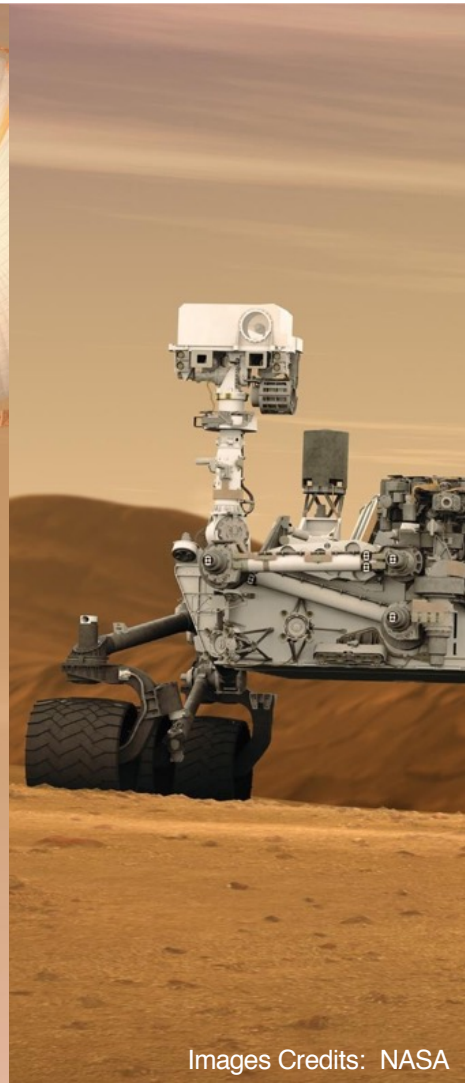
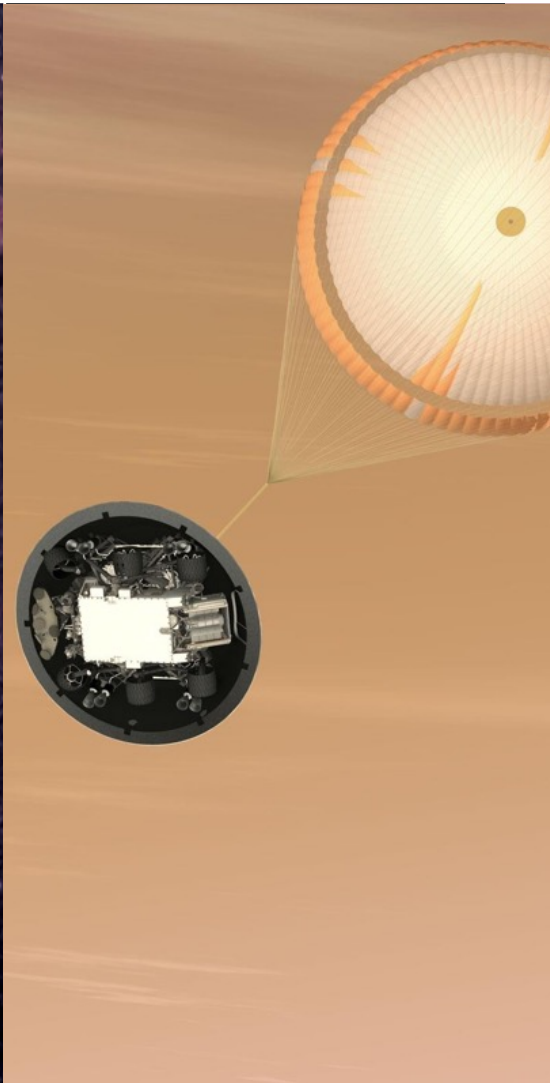


Technical Leadership



Jody L. Davis
NASA Goddard Space Flight Center
DevReach Conference
Sofia, Bulgaria
October 20-24, 2019



Images Credits: NASA

Experiences at NASA



“Don't let anyone rob you of your imagination, your creativity, or your curiosity. It's your place in the world; it's your life. Go on and do all you can with it, and make it the life you want to live.”

- Mae Jemison, first African American woman astronaut in space



Engineering Career Journey

A geeky engineer who became a technical leader...

- ✓ Wanted to be an aerospace engineer at a young age
- ✓ Earned private pilot license at local airport in Minnesota, USA
- ✓ Studied Aerospace and Mechanical Engineering in undergraduate (Embry-Riddle Aeronautical University) and graduate school (Univ of VA)
- ✓ Learned how to **work in teams** with Detailed Spacecraft Design teams
- ✓ University research focused on flight mechanics, supporting Titan Entry, Descent and Landing (EDL) for ESA Huygens probe...got to **work with NASA & international partners**
- ✓ Have now had a 15 year career at NASA with **breadth of experience**
- ✓ More to come.....

Innovation, Diversity and Leadership is key...

- ✓ Innovation, especially in STEM fields, is a key for success
- ✓ A diverse perspective can open up solution space professionally and personally, whether in background/discipline, race, gender, etc
- ✓ Technical leadership has been my focus at NASA, tailoring my career path to continue developing these skills throughout my career

Technical Leadership

Technical Development...

NASA Mars Science Laboratory (MSL)

- ✓ Helped develop Entry, Descent & Landing trajectory simulation for Mars Curiosity, exercising **technical background and innovation**
- ✓ Part of Curiosity rover landing team, utilizing **team building skills** learning to work with different personalities under stress and challenging team dynamics



Leadership Development...

Low-Density Supersonic Decelerators (LDSD) Flight Test

- ✓ Led LDSD team at NASA interfacing with multiple diverse groups
- ✓ Embraced leadership opportunity even in the presence of adversity and other challenges...**perseverance is key**
- ✓ Flight test demonstrated new technologies to enable landing larger payloads on Mars Surface
- ✓ Developing **leadership skills** managing highly technical team



Mars Entry, Descent and Landing

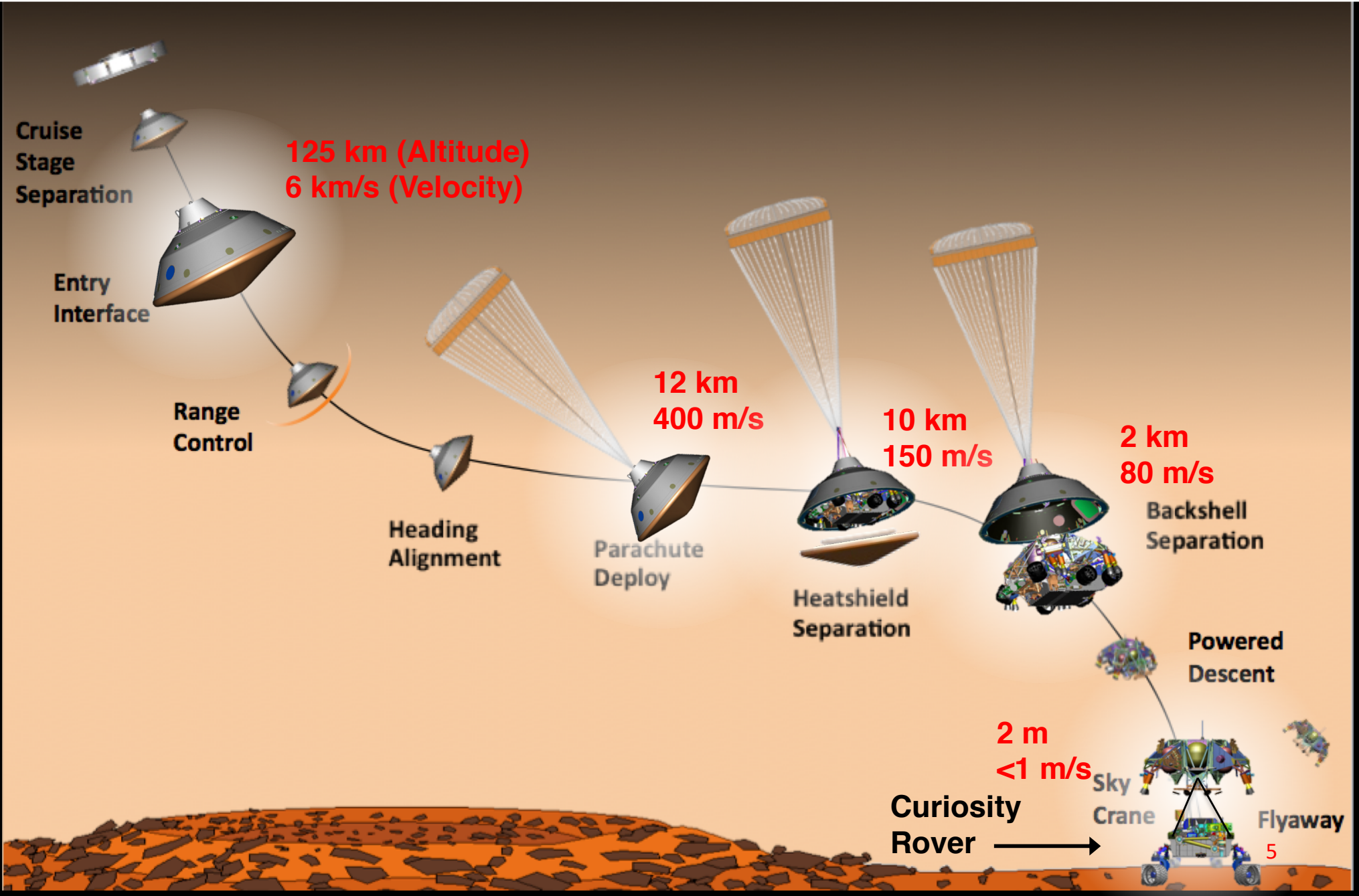




Image Credit: NASA/JPL-Caltech

Technical Leadership

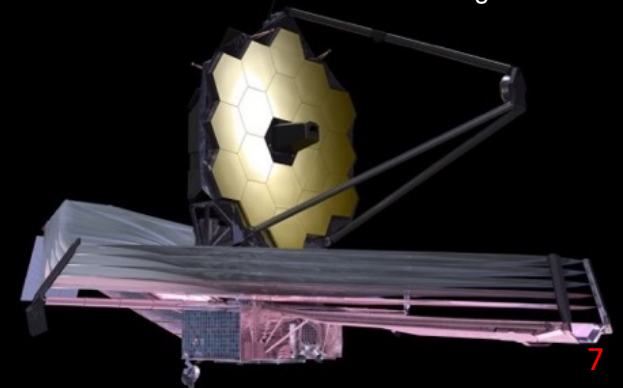
Technical & Leadership Development...

James Webb Space Telescope (JWST)

- ✓ Part of the mechanical integration and testing and systems engineering team building NASA's largest space telescope... **career challenge**
- ✓ Part of testing JWST at NASA Goddard Space Flight Center in the world's largest cleanroom
- ✓ Led final integration of critical hardware onto JWST **utilizing new technical skills and team leadership**



Images Credit: NASA



James Webb Space Telescope

Infrared tennis-court sized space telescope

JWST will be launched into deep space 1 million miles from Earth...

- ✓ Observe stars and galaxies formed just after Big Bang (13.5B years ago!)



Images: NASA



Images: NASA

- ✓ Search out other habitable planets in our Universe similar to Earth



Aerospace Leadership

Technical & Leadership Development...

Wide Field Infrared Survey Telescope (WFIRST)

- ✓ Supporting the Payload team as the Deputy Payload Systems Engineer (SE)
- ✓ WFIRST Payload team consists of a mix of Discipline and Element SE's from different backgrounds/experiences
- ✓ Currently helping lead the development of the WFIRST Payload **leveraging technical skills, communication skills and team leadership...."have the courage to be aware of and understand what you don't know"**



Image Credit: L3Harris

Wide Field Infrared Survey Telescope

Infrared field of view 200x larger than Hubble's

WFIRST will also be launched into deep space 1 million miles from Earth...

- ✓ Characterize the acceleration of the expansion of our Universe (dark energy)

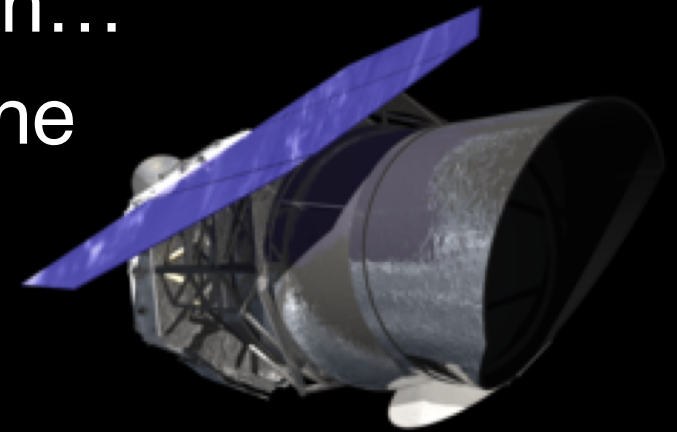


Image Credit: NASA



Image Credit: NASA

- ✓ High contrast images and measurements of exoplanets to characterize their atmospheres... habitable?

Technical Leadership

Getting comfortable with being uncomfortable...

Mount Kilimanjaro

- ✓ Kilimanjaro is the highest mountain in Africa (Tanzania) at 19,300 ft



- ✓ Hiked with three other NASA co-workers and learned more about ourselves than we expected, **teaching you about your reactions in stressful situations...and to make the best of the worst**

Leadership Lessons Learned

You can't land a Mars rover or build a Space Telescope by yourself...

- ✓ Technical aspect of engineering and science work is **only a small fraction** of overall success
- ✓ Teamwork, collaboration and communication is **actually the majority** of the effort
- ✓ Never too late to start developing or sharpening those team work and leadership skills

You are your own advocate...


- ✓ You will be surprised how much you can achieve in your career...**face adversity and challenge head on** and don't be afraid to try something new
- ✓ Look for input from a diverse perspective, you never know where the solutions may exist
- ✓ Growing your career experience, support from mentors, and continued learning will help you be successful

Where will your Curiosity take you?

NASA 

www.nasa.gov

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 National Aeronautics & Space
Administration - NASA

James Webb Space Telescope

www.jwst.nasa.gov

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 NASA's James Webb Space Telescope



Wide Field Infrared
Survey Telescope

www.wfirst.gsfc.nasa.gov

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Mars Science Laboratory



www.nasa.gov/msl

mars.jpl.nasa.gov/msl

 @MarsCuriosity

 MarsCuriosity

Jody L. Davis 

 @TangoDeltaNom

Jody.L.Davis@nasa.gov