

# Korean Plan for SLR System Development

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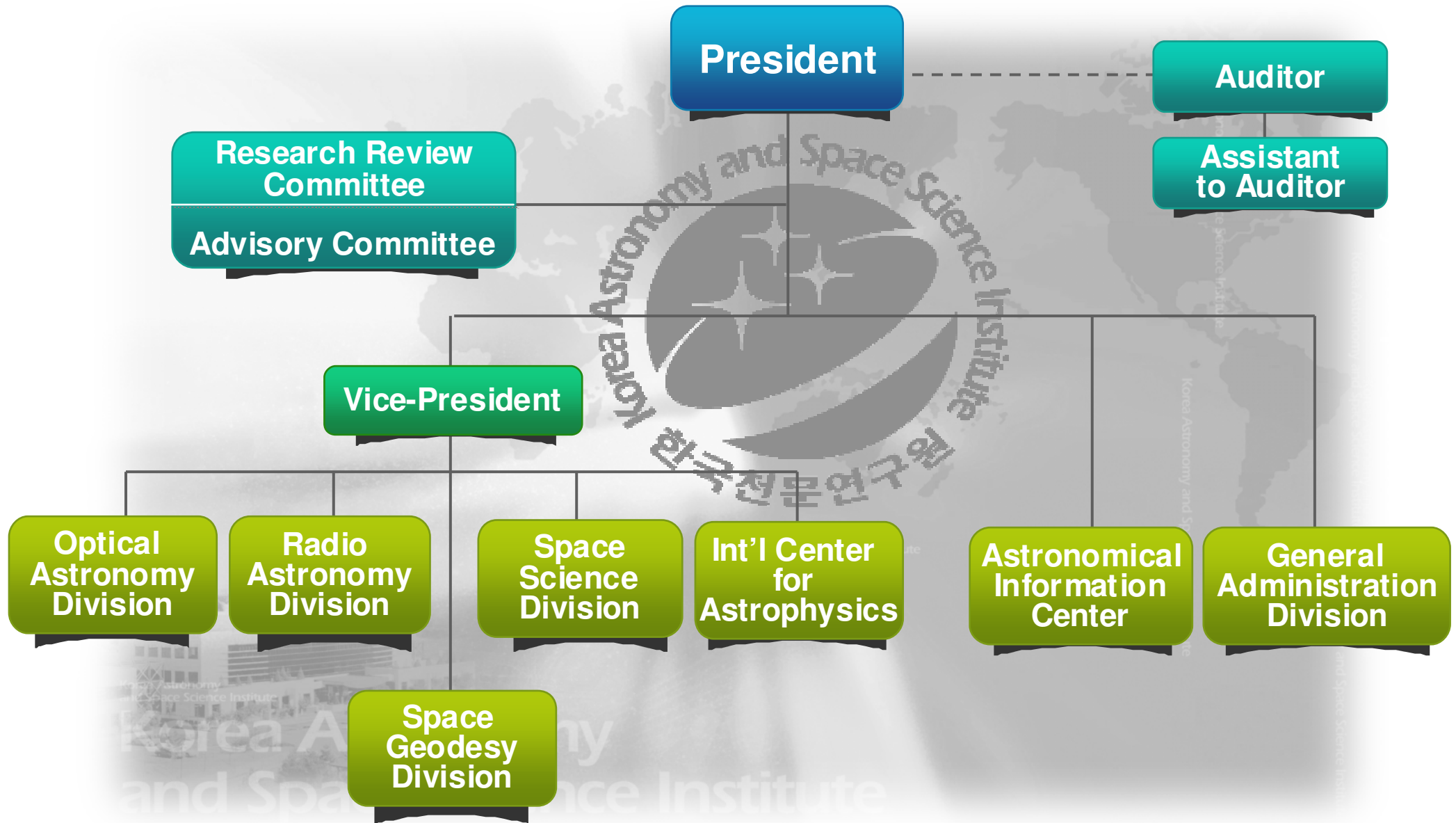




# Outline

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- 1. Introduction of KASI**
- 2. Present Status of Korea**
- 3. Plan of SLR System Development**
- 4. Future Plan of Space Geodesy**



## GPS Stations



**KASI Headquarters**

• 14m

**Taeduk Radio Astronomy Observatory**

**KVN Yonsei Radio Astronomy Observatory**

**Sobaeksan Optical Astronomy Observatory**

• 1m x 2

**KVN Ulsan Radio Astronomy Observatory**

**Bohyunsan Optical Astronomy Observatory**

• 2.8m  
• 1m

**KVN Tamna Radio Astronomy Observatory**

# KASI Facilities in Korea



- Robotic Telescope with Wide Field
- All Systems are controlled by remote site
- Survey of NEO and Variable Stars,  
Satellite Optical Tracking

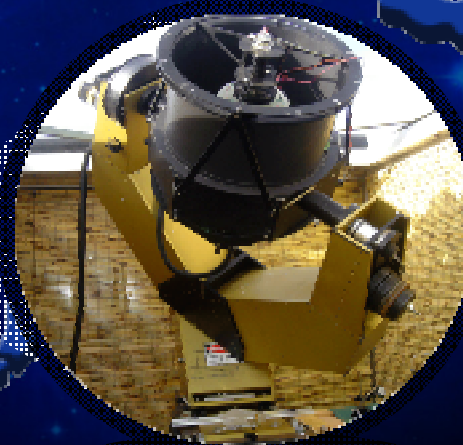


South Africa Station



Mt. Lemmon Optical  
Astronomy Observatory

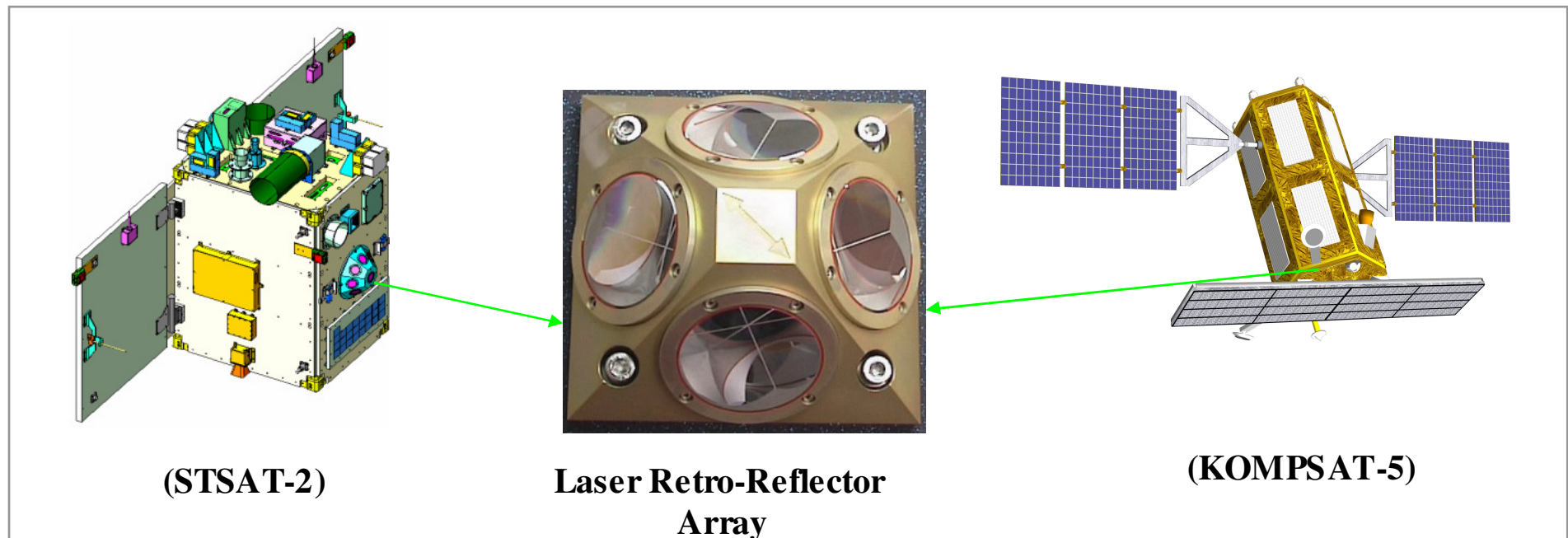
- Robotic telescope in Mt. Lemmon,  
Arizona
- 1m reflecting telescope
- Fully automated robotic telescope



Australia Station

# Present Status of Satellites with LRA

- No SLR Station in Korea
- Two Satellites with the LRA(Laser Retro-reflector Array)
  - STSAT-2(2007) and KOMPSAT-5(2009)
- Tracking System which can determine the Precise Orbit



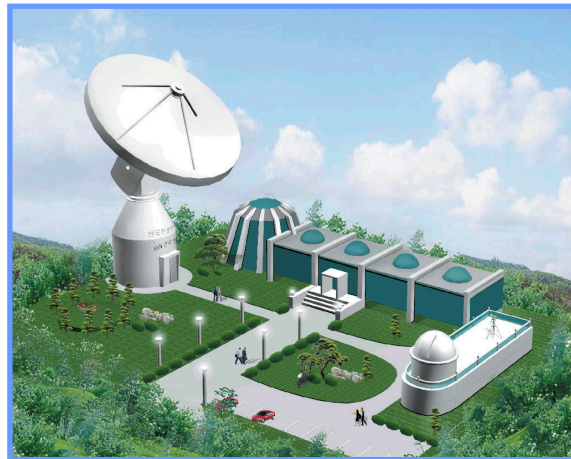
# Present Status of Space Geodesy

- No Fundamental Station in Korea
  - ITRF and ICRF Coordinate, EOP, Polar Motion, LOD, etc.
- GPS Station (about 80) and VLBI Station (3) in Korea
  - Crustal movement, Geodetic survey, mapping
- KASI wants to construct the Fundamental Station



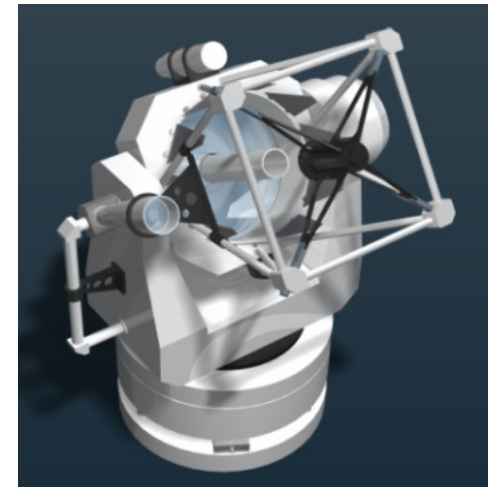
GPS

+



VLBI

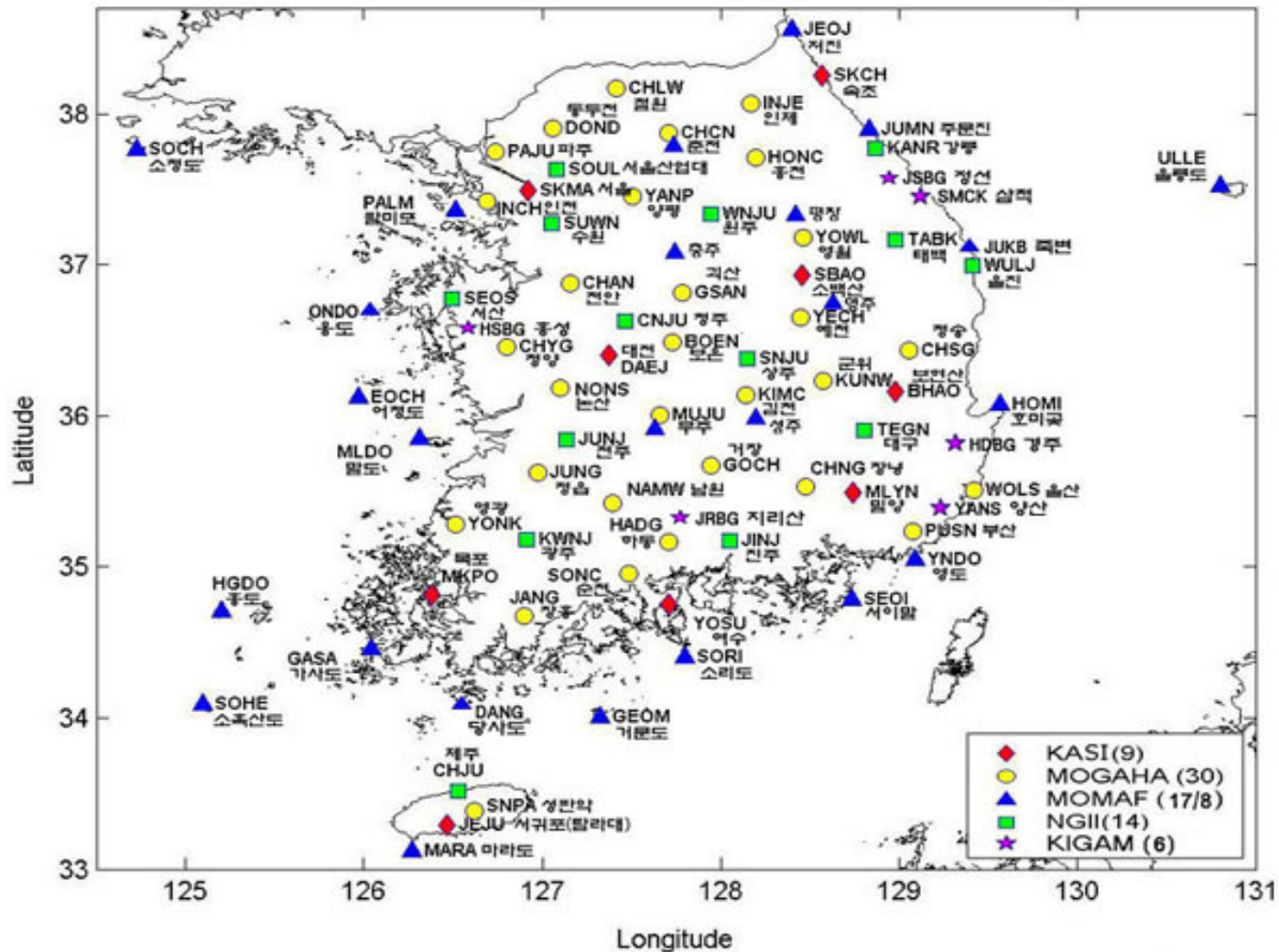
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SLR



# Korean GPS Network



한국천문연구원 Korea Astronomy and Space Science Institute (KASI)

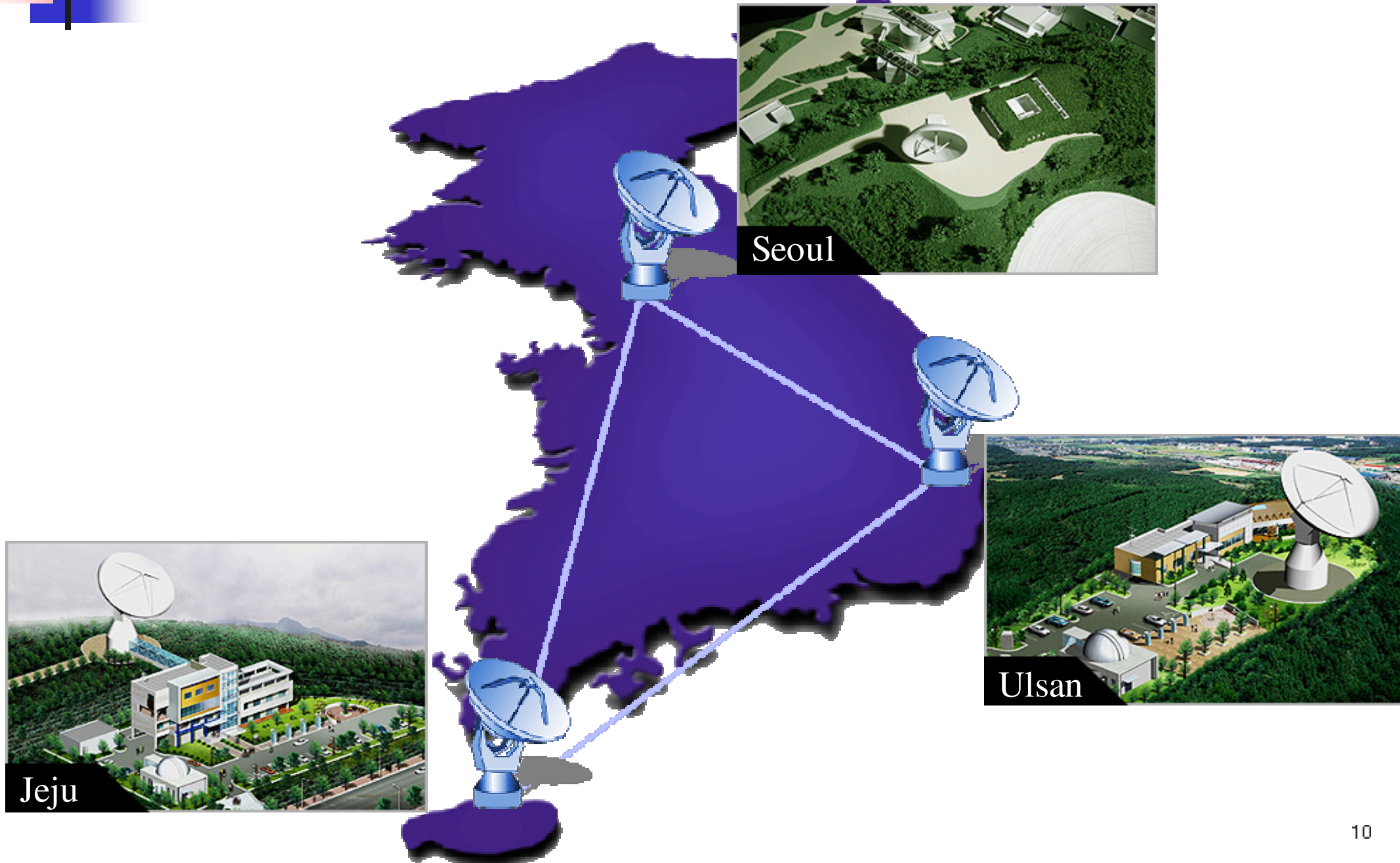
행정자치부 Ministry of Government Administration and Home Affairs (MOGAHA)

해양수산부 Ministry of Maritime Affairs and Fisheries (MOMAF)

국토지리정보원 National Geographic Information Institute (NGII)

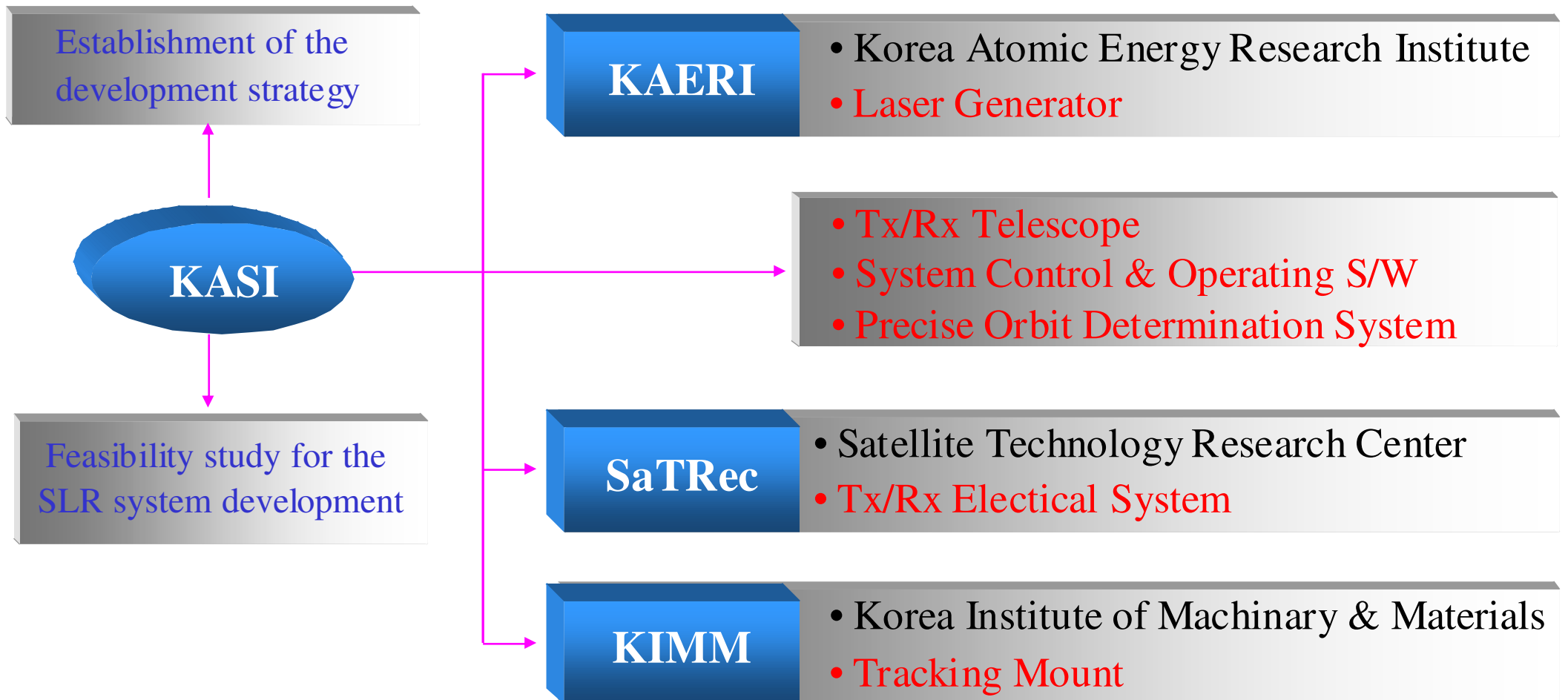
한국지질자원연구원 Korea Institute of Geoscience and Mineral Resources (KIGAM)

# Korean VLBI Network



# Overview of Preliminary Research

- Period : 2004. 12 – 2005. 11 (1 year)
- Funded by Ministry of Science & Technology



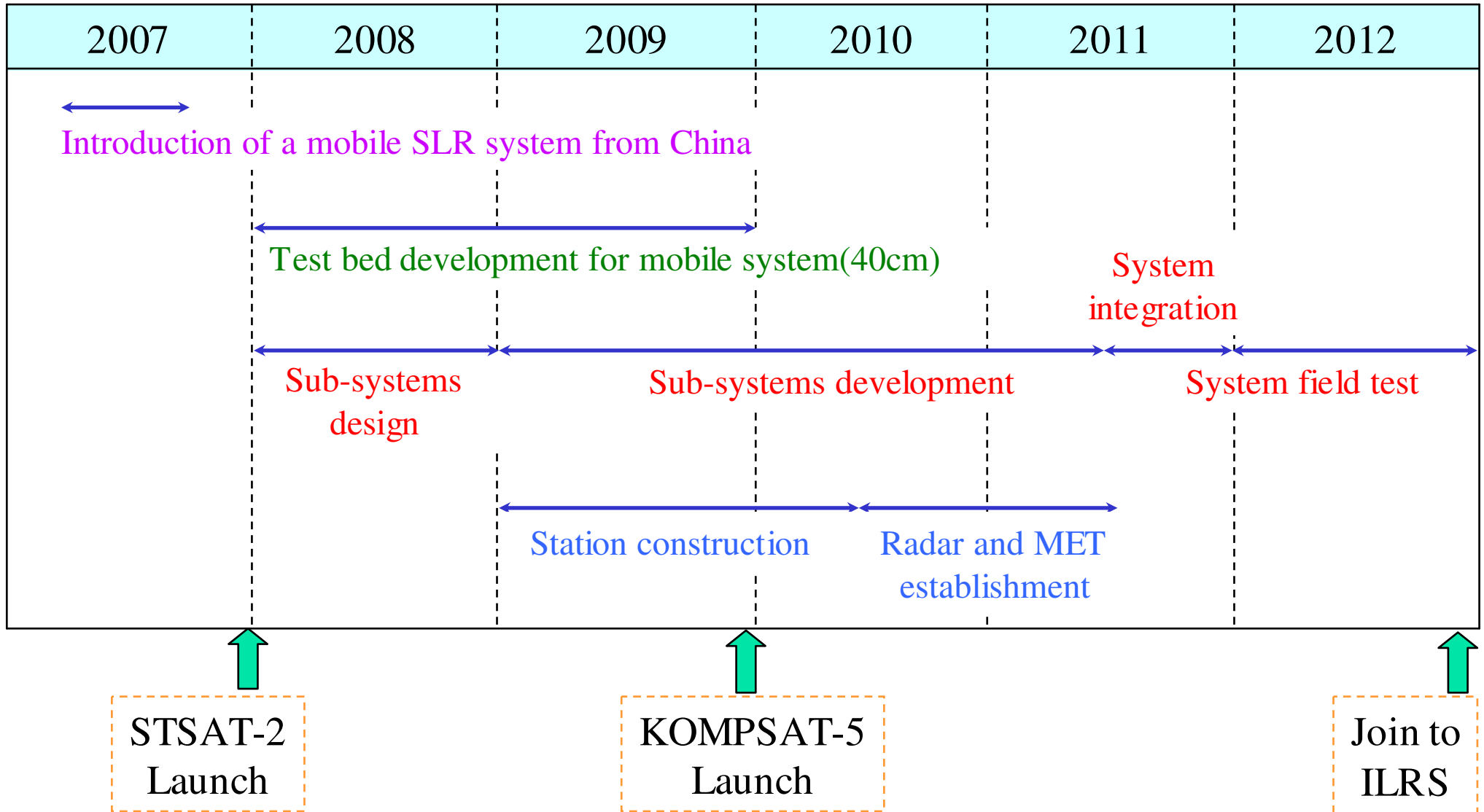


# Strategies for SLR System Development

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- Final Goal : One Mobile(40cm) & One Fixed SLR system(1m)
- Development Period : 5 years
  - Mobile system : 2 yrs
  - Fixed system : 5 yrs
    - Subsystem Development (3.5 yr) + SI (0.5yr) + Test Operation (1 yr)
  - Funded by government side
- Participants
  - KASI and other government institutes : system development
  - Universities : research on the application of SLR system
- Foreign Cooperation
  - Subsystem development, System integration, Test operation
- Applications
  - Satellite Tracking(precise orbit determination), Space geodesy

# Time Schedule for SLR System Development





# System Requirements

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## Tracking Coverage

- Possible to track satellites in the altitude of 25,000km
- STSAT-2, KOMPSAT-5, GPS, Galileo Satellites and so on

## Ranging Accuracy

- Lageos : 10mm(SS), 1-2mm(NP)
- GPS and Galileo : 20mm(SS), 3-5mm(NP)
- Ground Target : 3mm(SS), 1mm(NP)

## Automatic Operation

- All system can be controlled from the remote site
- Aircraft detection using radar and automatic observation according to the schedule

## Etc

- Daylight tracking
- Optical tracking of the space launch vehicle (if possible)

# Future Plan of Space Geodesy

**Joining ILRS(2012)**

**SLR Construction(2008-2012)**

**Project Plan(2005-2006)**



**Joining IVS (2010)**

**KVN Geodetic VLBI (2001-2007)**



**IGS Analysis Center(2008)**

**IGS Global Data Center(2005)**



**Thank You!**

