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

## **NGAC Meeting**

**September 6, 2018**

**Frank Avila  
LAG Chair**

**Roberta Lenczowski  
LAG Vice-Chair**

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# Agenda

- LAG Mission
- Subcommittee Introduction
- Task #3 Status Update
- New Tasks
- Questions / Discussion

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# LAG Mission

***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 2018 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	MAXAR Technologies/DigitalGlobe
Joanne Gabrynowicz	University of Mississippi

Federal Contact: Tim Newman and Peter Doucette (USGS)

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# LAG Task #3 – Cost sharing models for Landsat data

- DOI leadership has requested that USGS<sup>1</sup> consider new prospects for cost sharing of Landsat data to support USGS's role toward the Sustainable Land Imaging model.
  - Recognizing that aspects of this issue were investigated by the Landsat Advisory Group (LAG)<sup>2</sup>, DOI leadership is seeking to better understand economic and data policy considerations and impacts in relation to user needs, as well as the potential for public-private partnering (P3), with respect to various cost sharing models for Landsat data.
  - USGS is requesting that the Landsat Advisory Group (LAG) review the findings of [2, 3], and other potentially relevant studies, to consider a range of possible Landsat data cost sharing models that may include, but are not limited to:
    - resource leveraging for data processing, management, and distribution;
    - resource leveraging for satellite ground mission development and operations;
    - various forms of fee recovery models for different market sectors. The LAG should consider pros and cons of the cost sharing models investigated.

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# Status Update

## LAG Task #3 – Cost sharing models for Landsat data

- Task Team Lead – Kevin Pomfret
- USGS [Ft. Collins] Study in progress
  - Study is professionally designed to support critical analysis
  - Preliminary results expected to be available to LAG by January 2019
- Projected LAG report timelines:
  - Dec 2018 NGAC Meeting: Provide update report
  - April 2019 NGAC Meeting: Present final report to NGAC for adoption

[1] [sustainablelandimaging.gsfc.nasa.gov/](http://sustainablelandimaging.gsfc.nasa.gov/)

[2] [www.fgdc.gov/ngac/meetings/september-2012/ngac-landsat-cost-recovery-paper-FINAL.pdf](http://www.fgdc.gov/ngac/meetings/september-2012/ngac-landsat-cost-recovery-paper-FINAL.pdf)

[3] John Loomis, Steve Koontz, Holly Miller, and Leslie Richardson, “Valuing Geospatial Information: Using the Contingent Valuation Method to Estimate the Economic Benefits of Landsat satellite Imagery”, *PE&RS*, 81 (8), 647-668, 2015.

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# Status Update

## LAG Task #3 – Cost sharing models for Landsat data

- Task groups working on draft sub-sections, focusing report on three areas:
  - Charging for “traditional” data
  - Charging for value-added products and services
  - Private-public partnership (P3) structures
- LAG continues to receive letters advocating for the importance of free and open data policy
  - Group on Earth Observations
  - Silvia Terra (commercial firm)
- Task status presented and discussed at Landsat Science Team summer meeting (AUG 2018)
  - LST committed to providing an advocacy letter

# Status Update

## LAG Task #3 – Cost sharing models for Landsat data

- Discussions in social media platforms continues to grow as awareness of this task expands
  - Some examples from Twitter and blogs:

Github Blog Philipp Gärtner

### This Landsat project would cost...

June 26, 2018 in 7 min read

Many of us read Gabriel Popkin's [nature news article](#) (Popkin 2018) at the end of April this year. Among other things, it stated that officials at the Department of the Interior asked a committee of external advisers to study whether Landsat's costs could be recovered from users.

Meaning, they are considering whether to charge for access to two widely used sources of remote-sensing imagery:

- the Landsat satellites operated by the US Geological Survey (USGS) and
- an aerial-survey programme run by the Department of Agriculture (USDA).

#### Motivation

Tyler Erickson and Tim Assal responded to Jillian Deines tweet and made me wonder how difficult it might be to estimate the Landsat data costs within the Google Earth Engine.

*Sounds like a good #eaus8 hackathon idea: create a tool for estimating the cost of Landsat (or other imagery) analyzed, if it wasn't freely available.*

@tylerickson — <https://twitter.com/tylerickson/status/1005491603048357888>


*Right on Jillian! The USGS is currently trying to better estimate the value of #Landsat. We should all do this back of the envelope calculation as well! @USGSLandsat @NASA\_Landsat*

@TimAssal — <https://twitter.com/TimAssal/status/1005217085855813632>

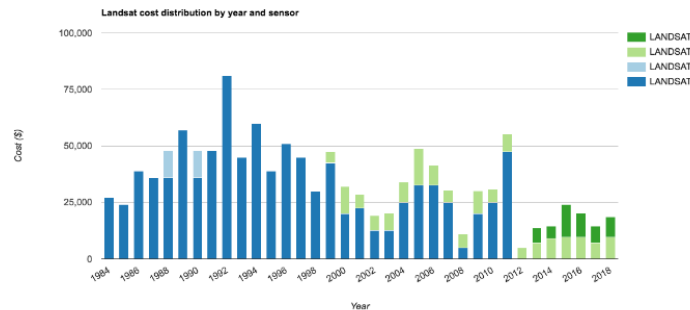
A quick look at the [hackathon list](#) of Google Earth Engine User Summit 2018 in Dublin shows that the proposed Landsat cost estimation hackathon didn't happen.

However, I think the idea is great and I made a first serve. So here is my example script to estimate the cost of Landsat (if it wasn't freely available) for the city of Berlin (Germany) between 1984, and 2018 from January till December with a 25% cloud threshold.

**Jillian Deines** @JillDeines  
Landsat imagery for my current project would have cost \$20,516,400 at the previous \$600/scene fee. No one would/could pay that. Grateful for free Landsat to study how large regions change over multiple decades! Vital for understanding how to manage water resources to grow food.  
1:33 PM - Jun 8, 2018  
♥ 286 💬 76 people are talking about this

**Joshua Stevens** @jscarto  
Landsat data used to be ~\$600/scene.  
A recent mosaic of mine used > 2300 scenes of data. In the past I'd owe \$1.4M. That was for a single map; a day's work.  
Technology has far outpaced the notion of paying for scenes. It's simply unimaginable. [nature.com/articles/d4158...](https://www.nature.com/articles/d4158...)  
9:36 PM - Apr 25, 2018  
  
**US government considers charging for popular Earth-observi...**  
Images from Landsat satellites and agricultural-survey programme are freely available to scientists — but for how long?  
[nature.com](https://www.nature.com)  
♥ 272 💬 177 people are talking about this

Calculate Landsat cost distribution by year and sensor



Example Berlin; Landsat cost distribution between 1984 - 2018 (Jan-Dec / 25% cloud).



# New LAG Tasking

- Task 2018-01: Formulation of a Deep Learning Challenge for Land Imaging Time-Series Data
  - USGS is exploring establishing a Government Challenge to investigate the utility and efficacy of deep learning methods that can exploit the temporal and spectral content of Landsat data applied toward time-series analysis and Land change forecasting. Algorithms explored may consider complementary data sets, as well as machine learning algorithms in general, as needed.
- The LAG will craft recommendations on how to structure a Government Challenge to incentivize exploration into the utility and efficacy of deep learning methods to exploit Landsat Analysis Ready Data for time-series analysis and land change forecasting

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# Draft LAG Tasking

- Draft Task 201x-xx: Review of the Land Remote Sensing Policy Act of 1992 (Public Law No: 102-555)
  - PL 102-555 repealed the Land Remote-Sensing Commercialization Act of 1984, and established the function of the National Satellite Land Remote Sensing Data Archive at USGS.
  - [www.congress.gov/bill/102nd-congress/house-bill/6133](http://www.congress.gov/bill/102nd-congress/house-bill/6133)
- USGS and LAG are finalizing on task language.

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# *Questions?*