# THE NATIONAL GEOTHERMAL DATA SYSTEM: VISION

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## GOAL

The ultimate goal of the National Geothermal Data System (NGDS) is to support the discovery and generation of geothermal sources of energy. The NGDS will provide online access to important geothermal-related data from a network of data providers in order to:

* Increase the efficiency of exploration, development and usage of geothermal energy by providing a basis for financial risk analysis of potential sites
* Assist state and federal agencies in making land and resource management assessments
* Foster the discovery of new geothermal resources by supporting ongoing and future geothermal-related research
* Increase public awareness of geothermal energy

## USER COMMUNITIES

The National Geothermal Data System will be a network consisting of three linked communities:

1. **Data providers** who will expose information to the system through standardized, internet-accessible interfaces and interchange formats
2. **Software developers** who will build applications that utilize the data in the system, and make it easier for end-users to interact with the system.
3. **End-users** who will utilize the software and information provided by the system in order to understand and develop geothermal resources.

## SYSTEM ARCHITECTURE

The NGDS will include data covering a wide range of topics, from well logs and drilling data to temperature, geochemical, and geophysical measurements. Standardized data access to important datasets will facilitate utilization of these information resources.

A key component of the system is the catalog service through which data providers will register the availability of resources, and through which users will discover, evaluate and access resources. A resource will be considered part of the system when it can be located by searching the catalog service, which will return a metadata record describing how the resource can be accessed. Data providers will maintain nodes in the network, connected through the use of standardized metadata for describing resources, content models for geothermal data, and common web-service protocols for exchanging information. These standards will be developed in conjunction with the US Geoscience Information Network (USGIN), thereby providing interoperability with a wider range of geoscientific information.

## DATA PROVIDER SOFTWARE PACKAGE

A redistributable, open-source software package will be created to give data providers a simple way to register data sources, load data and expose those data as a node in the NGDS. The software will support batch import and upload of shared datasets in supported formats adhering to standard content models. The use of this software is not required in order to participate as a node in the network; data providers may use whatever tools they wish to expose their data, as long as they utilize interchange formats and web-service protocols conforming to NGDS specifications.

## END-USER SOFTWARE

End-users may interact with the system through a variety of entry points, but the project will implement two primary access points. As much as possible, these will be integrated in order to appear to the end-user as a single web-based experience. The two primary access points are as follows:

### NGDS Website

The website will be designed to provide information about the NGDS. It will serve as an entry point to the system, allowing users to discover data and applications that utilize NGDS resources. The site will include information on the project’s progress, NGDS specifications, access to the Map-Centric Search Application described below as well as other software applications utilizing NGDS data, presentations, documentation and tutorials, a catalog of NGDS nodes, and any other results as they become available.

### Map-Centric Search Application

A user-friendly, web-based application will be created in order to support finding, visualizing, mapping, and acquisition of data by end-users. This application will allow users to discover and access resources made available across all NGDS nodes, and to search for data across the system based on topic, location, time or other criteria. Standardized metadata describing each dataset will provide the user with the information necessary to determine the utility of that dataset for their purposes. Geographic datasets will be visualized through a map interface that will also allow users to inspect the details of individual data points (e.g. wells, temperature measurements, etc.) from properly formatted datasets. In addition to visualization within the application, the interface will provide the information necessary for users to access the data from other applications.