Korea Pathfinder Lunar Orbiter (KPLO)

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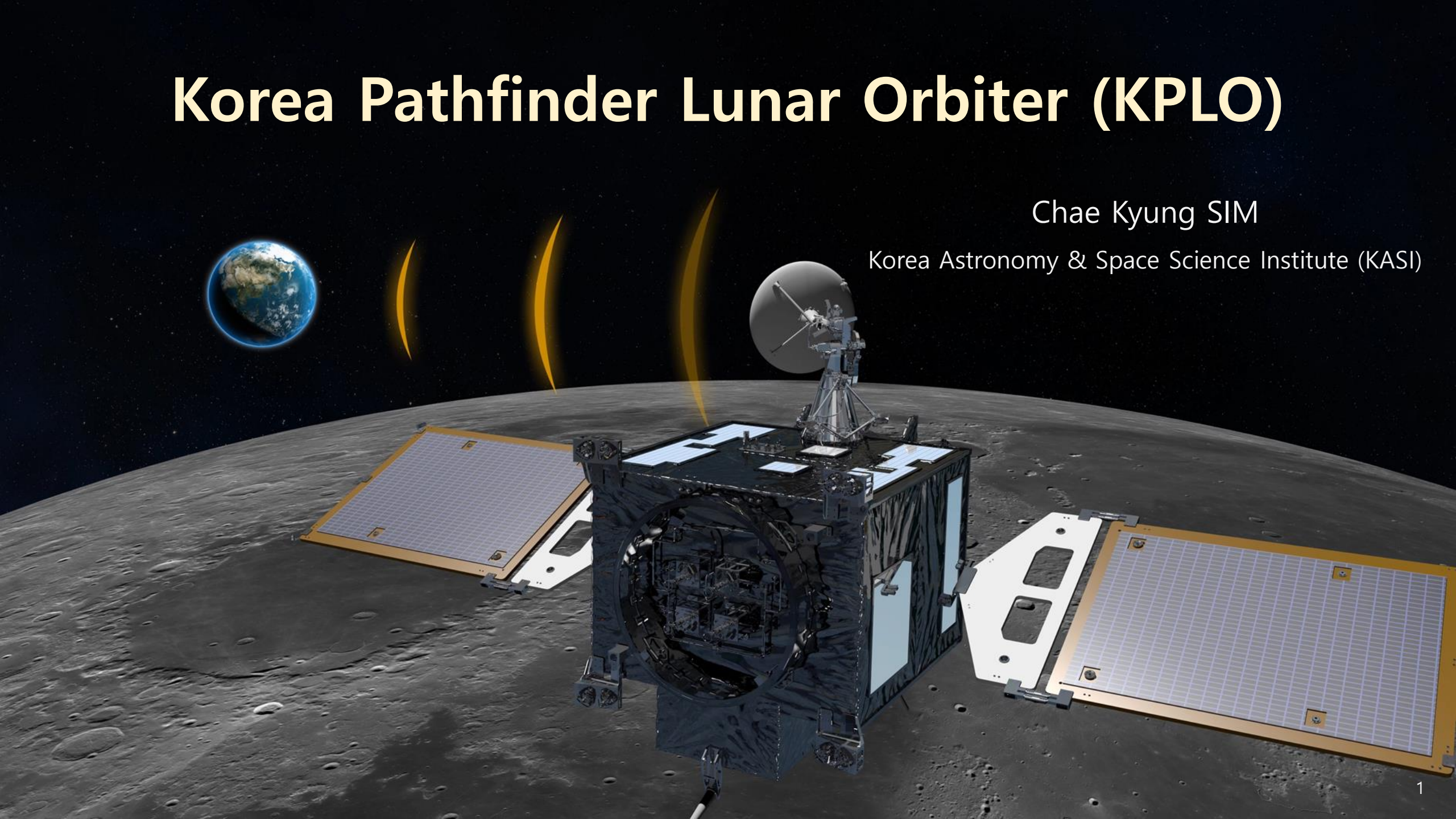
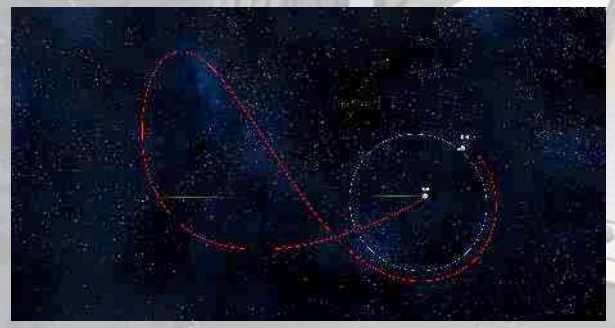
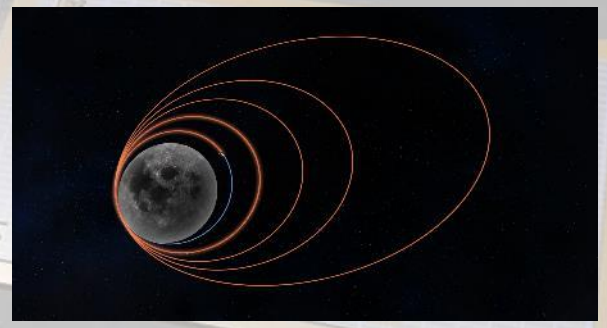
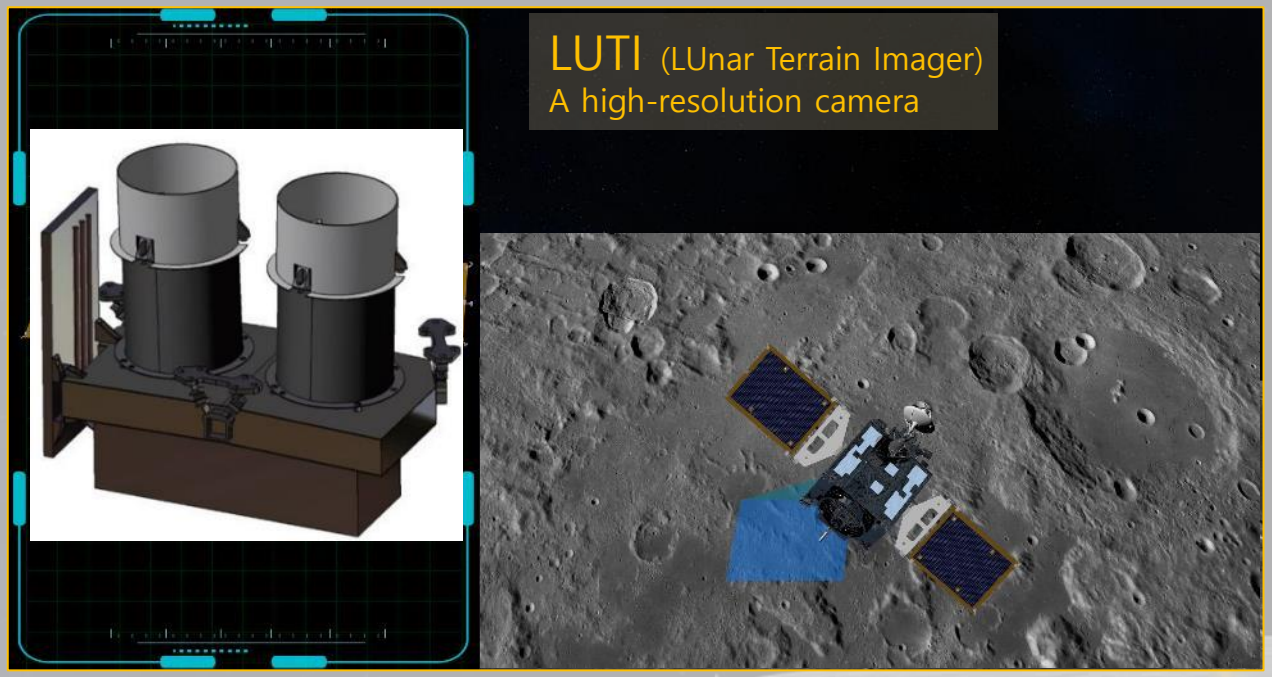


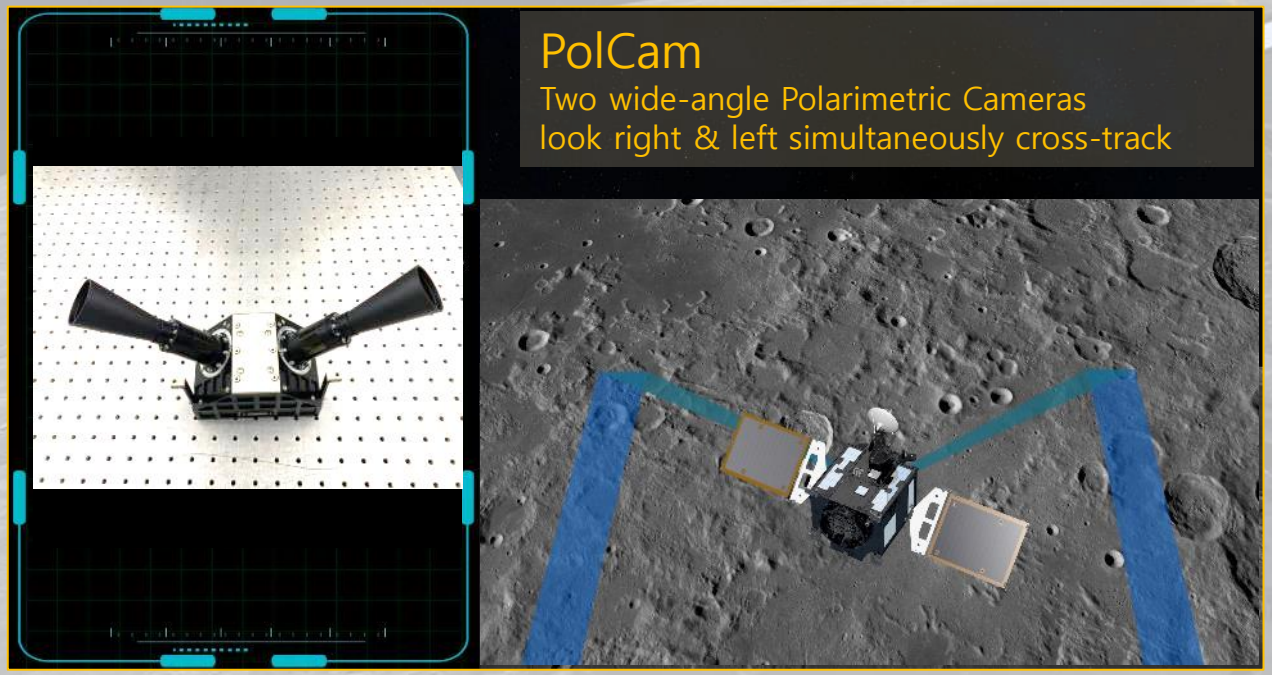
Korea Pathfinder Lunar Orbiter (KPLO)

- The first mission of *Korea Lunar Exploration Program* (KLEP)
  - **A lunar orbiter** (**100 km, 90°** inclination)
  - Mission duration: **1 year**
  - Total mass : 678 kg
- Will be launched in **August (**or later), **2022**
- 4-month transit (ballistic lunar transfer method)
- Five science instruments
  - **LUTI**, a high-resolution imager
  - **PolCam**, a wide-angle polarimetric camera
  - **KGRS**, a gamma-ray spectrometer
  - **KMAG**, a fluxgate magnetometer
  - **ShadowCam**, a highly-sensitive camera (NASA-provided)
- One technical demonstration payload
  - **DTNPL**, a DTN experiment instrument



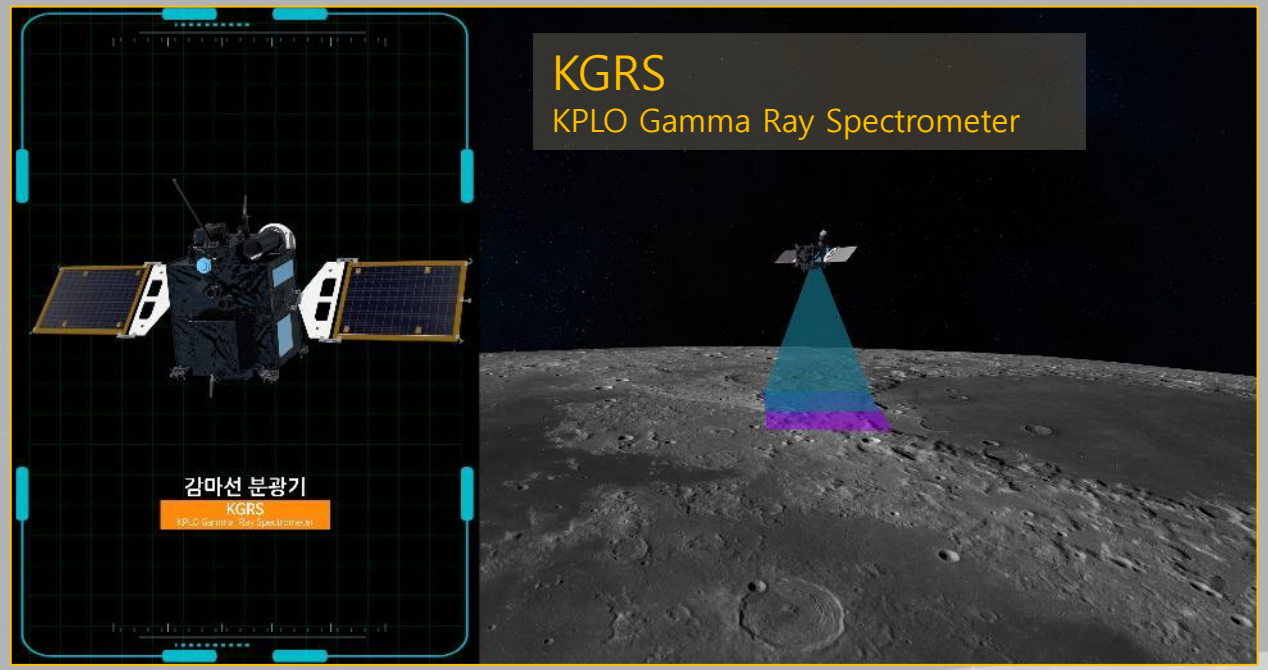




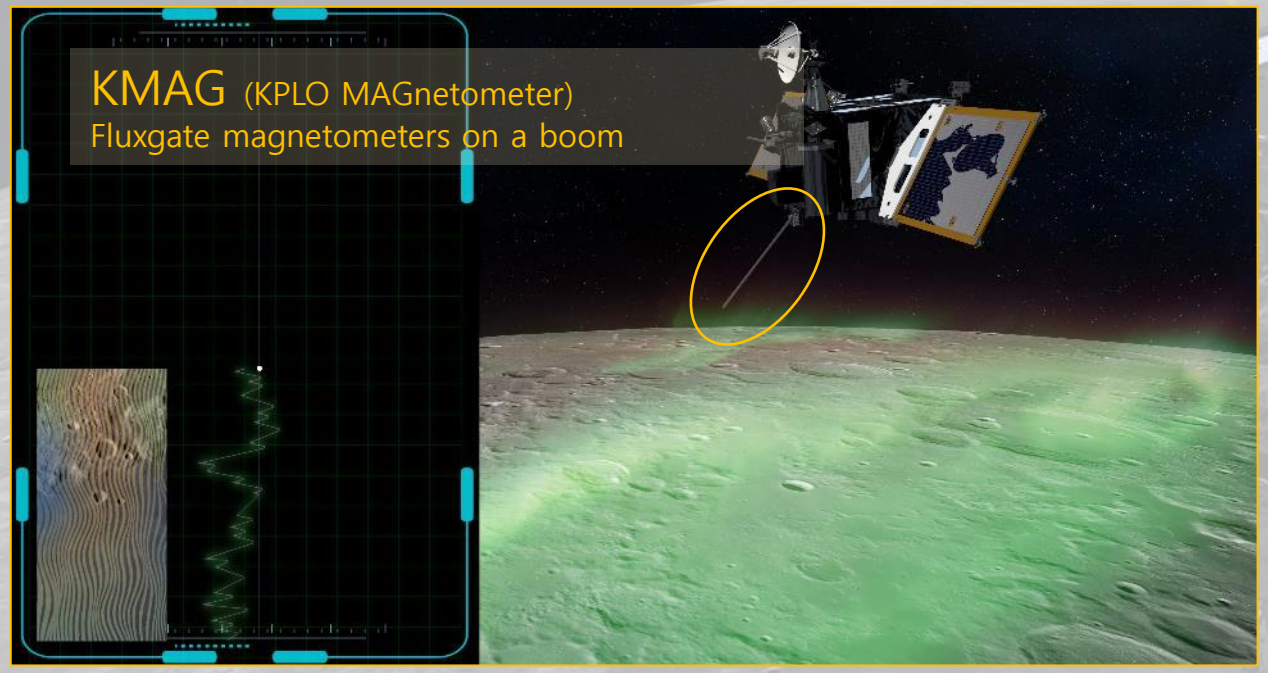


- **LUTI** (LUnar Terrain Imager)
  - Two high-resolution optical cameras (R ~ 5 m)
  - To investigate candidate landing sites for Korea's future landing mission ('30s)

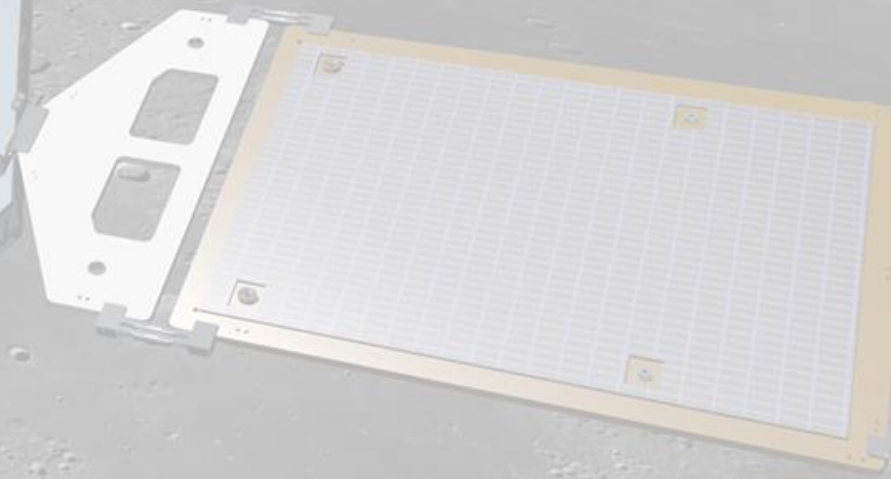
- **PolCam**, (wide-angle Polarimetric Camera)
  - The first polarimetry from the lunar orbit
  - Twin cameras mounted at 45º tilt angles from the nadir across the orbital track in opposite directions
  - Polarimetric measurements at various phase angles up to ~140º
  - 430 and 750 nm filters with polarization filters
  - Additional 320 nm filter without polarization

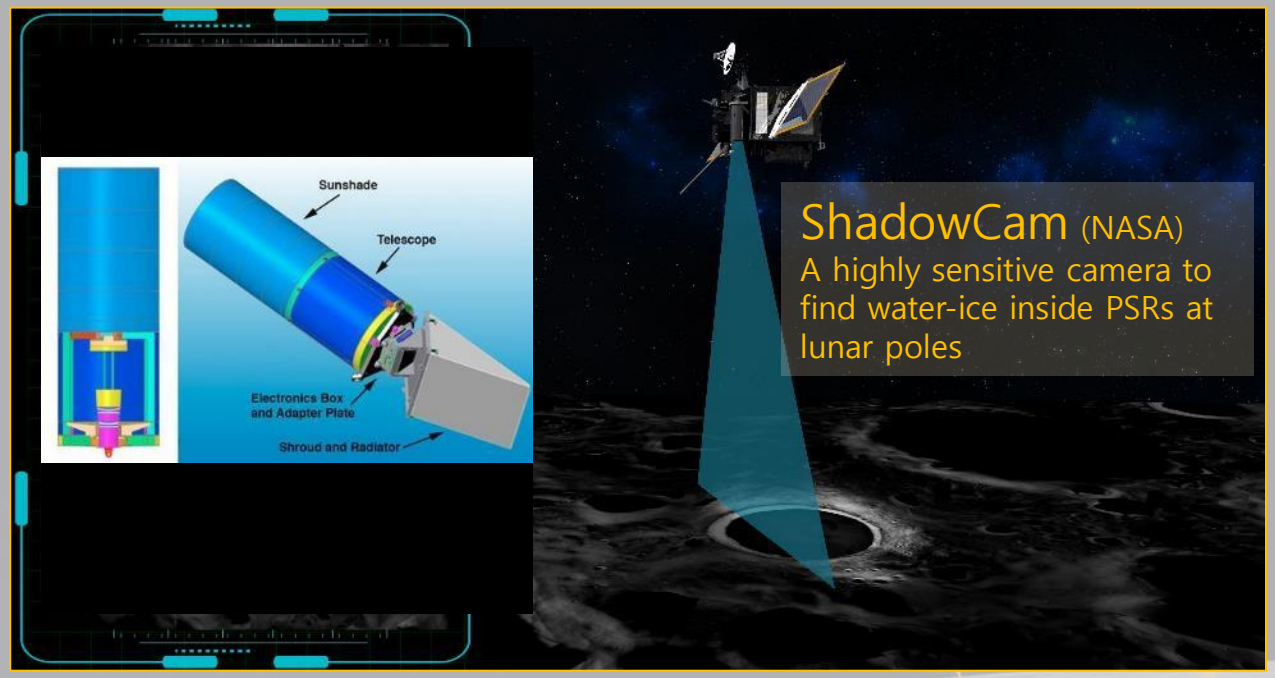


- **KGRS** (KPLO Gamma Ray Spectrometer)
  - Will map the spatial distribution of gamma-ray energy of 10 keV ~ 10 MeV
  - To investigate the chemical composition of the lunar surface materials



- **KMAG** (KPLO MAGnetometer)
  - Three tri-axial magnetometers
  - Mounted on a 1.2 m-long boom





- **ShadowCam**
  - Highly sensitive camera developed by NASA (ASU)
  - 200 times more sensitive than the LROC NAC
  - Look into Permanently Shadowed Regions (PSRs) in lunar poles
  - To see cold-trapped volatiles

- **DTNPL** (Disruptive Tolerance Network experiment PayLoad)
  - To conduct an interplanetary internet communication experiment on disruption tolerant networking

More Korean Lunar Missions To Come

- A lunar lander as the second-stage KLEP is in preparation
  - Will use a Korean launch vehicle
  - Will land in 2030s

- Four scientific instruments to be onboard NASA's CLPS landers
  - LUSEM (a pair of solid-state telescope) will join IM-3 mission to land at Reiner Gamma swirl
  - Developing three more payloads
    - GrainCams (light-field cameras to observe regolith grains)
    - LSMAG (magnetometers on a 1-m long boom)
    - LVRAD (a suit of instrument to measure radiation environments)