



LunarSS: Inspiring the Future



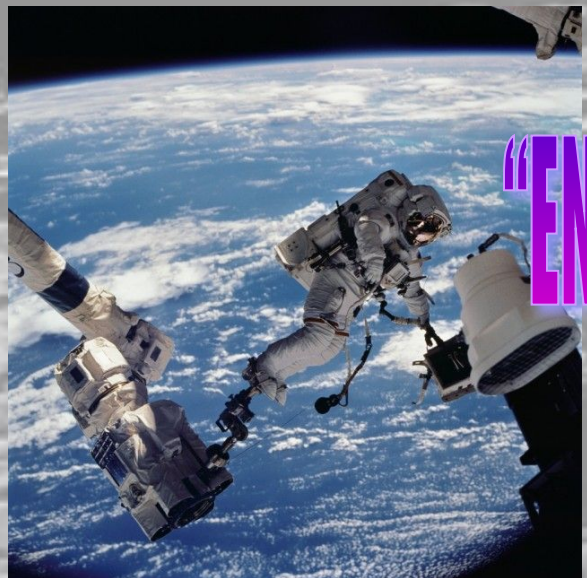
Dana Pugh

ASTE 527

December 15, 2008



Inspiring the Next Generation



"ENGAGE KIDS MORE!!!!"

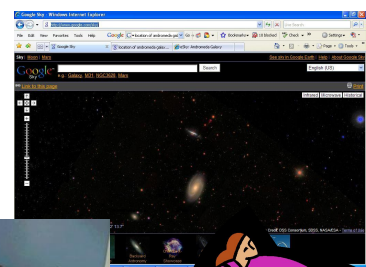
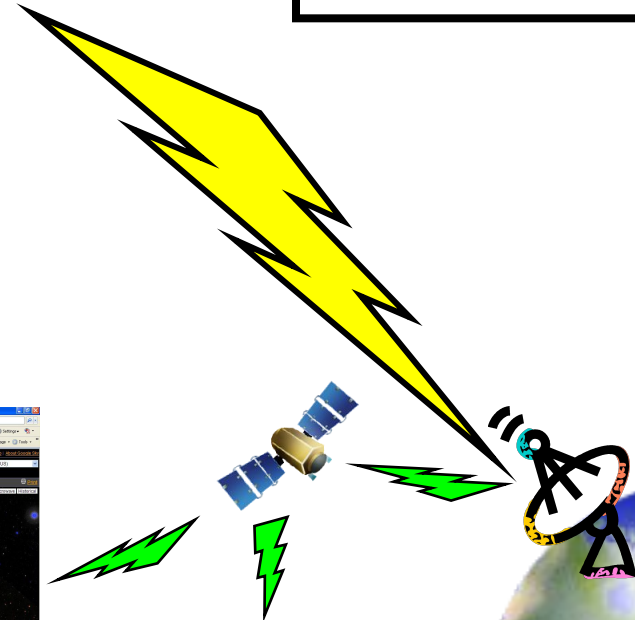
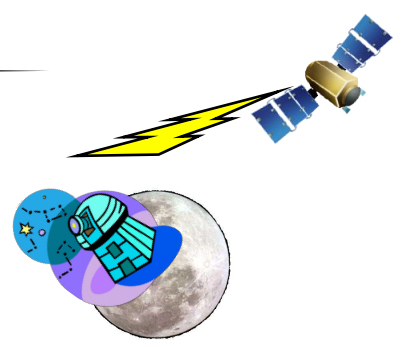
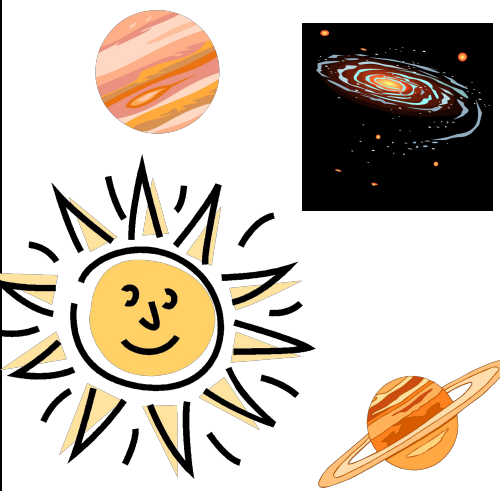




Lunar Space Scope Architecture



LunarSS



Nodes: Photo Entry - Data

This user asset has not been used. Please find your profile page.

The Grid Identifier is provided in the first frame.

This information comes from the user page. Be sure to enter your information in the format specified to the right of the input box, including leading zeros, colons, and dashes.

Keep your eye on this!

For security purposes, no carriage returns are allowed. Also only the following characters can be used:

Save Photo Information

8	hours	Coordinate System for locating Astronomical bodies
30	minutes	
00	seconds	
25	degrees	
Name: <input type="text" value="XYZ Middle School, Toronto, Canada"/>		
Code: <input type="text" value="123456789"/>		
Status: <input type="text" value="Closed"/>		
Year: <input type="text" value="2007"/>		
URL: <input type="text" value="http://www.xyzmiddle.com"/>		
Location: <input type="text" value="Andromeda Galaxy"/>		
Notes: <input type="text" value="see James' post and our object gallery."/>		
Description: <input type="text"/>		

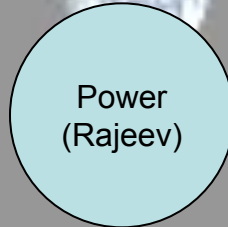




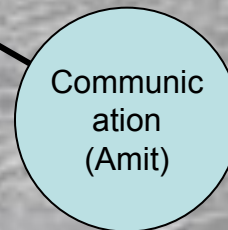
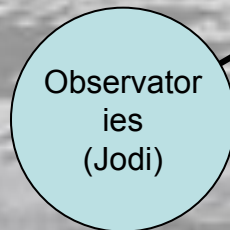
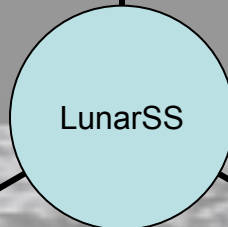
Interfaces



- Computer
- Cameras
- Sensors



- Information
 - Detailed pictures of various frequencies and resolutions
 - Temperature, seismic, radiation data



- Mounting/Set Up Interface
 - Computer
 - Camera
 - Sensors



Operational Architecture



LunarSS

Observatory
Operations

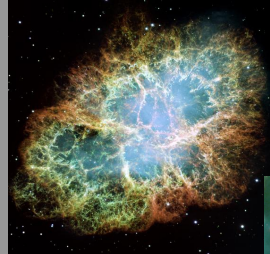
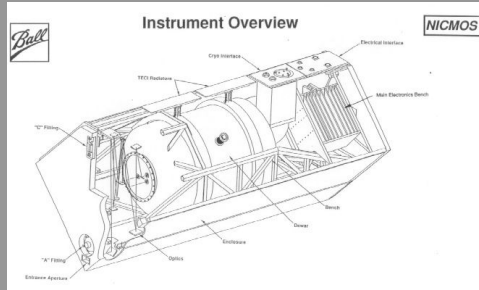
School/Education

Website





Sensory Systems



- Camera:
 - Advanced versions of Hubble imaging systems
 - Wide Field and Planetary Camera 2 (WFPC2)
 - Near Infrared Camera and Multi-object Spectrometer (NICMOS)
 - Space Telescope Imaging Spectrograph (STIS)
- Temperature Monitoring Systems
- Seismic Activities Monitors – study meteor hits
- Radiation Detectors



Power/Communication/ Integration



- Power
 - Power needed for each sensory system
 - 60W to run laptop
- Communication
 - Images & Sensor information sent in “bursts”
- Interchangeable sensor/camera system
 - Allows technology to be top of the line

Technology rate is fast!



Subaru's primary near-IR camera & Spectrograph



How are Kids involved



- Request the picture on the website interface
 - Observatory will be pointing to what area
 - Models
 - Simulations
 - Communication closely with LunarSS Observatory Operations
 - Associate the work with the class project
 - Label the different kinds of galaxies
 - Label the names of the stars
 - Astrology
- Something New – *You name it!*



Hanny's Voorwerp

Dana Pugh



Sky.google.com



Google Sky - Windows Internet Explorer

http://www.google.com/sky/

File Edit View Favorites Tools Help Google location of andromeda gal. Go 10 blocked Check Settings

Google Sky location of andromeda galax... eSky: Andromeda Galaxy

Sky | Moon | Mars See sky in Google Earth | Help | About Google Sky

Google Sky Search English (US)

e.g.: Galaxy, M31, NGC3628, Mars

Link to this page Print

Infrared Microwave Historical

Andromeda Galaxy

9h 55m 35.0s 69° 2' 13.7"

POWERED BY Google

Image Credit: DSS Consortium, SDSS, NASA/ESA - Terms of Use

Solar System Constellations Hubble Showcase Backyard Astronomy Chandra X-Ray Showcase GALEX Ultraviolet Showcase Spitzer Infrared Showcase Earth & Sky Podcasts



Request Webpage Example



Notes:

This code word has not been used. Please input your photo request.

The Orbit Number is provided in the MAP PAGE

This information comes from the map page. Be sure to enter your information in the format specified to the right of the input box, including leading zeros, colons, and slashes.

Keep your eye on this!

Photo Entry - Data:

School: XYZ Middle School, Toronto, Canada
 Codeword: swampy97
 Status: Unused
 Orbit Number: 2463

9 hours
 55 minutes
 35.0 second
 or
 69 degrees
 21 '
 25.5 "

Coordinate System for locating Astronomical feature

GMT: 2003/191/10:33:19 (yyyy/ddd/hh:mm:ss)

Location: Andromeda Galaxy

Reason and Description: I am investigating our closest galaxy.

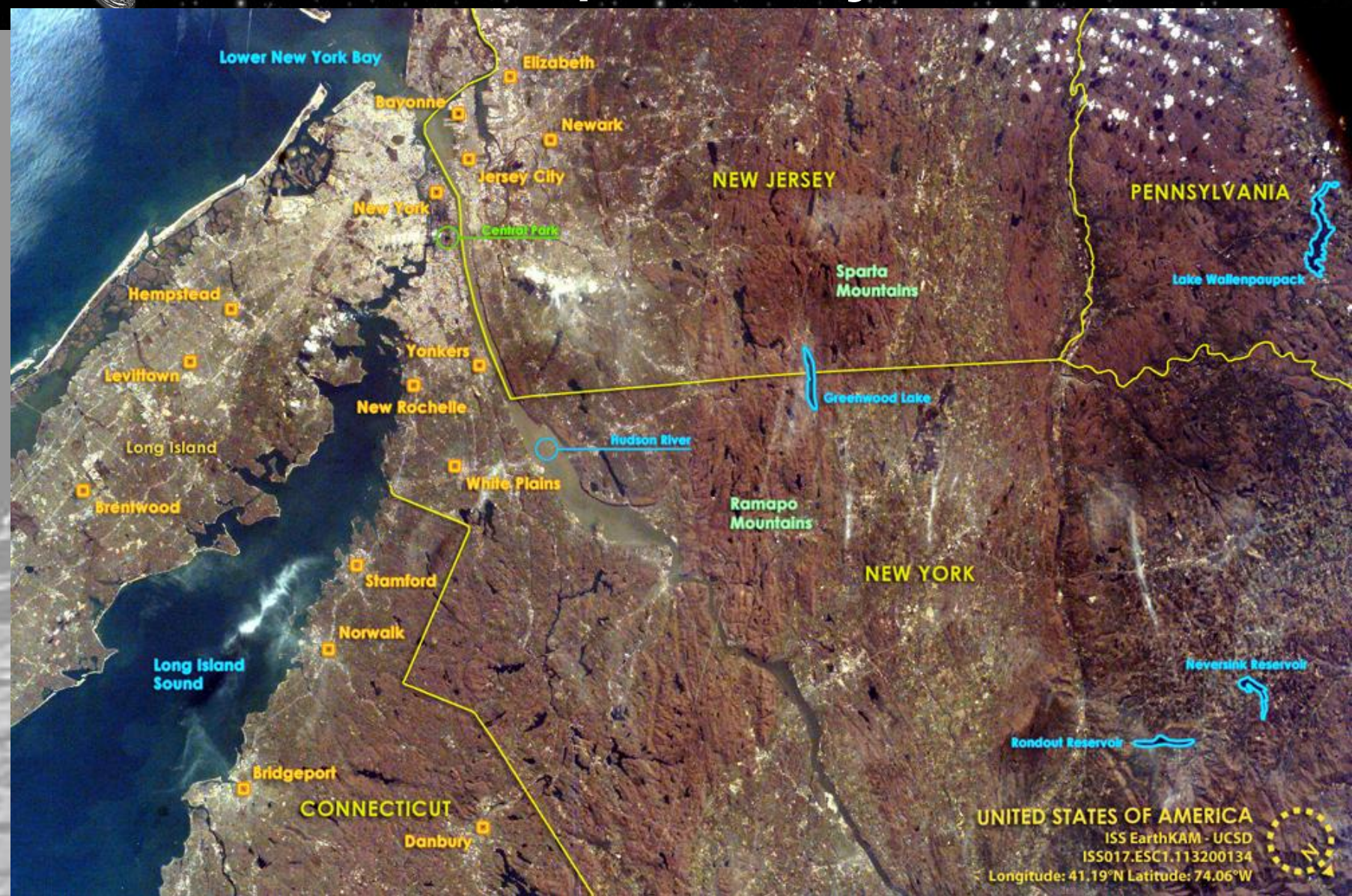
For security purposes, no carriage returns are allowed. Also only the following characters can be used: . @ -

Send Photo Selection



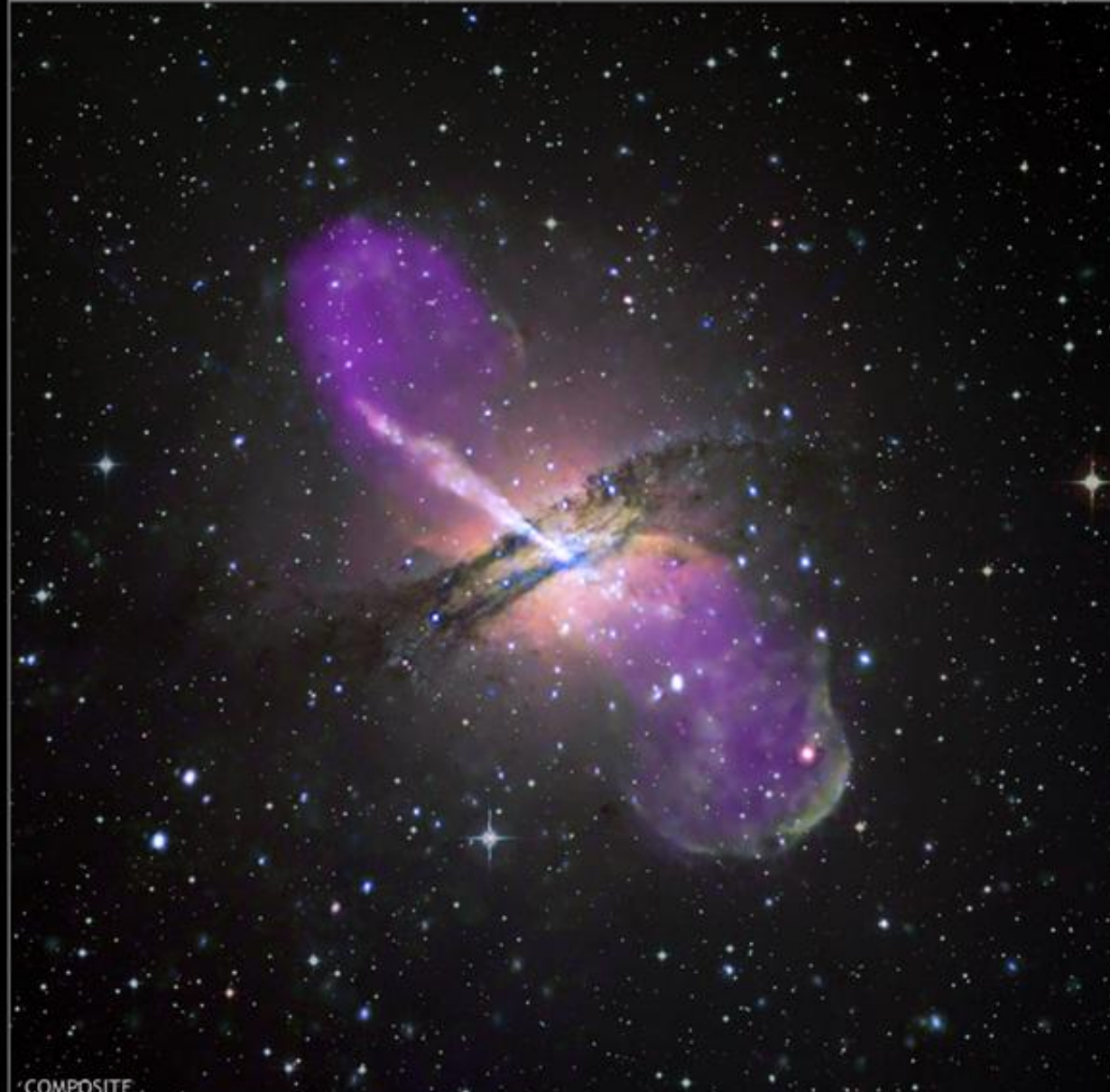


Example Project





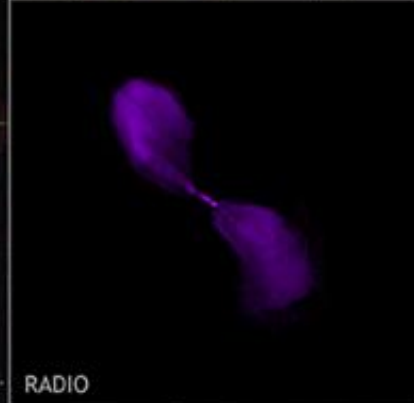
Active Galaxy Centaurus A



COMPOSITE



X-RAY



RADIO



OPTICAL



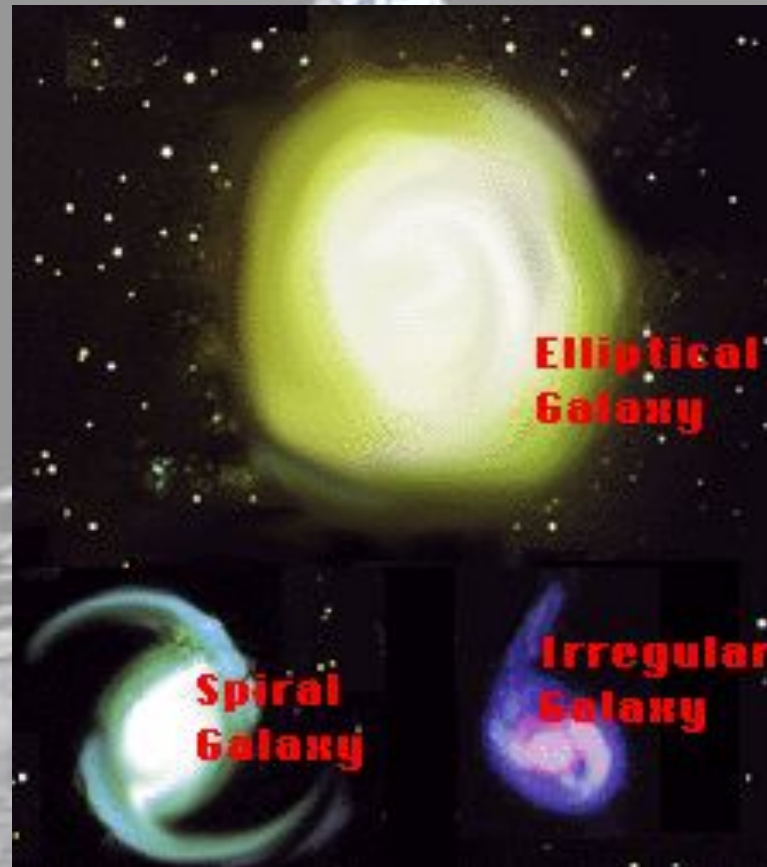
Example Project

Active Galaxy Centaurus A X-Ray





Example Project



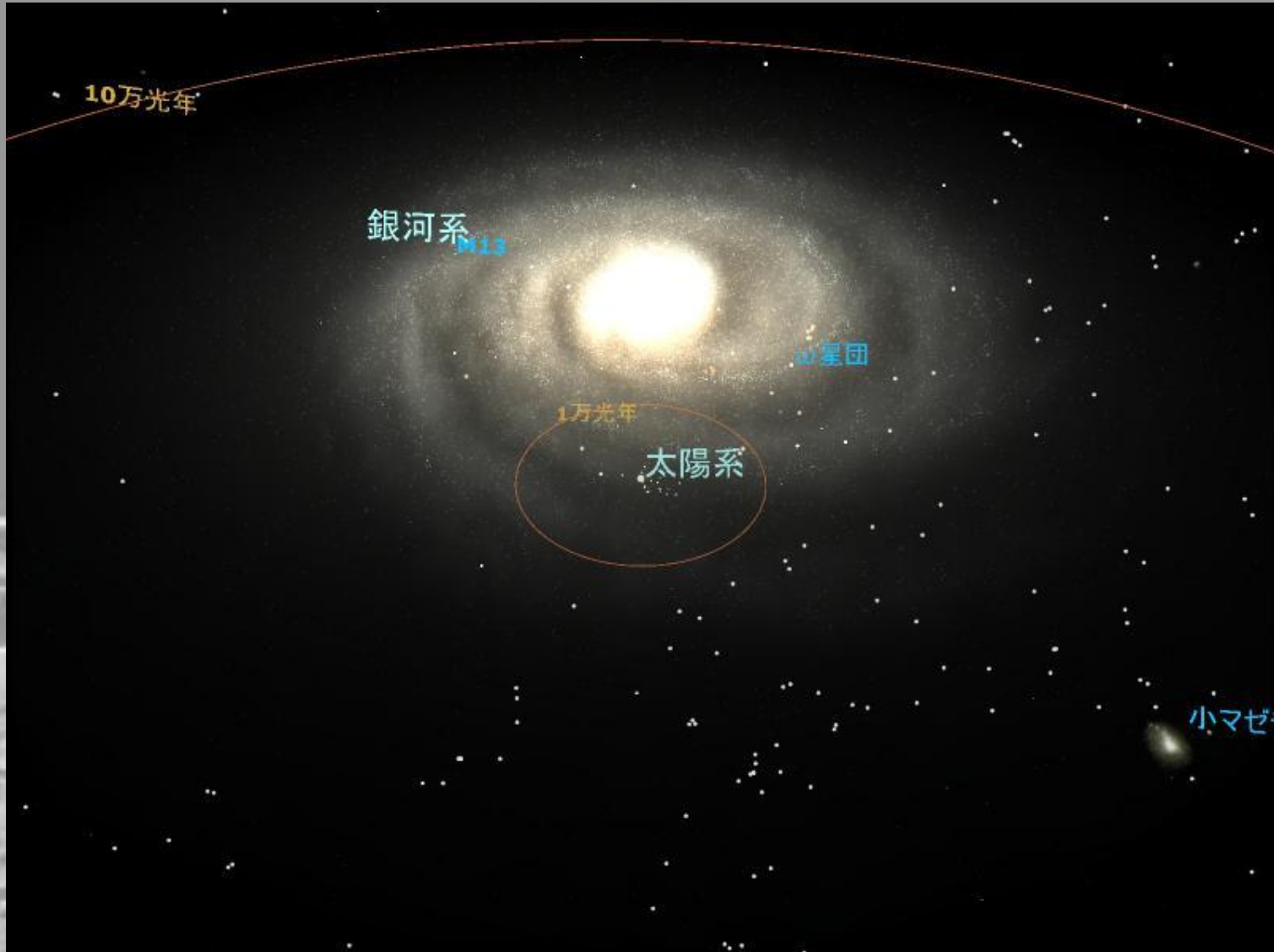


Example Project





Example Project





Further Studies



- Program run by students
- Account for Lunar Wobble
- Other interactive programs
 - Telerobotic rovers
 - Samples Moon for kids to analyze
 - Temperature studies
 - Meteorite studies
 - Radiation studies



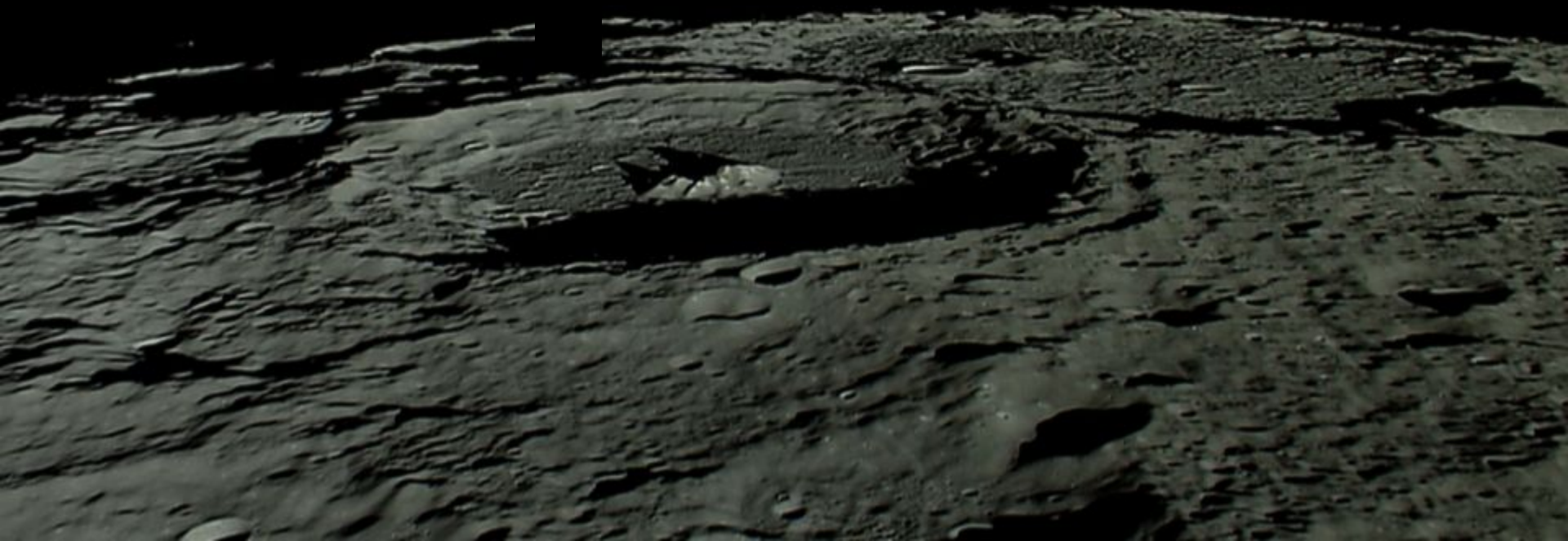
References



- Picture of NASA employee teaching kids
 - <http://coop.jsc.nasa.gov/biography/grafx/watsond3.jpg>
- Picture of Kid in spacesuit:
 - http://shopping.redorbit.com/images/thumbs/t_16420.jpg
- Astronaut doing a spacewalk
 - http://www.gerhards.net/albums/space/eva_sts112_709_073k.sized.jpg
- Kids love science picture:
 - <http://www.ufaparents.com/images/Science.jpg>
- World with hands
 - <http://www.humanitysteam.in/images/hands.jpg>
 - http://i45.photobucket.com/albums/f98/kathrynsanders/hands_around_earth.jpg
 - <http://todaysseniorsnetwork.com/Globe,%20Hands%20on%20Globe,%20World.jpg>
- "Where have all the engineers gone?". University Business. . FindArticles.com. 08 Dec. 2008.
 - http://findarticles.com/p/articles/mi_m0LSH/is_4_11/ai_n25338463/pg_1
- "5...4...3...2...Yawwwwww: NASA Faces Public Relations Quandary: How to Hold Attention of Preoccupied Earthlings"; GINA SUNSERI, HOUSTON, Nov. 29, 2008
 - <http://abcnews.go.com/Technology/Space/Story?id=6358924&page=1>
- Classroom Picture
 - http://www.dnr.mo.gov/geology/images/dgls_dixonsm.jpg
- Observatory Picture
 - <http://www.rickpeterson.com/Images-News/Keck.starfall.jpg>
- NASA ISS EarthKAM Example Project
 - http://www.earthkam.ucsd.edu/public/images/graphics/annotated/NewYork_andLongIsland_LARGE.jpg
- Hubble Telescope Information
 - <http://science.howstuffworks.com/hubble3.htm>
- Labeled Galaxies
 - http://starchild.gsfc.nasa.gov/Images/StarChild/universe_level1/galaxies.gif
 - http://antwrp.gsfc.nasa.gov/cgi-bin/apod/apod_search?elliptical+galaxy
 - <http://antwrp.gsfc.nasa.gov/apod/ap080110.html>
- Camera and sensors
 - <http://www.spaceaholic.com/wfpccameras.jpg>
 - http://www.nasa.gov/centers/goddard/images/content/204997main_MIRI_Verif_Iq.jpg
 - http://www.stsci.edu/hst/nicmos/images/GRAPHIC_Instrument_Cutaway.GIF
 - <http://creativeclass.typepad.com/thecreativityexchange/images/2007/06/28/motarboard.jpg>
 - http://www.publicagenda.org/files/images/pages/2008KansasBoyPC_m.jpg
 - http://images.spaceref.com/news/hand_moon.jpg
 - http://subarutelescope.org/Introduction/instrument/img/IRCS_300.jpg



Backup Slides

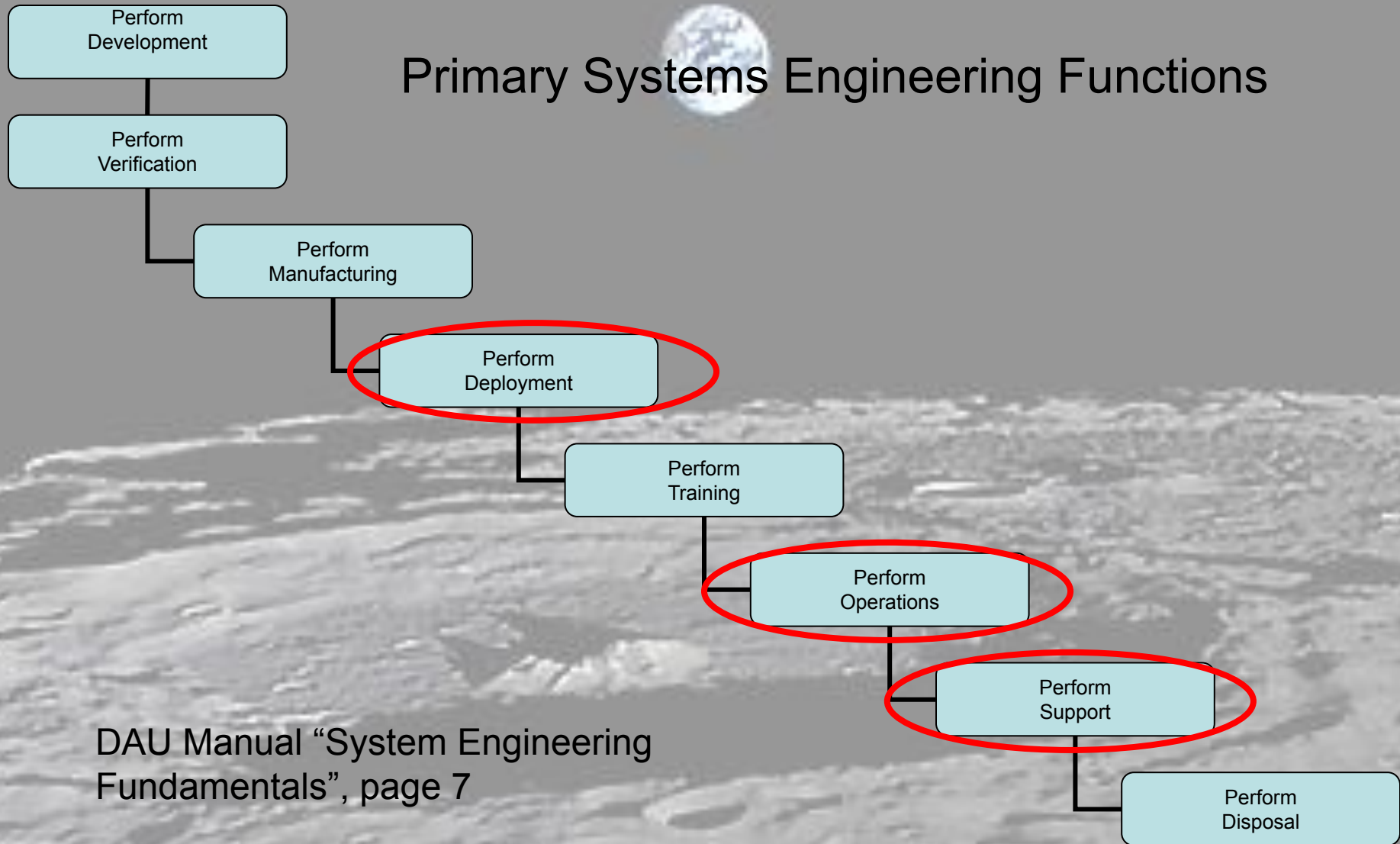




Overall Return to the Moon: Lunar Observatories



Primary Systems Engineering Functions



DAU Manual "System Engineering Fundamentals", page 7



Looking Glass 2024 Architecture

