National Land Imaging Responsibilities

- **NLI Mission:**
  - **To serve the Nation by acquiring and providing operational land imaging capabilities and applications to support U.S. economic, environmental, foreign policy, and security interests.**
- **DOI and USGS will:**
  - **Coordinate a Federal Land Imaging Council and a (FACA) Land Imaging Advisory Committee;**
  - **Gather U.S. Land Imaging requirements (optical, SAR, etc.);**
  - **Acquire U.S. Land Imaging systems and data; augment with domestic and foreign government and commercial data sources**
  - **Develop new applications for Federal, State, and local government;**
  - **Investigate and develop new remote sensing technology;**
  - **Ensure data delivery to broad user community; and**
  - **Coordinate data acquisition and distribution plans with U.S. industry and foreign government and commercial firms.**
- **Above all else, "Ensure availability, access, and ease of use of land imaging data for the Nation."**

NLI Responsibilities (FLI Report) (Reqs)

- Lead, coordinate and plan for future US civil operational mod-res land imaging
  - Manage the civil operational mod-res land imagery needs of the Nation
- Convene a FLIC to coordinate US mod-res land imaging data needs
- Maintain ongoing assessments of user needs and advanced technologies in remote sensing, including communication with private, nonprofit, academic, commercial and international users, US state and local government, and the satellites and land imaging data industries

NLI Implementation Steps (FLI Report)

Within the first 18 months (FY09-FY10) accomplish the following steps:

- **Establish a policy and program management office to manage NLI**
- **Develop charters for a FLIC and a FACA focused on the future needs and capabilities of US civil mod-res land imaging**
- **Define a core operational capability for the US mod-res land imaging system**
- **Develop a strategic plan for US civil operational mod-res land imaging, including a technology plan to meet future needs**
- **Formalize a governance model that would be used by US Federal agencies to coordinate US civil operational land imaging affairs and identify the necessary suite of interagency agreements and memoranda to accompany that model**
- **Set forth the interagency agreements and protocols that will be used to acquire future civil operational mod-res land imaging data from international sources**
- **Initiate a comprehensive index of current US operational mod-res land imaging technical requirements and capabiliities, based on a national inventory of US needs and applications of civil operational land imaging data**

NLI: First Steps

Beginning with $2M in FY09:

- Establish a Federal Land Imaging Council to advise the Department on how operational land imaging data relates to the purposes of the Federal Government
- Establish a Land Imaging Advisory Committee, composed of representatives of State, local and tribal government, science and non-profit institutions, and U.S. commercial industry to advise the Department on their needs for operational land imaging capabilities, data, and applications
- Establish cooperative agreements and grants with scientists and universities to jointly develop innovative applications (e.g, land use change, climate effects, water monitoring, and agriculture and natural resource management support) that address societal needs
- Conduct a comprehensive evaluation of societal and economic benefits of moderate-resolution land imaging data
- Coordinate and promote the uses of land imaging data with the Department of the Interior's bureaus and other Federal agencies

Requirements Discussion

Genesis of Requirements:

- Each FLIC Representative responsible for submitting respective Department/Agency needs (platform independent)
- NLI consolidates needs into database (several now under consideration)
- NLI assesses needs, prioritizes
- NLI matches needs to capabilities (air, space, ground)
- FLIC reviews needs work and validates requirements

Issues:

- Landsat 9 discussions coupled with NLI
- Given NLI issues, now may be the time to separate the two
- Land Remote Sensing Program has charter for LRS requirements
- Goal to canvass community over next few months to gather L9 needs
- Draft RFI for L9 Mission Concepts requires LST review

Notional Options for Landsat 9 and Beyond

- NLI will determine optimum architecture for Landsats beyond Landsat 8 (LDCM)
- Many alternatives with varying cost profiles and capabilities:

	Relative Cost	Temporal Frequency	Spatial Resolution	Spectral Resolution	Risk of Data Gap
Traditional Model	Highest	Poor	Better than 30m	More bands than L8	Moderate-High
Landsat 8 Clone+	Moderate	Fair	30m	Same as L8 plus thermal	Lowest
Single Smallsat	Lowest	Poor	Probably 30m or worse	Least number of bands	Moderate
Multiple Smallsats	Moderate	Best	Potentially better than 30m	Probably less bands than L8	Moderate-High

Notional Options for Landsat 9 and Beyond

- **Traditional Model**:
  - Develop single large observatory along lines of L8, with increased capability
  - Costs about the same as L8 plus inflation
  - Assumes launch 5-6 years after L8 launch
  - Better overall performance than L8
- **L8 Clone+**:
  - Takes advantage of L8 engineering development
  - Requires more near-term money but less overall money than L8
  - Design and schedule allow addition of a thermal capability
  - Earlier launch allows better overall temporal coverage (L8 still operational)
  - Greatly reduces risk of gap in capability
- **Single Smallsat**:
  - Far cheaper, but less capable than L8
- **Multiple Smallsats**:
  - Collective cost about the same as Traditional Model
  - Far better temporal coverage
  - Roughly similar spatial and spectral performance overall to L8
  - Individual payloads may differ to allow increased variety of measurements