PECORA 22 TS 5-2

INTEGRATED ANALYSIS OF LAND IMAGING SATELLITE PERFORMANCE AND BENEFITS

User Driven Earth Observation Pathways

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Celebrating 50 YEARS of Landsat 1972-2022

User Needs Analysis

The USGS National Land Imaging Program documents user needs and assesses satellite capabilities to determine the most effective solutions to address broad civil agency and societal challenges. This work informs satellite mission formulation, interagency and international collaboration, and commercial engagement.

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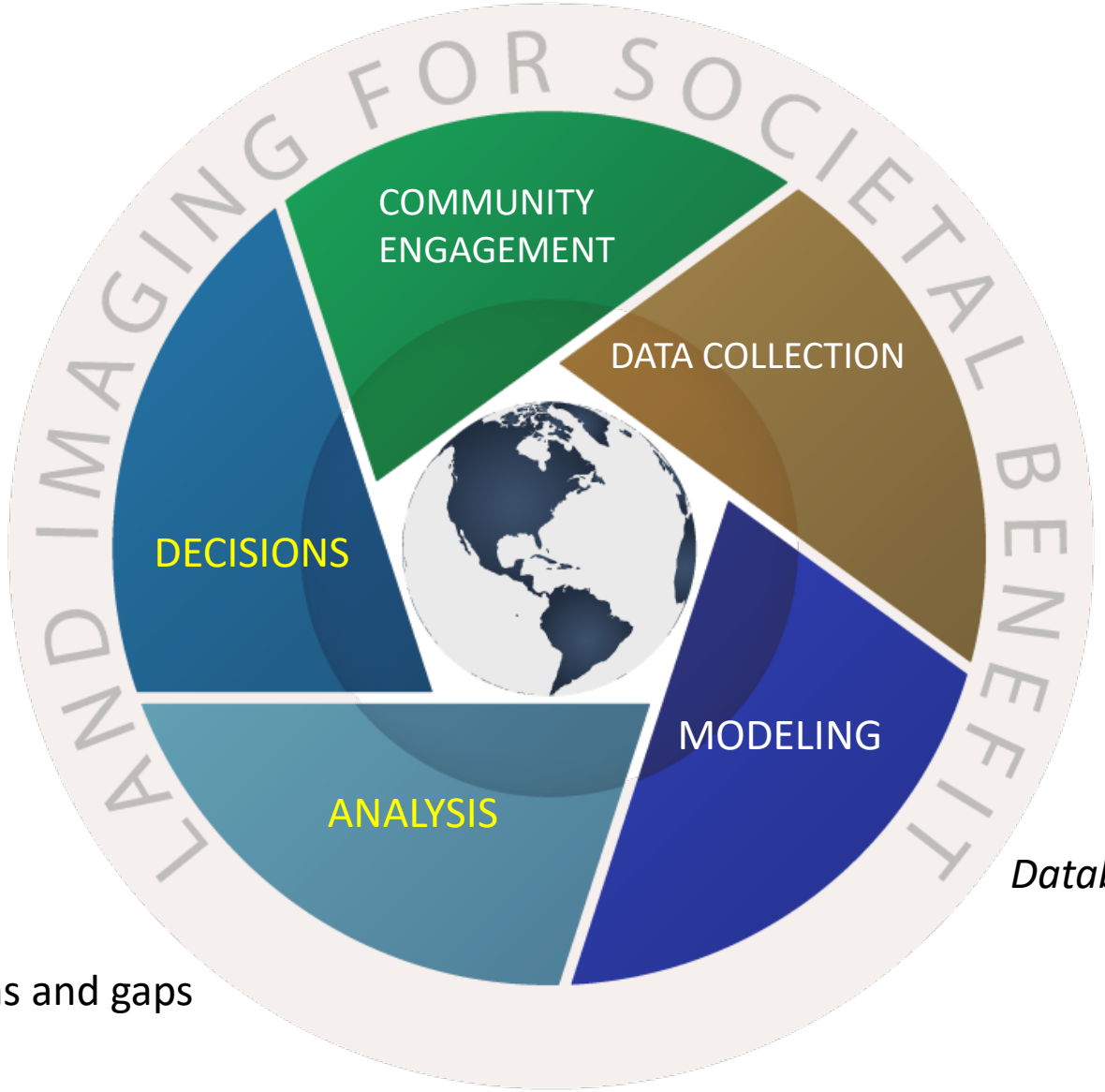
User Driven Earth Observation Pathways

Beginning with users



Inform system development and data procurement

Collect data

Databases and software

EO solutions and gaps

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Informing Decisions

Future Landsat mission concepts, products, and services

Commercial data augmentation

National Earth observation Assessments in the Executive Office of the President

International satellite partnerships

Prioritization of satellite data characterization studies

NASA Decadal Survey missions, and mission continuance

USGS science collaboration, needs, data accessibility

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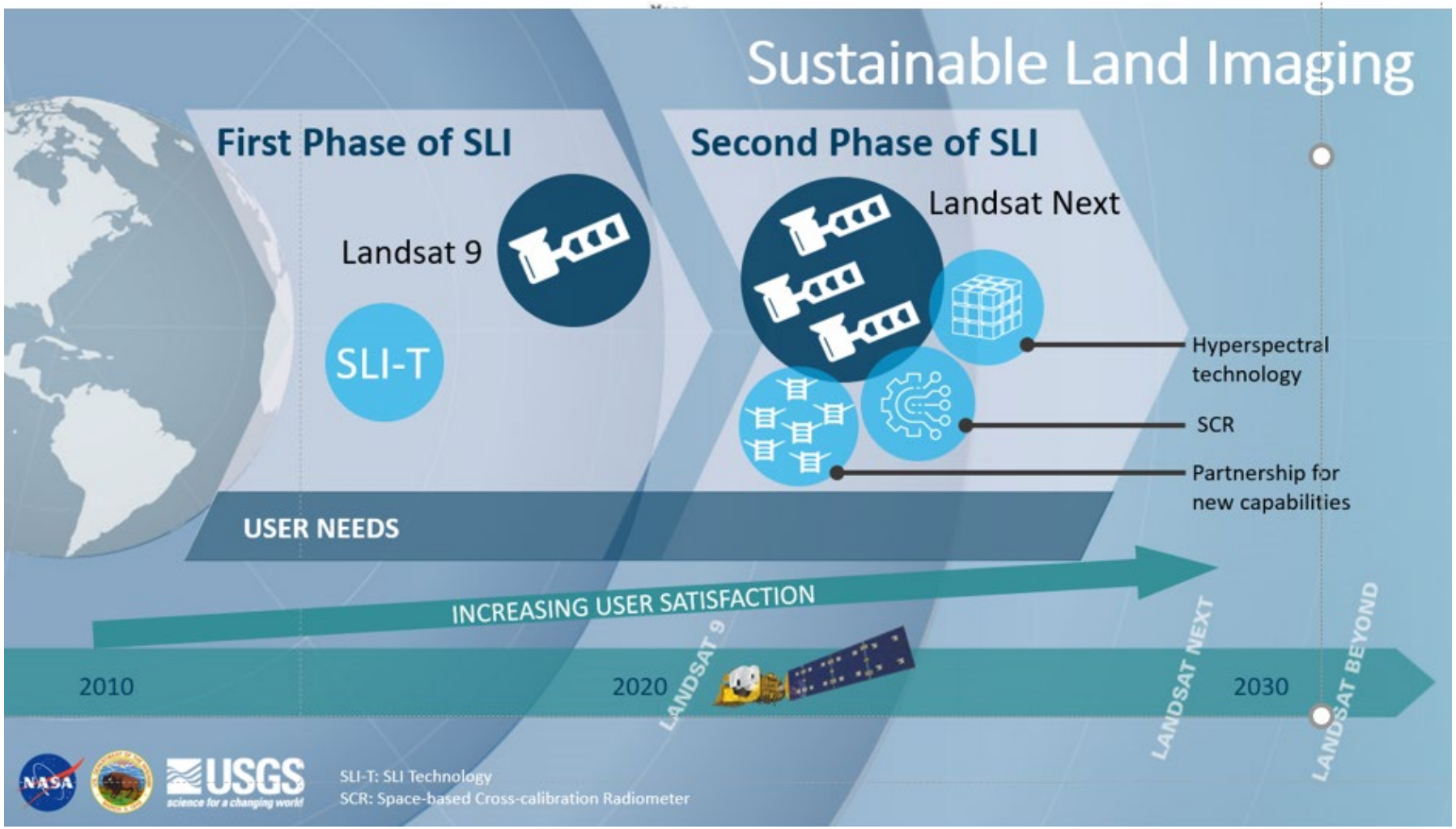
Headed to 2030



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Landsat Next

- **Landsat Next**: Under the USGS/NASA Sustainable Land Imaging (SLI) Agreement, the U.S. intends to implement a robust spaceborne, land imaging system to ensure continued collection of data for processing into useful and efficient information products for use by the wide range of interested science communities.
- **Mission Concept:** Collection of “superspectral” land observations featuring both richer spectral information and higher spatial resolution than Landsat 8 and 9 with improved temporal frequency.
- **Requirements:** Reflect the needs of users for:
  - **Improved temporal revisit** for monitoring dynamic land and water surfaces such as vegetation crop phenology, burn severity, water use and quality, coastal and wetland change, glacier and ice sheet dynamics.
  - **Improved spatial resolution** for agricultural monitoring, ecological monitoring, urban studies, water resources management and other applications.
  - **Synergy with European Sentinel-2** bands allowing easier merging of information products.
  - **Improved spectral resolution** to support new and evolving applications, including surface water quality, cryospheric science, geology, and agricultural applications including crop water consumption.
  - **Preservation of heritage performance**: spatial, geometric, radiometric, and Signal-to-Noise Ratio (SNR).

USGS Sustainable Land Imaging; Commercial and International Augmentation

- Collect interdisciplinary user needs to inform the USGS/NASA SLI Landsat missions and augmentation by international and commercial sources
- Maintain a compendium of government, commercial and international existing and upcoming satellite missions https://www.usgs.gov/tools/land-remote-sensing-satellites-online-compendium
- Perform architecture studies that identify applications that could benefit from higher spatial, temporal, and spectral data – typically provided by commercial sources
- Provide Federal civil needs to inform defense and intelligence community commercial satellite contracts and civil agency access to these contracts once awarded
- Collaborate with NASA to expand civil access to commercial remote sensing data
- Coordinate with Federal agencies, industry, and the international community to characterize emerging satellite data quality and promote interoperability
- Coordinate with EC/ESA and other international partners in satellite mission planning and requirements sharing

Earth observation trends


Commercial hyperspectral, thermal, radar


Pervasive applications and analytics in the cloud


Combined multi-source observations


Interoperability


Data, information and insights


Local to global scale decisions


Value propositions and partnerships

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Keeping up: Future directions in collecting user needs

- Partner with non-Federal consortia
- Focus on representative “key needs”
- Expand approaches understanding user needs – literature and data mining
- Bolster underrepresented application areas, e.g., fire
- Requirements exchange with international partners

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Future User Needs Activities

- Extend analysis tools to assess multi-mission satellite performance
- Collect increasingly diverse user community needs
- Develop An interagency approach to commercial augmentation
- Refresh user needs to inform the mission after Landsat Next
- Co-lead Executive Branch Earth Observation Assessments
- Enhance partnerships for satellite data quality and utility assessments

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Online and Printed Satellite Compendium

- Continuous improvements for online version
- https://www.usgs.gov/calval/jacie

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JACIE

Filters

Launch Date: 1972 - 2032

Spectral Bands (All) ◉ AND ○ OR

All bands

Range(nm): Reset Range

Ground sample distance (All) ◉ AND ○ OR

All GSD

Sensor Element Type (All)

All SET

Country (All)

All country

Status (All)

All Status

Satellite Orbit (All)

All type

Satellite Associations

◉ All ○ Private ○ Government/Civil

Satellite Name (All) Reset Satellite Name

Type to filter

eccoe
EROS Cal/Val Center of Excellence

Satellites

Export

Search:

Satellite Name	Status	Orbit	Launch year	Country	Details
Advanced Land Observing Satellite-1 (ALOS-1)	Retired	Sun-Synchronous	2006		
Advanced Land Observing Satellite-2 (ALOS-2)	Operational	Sun-Synchronous	2014		
Advanced Land Observing Satellite-3 (ALOS-3)	Development	Sun-Synchronous	2022		
Advanced Land Observing Satellite-4 (ALOS-4)	Development	Sun-Synchronous	2023		
Advanced Satellite with New system Architecture for Observation-1 (ASNARO-1)	Operational	Sun-Synchronous	2014		
Advanced Satellite with New system Architecture for Observation-2 (ASNARO-2)	Operational	Sun-Synchronous	2018		
Advanced Satellite with New system Architecture for Observation-3 (ASNARO-3)	Development		2023		
Albedo-1 Satellite	Planned		2024		
Algeria Satellite-1 (AlSat-1)	Retired	Sun-Synchronous	2002		

Thank you!

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