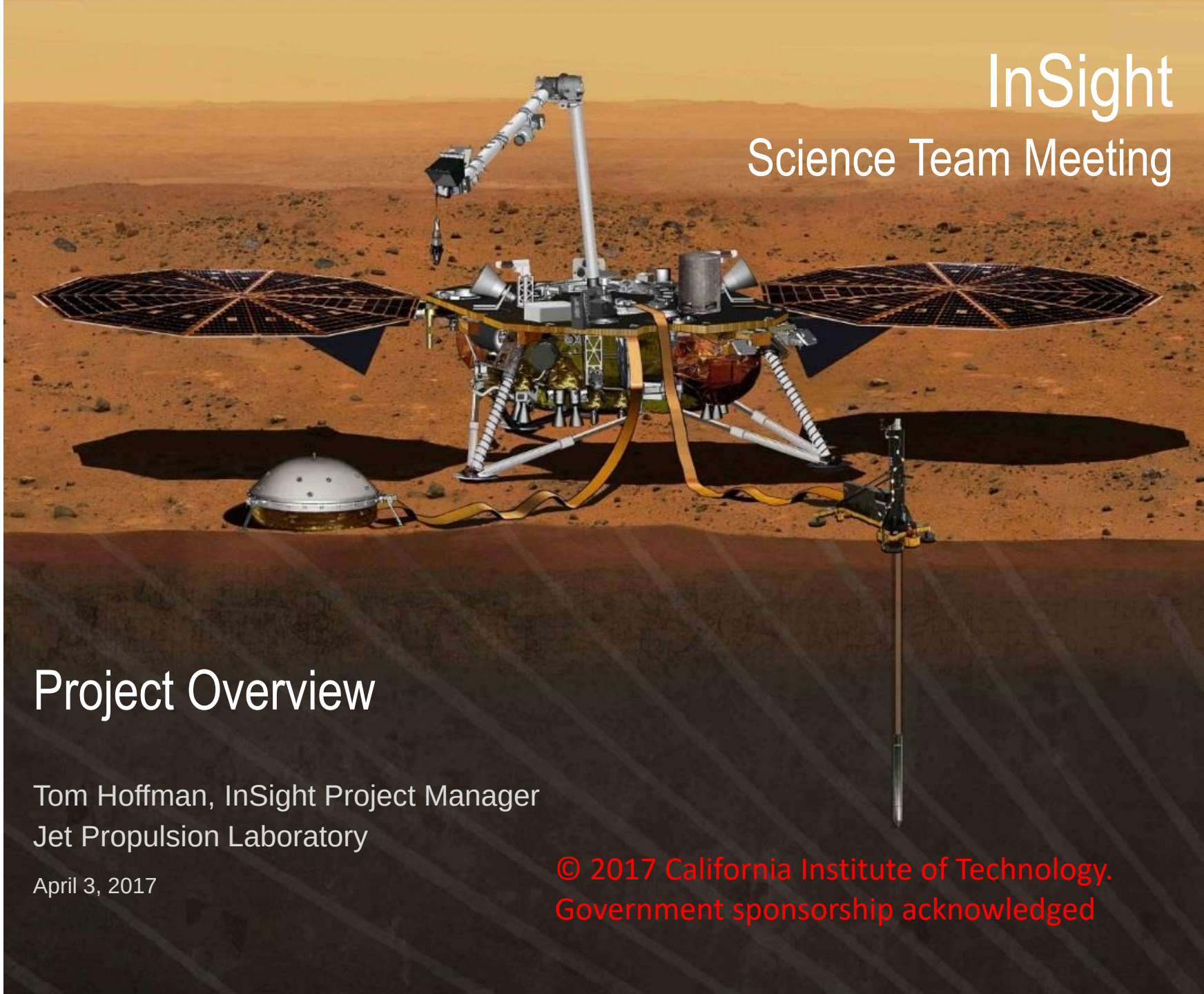

InSight
Science Team Meeting

Project Overview

Tom Hoffman, InSight Project Manager
Jet Propulsion Laboratory

April 3, 2017

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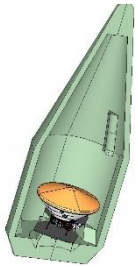
Government sponsorship acknowledged

2018 Mission Overview

LAUNCH

May/June 2018



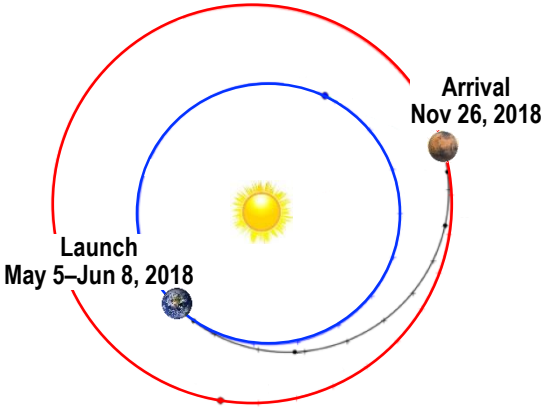
InSight Stowed in 4-m Payload Fairing

Vandenberg Air Force Base (Western Test Range)

Atlas V 401

INTERPLANETARY CRUISE

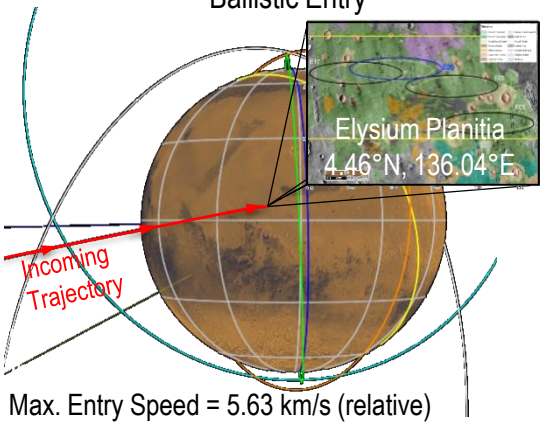
171 days to 205 days



Type-1 Trajectory
Max C_3 = 14.3 km^2/s^2, max DLA = -40.8 deg

APPROACH & EDL

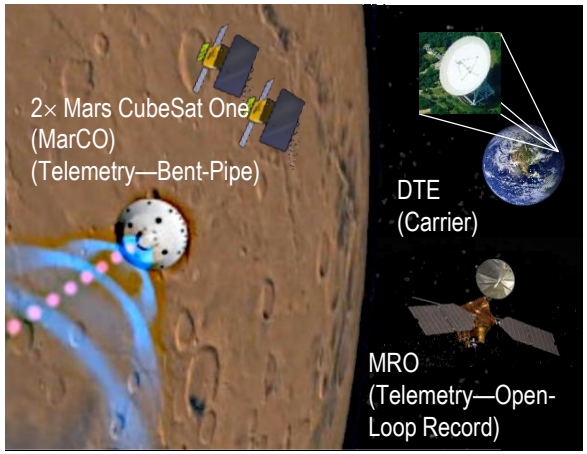
Ballistic Entry



Max. Entry Speed = 5.63 km/s (relative)
Ls = 296 deg (dust storm season)
Landing elevation ~ -2.7 km
Landing LMST = ~2:05 PM–2:25 PM

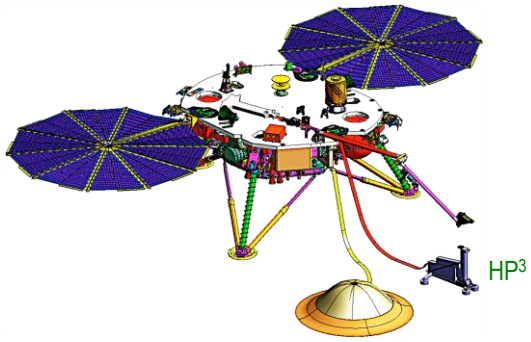
EDL COMMUNICATIONS

Ultrahigh-Frequency Link



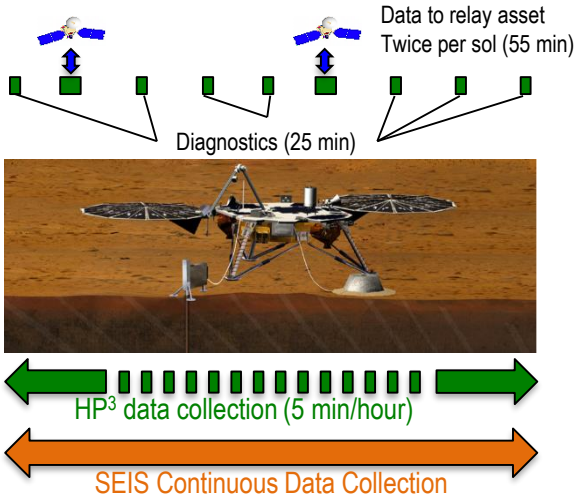
DEPLOYMENT

54 Sols

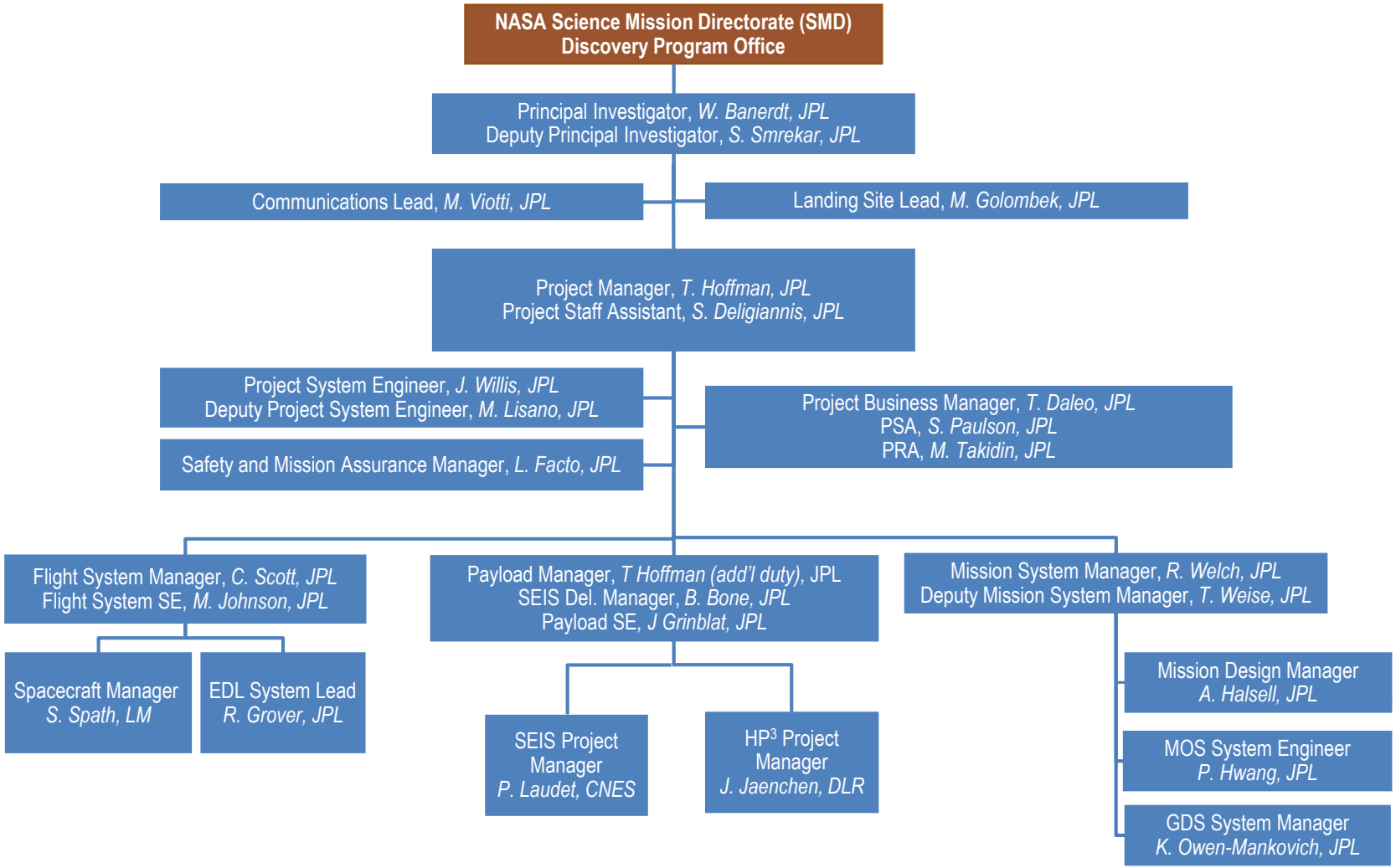


SCIENCE MONITORING

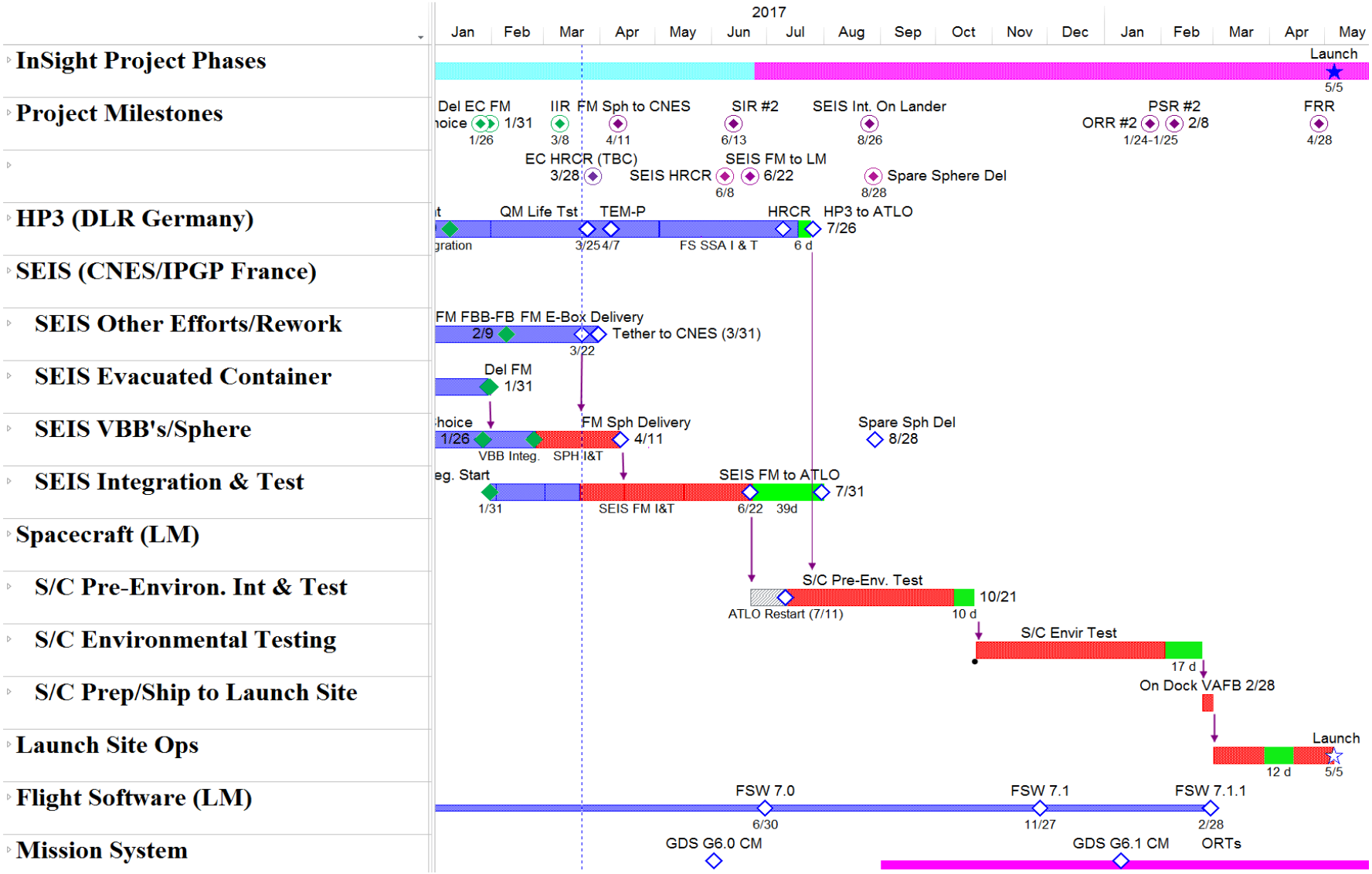
One Martian Year



Project Organization

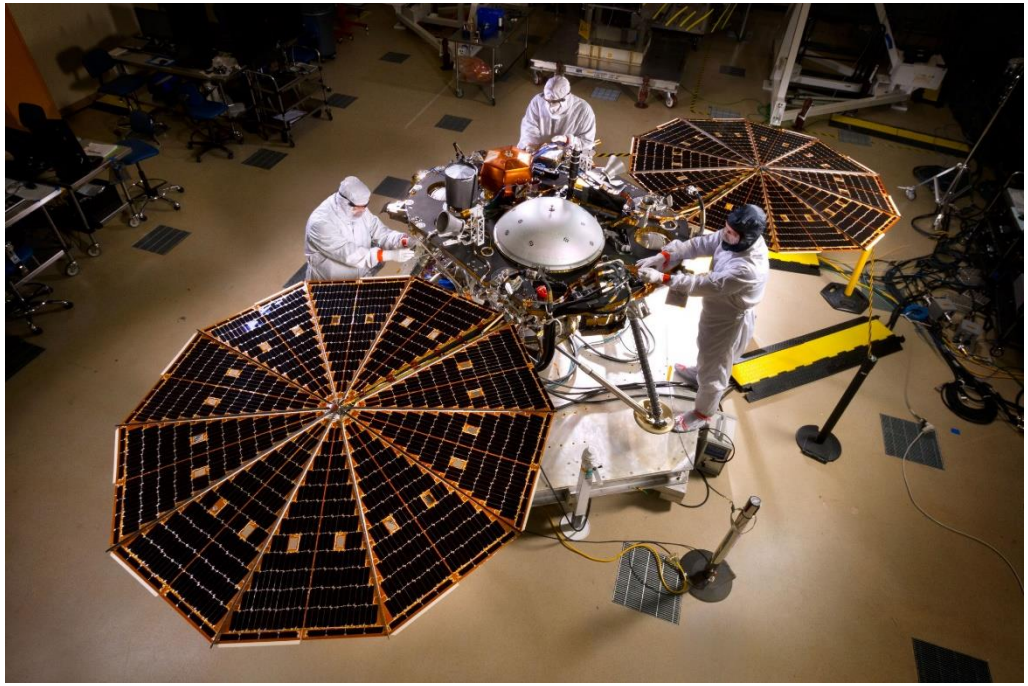


InSight Project Top Level Schedule



Spacecraft Status

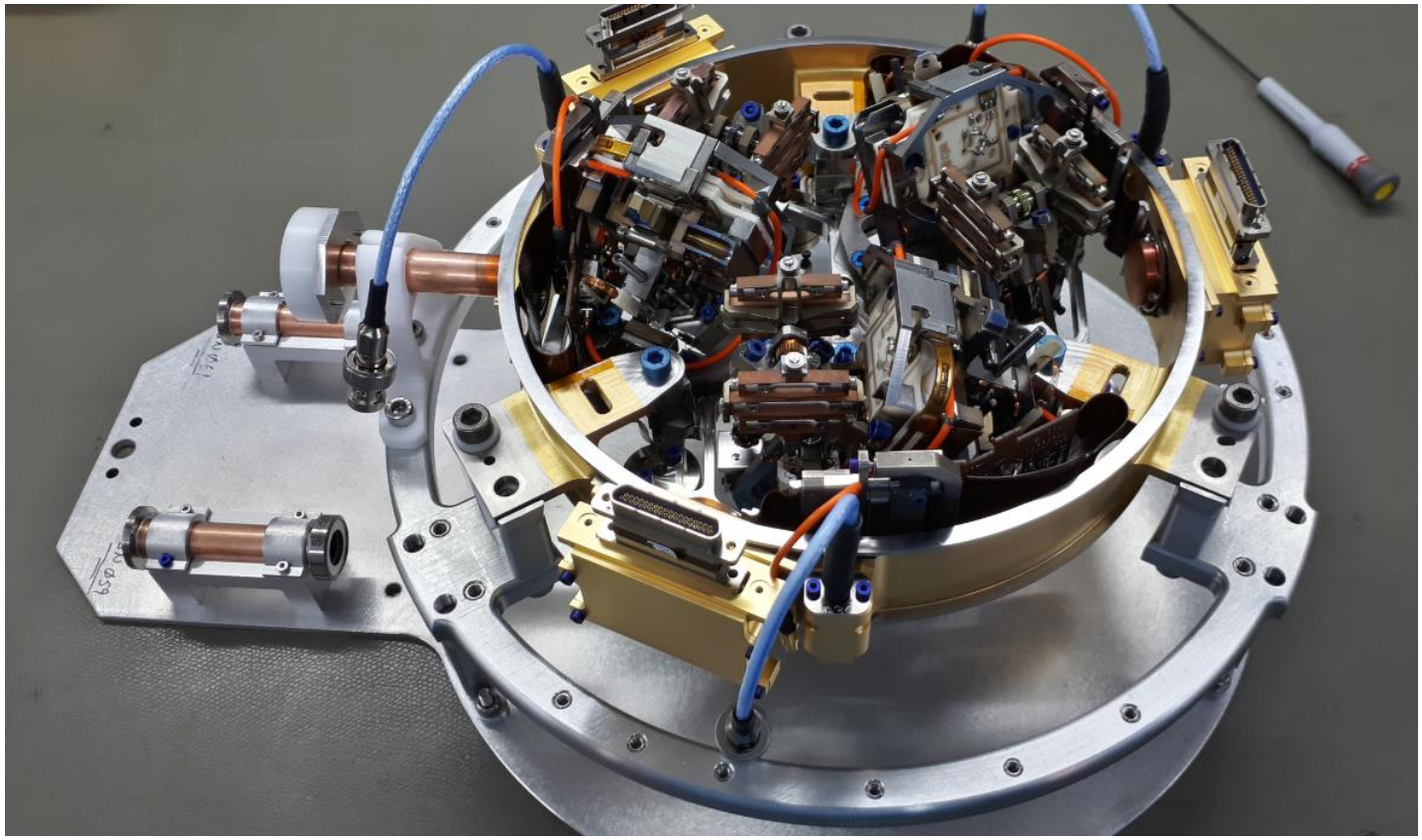
- Spacecraft stored at LM-Denver awaiting ATLO Restart
- Limited activities planned for the hiatus period were completed
  - Most notably was delivery of a new flight software version
- LM Team starting to ready for the start of ATLO
  - System Integration Review (SIR) is June 13-14
  - Start of ATLO operations is July 11th
  - Ship to VAFB is February



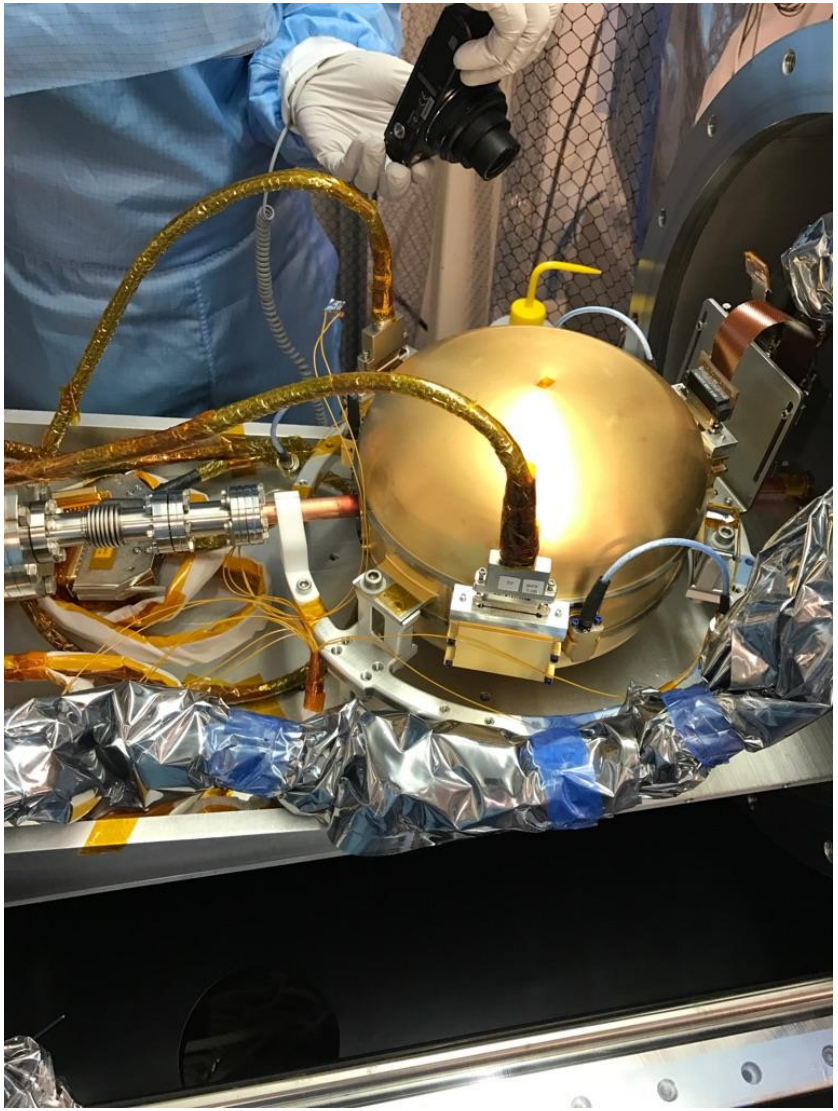
Payloads - SEIS

- Status:
  - Completed new EC built by JPL that incorporates the lessons learned and a more robust test program
  - Modified the gain and control loop parameters to gain performance margin on VBB and SP sensors
  - Augmented QM test program to characterize sensor assembly performance in the in situ environment
  - Building additional VBBs and electronics to provide flight spares
- Near term activities:
  - New FM Ebox has been delivered to CNES, being tested now
  - Sphere has been sealed, leak checked and is nearly ready for pinch off
    - Will be delivered to CNES in mid-April
  - CNES I&T team ready to begin instrument level testing
    - Successfully passed Instrument Integration Review (IIR) last month

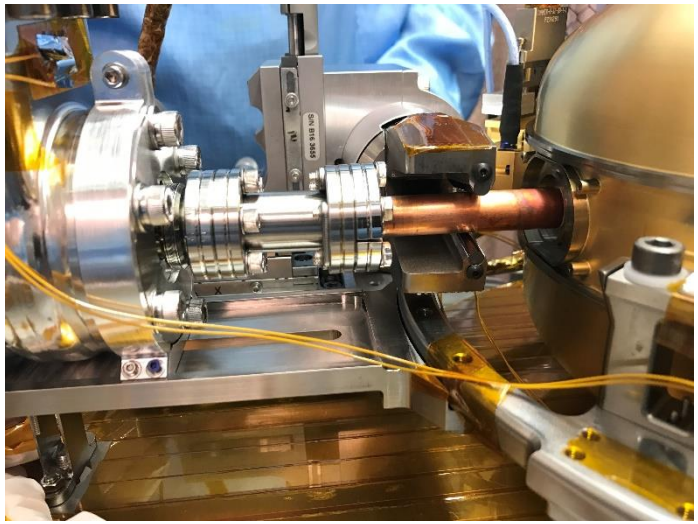
SEIS with 2 VBBs before welding

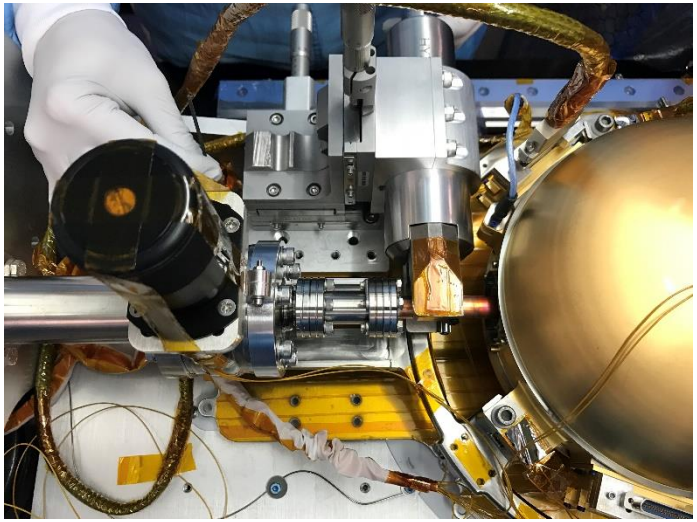


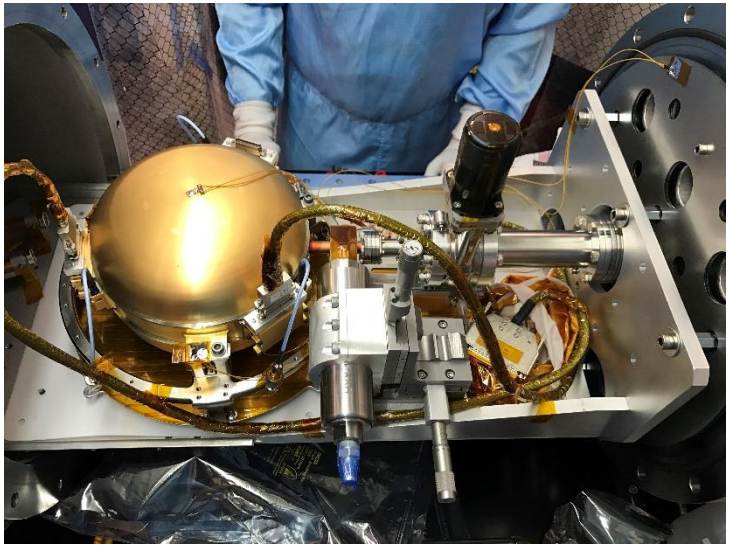
SEIS in leak test configuration – welded sphere



Sphere pinch off operations







Payloads - HP3, APSS, IDS

- HP3
  - DLR has completed the redesign of the mole
    - Improved mechanical packaging for more robust operations
  - Completed design, build and test of Life Test Unit (LTU)
  - Next step is to build, test and deliver Flight mole and SSA

- APSS
  - Most components in storage during hiatus
  - Will recalibrate the Pressure sensor prior to ATLO delivery

- IDS
  - FM Motor Controller rework required due to parts alert completed
  - EM IDS arm reworked to support testbed activities

Mission Systems

- Ongoing Activities:
  - GDS team supporting testbed activities and new FSW release
  - Deployment team working on test scenarios in testbed
  - Science Operations engaging instrument teams with TIMs
    - Development of payload soft products is an important activity
  - Other MS areas now becoming active as team ramps back up

- Near Term work:
  - New team members joining the project
    - Many new faces or familiar people in new roles
  - Each area working towards ORTs and operations

Overall PM Thoughts

- SEIS remains the near-term focus
  - SEIS plan will deliver a well-tested instrument before ATLO start
  - Need to execute to the plan – so far so good!

- ATLO flow takes advantage of first campaign
  - Complete flow has already been executed, team getting into place
  - Will look at the order of activities in April to improve efficiency
  - SIR in June is next major Project event

- Operations planning is proceeding well
  - Team has staffed all key positions
  - Implementation and training plans are in place
  - Need to complete all work on time to support May 5th launch