



# SAXTA: A High Resolution Data Dissemination System

<http://Saxta.geog.umd.edu>

Join Our  
Early Adopters  
Network

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## Mission

The mission of the SAXTA development project is to use the Internet to establish a new distributed system for sharing high resolution (~30m) satellite datasets, such as Landsat and ASTER data.

## Objective

The objective is to dramatically improve access to, and distribution of high-resolution satellite data sets for the science, applied science, and education communities.

## Basis: NASA's Open Data Policy

NASA's Open Data Policy provides the foundation for the system's distribution model: *NASA is committed to the full and open sharing of Earth Science data obtained from U.S. Government-funded and -owned systems with all users as soon as such data become available.* [1] As a result, NASA's Earth Observation data are typically not restricted in distribution whether the data are purchased or distributed for free. The SAXTA system will greatly extend access to and distribution of these data.

## Statement of the Challenge

NASA currently sponsors a large number of projects that acquire and utilize high resolution datasets such as Landsat and ASTER. Other agencies and organizations also sponsor a significant number of projects that use these data, some having quite large holdings. These distributed collections represent a major potential resource for the larger LCLUC community. The challenge is to improve access and distribution of this data.

## Goals

- Develop new tool for data sharing
  - Provide search and download
  - Provide advertising and discovery

## User Communities

- Science
- Applied Science
- Education



Fig 1: SAXTA Homepage

## Requirements

- The software should be free
- Easy to install and use
- Secure
- Scalable

## Technology

SAXTA leverages the open source Grid and Peer-to-Peer JXTA™ [2] technology for providing its core network infrastructure. Sponsored by Sun Microsystems®, Project JXTA provides a standard XML-based set of protocols as well as a JAVA™ reference implementation for the foundations of Peer to Peer and Grid Computing.

JXTA™ has the following characteristics:

- Generalizes the Peer-to-Peer problem
- Provides for Dynamic Resource Discovery
- Allows Interoperability and Ubiquity
- Includes Platform Independence
- Manages Network Security, Node Groups, Stability, Scalability and Node communication
- Allows Virtual Network Overlay

## System Requirements

- Platforms must run JAVA 5
- Support a JAVA Web Servlet (Servlet v2.4, JSP v2.0)

## Data Types

- Landsat 7 L1G
- ASTER L1A and L1B

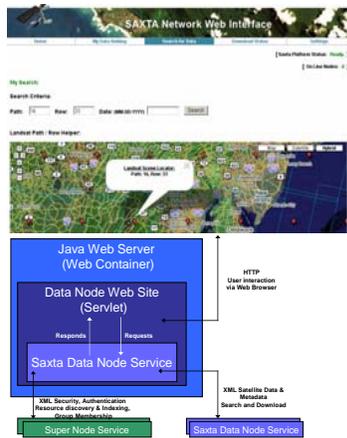


Fig 2: Interaction between the SAXTA Nodes and the user

## How it Works

Any user can participate in the SAXTA network by downloading and installing the SAXTA user node software. After joining the SAXTA network the participant is ready to place a spatial, temporal, or path/row search query. A SAXTA Super Node will identify user nodes currently on the network that have data matching the query. Then download the data directly. To share data, users can just select the file or directory they wish to share and SAXTA automatically retrieves and shares the associated metadata.

## Q. Who Can Access My Data?

A. All members of the SAXTA community

## Q. How Is Access Controlled Within SAXTA?

- A. SAXTA Uses 3 Mechanisms to Control Access:
- 1) SAXTA uses a private JXTA Net Peer Group. (This is analogous to a custom Chat protocol)
  - 2) SAXTA uses private JXTA Super, Rendez-Vous and Relay Peers. (This is analogous to a custom Chat Server)
  - 3) SAXTA is also a "Saxta Community" Peer Group using JXTA Personal Security Environment (PSE) Authentication and Security Framework. (This is analogous to a protected, private Chat Room)



Download Software



Search Screen

## Summary

Access to satellite data remains a significant obstacle to its expanded utilization. Widespread user adoption of SAXTA will help remove this barrier. The decentralized architecture of SAXTA minimizes cost and maximizes system scalability and responsiveness. SAXTA will support the NASA Land Cover and Land Use Change research community, as well as most of the 12 national applications of the Applied Sciences Program.

## Reference:

- [1]: NASA Open Data Policy: <http://globalchange.gov/policies/agency/nasa.html>  
 [2] Project JXTA <http://www.jxta.org>

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