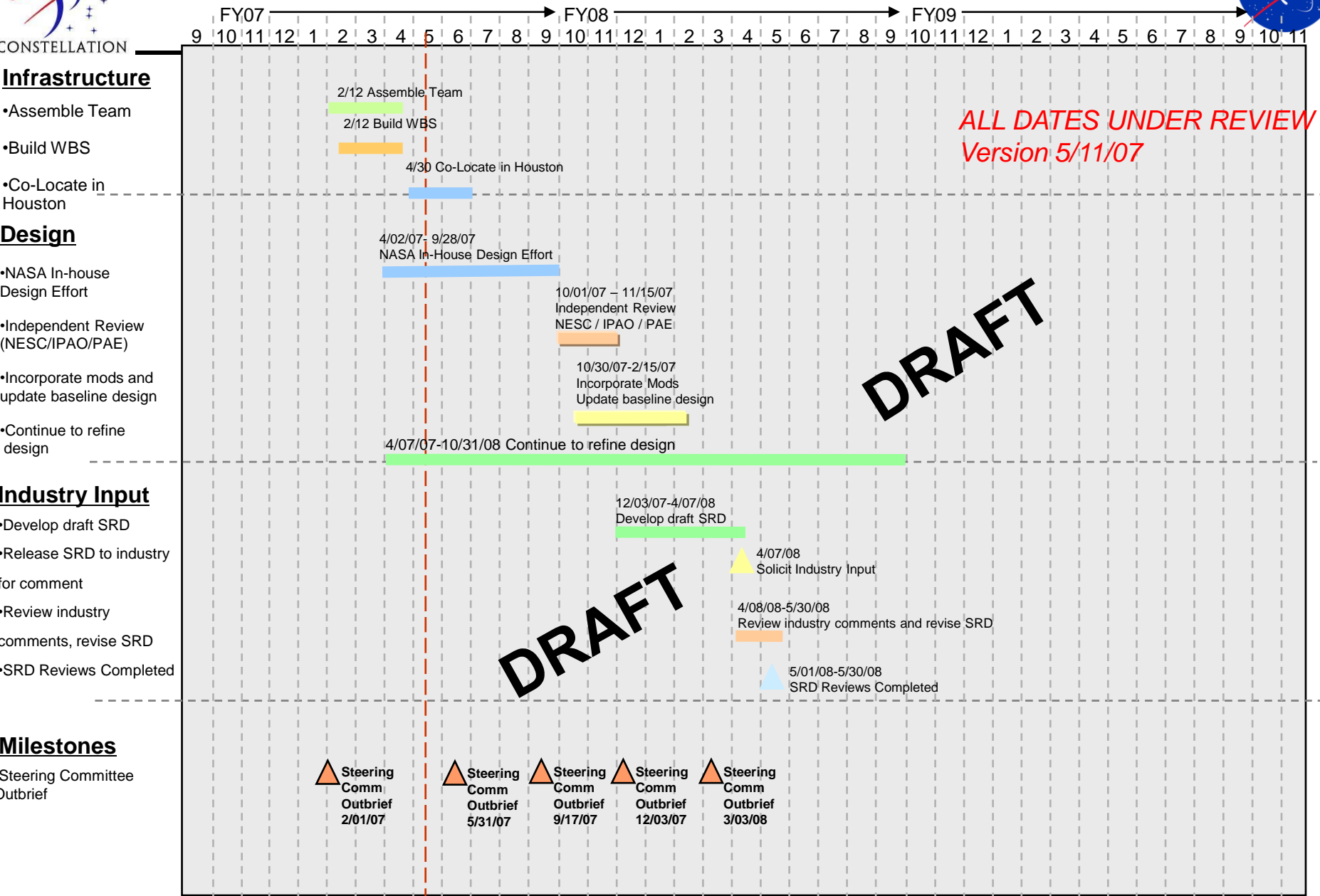


# Overview of Approach for In-house Design Team

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- ◆ **Using a Smart Buyer approach**
  - Take 6-9 months to develop a preliminary government design
- ◆ **Coming out of initial design effort, have independent, agency-wide review**
- ◆ **Iterate on design following independent review**
- ◆ **Using knowledge gained from in-house design effort, create draft vehicle design requirements**
- ◆ **Get out to industry for comment/input**
- ◆ **Continue to refine design & requirements based on industry input**
- ◆ **In FY09 have a vehicle requirements review, and baseline requirements**
- ◆ **Between 2009 – 2011, build hardware/test beds to mature confidence in path for forward design (lower risk of unknown surprises)**
- ◆ **Continue to mature design in-house until PDR timeframe**

# Lander Design Team Integration Roadmap – 40 months



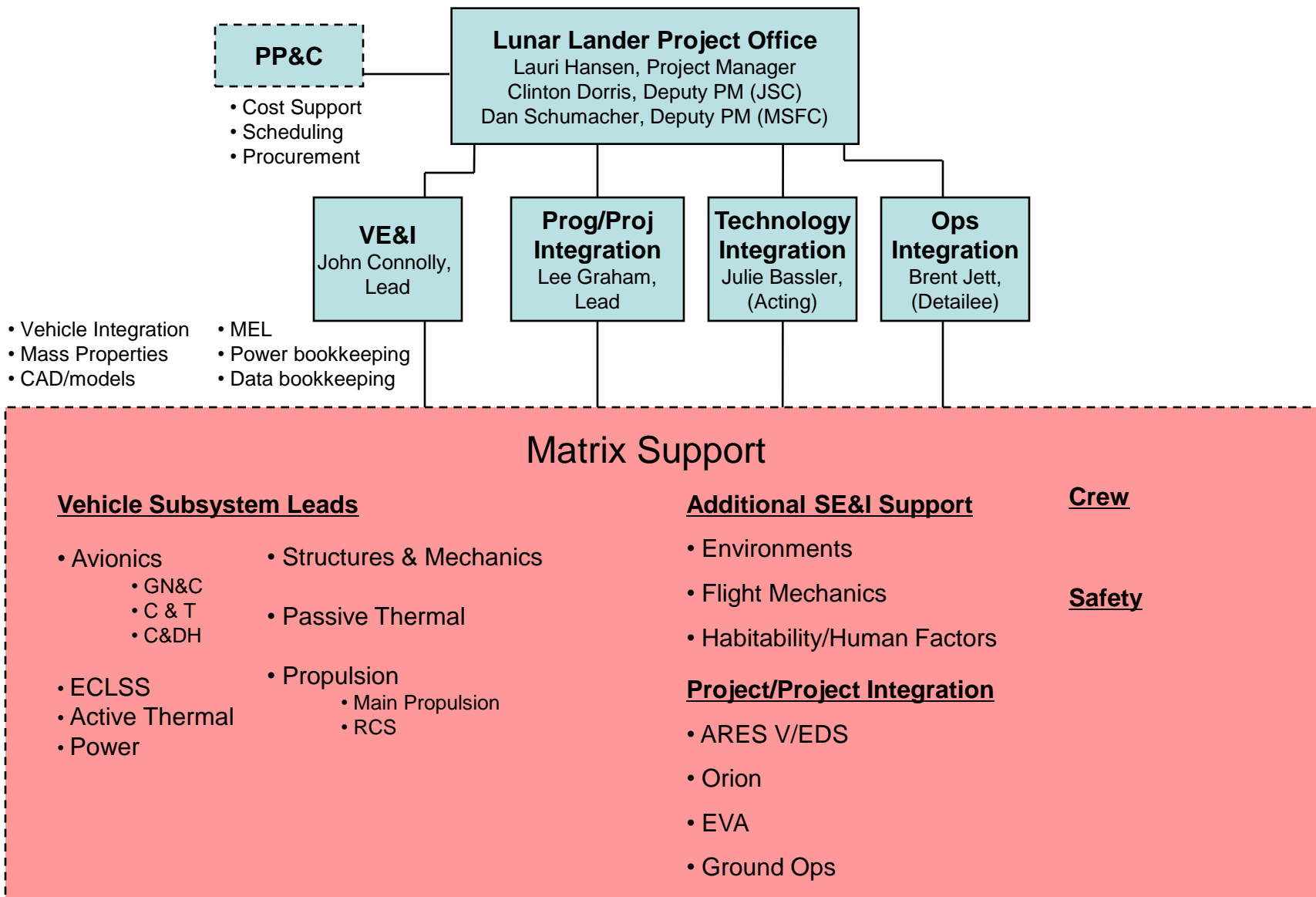


## Approach (cont.)

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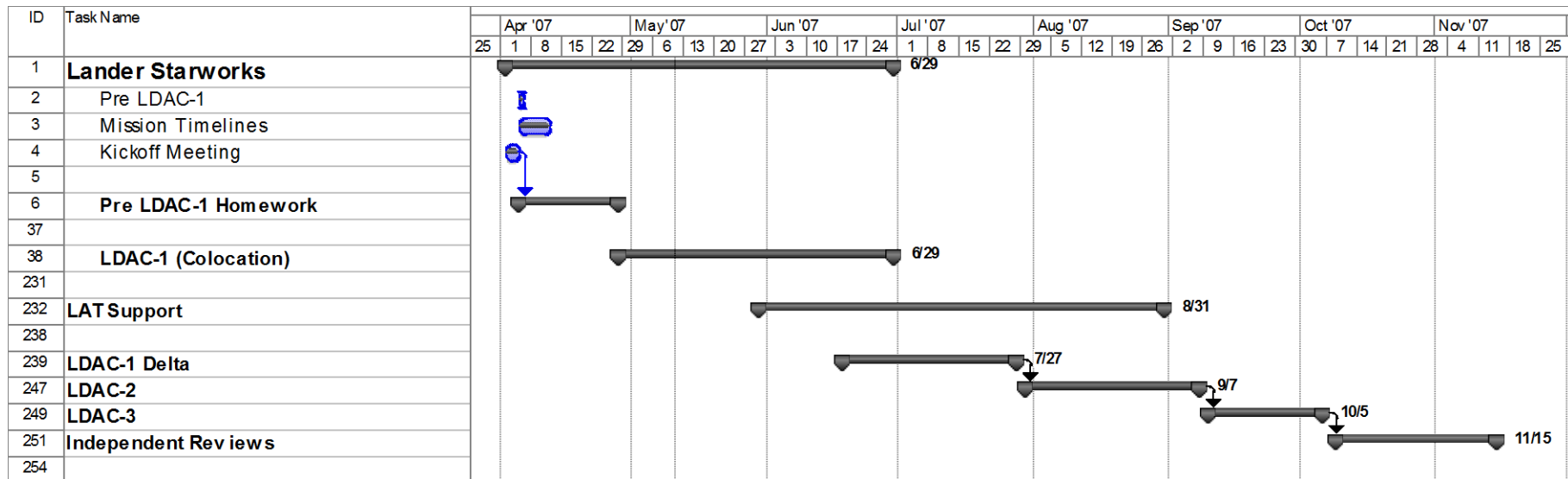
- ◆ **Team started with ground rules & constraints imposed by overall CxPO transportation architecture and current LAT-2 for surface systems**
  - Many physical constraints imposed by architecture (mass, delta V, etc.)
  - Surface systems architecture less mature. However, Lander and LAT-2 agreed on a packaging configuration and initial scenarios
- ◆ **Examined what's been done to date, but opened up all the design trades to the extent the architecture allows**
- ◆ **Maturing design effort – drawings, CAD models, performance analyses, etc.**
- ◆ **Keep process overhead to the minimum required**
  - Recognizing that a small, dynamic team doesn't need all of the process overhead that a much larger one does
  - But.... It still needs the basics

# Lander Design Team Initial Team Structure





# Lunar Design Analysis Cycle Schedule – 6 months







# Forward Work

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- ◆ **Need to flesh out implementation after initial set of design iterations**
- ◆ **Several significant drivers:**
  - How far does NASA want to take the in-house design? PDR? CDR?
    - Changes the nature of the baselined requirements
  - How long does the project stay in initial operating mode, and what does the transition look like
    - Initial team is made of designers, analysts, integrators. Not necessarily the same skill set as requirement and RFP writers
  - How much money will be available in 2009 -2011 timeframe to build hardware and test beds to
    - Buy down risk
    - Finalize design trades
  - Even if NASA extends the design in-house, need industry engagement/interest & help



# Current Status

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## ◆ Current Project Status

- Completed initial meeting with Steering Committee & received go-ahead for implementation
- Completed staffing of Agency-wide team
- Initial kick-off week was 4/2 in Houston
- Team co-location occurred 4/30 in Houston
- LDAC1 underway