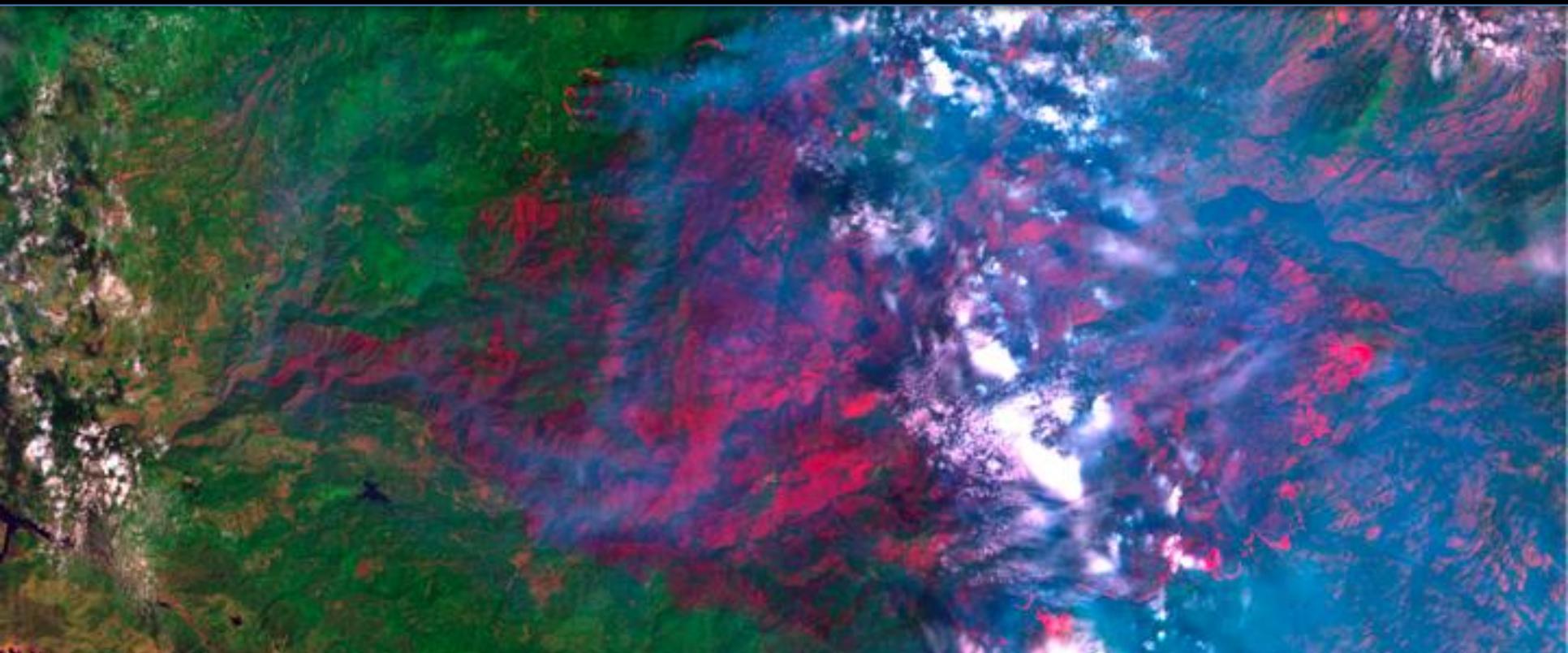




# SUSTAINABLE LAND IMAGING AND SCIENCE



Landsat Science Team Meeting, 28-30 October 2013, EROS Center, Sioux Falls, SD

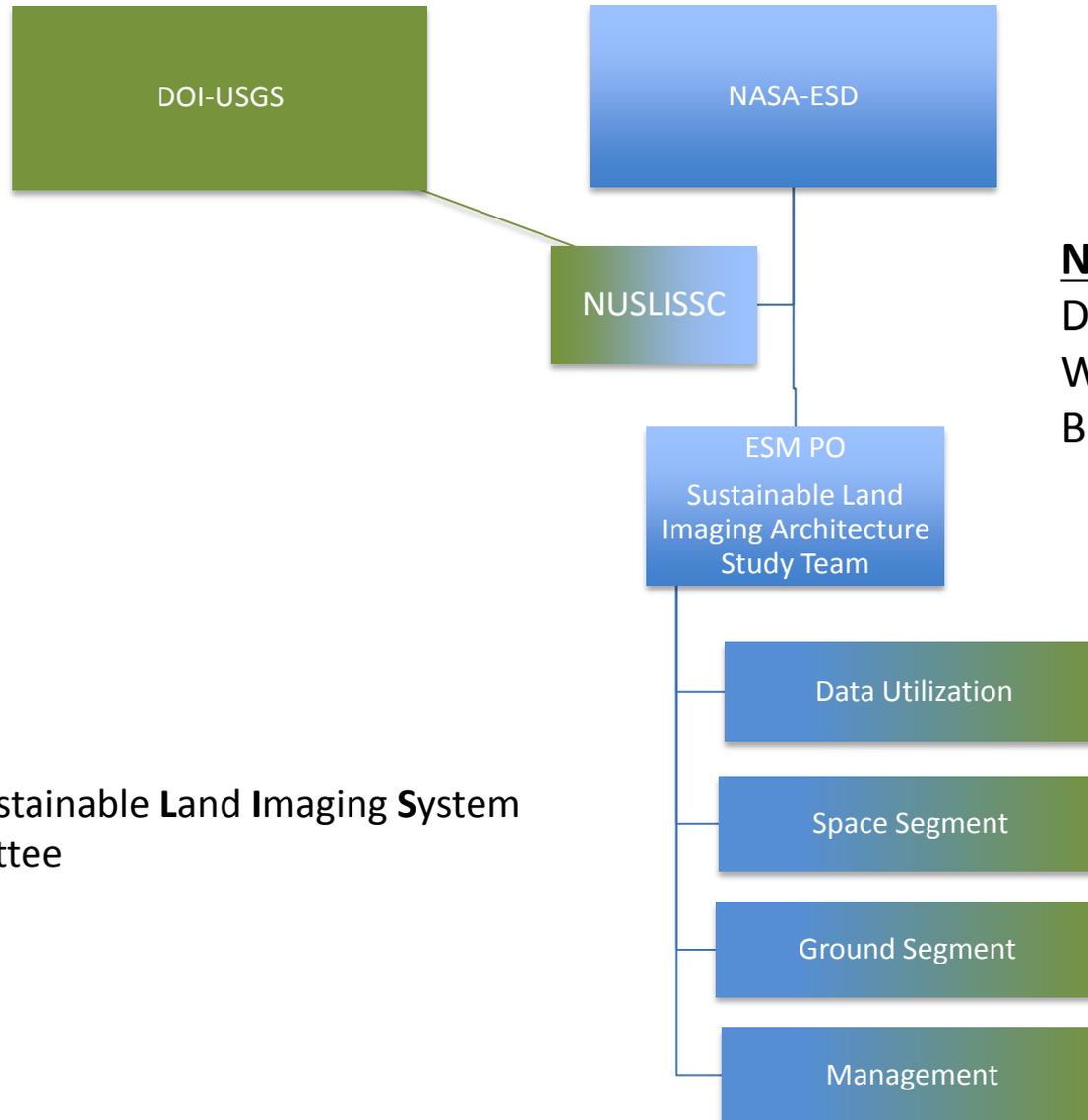
Slides Adapted from David B. Jarrett  
Program Executive  
NASA Earth Science Division

# Land Imaging in FY 2014 President's Budget for NASA

*In FY14 NASA will initiate the definition of a sustained, space-based, global land imaging capability for the nation, ensuring continuity following LDCM. Near-term activities led by NASA, in cooperation with USGS, will focus on **studies** to define the scope, measurement approaches, cost, and risk of a viable long-term land imaging system that will achieve national objectives. Evaluations and design activities will include consideration of stand-alone new instruments and satellites, as well as potential international partnerships. It is expected that NASA will support the overall system design, flight system implementation, and launch of future missions, while USGS will continue to fund ground system development, post-launch operations, and data processing, archiving, and distribution.*

**- President's FY 2014 Budget release**

# NUSLIS\* Study Organization



## NASA SC Members

Dave Jarrett

Woody Turner

Bradley Doorn

\*NASA-USGS Sustainable Land Imaging System Steering Committee

# NASA – USGS Collaboration

## Study Phase

- NASA will lead the overall system architecture study, utilizing its space systems engineering expertise
- USGS will support all aspects of the study; USGS will represent the consolidated needs and desires of the Landsat user communities and provide expert analyses of the data processing and data dissemination aspects of the system

## Implementation Phase

- NASA will be responsible for the overall system design, as well as the implementation, launch, and commissioning of the system's space-borne elements
- USGS will provide unique expertise and guidance in the design of the operations, ground network, data processing (including integration of measurements from multiple sources), and data dissemination components of the complete system
- USGS will be responsible for operating the space-borne assets after commissioning, as well as the downlink, ground processing, archiving, and distribution of the system's information and data products
- The USGS will maintain the national archive of Landsat data, distribute data to users, and administer, on behalf of the U.S. Government, data acquisition by non-USG ground stations.

# Study Objectives

- Define a system for delivering sustained global land-imaging multispectral and thermal infrared information for an approximately 20-year period starting in 2018
- Provide options which consider various weightings of near-term capability, continuity/gap risk mitigation, technology infusion over the system's lifetime, and cost
- Consider refined capabilities requested by the user communities
  - *Our objective is to 1<sup>st</sup> meet the existing performance*
  - *A thorough “user review” is essential to know what products are most valuable, not just the existing capabilities*
- Include consideration of new measurement approaches, as well as potential international and private sector partnerships
- Provide complete system architecture recommendations to the Executive Office of the President by August 15, 2013

# Cost Factors

- Programmatic stability recognizes that system cost is a critical parameter in the overall design
- The NASA budget includes development, launch, and commissioning of the space-borne assets
- The USGS budget includes mission operations, ground systems, and data archiving and distribution
- Trade-offs between the space and ground elements must factor in the budget constraints of each Agency

# NASA FY 2014 Land Imaging Budget

- The President's FY 2014 Budget Submittal for NASA's Sustained Land Imaging activities, released in April 2013 is:
  - This is our budget for our plans. We assume for planning purposes a steady state funding level of \$120M/year into the future.
  - The House and the Senate have each said different things in their "announcements." But no different budget has been published, and in any case, their discussions have had less money targeted for land imaging.

# Architecture Study Approach

- NASA and USGS established the Land Imaging Architecture Study Team (AST) within the NASA Earth Systematic Missions Program Office
  - Includes representatives from NASA Centers, USGS, JPL, Aerospace, others
  - Will be informed by the RFI responses
  - Will conduct independent analyses
  - Will conduct architecture feasibility studies
- NASA is released an RFI (9/18/13) with inputs due in 30 days (*1 Nov due to shutdown*)
  - Responses will be used as an input to the study
- The AST will present initial findings to NASA and USGS
- NASA and USGS will hold Community Workshops to communicate architecture options and to elicit feedback
- The AST will refine architecture options and present them to NASA and USGS for final review and evaluation
- The study activity will result in recommendations and an implementation plan for a Sustainable Land Imaging System (combined space and ground system) to be provided to the Executive Office of the President by August 15, 2014

# Three Basic Study Tenets for the Program

- Sustainability
  - The LI program should provide the *data products* with a long-term support plan, without extraordinary infusions of funds, within the budget guidance provided.
- Continuity
  - The LI program should continue the long term Landsat data record. This does not mean a continuity of how the Landsat data record is produced. Also, it should not preclude adjustments to the data record that improve the efficacy of how the data records are produced OR used, as long as there is an adequate ability to relate the data records over time.
- Reliability
  - The LI program should be robust and *not susceptible to single point failures*. The loss of a single satellite or instrument on orbit should not cripple the program or significantly impact users.

# Community & Stakeholder Engagement

- NASA and USGS will communicate the progress of the study with the community at established, planned events:
  - Oct 2013      Landsat Science Team Meeting
  - Dec 2013      USGS/NASA User's Workshop
  - Feb 2014      AMS Meeting
  - Apr 2014      ASPRS/JACIE Meeting
  - ~Apr 2014     NASA/USGS Community Workshop
  - .....developing

# Science Role in the NUSLIS

- Discussion Points
  - Priorities
  - User requirements must answer the question of what happens if it is not fulfilled
  - Option Impacts
  - Potential / Capabilities
  - Application Validation
  - Vision
    - Science role for NUSLIS

A new frontier!



Sustained Land Imaging