Ministry of Science, ICT and Future Planning

Korea Astronomy and Space Science Institute

Preparedness Plan for Space Hazards in Republic of Korea

Committee on the Peaceful Uses of Outer Space
Fifty-seventh session
Vienna, 11 June 2014

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and Future Planning

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Korea's Space Policy

- Space Development Promotion Act was enacted in 2005.
  - To promote the peaceful use and scientific exploration of outer space, to ensure national security and to further develop the national economy, and to raise the national standard of living through the systematic promotion of space development and the effective use and management of space objects

- Space Development Promotion Act Proposition including the preparedness plan for space hazards passed the national assembly in May 2014.
  - To prepare for the space hazards by crash and collision of space and natural objects
  - Establish master plan for preparation to space hazards every 10 year

Establishment of Preparedness Plan for Space Hazards including strategies and policies for preemptive and systematic provision about space hazards

Space Hazards Situation

- Risk to humans and property on ground due to re-entries of natural and artificial space objects

Chelyabinsk meteor(‘13.02)

GOCE satellite(‘13.11)

Jinju meteor (‘14.03)

- Increase the occurrence possibility of collision between space debris and satellites due to sustainable space development
  - Iridium 33 and Cosmos 2251 Collision(‘09.02)
  - Collision avoidance maneuver for safe distance between Chollian and Raduga 1-7 (‘11.03)

Debris Growth

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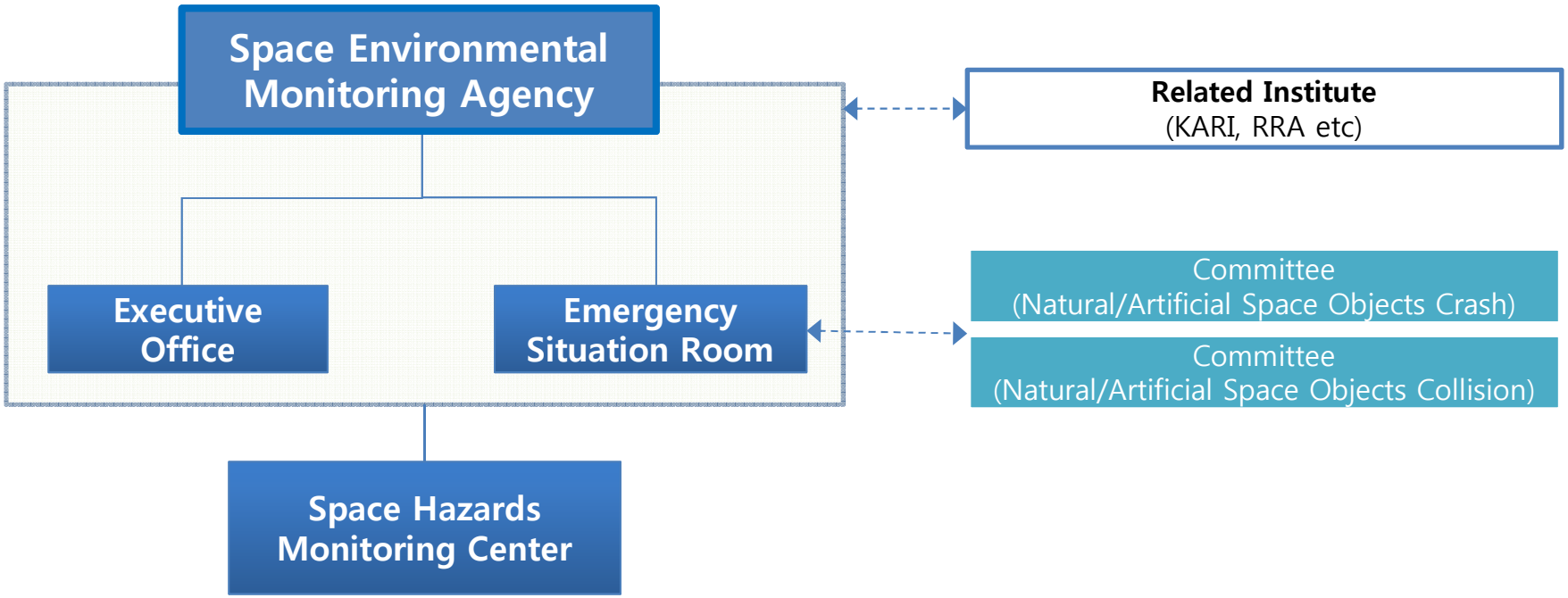
Preparedness Plan for Space Hazards

VISION	**Safety and Protection from Space Hazards**
GOAL	◈ Prompt Action and Forecasting about Space Hazards ◈ Building up of National Space Hazards Monitoring System ◈ Enhancement of Preparedness Capability for Space Hazards

Subject	Projects
System	- Establishment and management of National Space Hazards Headquarters - Designation and management of Space Environmental Monitoring Agency - Establishment of Meteorite Management System
Technology	- Space risk identification and integrated analysis - Monitoring and warning of potential Earth impactors - Prediction of potential collisions between space objects - Advanced system for solar activity monitoring
Intrastructure	- International cooperation to prepare in case of space hazards - Research and development for technology - Education for enhancement of Human resources

System: Space Environmental Monitoring Agency

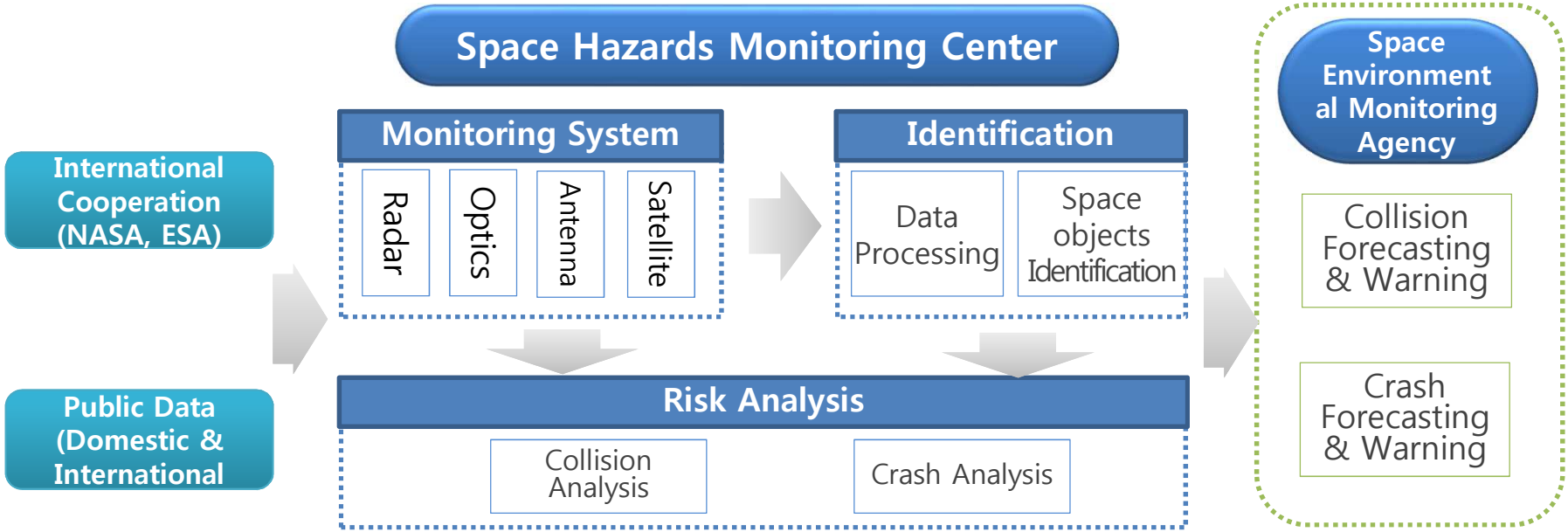
- Professional organization space hazards monitoring
  - Set up the organization dedicated to the space hazards correspondence with the ministry of Science, ICT and Future Planning and related ministries (~'15)
  - Space hazards forecasting and warning
  - International cooperation needed for technology exchange and space risk monitoring



System: Space Hazards Monitoring Center

- Technical expertise to complement the space environmental monitoring agency
  - Operation the self-contained equipment to observe the space situation
  - Data processing and identification of space objects
  - Analysis of collision and crash

※Korea Astronomy and Space Research Institute is designated as space hazards monitoring center



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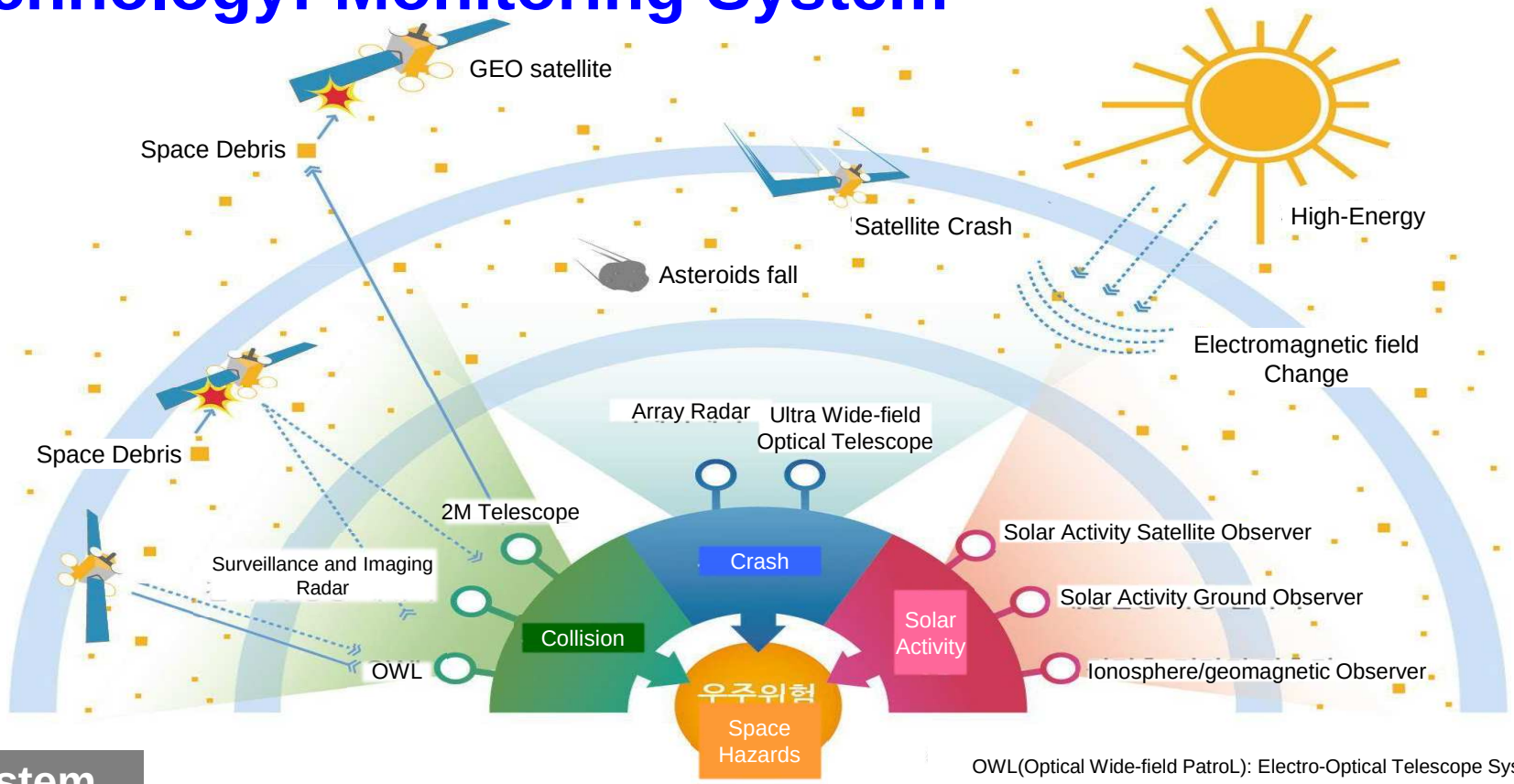
Technology: Monitoring System



OWL(Optical Wide-field PatroL): Electro-Optical Telescope System

System

All-sky surveillance complex camera

OWL-Net

Array Radar

Ultra-wide field optical telescope

2m-class optical surveillance telescope

Surveillance Radar

Imaging Radar

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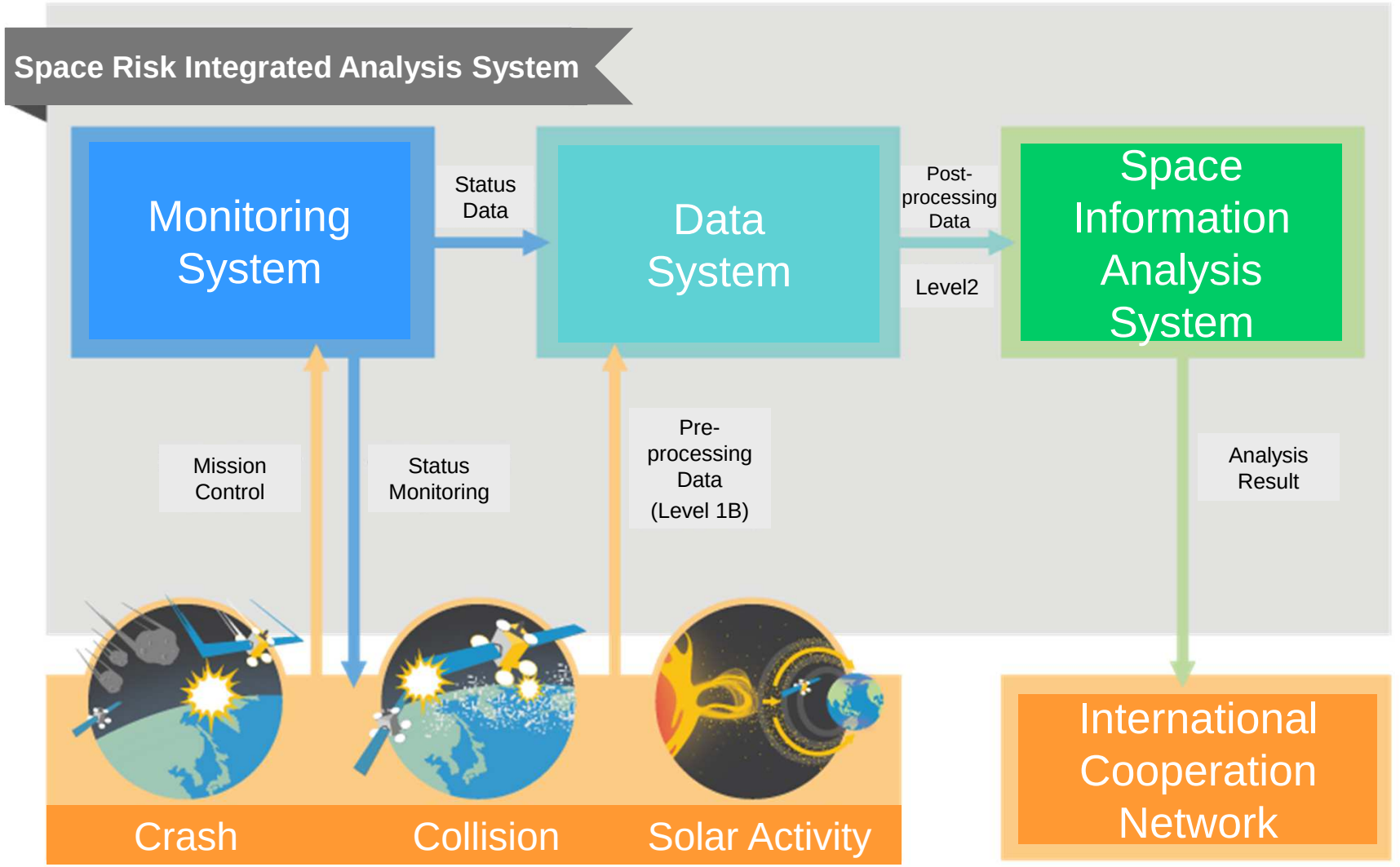
Technology: Integrated Risk Analysis System



Infrastructure: Research & Development

- Promotion of research & development of core technology for capabilities improvement of space hazards preparedness
- Development of software tools, applications and data systems for space risk analysis and evaluation
- Future space technology: Active debris removal


Satellite Reentry Control


Robotic Capture and Move


Space Debris Laser tracking

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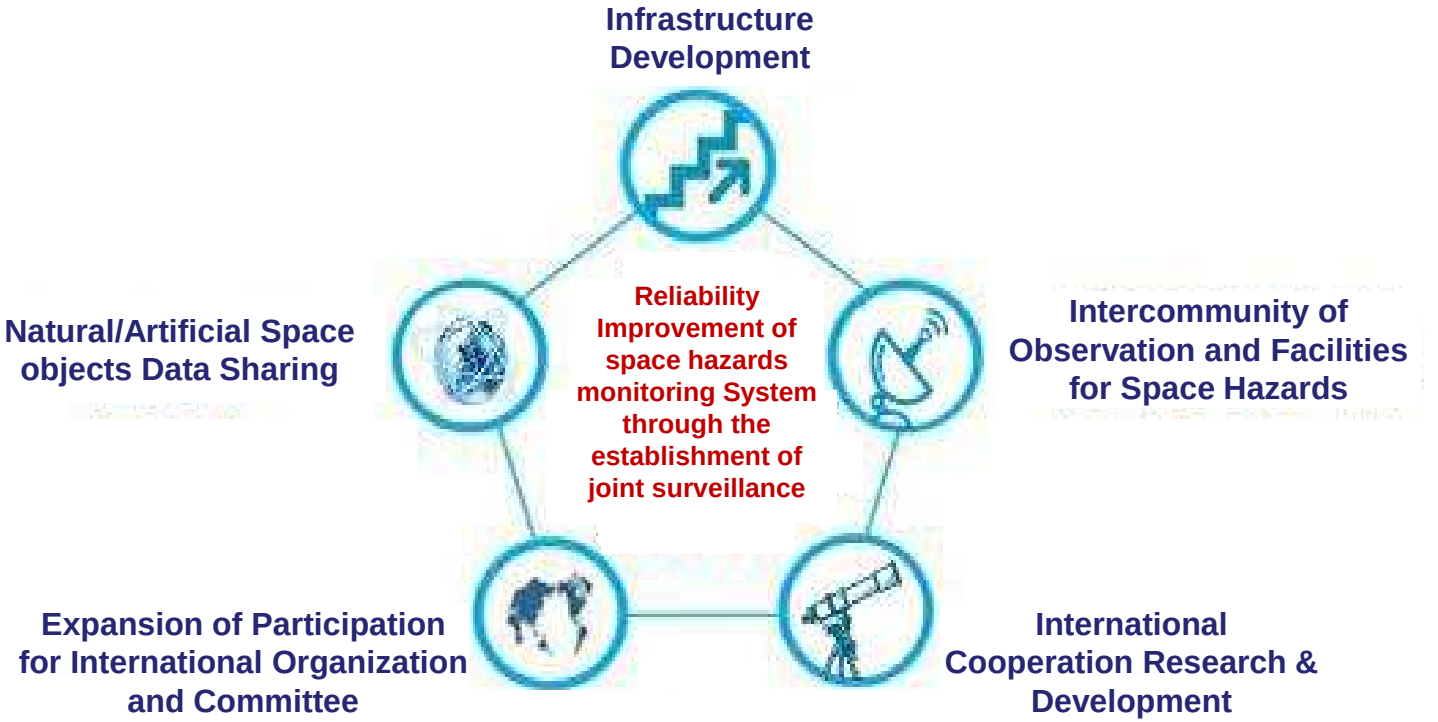
Infrastructure: International Cooperation



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KARI Korea Aerospace Research Institute

- STSC AT#14 : KASI joined from 2005
- MOU for space debris orbit control (2008)
- In the process of joining a member agency (2014)
- MOU for exchanging information about space hazards (2014)

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Summary

The Preparedness Plan for Space Hazards in Republic of Korea (2014~2023) was established

(2014. 05.30)

- Becomes a baseline for preparedness of space hazards
- Establishes Space Environmental Monitoring Agency
- Establishes Space Hazards Monitoring Center
- Develop the Space Hazards Monitoring System
- Develop the integrated risk analysis system
- Research and develop the core technology
- Develop human resources of space risk assessment
- Expand the international collaboration for preparing space hazards

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Thank You for your attention