Commercial Remote Sensing Space Policy (CRSSP)
Civil Near-Term Requirements Collection Update

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Presentation Outline

- *Policy Guidelines*
- *"Near-term Requirements"*
- *Potential Uses*
- *Communicating the Results*
- *Implementation Timeline*
- *A Vision for the Future*

Policy Directives

The policy specifically requires civil agencies to:

- "**Determine which civil needs can be met by commercial remote sensing capabilities**;

  and

- **Communicate current and projected needs** to the commercial remote sensing space industry"

What are Near-Term Requirements?

- **Planned Procurements** (Funded Items)
  - Includes Partnerships
- **Mission Needs** (Funded or Unfunded)
  - Includes Disaster Response
- **Based on Current Technologies**
  - Includes land-based aerial and satellite capabilities
- **Includes Derived Products**
  - Land Cover / Land Use
  - DEM
  - Disaster Impact Areas
  - Etc.

Pittsburgh, PA September 2004

Photo Courtesy of the Pittsburgh Post Gazette

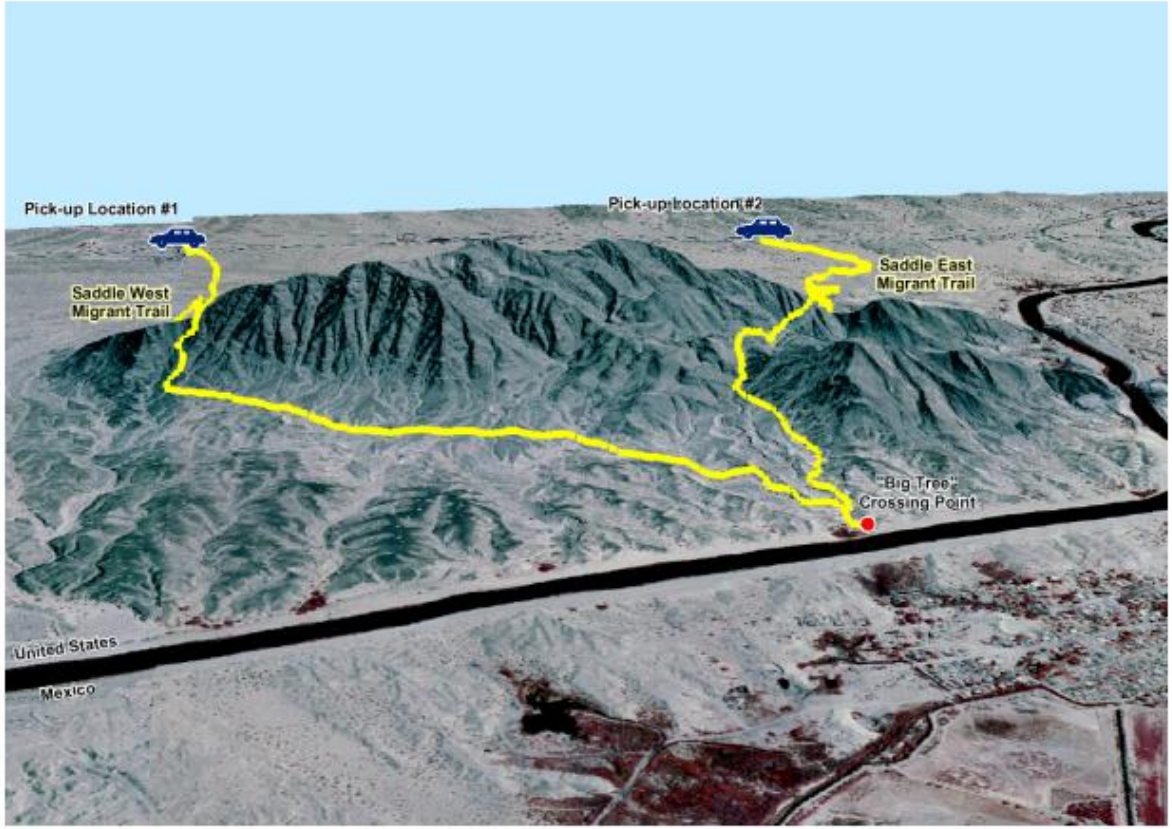
Pittsburgh, PA September 2004 – the day after

Aerial Photo courtesy of the State of Pennsylvania

USGS

Value Added Example

Aerial Imagery Used For 3D Representation of Trails



NTR Overview

- Goals and objectives
  - Increase inter/intra-agency awareness of remote sensing applications and data needs
  - Provide a basis for budget sub-team recommendations
  - Identify commonality between agency needs
  - Help guide infrastructure development
  - Convey requirements to industry

How Requirements are Conveyed

- Spatially
- Descriptively (end objective(s))
- By Platform / Sensor
- By Parameters
  - Spatial, Spectral, Temporal Resolutions
  - Acceptable Time-Frame
  - Other (Stereo Pairs, DEMs, etc.)

Requirements Information Captured

- Contact Info
  - Name, Agency, Sub-agency
- Program/Project/Mission Info
- Observable Description
- How Plan to Obtain
  - Direct Purchase, Contract, Partnership, In-house, Free Source
- Area of Interest

Requirements Information Captured (cont)

- Image / Product / Sensor Characteristics
  - Spatial, Spectral, Temporal Characteristics
  - Platform Preference may be specified
  - Queries user regarding acceptability of archive data
  - Acceptability of Cloud Cover in Sensed Area
  - Post-processing requirements
    - Rectification, pan-sharpening, accuracy
  - Value-added
- Acceptable Licensing Restriction

Potential Uses

- Inform industry regarding Civil remote sensing needs
  - Identify trends and marketing opportunities
- Sharing of Government data resources
- Identify and facilitate partnerships
- Evaluate common AOIs to identify potential funding initiatives
- Awareness of peer users, techniques and applicable sensors for similar missions

Communicating Results

- "Data Needs" Perspective
  - Overlapping Remote Sensing Data Requirements over AOI
  - Potential partners among the civil agencies
  - Recent data collection by civil agencies over AOI
  - Identify civil agencies with similar missions and compare methodologies

Communicating Results

- "Data Provider" Perspective
  - For a given time period where do civil agencies require data? (speculative collection opportunities)
    - Identify geographical "hot areas" to focus capture plans
  - The sensor characteristics and processing levels needed to meet specific disaster analysis
  - The tolerable cloud cover levels for time critical events

Past: Timeline

- Data requirements gathering process began February 2004
- Scope expanded beyond Commercial Satellite Requirements in April 2004
- Findings were evaluated May 2004
- The strategy was refined based on:
  - Lessons learned from the initial data call
  - Meetings with the agencies involved
  - Meetings with industry

U.S. Requirements

Agency	Program/Project	Application(s)	Seasonality	Resolution	Spectral
US Fish & Wildlife Service	Habitat Assessment, Wetland Status & Trends	Environmental Monitoring	Spring	< 1M, 1M	Multispectral, Panchromatic, Pansharpened
Bureau of Land Management	Land Management	Mapping, Science Research, Resource Surveying, Disaster Mitigation, Regulatory	Winter, Spring, Summer, Fall	<1M, 1M, 2-5M, 30M	Multispectral, Panchromatic, Pansharpened
US Geological Survey	Orthoimagery	Mapping	Spring, Summer	<1M, 1M	Multispectral, Panchromatic, Pansharpened
US Geological Survey	NLCD 2001 Project, Landfire	Mapping		<1M, 1M, 2-5M	Multispectral, Panchromatic, Pansharpened
Foreign Agriculture Service	FSA Early Warning & condition assessments, USDA satellite imagery archive	Crop Economics	Spring, Summer, Fall	2-5M, 5-25M, 30M, >30M	Multispectral
National Agricultural Statistics Service	June Area Survey, Crop Monitoring	Crop Economics, Resource Surveying	Spring, Summer, Fall	1M, 5-25M, 30M, >30M	Multispectral, Panchromatic
National Resource Conservation Service	Conservation programs, wetland resources, natural resources	Resource surveying, environmental monitoring	Spring, summer	<1M, 1M	Pansharpened
US Forest Service	Research imagery, forest inventory analysis	Science research, resource surveying	Winter, Summer, Winter, Fall	2-5M	Multispectral
Farm Service Agency	National Agricultural Imagery Program	Crop Economics	Summer	2-5M	Pansharpened
US Army Corps of Engineers	East Coast, West Coast, Gulf Coast	Disaster Mitigation	Winter, Spring, Summer, Fall	<1M, 1M, 2-5M, 5-25M, 30M	Multispectral
National Oceanic & Atmospheric Administration	US Coasts	Mapping, Disaster Mitigation, Science Research, Environmental Monitoring	Winter, Spring, Summer, Fall	<1M, 2-5M, 5-25M, 30M	Multispectral, Panchromatic
Transportation Security Agency	Maritime & Land Security	Regulatory		1M	Multispectral, Panchromatic, Pansharpened
Federal Emergency Management Agency	Preparedness, Mitigation	Mapping, Disaster Mitigation	Winter, Spring, Summer, Fall	2-5M	Multispectral, Panchromatic, Pansharpened
US Coast Guard	US Coast Guard Port GIS Program	Disaster Mitigation, Environmental Monitoring, Regulatory	Winter, Summer	1M	Pansharpened

Focus Areas

Areas where requirements were concentrated and / or aligned for multiple agencies:

- Alaska
- Great Lakes
- Coastal
- Emergency Response

Key Alaska Data Needs

- Critical targets
  - .5 – 2.5 meter high resolution orthoimagery - core infrastructure
  - 2.5 – 5.0 meter lower resolution orthoimagery – federal interest areas
- Core infrastructure includes cities, towns, villages, roads, pipeline, ports and energy producing and development areas
- Shared interest among multiple agencies and organizations for Alaska Data
- Key areas of use include: *Aviation Safety, Disaster Response, Homeland Security, Land Transfer, Public Safety, Environmental Research, Resource Assessment, Community & Economic Development*

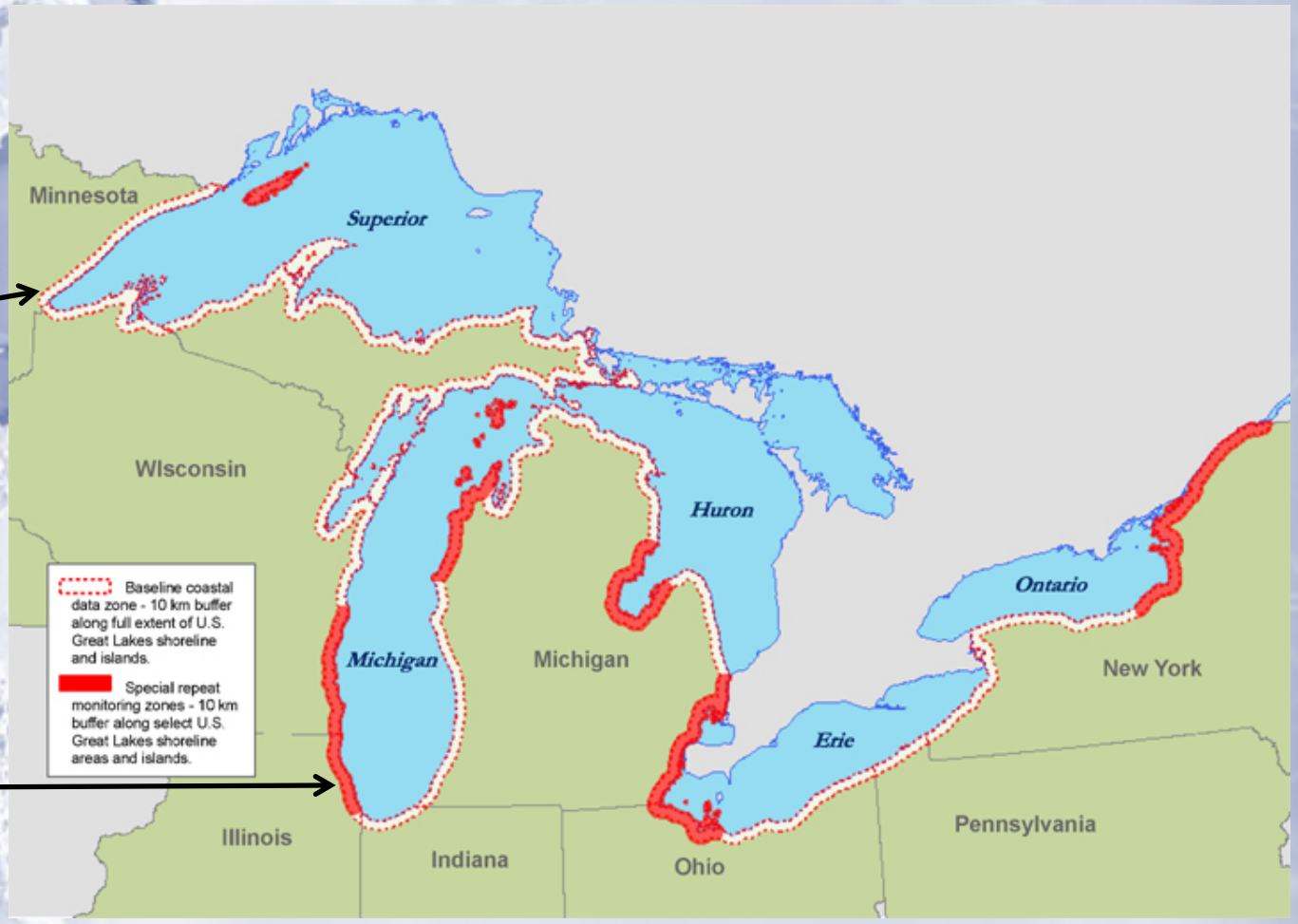
Great Lakes Data Requirements

- Shared interest for comprehensive coverage of all U.S. shorelines
  - <5-m multispectral and 1-m panchromatic
- Shared interest in multi-seasonal coverage of sensitive areas on each of the 5 Great Lakes for:
  - Wetlands monitoring (encroachment, invasives, vigor)
  - Emergency response (oil/toxic spills, terrorism, natural disasters)
  - Public health (water supply, beach closures, etc.)
- Improved coastal monitoring will support:
  - Great Lakes Water Quality Agreement
  - State of the Lakes Ecosystem Conference (SOLEC) indicators

Great Lakes Priority Needs

Option 1 *– "Comprehensive Coverage"*

Option 2 *– "Special Monitoring"*



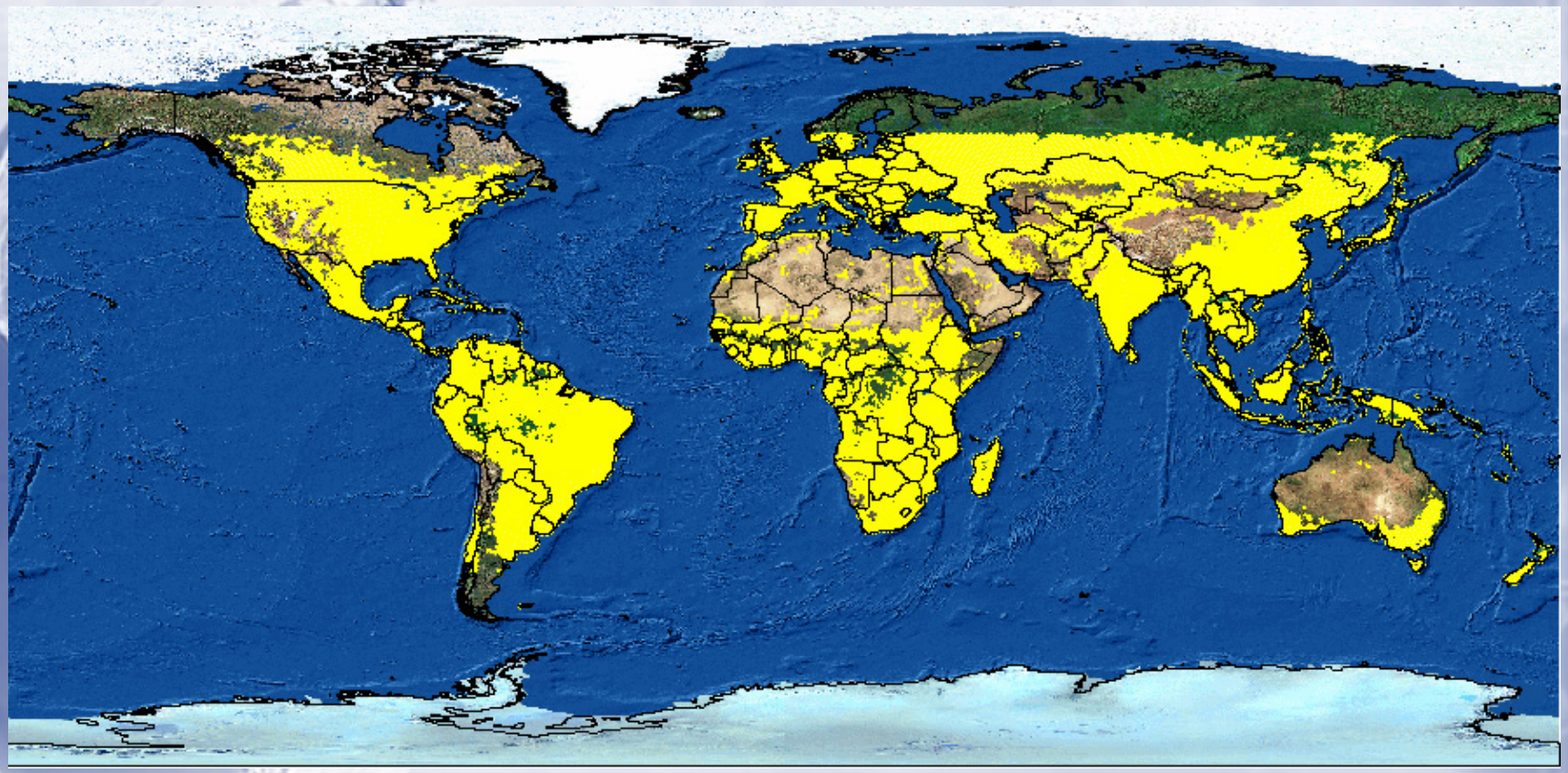
Emergency Response

- Opportunity to:
  - Analyze disaster response needs and opportunities for commercial satellite solutions
  - Work with vendors to demonstrate satellite utility for disaster response (case studies)
  - Better coordinate non-FEMA needs
  - Exercise responsive procurement action

International Requirements

Agency	Program/Project	Application(s)	Seasonality	Resolution	Spectral
Foreign Agricultural Service	Remote Sensing Services in support of the Global Crop Production Intelligence Program	Crop Economics, Environmental Monitoring	Winter, Spring, Summer, Fall	2-5m, 5-25m, 30m	Multispectral

International Requirements Cont.



Yellow represents USDA Foreign Agriculture Service (FAS) and National Agriculture Statistics Service (NASS) crop production monitoring areas

Present

- Preparing for the January Data Call
  - Collating agency points of contact
  - Meet with interested industry leaders to understand their needs versus what is being captured
  - Developing a web based data entry tool
    - This toolset to accommodate:
      - Submission and editing of requirements
      - Data analysis and reporting
      - Administration

Imminent Future

- **Introduce a "living" requirements database:**
  - Field test new requirements collection system
  - Implement system (phase 1) in Jan FY05
    - Collect the FY04 actual purchase data as a baseline
    - Validate our FY04 data with industry actuals
    - Update FY05-06 data requirements
    - Addition of FY07 requirements
- **Assist agencies with requirements submissions**

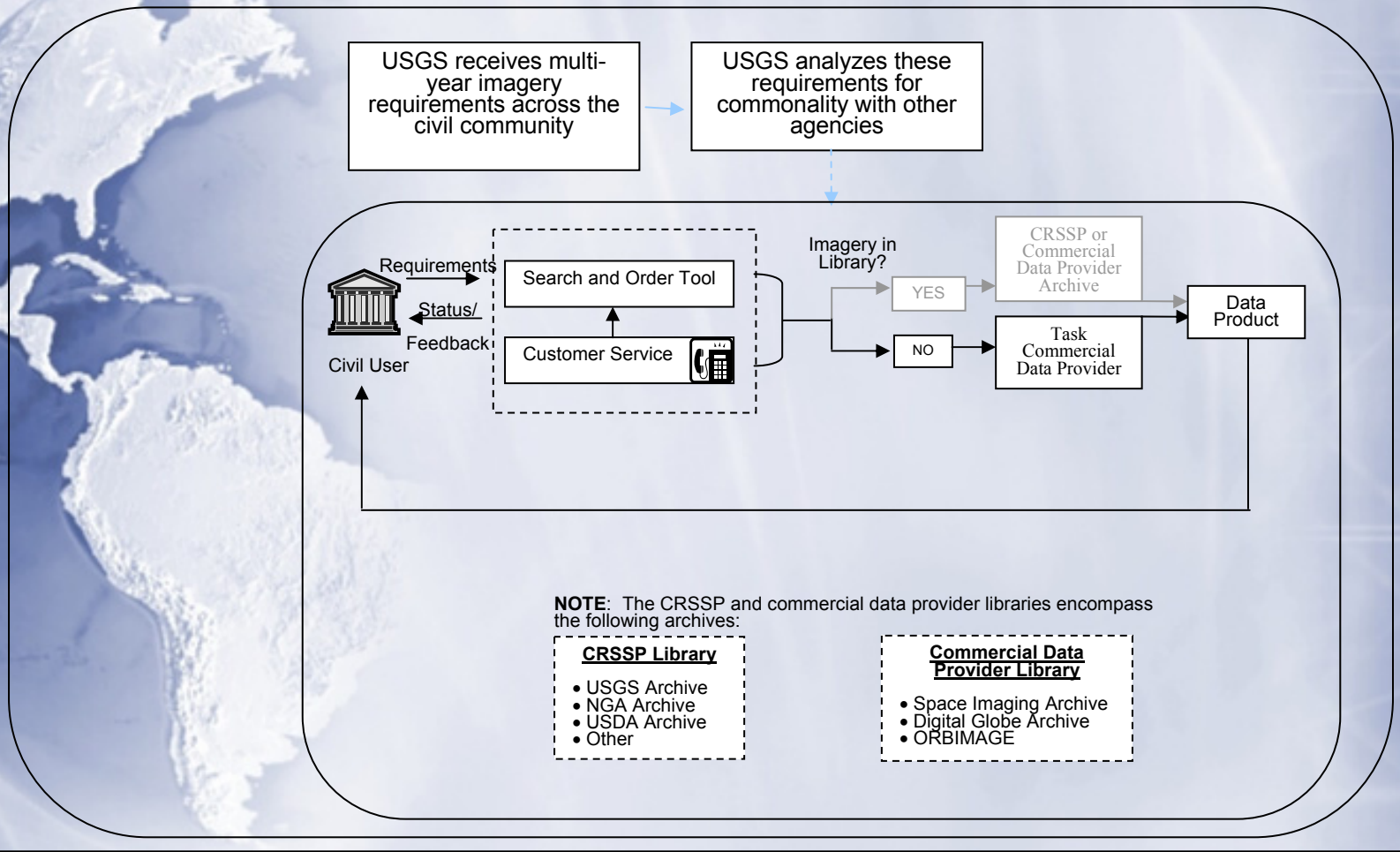
Next Steps

- Increase quality and quantity of requirements database
  - Mine the data to facilitate procurements/initiatives
- Develop case studies demonstrating utility of satellite data for major national needs and agency specific needs
  - Education of potential remote sensing user community
- Expose more users to satellite data by populating highly visible civil archive
- Synchronize requirements collection with FY07 budget cycle

Future Collaboration

- Conduct analysis of NOAA requirements tool for possible collaboration and reuse
- Interface with Geospatial One-Stop
- Continue productive civil/NGA cooperation for commercial remote sensing

Requirements to Actual Process



NOTE: The CRSSP and commercial data provider libraries encompass the following archives:

CRSSP Library

- USGS Archive
- NGA Archive
- USDA Archive
- Other

Commercial Data Provider Library

- Space Imaging Archive
- Digital Globe Archive
- ORBIMAGE

A Vision for the Future

- A map based interface for data searching and requirements matching/sharing
- Continually strive to improve process for capturing civil government remote sensing needs
- Data sources certified to meet calibration standards (JACIE seal of approval)
- Automated electronic data availability notification