This Presentation is made by KARI on behalf of **Korea AeroSpace Administration(KASA)** newly established on 27 May 2024.

Earth Observation in Rep. of Korea
: focused on Low Earth Orbit Satellites

UN/Austria Climate Action Symposium

18 July 2024

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Korea AeroSpace Administration

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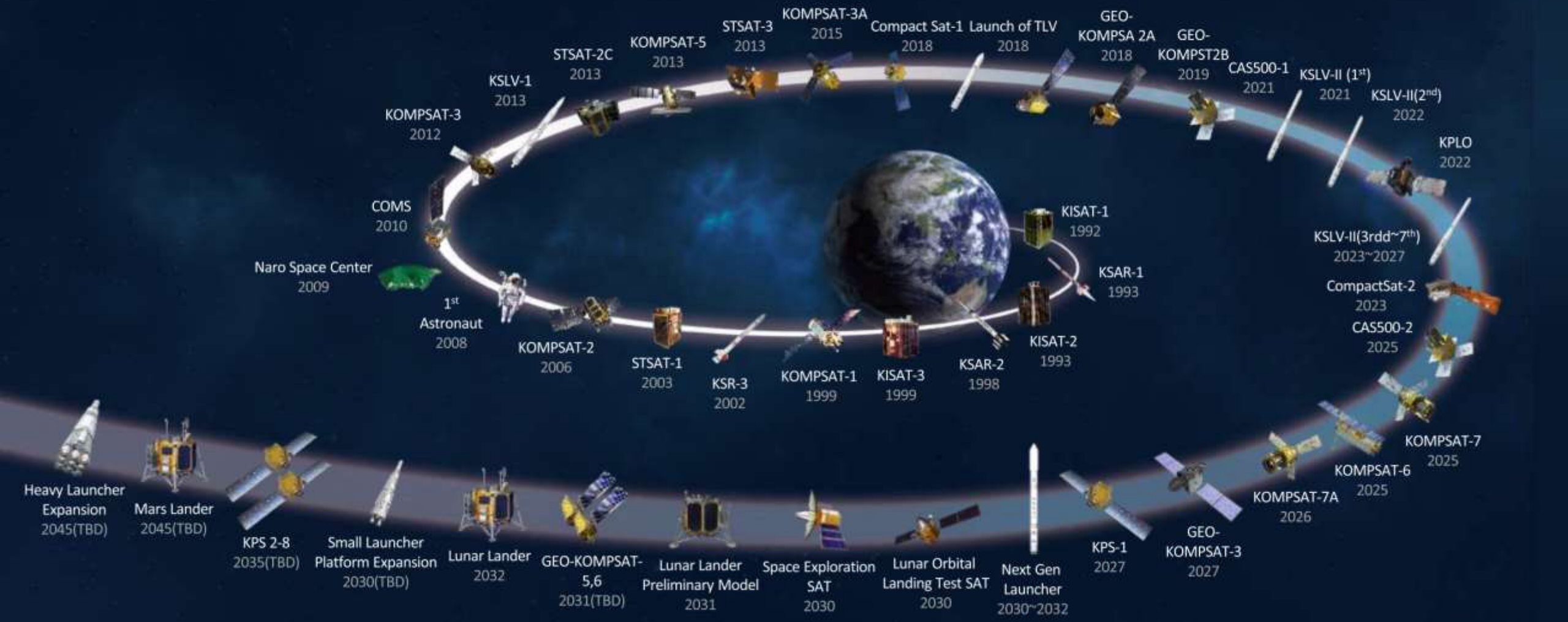
National Space Program

Space Development Promotion Plan, 2023



National Space Program

Space Development Promotion Plan, 2023

Ministry of Science and ICT

Korea Aerospace Research Institute (KARI)

Government-funded R&D institution established in **1989**

Dedicated body for **national space development**

Supports national space policies and international cooperation

KASA as Center of **Korea's AeroSpace Sector** since May 27, 2024

Korea AeroSpace Administration

Mission

Accelerating economic growth and space technology innovation by fostering aerospace industry as a key national industry

- **National Aerospace policy**
- **R&D for core space technology**
- **International cooperation**
- **Aerospace Industry promotion**

Heavy Laun… Expansio… 2045(TBD)

2035(TBD)

Small Launcher Platform Expansion 2030(TBD)

Lunar Lander 2032

GEO-KOMPSAT-5,6 2031(TBD)

Lunar Lander Preliminary Model 2031

Space Exploration SAT 2030

Lunar Orbital Landing Test SAT 2030

Next Gen Launcher 2030~2032

KPS-1 2027

KOMPSAT-3 2027

KOMPSAT-5 2013

STSAT-3 2013

KOMPSAT-3A 2015

Compact Sat-1 2018

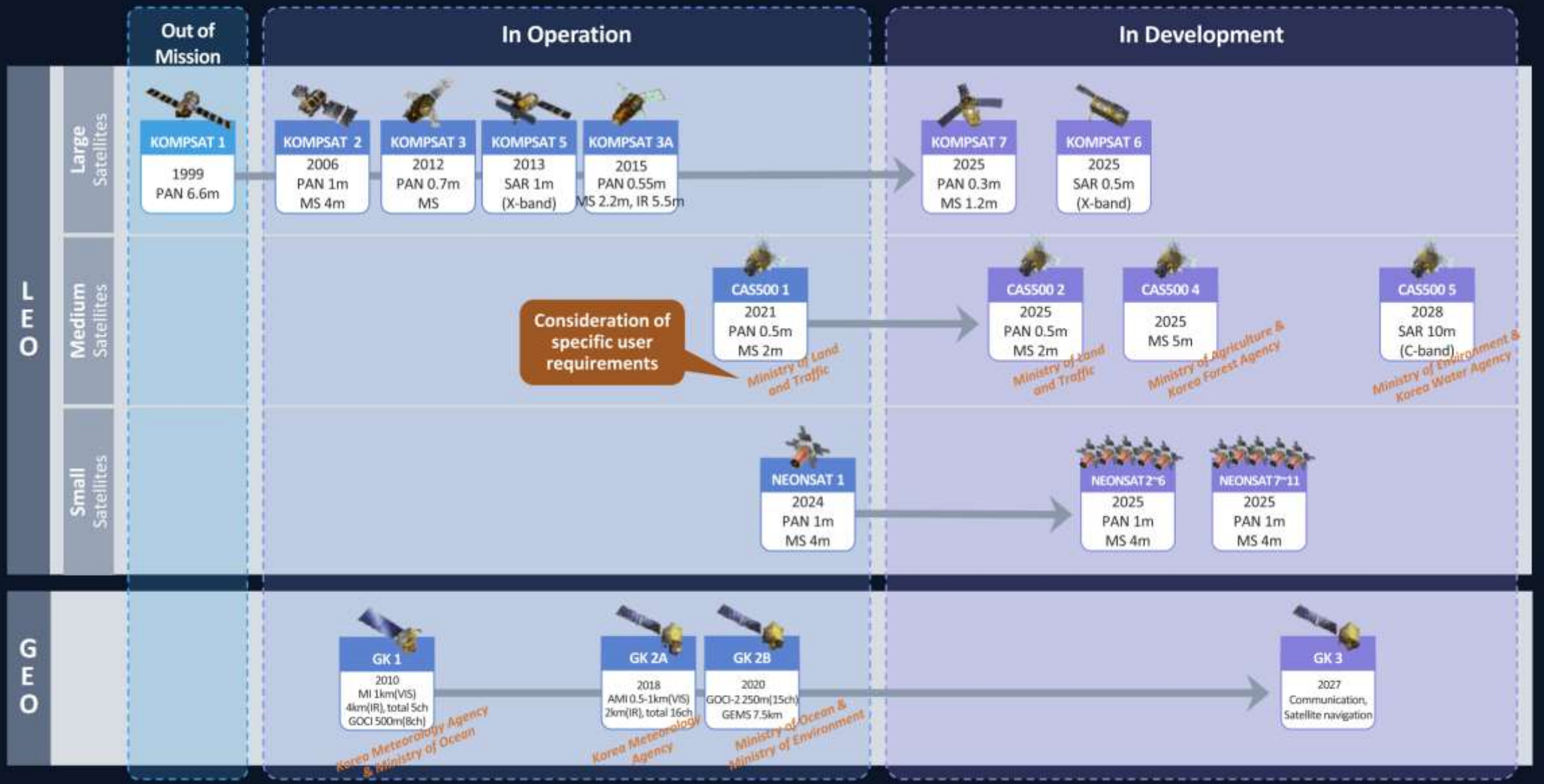
Launch of TLV 2018

GEO-KOMPSA 2A

GEO-

MIPSAT-1 1999

National EO Satellite Development Program



National EO Satellite Operation and Application

Korea AeroSpace Administration

National Satellite Operation Center

- Satellite Control and Operations
- Domestic and International Ground Segment Operations

Jeju / Korea	Daejeon / Korea
Antarctic King Sejong Station	Svalbard / Norway
Weno / Micronesia	Neustrelitz / Germany

- Satellite Data Processing and Distribution
- International Cooperation (e.g. Int'l Charter on Space and Major Disasters, GEO)

KARI Korea Aerospace Research Institute

National Satellite Application Support Center

- R&D in Earth Observation Applications
- R&D in AI-based Geospatial Intelligence
- Industry advocacy and Capacity Building
- Support for National and International Cooperation

How does KASA supports the Earth Observation practices in Korea?

Supporting and Encouraging Government Users

Legally based on: "Regulation on the Organization and Operation of the National Satellite Information Application Council" (by Ministry of Science and ICT)

Korea AeroSpace Administration

National Satellite Application Support Center

Raise Demands

Government User Group

- **21 government** departments
- **17 affiliation** and **local agencies**

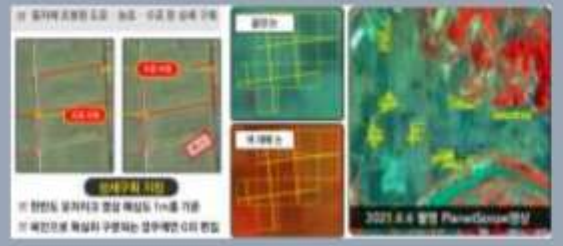
Easy-to-use Data Processing

Dedicated Data Order and Distribution Platform

Capacity Building (conferences, workshop, newsletter, etc.)

Technology Support and Transfer

Area/Object of Interest Detection (Ministry of Korea Reunification)	Disaster Damage Area Detection (National Disaster Management Institute)
Smart Farm Map Update (Ministry of Agriculture)	Air Pollution Resource Detection (National Institute of Environmental Research)
Farmland Survey (Statistics Korea)	Landcover Map Update (Ministry of Environment)



How does KASA supports the Earth Observation practices in Korea?

Support for Disaster Response

International Charter on Space and Major Disasters

- **17 national agencies** (ESA, CNES, DLR, UKSA, EUMETSAT, USGS, NOAA, INPE, CONAE, JAXA, ISRO, CNSA, UAESA, ROSCOSMOS, ABAE, etc.)
- & **Private companies** (Planet, ICEYE, Satellogic, etc.)

Korea National Satellites

Provide Data and Processing Service

Trigger Charter

Activation Result Report

Member since 2011

KARI Korea Aerospace Research Institute

National Satellite Application Support Center

Government User Group/Disaster WG

- K-Water
- Korea Forest Agency
- National Disaster Management Institute
- Others

Feedback

- Charter Activation Management
- Technical Support: e.g. Charter User Training

Request Data

Provide Data (incl. post processing)

Korea AeroSpace Administration

National Satellite Operation Center

Satellite Mission Planning

Data acquisition

— Disaster response on **local level**

— Disaster response on **national level**

How does KASA supports the Earth Observation practices in Korea?

Challenges and Opportunities

Korea is a rapidly developing and densely populated country, so there is a need for **high-resolution Earth observation** to respond rapidly to emergencies and to monitor infrastructure development and environmental changes.

High resolution KOMPSATs operate under the concept of user-request based image acquisition, so data availability for monitoring purposes is often limited.
(no data available where no order has been made)

The increasing uncertainty of climate conditions require a **short revisit period for data acquisition.**

NEONSAT

New-Space Earth Observation Satellite Constellation for National Safety

- 1st National satellite programme with constellation concept
- Composed of 11 very high-resolution optical microsatellites
- Scan-line strips along the pass over the Korean peninsula
- Improves the nation-wide data accumulation, short-period monitoring as well as emergency response capabilities

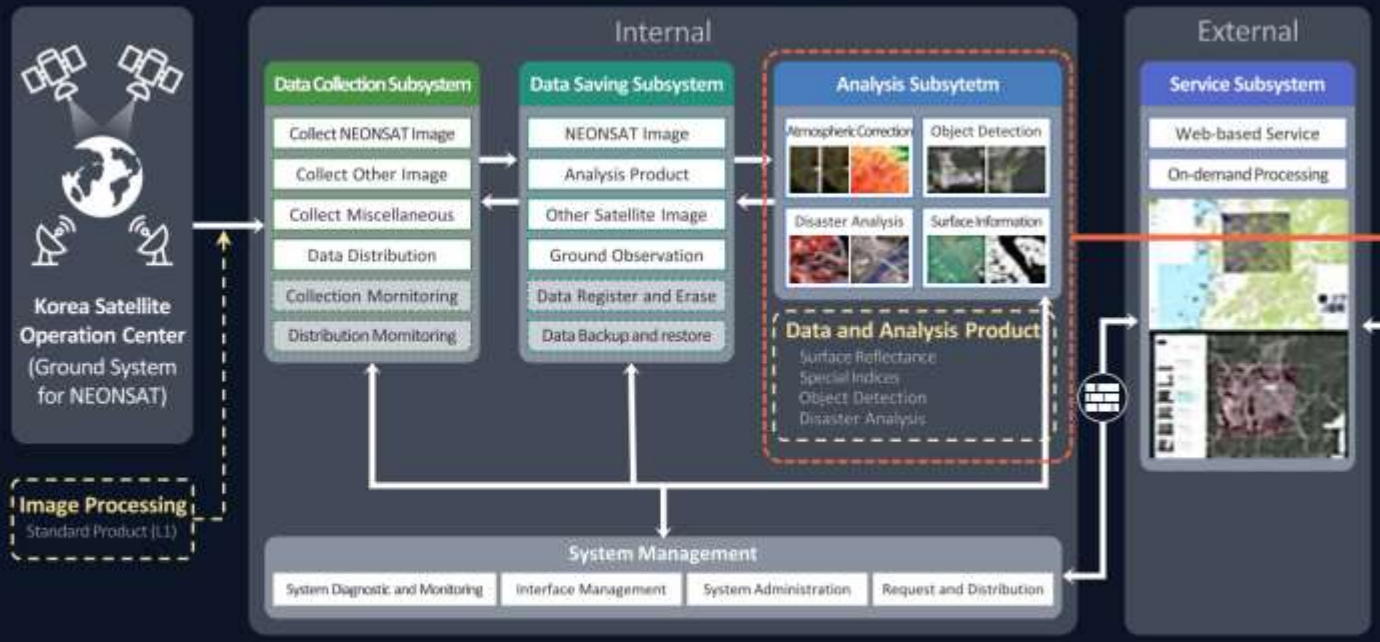
Paradigm Shift: **New Space**

How does KASA supports the Earth Observation practices in Korea?

NEONSAT-based Earth Observation Data and Analysis Service

Capabilities and Challenges of NEONSAT	User Expectation (surveys, expert advisory group)	Concept of User Support
▪ Nation-wide data accumulation	▪ Easy to use data product	▪ Analysis Ready Data
▪ Short period monitoring	▪ Easy to use analysis support	▪ Web-based online platform
▪ Increase of data volume	▪ Openly accessible system	▪ Data processing and analysis algorithm integration

NEONSAT-based Application Support System



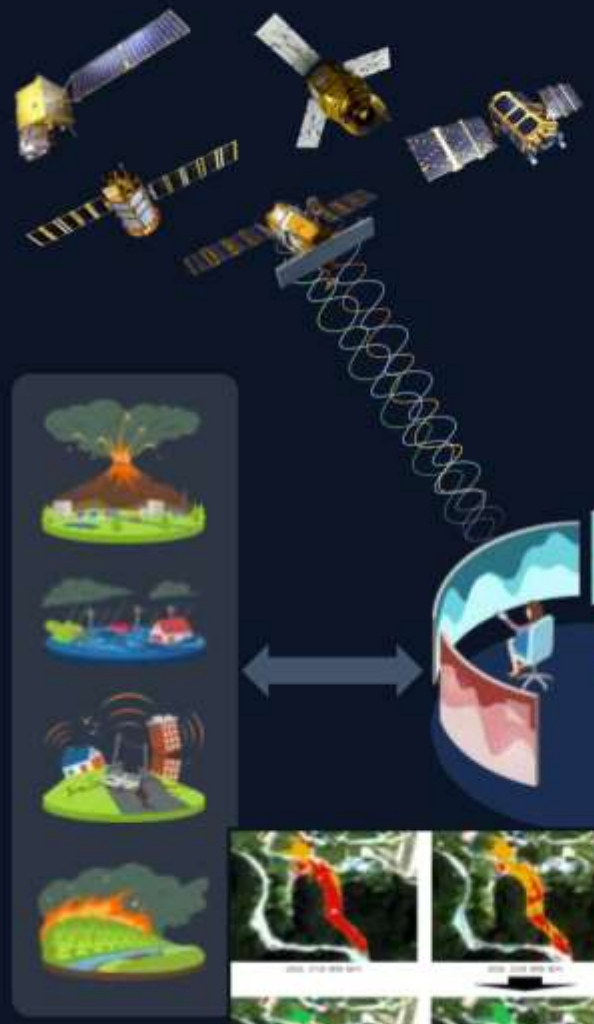
Technology Development for User Support

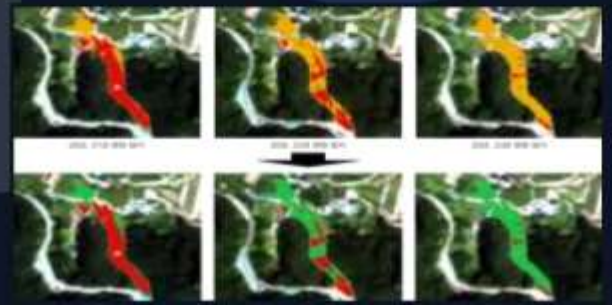
- Atmospheric correction for analysis ready data
- Value-added products such as spectral indices (NDVI, EVI, SAV, NDWI, etc.)
- Image processing for large area time-series analysis (gap filling, image fusion, etc.)
- AI-based object detection and segmentation

nation-wide short-period MONITORING
(Climate Change, SDGs, Disaster Reduction)

How does KASA supports the Earth Observation practices in Korea?

Solving social problems with Earth observation





Opening of the Space Economy Era in Korea

THANK YOU!

Korea AeroSpace Administration

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Image: **Earth taken by Danuri, S. Korea's lunar orbiter,** 2023