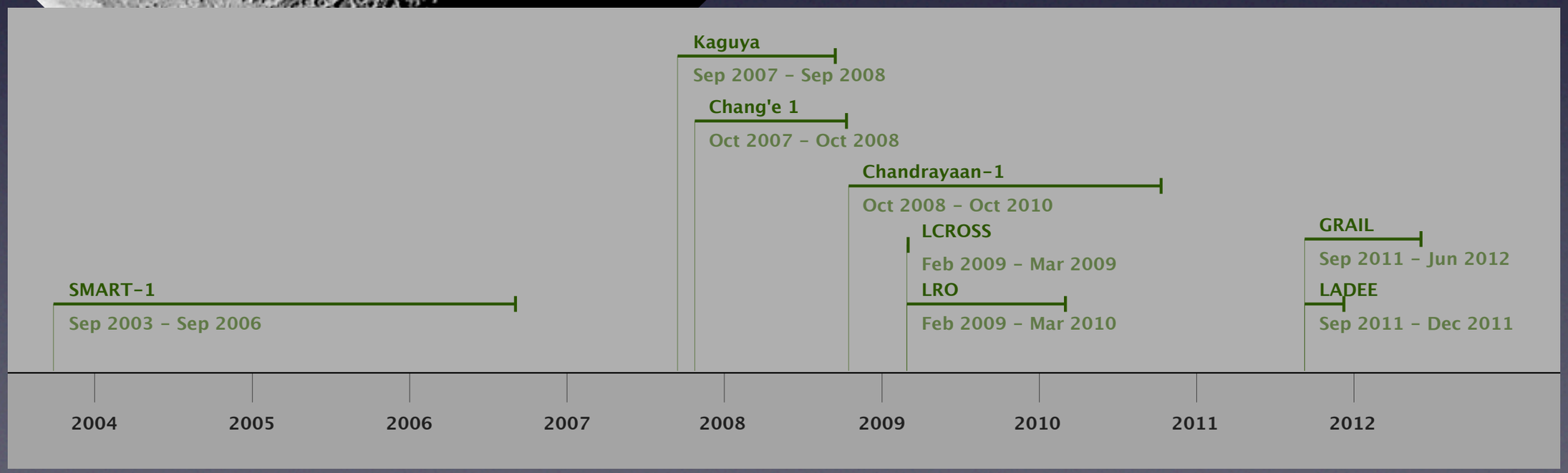
Current and Future Missions to the Moon

a compilation of artist renderings by:

Andrew Hay



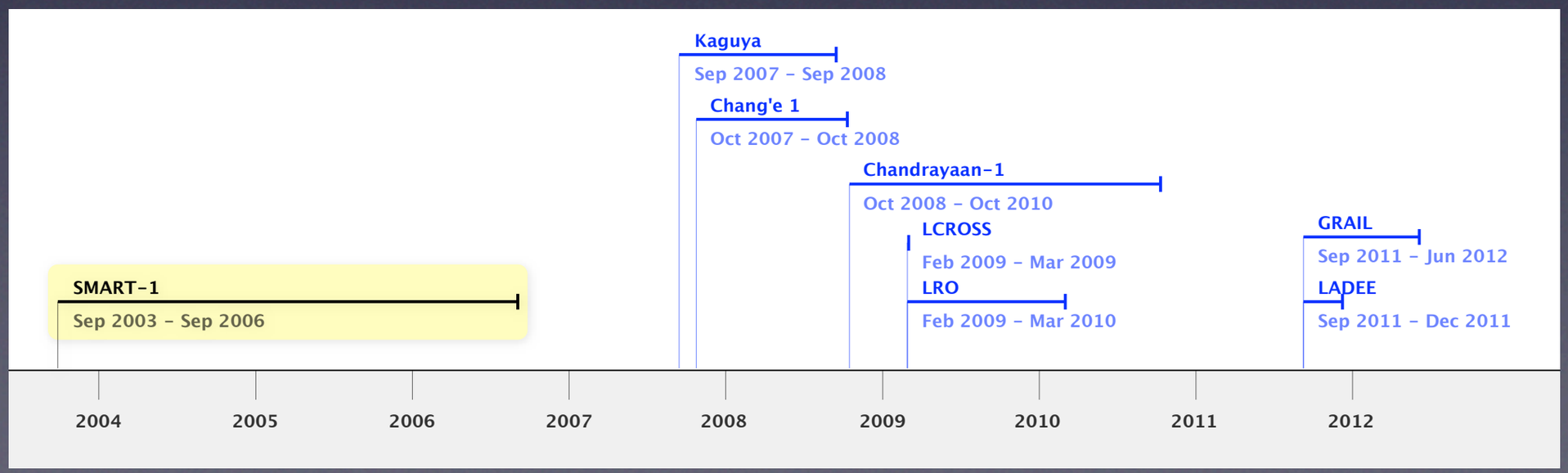
Overview

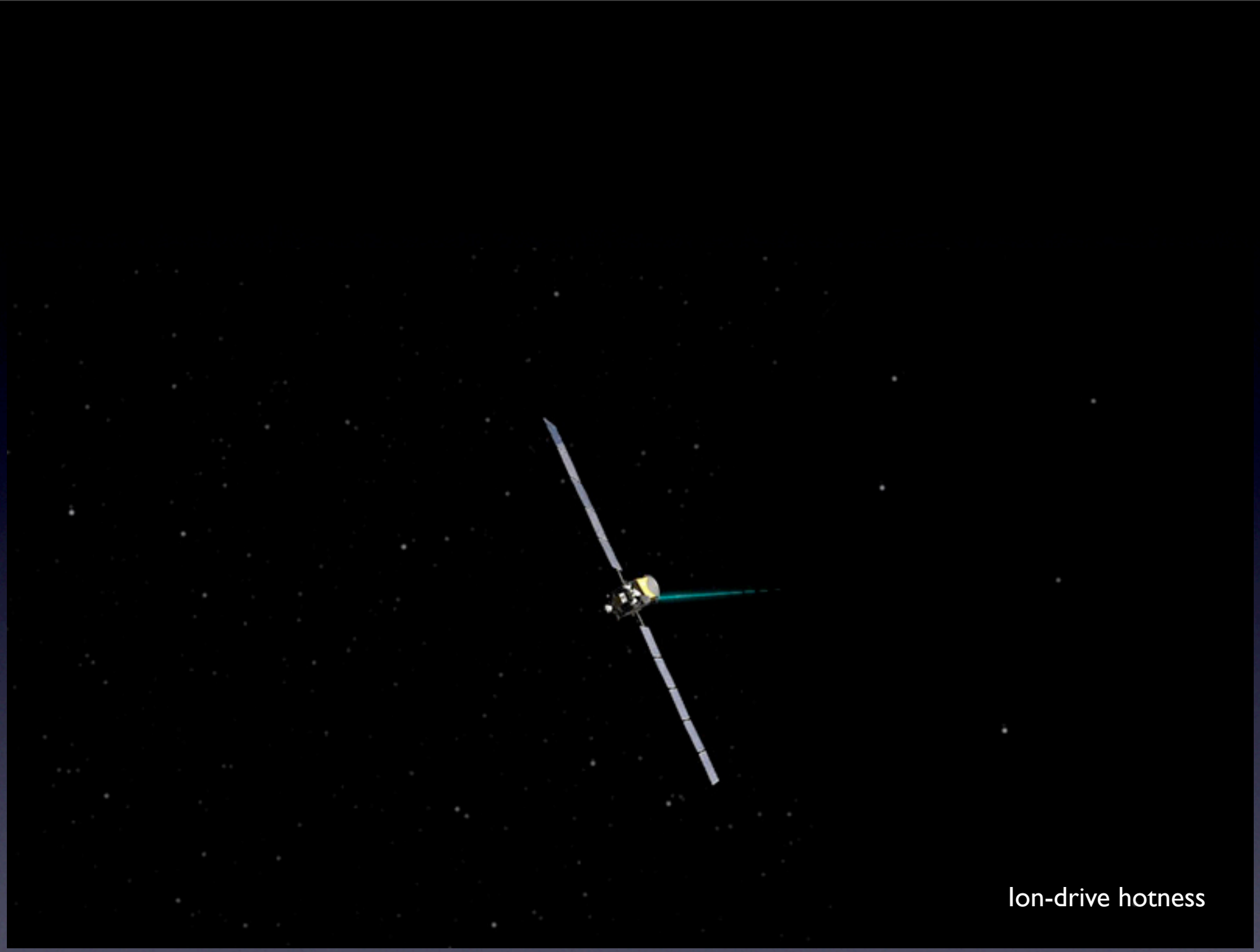
- SMART-1 (ESA) - complete
- Kaguya | SELENE (JAXA) - ongoing
- Chang'e 1 (CNSA) - ongoing
- Chandrayaan-1 (ISRO) - imminent
- LRO (NASA) - pending
- LCROSS (NASA) - pending
- GRAIL (NASA) - pending
- LADEE (NASA) - pending
- Constellation (NASA) - conceptual

SMART-1 (ESA)

Small Missions for Advanced Research in Technology

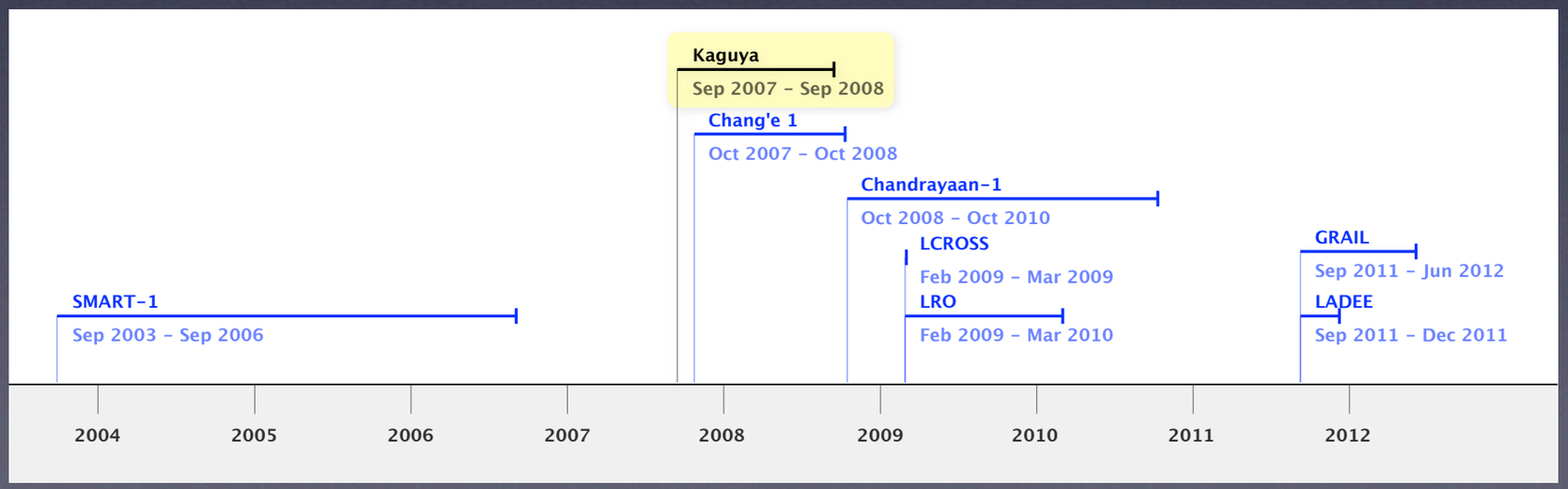
- Launch Date: 27 September 2003
- Mission Duration: 3 years
- Science Goals:
  - Test spacecraft technologies for future missions
  - Chemical composition of the moon
  - Geophysical processes
  - High resolution surface imaging
- Accomplishments:
  - Use of spectroscopy to determine composition
  - Successful use of ion propulsion
  - Low-low cost of 110mil euros (117mil dollars US)




Ion-drive hotness

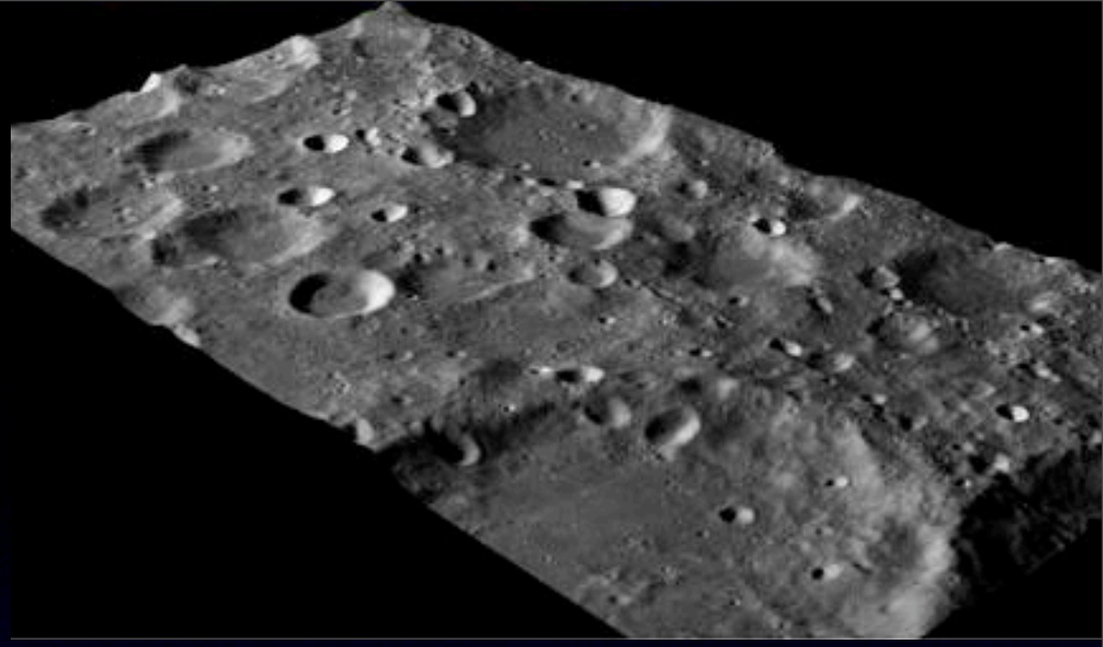
(JAXA)

- Launch Date: 14 September 2007
- Mission Duration: 1 year
- Science Goals:
  - Measure lunar gravitational and magnetic fields
  - Study composition and topography of lunar surface
  - Development of technology for lunar exploration
- Deployed a primary spacecraft and two subsatellites for use as relays

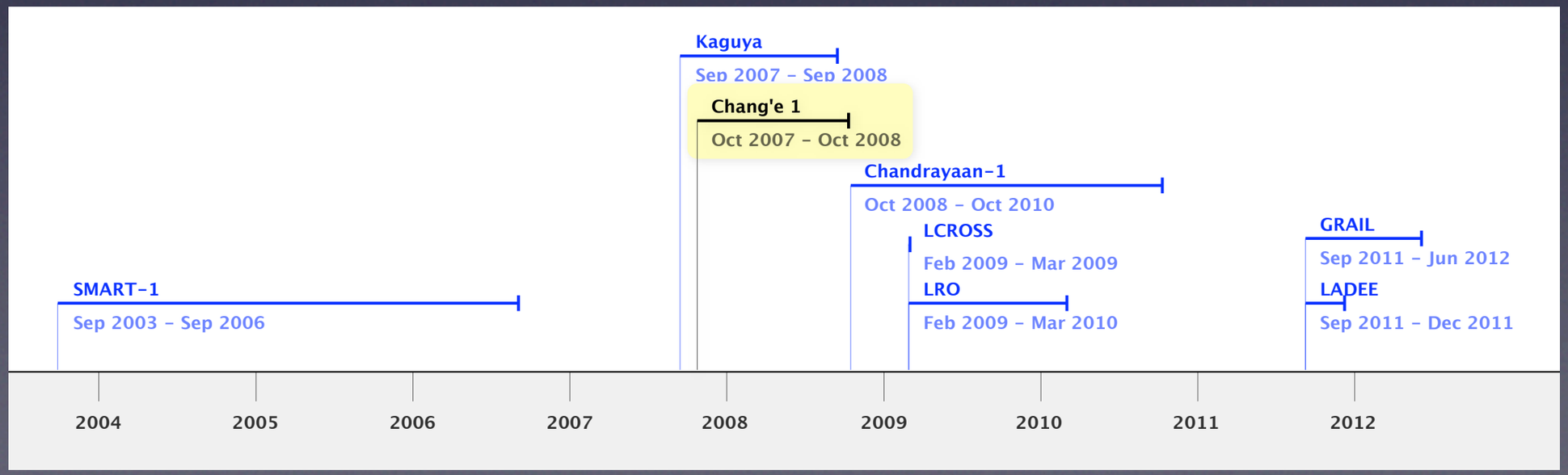


a artist non-rendering

Chang'e 1 (CNSA)

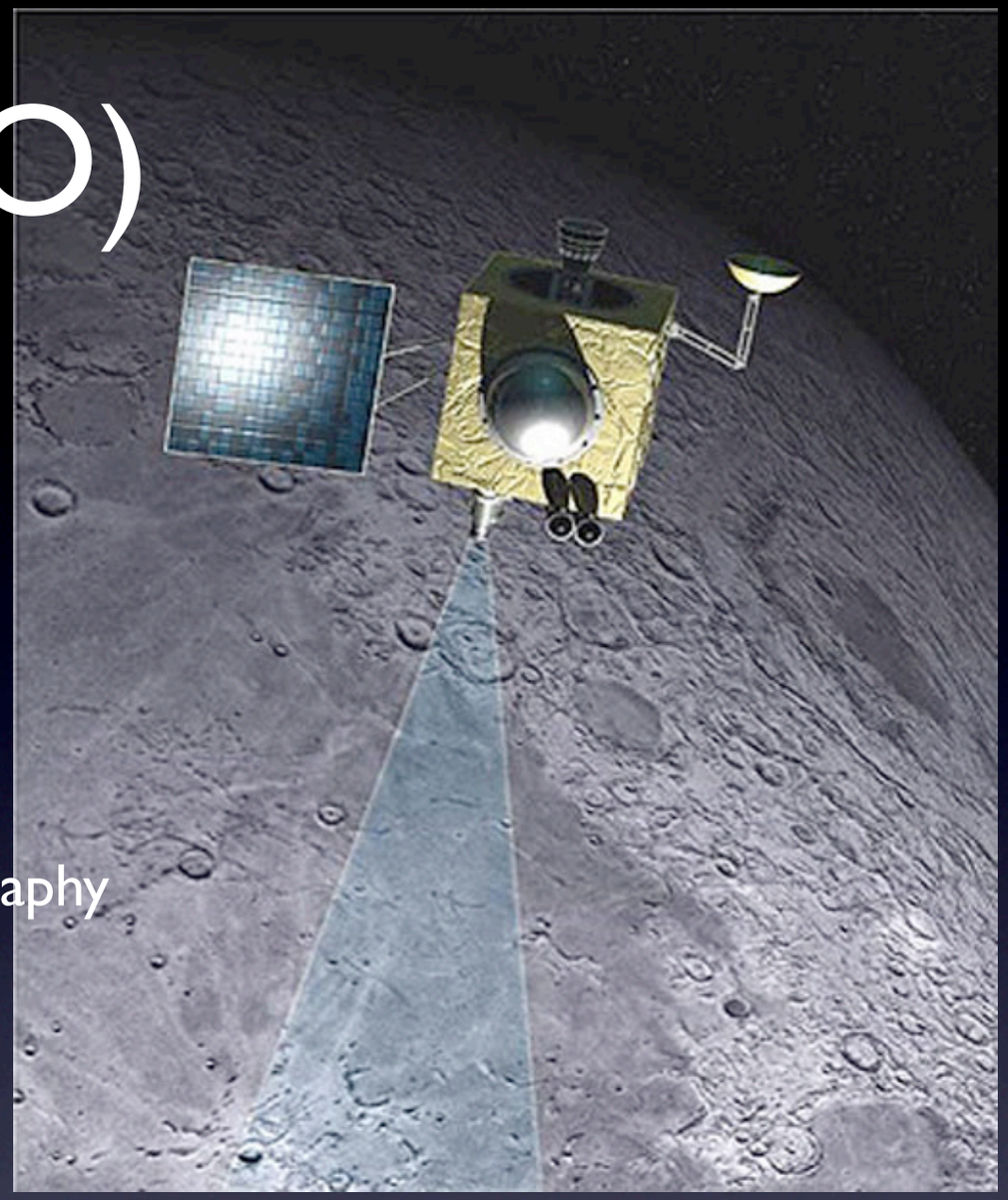


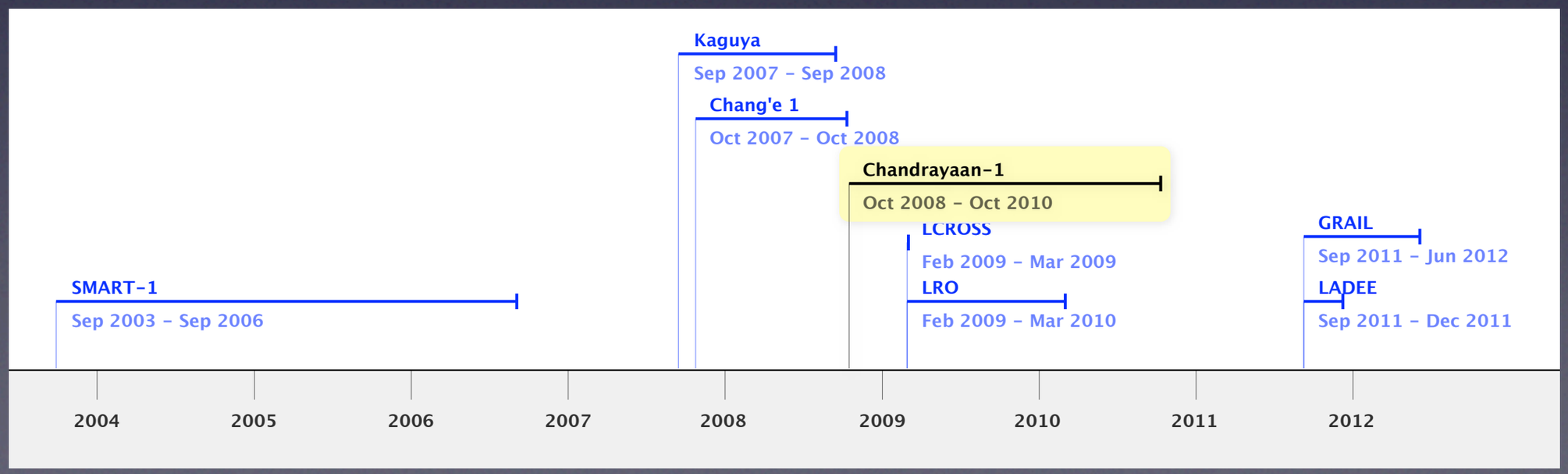
- Launch Date: 24 October 2007
- Mission Duration: 1 year
- Science Goals:
  - Obtaining 3D images of the lunar surface
  - First in a 3-part series of spacecraft leading to possible manned exploration (?)
- Accomplishments:
  - China's first lunar probe...
- Seriously? [CNSA Homepage]



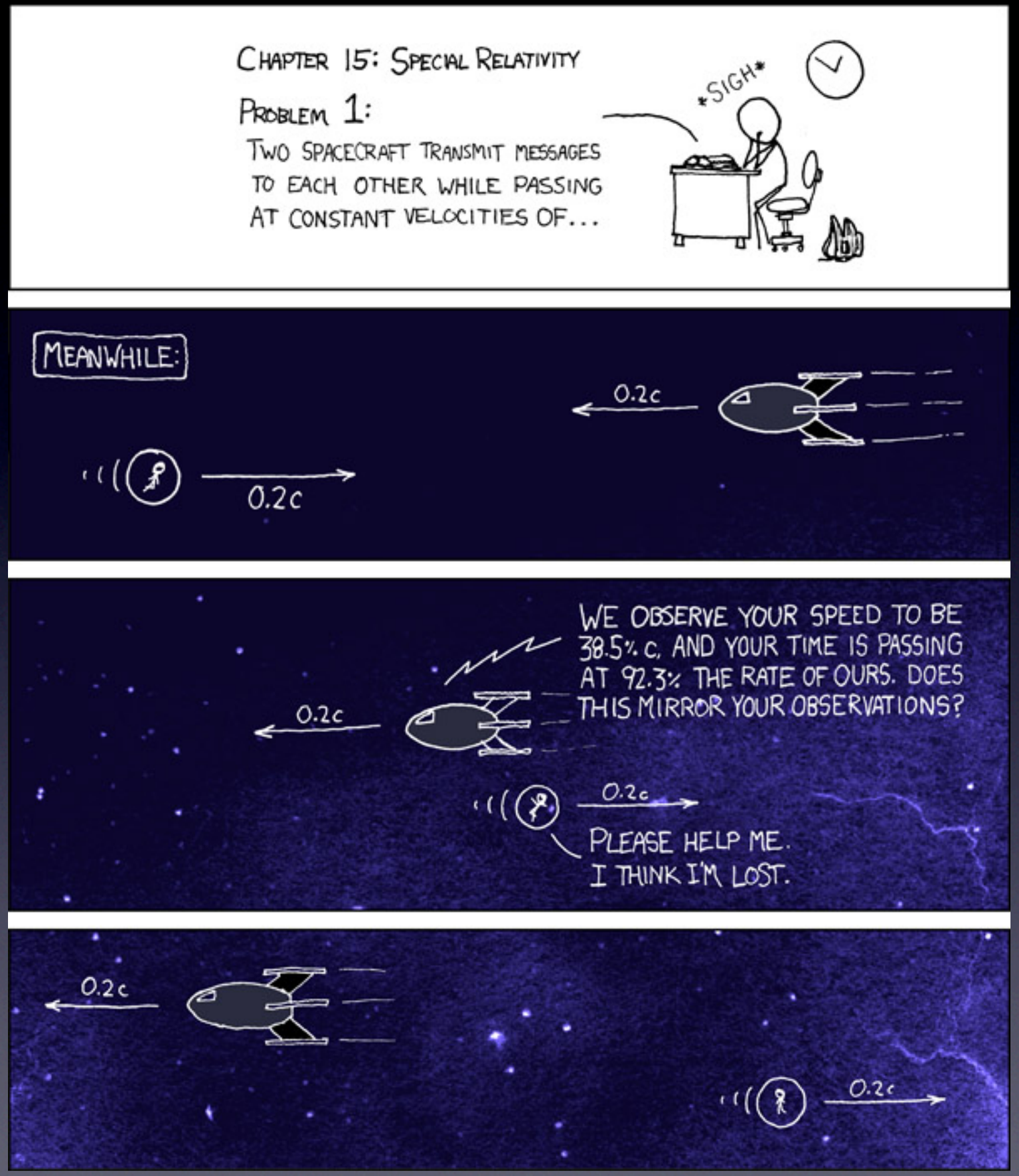
Chandrayaan-1 (ISRO)

- Launch Date: October 2008
- Mission Duration: 2 years
- Science Goals:
  - High resolution mapping in 3D
  - Complete chemical composition of topography
- Moon Impact Probe (MIP)
  - Analysis of subsurface mineralogy



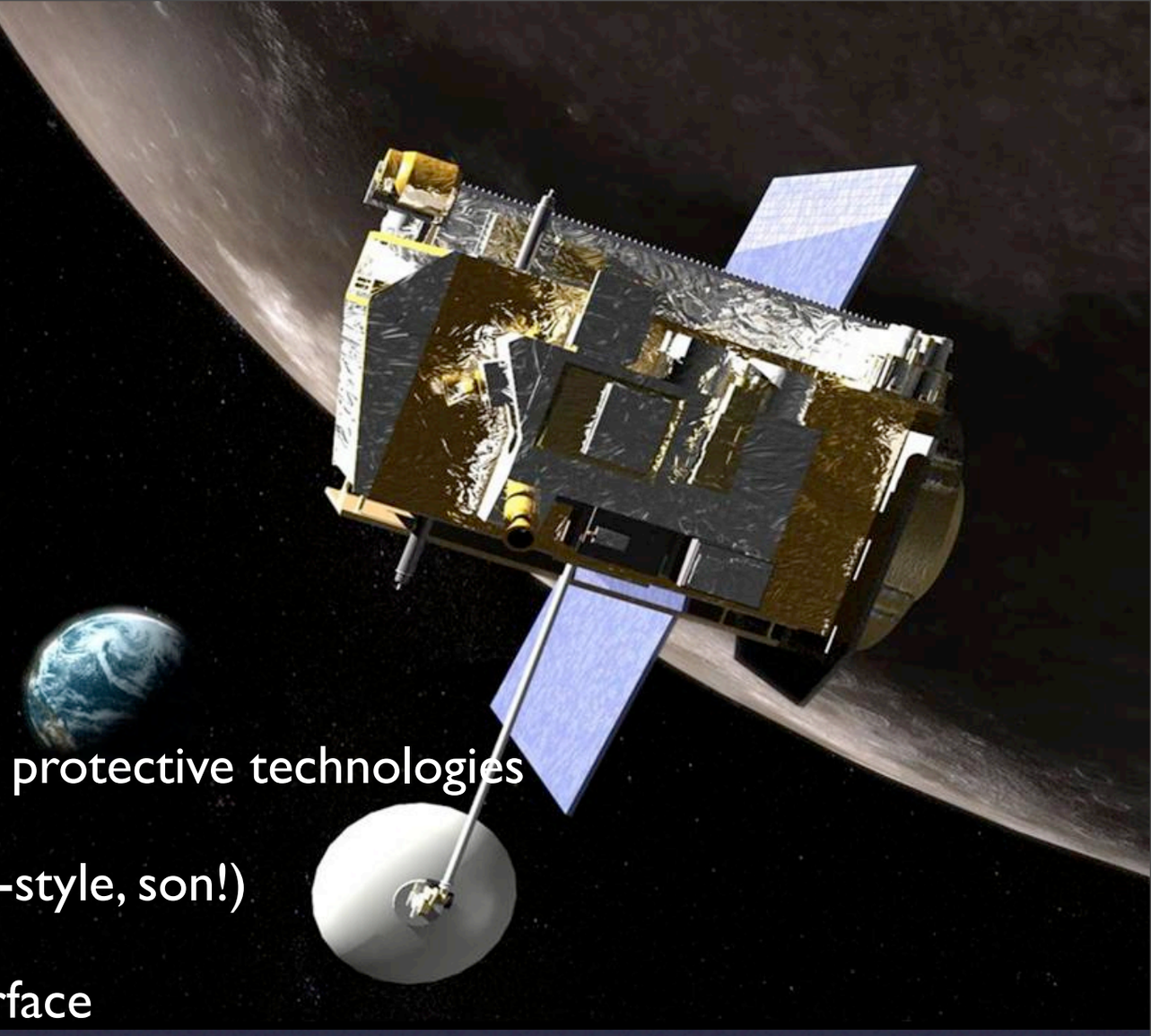


Inter'mission:

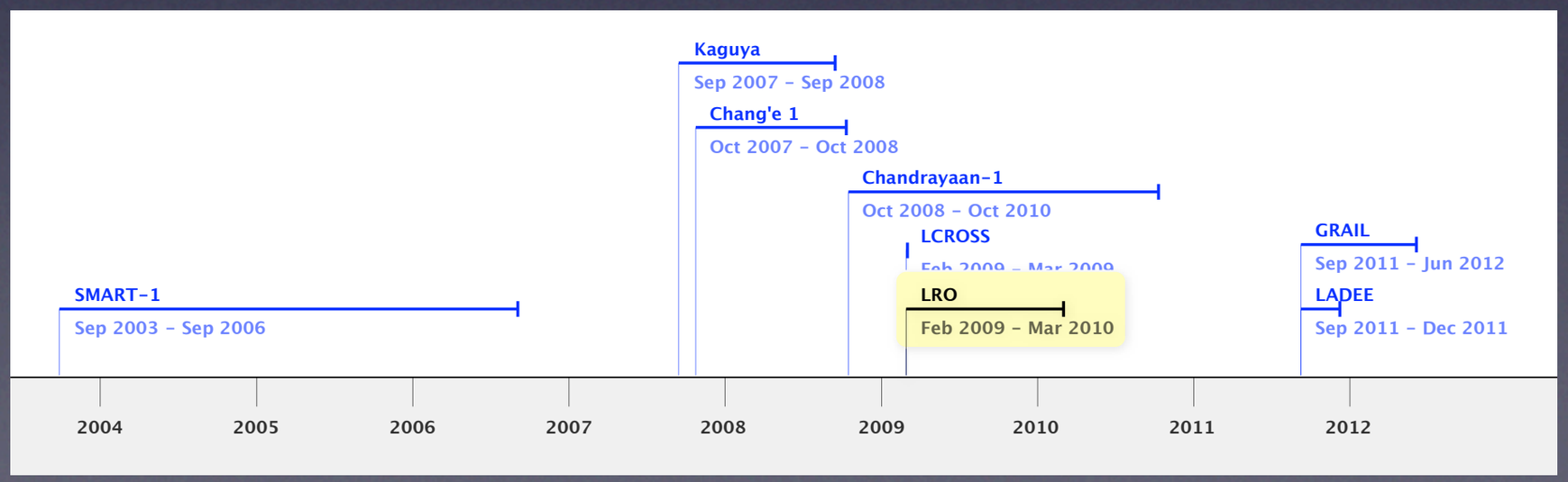


LRO (NASA)

Lunar Recognizance Orbiter



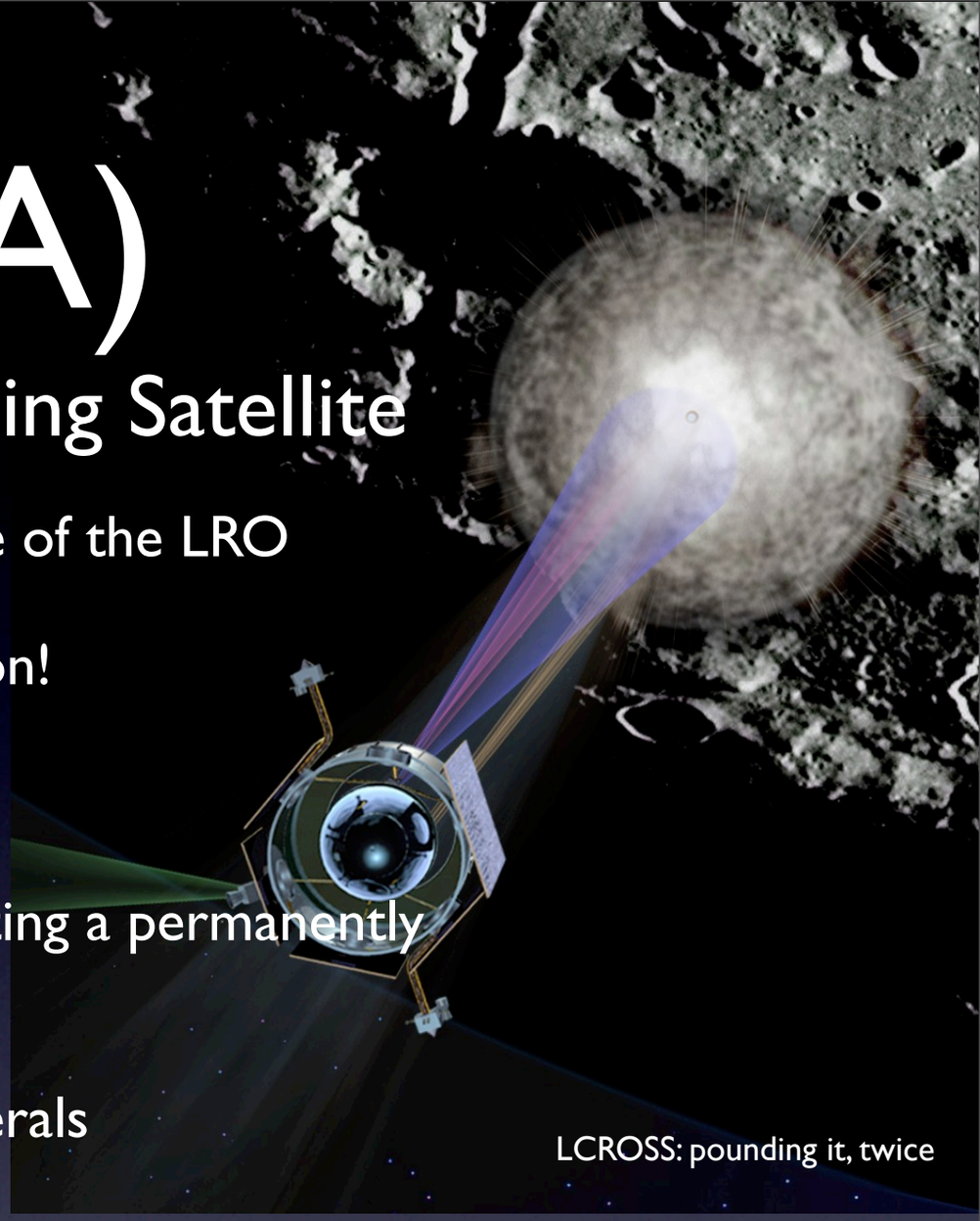
- Launch Date: 27 February 2009
- Mission Duration: 1 year
- Science Goals:
  - Evaluating biological impacts to develop protective technologies
  - Develop highly accurate 3D maps (USA-style, son!)
  - Map minerals and volatiles on moon surface
  - Asses potential landing sites
- THIS is a website!



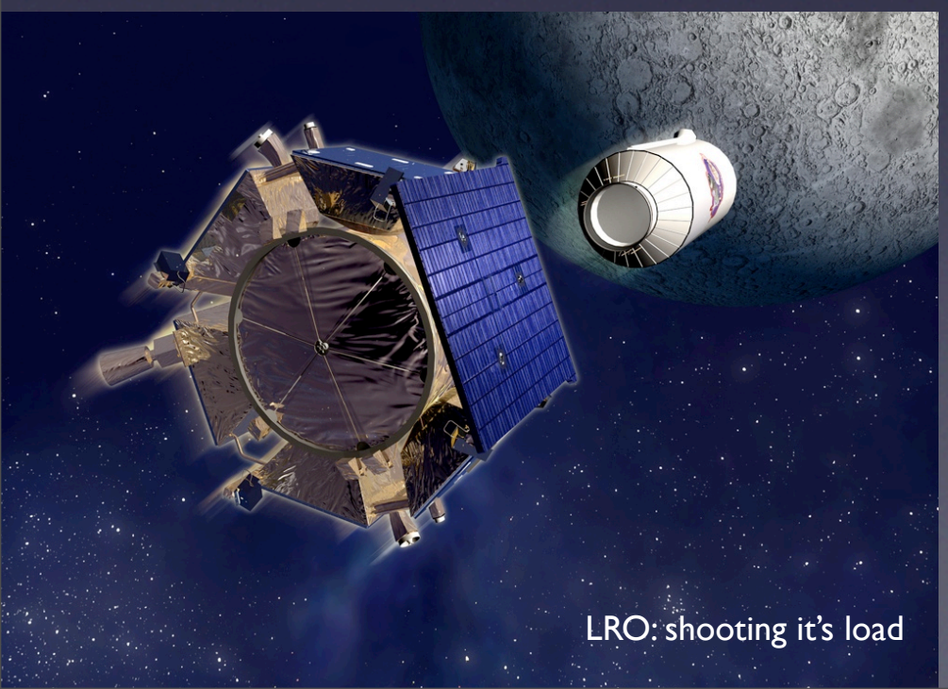
LCROSS (NASA)

Lunar Crater Observation and Sensing Satellite

- Co-manifested payload aboard the launch vehicle of the LRO
- Mission duration: 4 minutes? It's an impact mission!
- Science Goals:
  - Excavate subsurface debris by directly impacting a permanently shadowed region of the moon's pole
  - Analyze plume for evidence of hydrated minerals



LCROSS: pounding it, twice



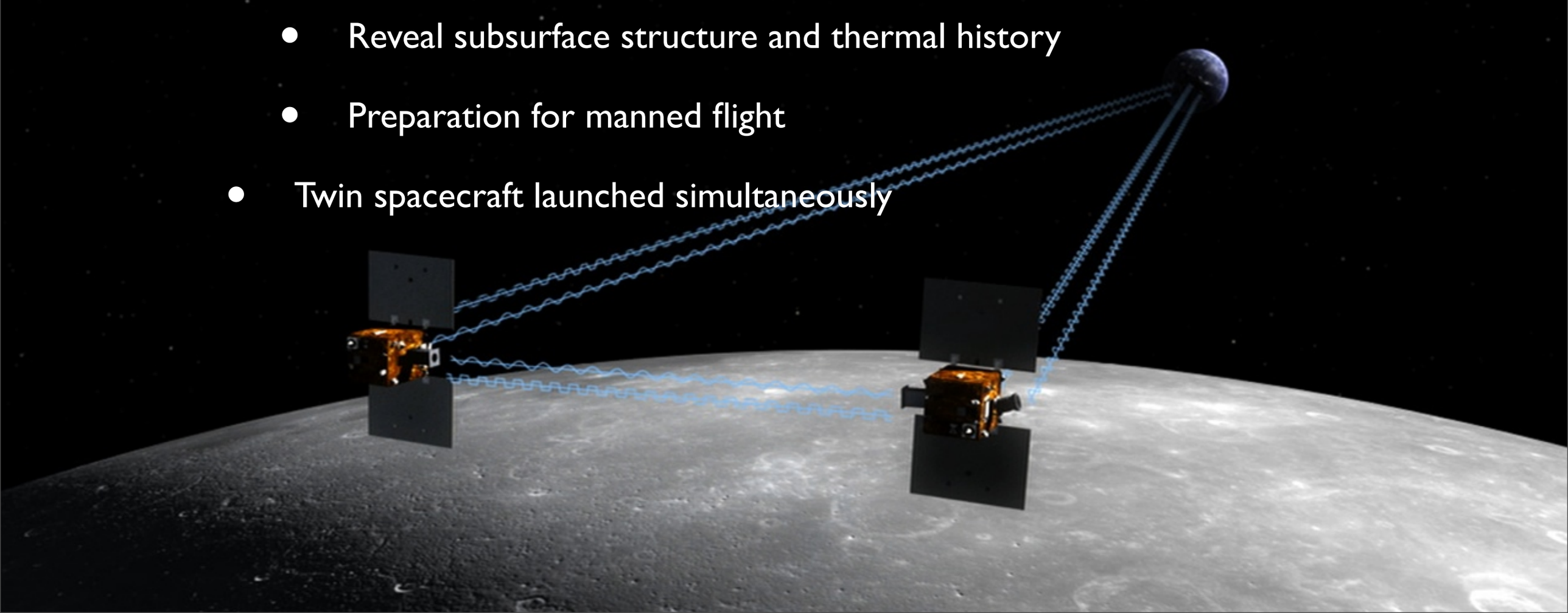
LRO: shooting it's load

- What impact will the impact have on the Moon?
  - NASA says: "The LCROSS impact will not be noticed by the Moon..."

GRAIL (NASA)

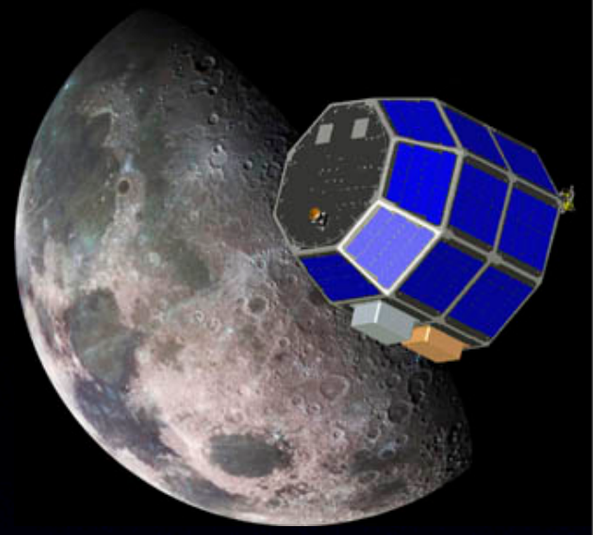
Gravity Recovery and Interior Laboratory

- Launch Date: 2011
- Mission Duration: 270 days
- Science Goals:
  - Detailed measurement of the Moon's gravitational field
  - Reveal subsurface structure and thermal history
  - Preparation for manned flight
- Twin spacecraft launched simultaneously

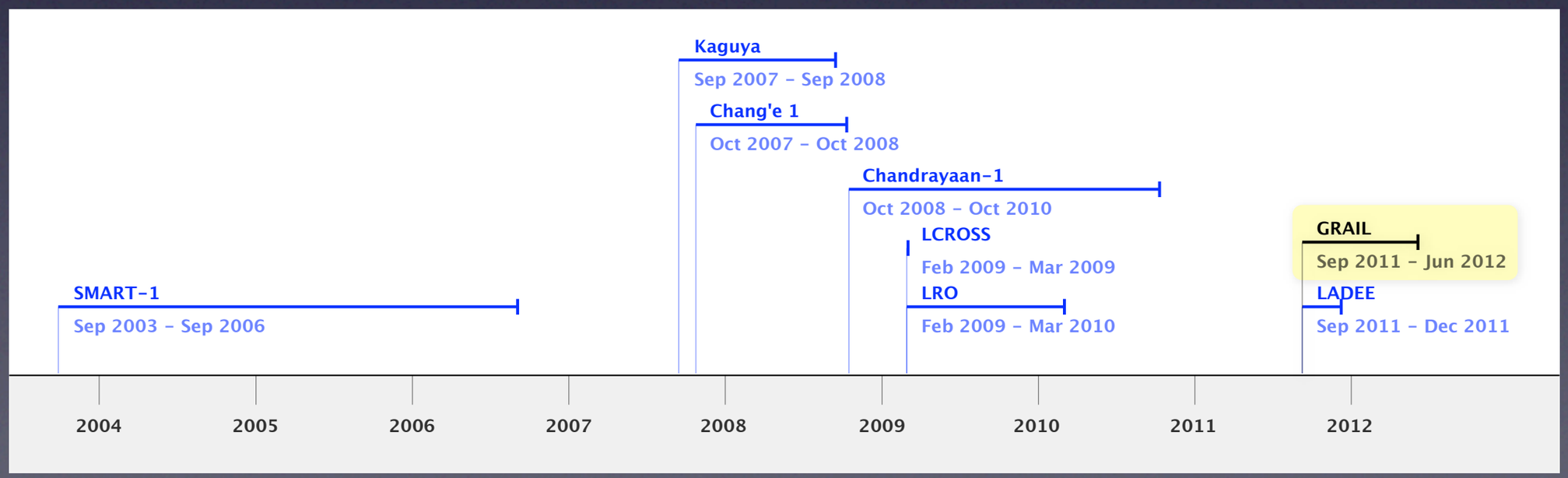


LADEE (NASA)

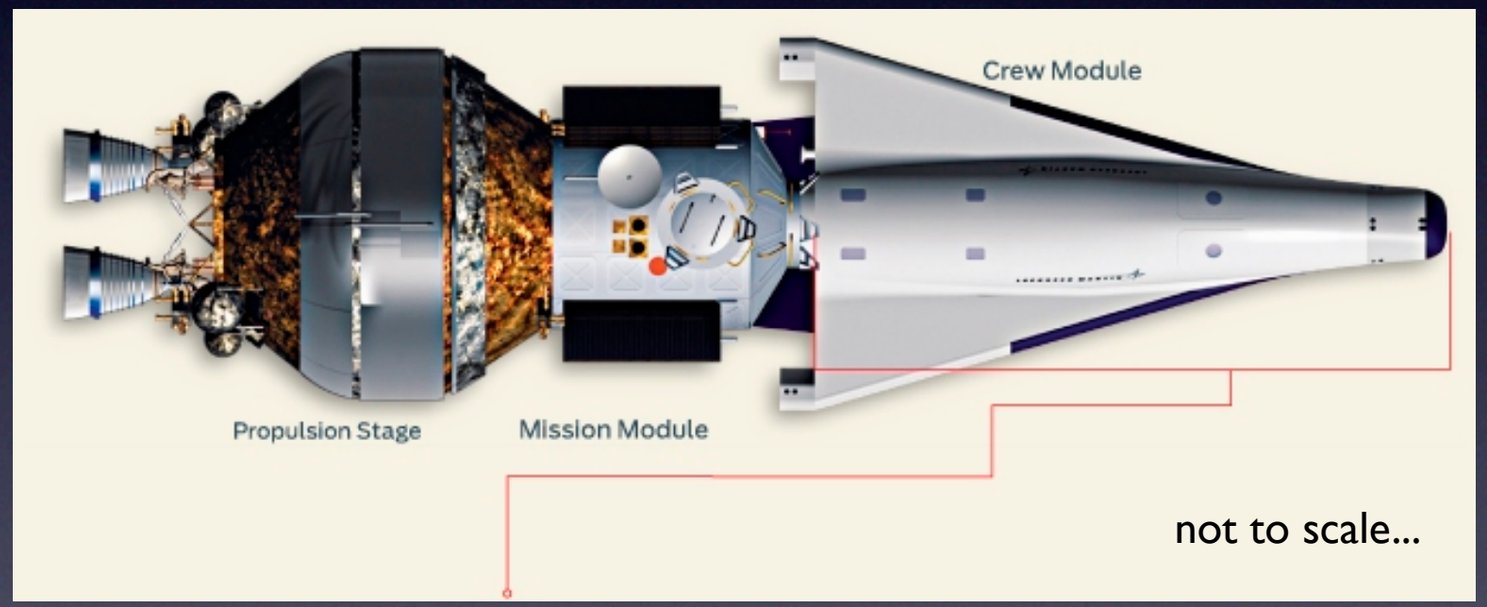
Lunar Atmosphere and Dust Environment Explorer



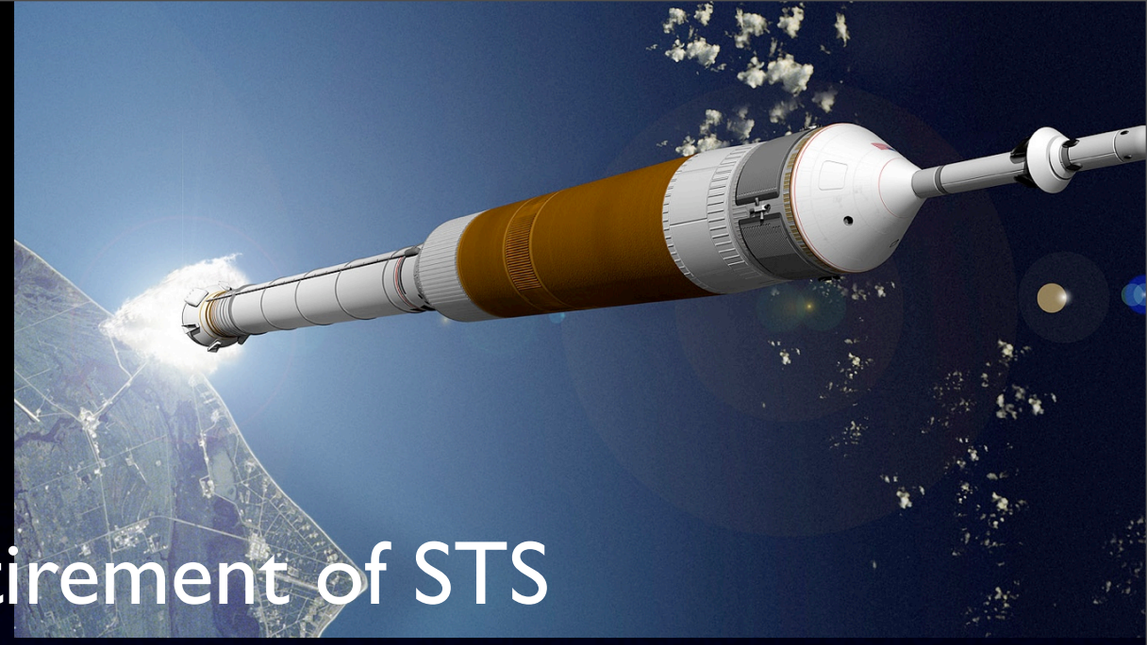
- Launched together with the GRAIL payload
- Mission duration: 100 days
- Science Goals:
  - Analyze dust and “atmosphere” surrounding the moon
  - Determine cause of diffuse emissions seen by Apollo astronauts



Constellation (NASA)
2015



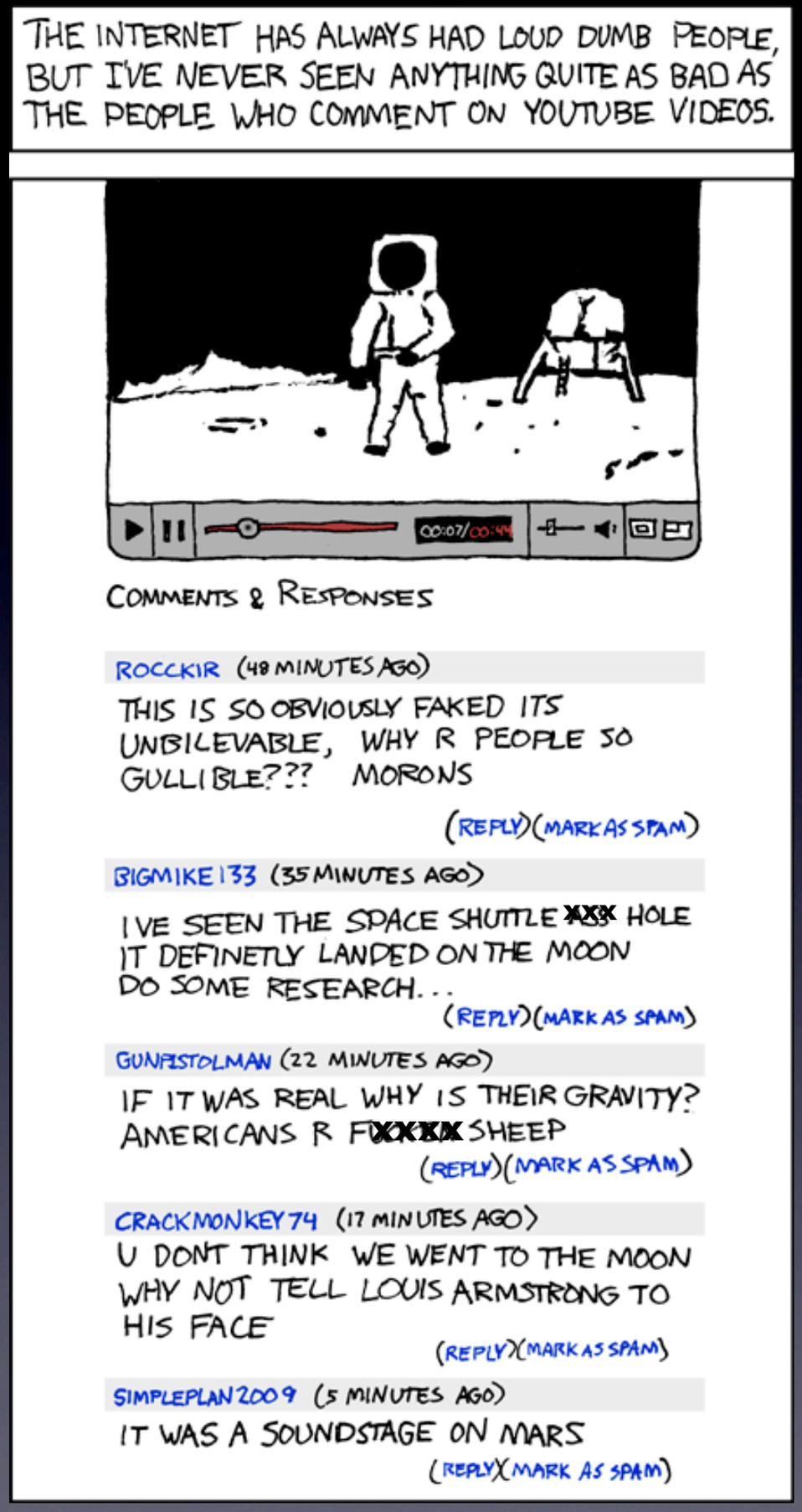
Constellation



- Science Goals:
  - Human exploration after retirement of STS
  - Manned spaceflight to the Moon
  - Preparation for expanded human presence in space
- Modular, Apollo-like spaceflight system

- Planned human return to the moon before 2020

Questions?


THE INTERNET HAS ALWAYS HAD LOUD DUMB PEOPLE, BUT I'VE NEVER SEEN ANYTHING QUITE AS BAD AS THE PEOPLE WHO COMMENT ON YOUTUBE VIDEOS.
00:07/00:44
COMMENTS & RESPONSES
ROCCKIR (48 MINUTES AGO)
THIS IS SO OBVIOUSLY FAKED ITS UNBILEVABLE, WHY R PEOPLE SO GULLIBLE??? MORONS
(REPLY)(MARK AS SPAM)
BIGMIKE133 (35 MINUTES AGO)
I VE SEEN THE SPACE SHUTTLE ASS HOLE IT DEFINETLY LANDED ON THE MOON DO SOME RESEARCH...
(REPLY)(MARK AS SPAM)
GUNFISTOLMAN (22 MINUTES AGO)
IF IT WAS REAL WHY IS THEIR GRAVITY? AMERICANS R FU SHEEP
(REPLY)(MARK AS SPAM)
CRACKMONKEY74 (17 MINUTES AGO)
U DONT THINK WE WENT TO THE MOON WHY NOT TELL LOUIS ARMSTRONG TO HIS FACE
(REPLY)(MARK AS SPAM)
SIMPLEPLAN2009 (5 MINUTES AGO)
IT WAS A SOUNDSTAGE ON MARS
(REPLY)(MARK AS SPAM)