

KPS & KASS Status Updates

23rd October 2023



Overview of KPS (Korean Positioning System)

Objectives

Providing high-precision PNT information required in the era of the 4th industrial revolution

Goals

Development and construction of KPS system that stably provides PNT services to meet various satellite navigation needs



Program

KPS R&D Program
(including Space, Ground and User Segment)

Period

2022~2035 (14 years)

Governing



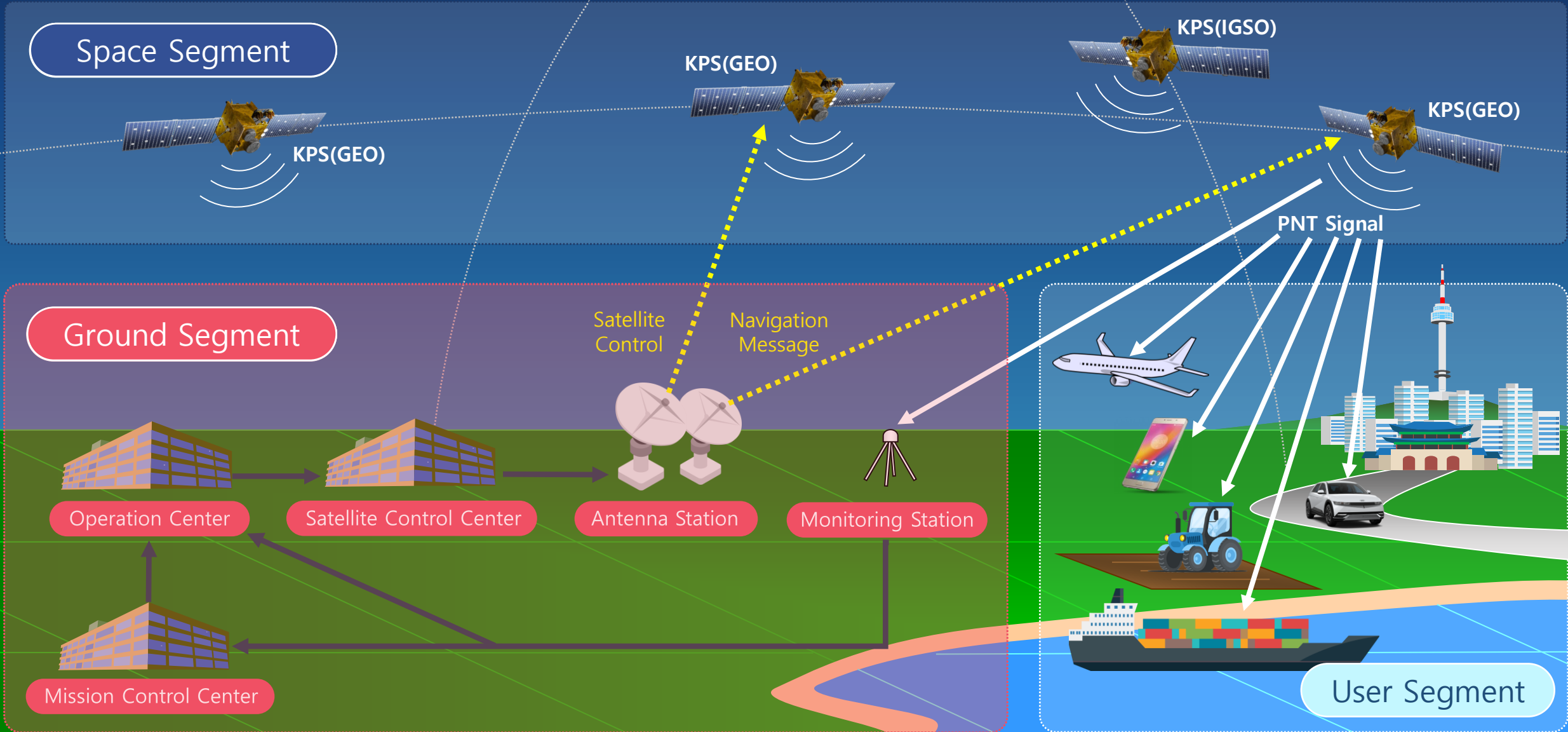
과학기술정보통신부
Ministry of Science and ICT

R&D



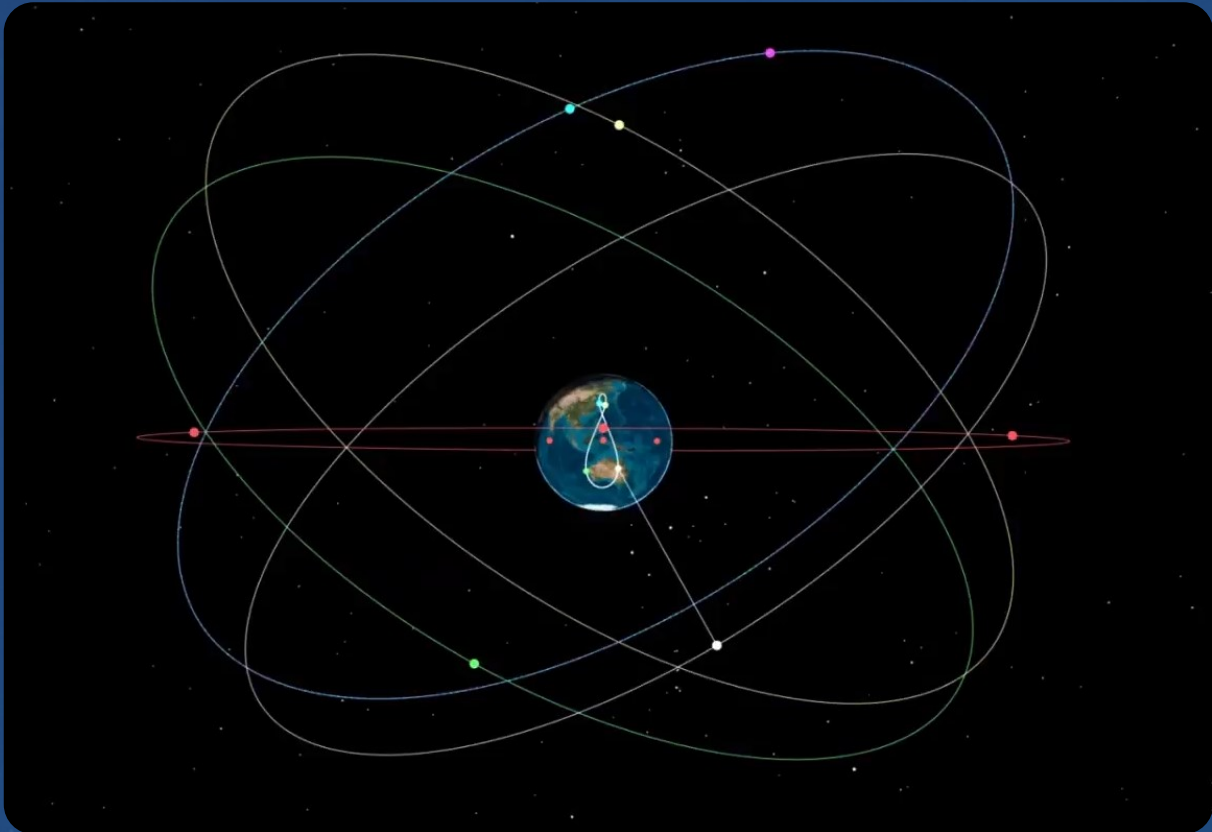
한국항공우주연구원
KOREA AEROSPACE RESEARCH INSTITUTE

KPS System Configuration



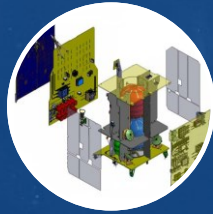
KPS Satellite Constellation

It consists of 3 GEO satellites and 5 IGSO satellites.



KPS Development Plan

Launching 1st KPS-IGSO in 2027, Finishing Deployment until 2035



System Design ('22~'24)

- KPS R&D start and application for international satellite network registration
- Navigation signal and Constellation design



System Development ('25~'28)

- Development of satellite bus, payloads, and ground segments
- Launch of the 1st IGSO satellite in 2027



Deployment and Validation ('29~'35)

- Development and launch of the remaining 4 IGSO and 3 GEO satellites
- Development of all of the ground segments, Test and validation

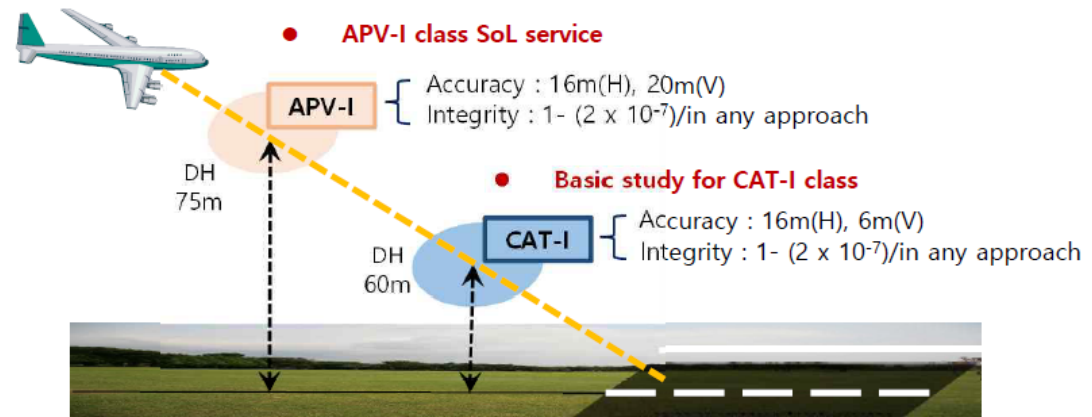
Overview of KASS (Korea Augmentation Satellite System)

Main Goals

- Provide APV-I SoL Service to Airports located in South Korea
- Start APV-I SoL Service after 2023



- APV-I and NPA service provision within Incheon FIR
 - APV-I : around airports (land mass and Jeju Island)
 - NPA : Outside of the APV-I service area
- SoL service commencement
 - After 2023yr



※ APV(APproach with Vertical guidance), CAT(CATEGORY), DH(Decision Height), SoL (Safety of Life)

KASS System Deployment



KRS : KASS Reference Station



KUS : KASS Uplink Station

- : KRS
- : KPS, KCS
- : KUS
- : GEO Satellite

KPS : KASS Processing Station

KCS : KASS Control Station



SBAS Message
Broadcasting (2)



MEASAT-3d (91.5° East)



Launch Vehicle
: Ariane-5ECA

KASS Status

Start APV-I class SoL Service after 2023



Status

- ('21.6) KUS Infrastructure Facilities Construction Completion
- ('22.6.23.) KASS 1st GEO satellite launch (Measat-3D with KASS payload)
- ('22.7.4.~6.) KASS Navigation Payload IOT (In Orbit Test) Completion
- ('22.7.19.) KASS FAT (Factory Acceptance Test) Completion
- ('22.10.~11.) KUS ↔ GEO#1 (Measat-3D) integration test
- ('22.12.) KASS 1st signal broadcasting (MT0/0)
- ('23.6.) KASS 2nd signal broadcasting (MT0/2)



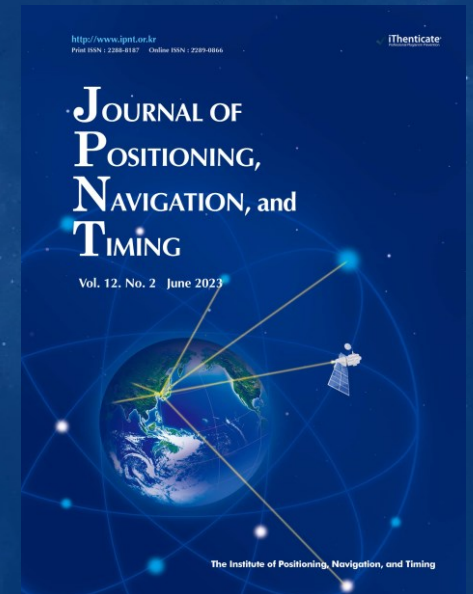
Future Plan

- ('23.11.) SQR (System Qualification Review)

IPNT (Institute of Positioning, Navigation and Timing in Korea)

Main Activities

- Established in 1994
- IPNT Annual Conference from 2012 to Present
- GPS / GNSS Workshop from 1994 to Present
- Press 'Journal of Positioning, Navigation and Timing' from 2012



Thank you

