

## Harvard Researchers use ICEfaces in Dataverse Network Project

Traditionally, researchers have bound data and stored it in a physical form on a library shelf; the only way to access it was to look up its ISBN. In more recent times, research data has often been stored on someone's computer somewhere, accessible to only a few. There has been a growing need for long term archiving of data, to make it available in a digital form that can be shared and used by others.

A team of graduate students & visiting scholars at the Institute for Quantitative Social Science (IQSS) at Harvard University led an initiative to make that data available in a digital form. The Dataverse Network Project (Figure 1) is a social science research data archive that allows researchers, faculty, students, and other research professionals around the world to store and share their work.

### About the Dataverse Network Application

The Dataverse Network is a web application for archiving, analyzing and sharing social science research data. The Dataverse Network software is written under the Java Platform, Enterprise Edition (Java EE) 5 using the latest Java technologies, including Enterprise Java Beans (EJB) 3, Java Server Faces and ICEfaces. The Dataverse Network runs on Glassfish installed on Fedora Linux and relies on the PostgreSQL database software. The developers used NetBeans on different operating systems, including Windows XP, Mac, and Linux. The data analysis component uses R and Zelig for statistical computing.

The application is designed to be a network of individual research/storage sites known as Dataverses. It is easy for an individual, or an organization to create a Dataverse on the Dataverse network, by simply clicking a link on the Dataverse network home page. After its creation, the owner can administer their own Dataverse without having to install their own version of the software. Each Dataverse can be customized to create its own look and feel, as well as add its own users, access restrictions, and so forth. Access to studies and files is completely up to the owner/administrator of the content.



The Institute  
for Quantitative Social Science  
at Harvard University

“The ICEfaces components are professional looking, easier to use than other frameworks, and allowed us to implement rich Ajax features across our entire site within a relatively short period of time. Additionally, the ability to push out data to the application was a key factor.”

Wendy Bossons  
Senior Software Engineer



The Dataverse Network features industry leading citation standard and data analysis, in addition to XML data that describes the data in terms of its producers' credentials, research abstract, and other criteria. It conforms to standards for interoperability with other organizations that are collecting, distributing, and using social science research data, which means that studies, and their files, can be linked among Dataverses. Users can also harvest data on a schedule from other organizations that make their studies and the data available.

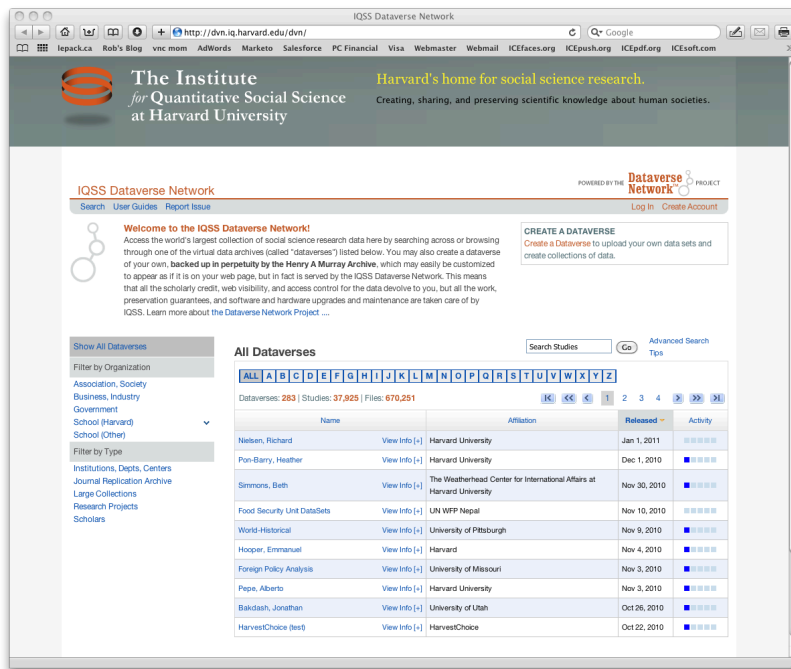


Figure 1: IQSS Dataverse Network Home Page

The Dataverse Network is an open source software project freely available at Source-Forge. In addition to the Dataverse Network hosted at Harvard, it is also installed at the University of North Carolina, UNC, and it will soon be put to use by ICPSR, a well-known social science research house.

## Why ICEfaces?

We chose ICEfaces because we wanted a JSF component library with Ajax features built in. We are also using ICEfaces Ajax Push technology for displaying live statistics related to our data archive on our Homepage (for example, the number of studies and files that have been archived on the system).

While a predecessor of the project was JSP-based and used standard JSF components, the Dataverse Network was built as an EJB/JSF project from the beginning. The project started out using the Sun's (now retired) Project Woodstock components, but quickly moved to ICEfaces 1.7.2. ICEfaces provided a much richer set of Ajax enabled components that were very easy to use.

In preparation for using ICEfaces, the application was quickly refactored to leverage Facelets. The development team found Facelets to be very effective, not only for the way that it provides a simple set of tags for templating, but also for the use of the `ui:repeat`, `ui:fragment` tags, and the attribute `jsfc`, which allowed them to tie HTML elements to the behaviors of specific ICEfaces components. This was important because in some cases the team wanted to use semantic markup, while continuing to leverage all of the richness that the ICEfaces framework had to offer.

It's also important to note that some iQuery JavaScript components were also used in conjunction with ICEfaces providing us the flexibility to mix and match third party JavaScript components with ICEfaces as required.

