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# **Landsat Advisory Group (LAG) Status Report**

## **NGAC Meeting**

**December 11, 2017**

**Frank Avila  
LAG Chair**

**Roberta Lenczowski  
LAG Vice-Chair**

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# LAG Purpose

*Provide advice to the Federal Government, through the Department of the Interior National Geospatial Advisory Committee, on the requirements, objectives and actions of the Landsat Program as they apply to continued delivery of societal benefits for the Nation and the global Earth observation community.*

# LAG 2017 Membership

Name	Organization
Frank Avila (LAG Chair, NGAC Member)	National Geospatial-Intelligence Agency (NGA)
Roberta Lenczowski (LAG Vice-Chair, NGAC Member)	Roberta E. Lenczowski Consulting, LLC
Rebecca Moore (NGAC Member)	Google, Inc..
Kevin Pomfret (NGAC Member)	Centre for Spatial Law and Policy
Kass Green	Kass Green & Associates
Peter Becker	ESRI
Tony Willardson	Western States Water Council
Steven Brumby	Descartes Labs
Walter Scott	DigitalGlobe
Joanne Gabrynowicz	University of Mississippi

Federal Contacts: Tim Newman and Peter Doucette (USGS)

# LAG Task #1 – Architectures for Future Mission

- This task combines Tasks 1 and 3 from 2016 guidance to LAG

*“Examine possible architectures for a future Earth land surface data collection mission beyond Landsat 9.”*

- USGS is asking LAG to provide recommendations in regards to possible future Global Land data collection missions beyond Landsat 9
- The following dependencies should be considered:
  - *Informing a significant GOV milestone decision by mid-2018*
  - *Launch timeframe of the mid-2020s*
  - *Capabilities that are complimentary to the expected capabilities of the Commercial RS industry, as well as ESA’s Copernicus Program*
  - *Maintaining continuity with historic and current Landsat system capabilities and applications*

# LAG Task #1 – Architectures for Future Mission

- *Maintaining continuity with historic and current Landsat system capabilities and applications*
  - Spectral coverage that includes VNIR, SWIR, and Thermal IR
  - Rigorous levels of geometric and radiometric calibration accuracy with respect to absolute reference standards
  - Systematic data collection of the entire Earth's land mass, with a minimum of 8 day nadir revisit among all active Program assets
  - A ground segment infrastructure that can support expected levels of IT requirements for processing, distribution, and archiving
  
- *Additional considerations sought*
  - Opportunities for public-private partnerships (P3)
  - Technical feasibility and application value of enhanced collection capabilities among spatial, spectral, radiometric, and temporal resolution
  - Discussion of utility and limitations for leveraging CubeSat and SmallSat technology

# LAG Task #1 – Architectures for Future Mission

## ■ Team Members -

Name	Organization
Kass Green – <b>TEAM LEAD</b>	Kass Green & Associates
Peter Becker	ESRI
Steven Brumby	Descartes Labs
Walter Scott	DigitalGlobe

- Team reconvened on Sep 4, 2017 to discuss draft report
- First draft report for Task #1 team review by end of September
- LAG discussion on Nov 27, 2017 of current draft version of report
  - Nearly complete to present for LAG concurrence
  - Several LAG comments to consider
  - Tone of paper commended
  - Additional content
    - Options based on USG-AWS Cloud contract
    - Pro/cons to each option discussed in the report
- To be refined and completed prior to the April 3-4, 2018 NGAC meeting

# LAG Task #2 – Temporal Data Cube Study

- This task is continued from 2016 guidance to LAG
  - “Examine the feasibility and utility of implementing temporal data cubes to support projection or ‘forecast’ models of land change trends.*
- It remains unclear whether a deeper market demand for forecasting land change will develop. To that end, the following questions are posed for further study:
  - In addition to Landsat, what other data sources (to include EO, SAR, and LIDAR) are optimally suited for leveraging (e.g., co-registered) to support data cube implementations for land change analysis and forecast modeling?
  - What kinds of Landsat time-series products would have the broadest community use, or most impactful contribution in specific areas?
  - Which organizations with expertise in forecast modeling are best postured to evaluate and demonstrate the forecast potential from a Landsat-based temporal data cube?
  - How far back in time into the Landsat archive should the staging of ‘analysis ready data’ be considered? e.g., early data collections such as multi-spectral scanner (MSS) data are less equipped (in terms of metadata) to support rigorous geometric and radiometric calibration compared to later collections.
- How could efficient synergy be realized among government and commercial roles for data cube development, and operations (processing, storage, distribution) to satisfy broad community needs?

# LAG Task #2 – Temporal Data Cube Study

## ■ Team Members –

Name	Organization
Roberta Lenczowski - <b>TEAM LEAD</b>	Roberta E. Lenczowski Consulting, LLC
Rebecca Moore (NGAC Member)	Google, Inc.
Peter Becker	ESRI
Tony Willardson (Sara Larsen)	Western States Water Council
Steven Brumby	Descartes Labs
Frank Avila (NGAC Member)	NGA

- Team reviewed draft report versions in October and November
- Draft Interim Report to NGAC in December 2017
  - Need time to assess feedback after late October ARD release
  - Learning more about CEOS Data Cube initiative and global impacts
  - Monitoring evolving public-private partnerships
- Final Report to be ready for April 2018 NGAC

# LAG Task #3 – Fee recovery for Landsat data

*DOI leadership requested that USGS evaluate possibilities for fee recovery for Landsat data.*

- Recognizing that this issue has been investigated in the past, DOI leadership is seeking to better understand the Landsat user community's needs in terms of “willingness-to-pay.” (Guidance)
- LRS requested that the LAG review the results from previous relevant studies “to consider the plausibility of fee recovery today.”
  - “Valuing Geospatial Information: Using the Contingent Valuation Method to Estimate the Economic Benefits of Landsat Satellite Imagery” by John Loomis, Steve Koontz, Holly Miller, and Leslie Richardson *Photogrammetric Engineering & Remote Sensing* (Vol. 81, No. 8, August 2015, pp. 647–656)
  - “NGAC Landsat Advisory Group Statement on Landsat Data Use and Charges” by the FACA National Geospatial Advisory Committee Landsat Advisory Group in June 2012
  - *Users, Uses, and Value of Landsat Satellite Imagery— Results from the 2012 Survey of Users* by Holly M. Miller, Leslie Richardson, Stephen R. Koontz, John Loomis, and Lynne Koontz, Open-File Report 2013–1269 (DOI/USGS)
  - Land Remote Sensing Policy Act of 1992, 15 U.S.C. § 5601, sec. (3), (4), (13)
- Holly Miller (USGS) has initiated another User Community survey, currently underway, modeling previous version.

# LAG Task #3 – Fee recovery for Landsat data

- Team Members – NOTE: No formal team leader at this point

Name	Organization
Kevin Pomfret (NGAC Member)	Centre for Spatial Law and Policy
Kass Green	Kass Green & Associates
Peter Becker	ESRI
Sara Larsen (for Tony Willardson)	Western States Water Council
Steven Brumby	Descartes Labs
Sean Gorman (for Walter Scott)	MDA DigitalGlobe
Joanne Gabrynowicz	University of Mississippi
Frank Avila (NGAC Member)	National Geospatial-Intelligence Agency (NGA)
Roberta Lenczowski (NGAC Member)	Roberta E. Lenczowski Consulting, LLC

- LAG Conference Calls to discuss “strawman options with supporting and cautionary statements” in October and November, 2017
- Anticipated Report for NGAC in April, 2018