Weave on Grails

And

The Weave Ontology

from

Curran Kelleher

Weave on Grails

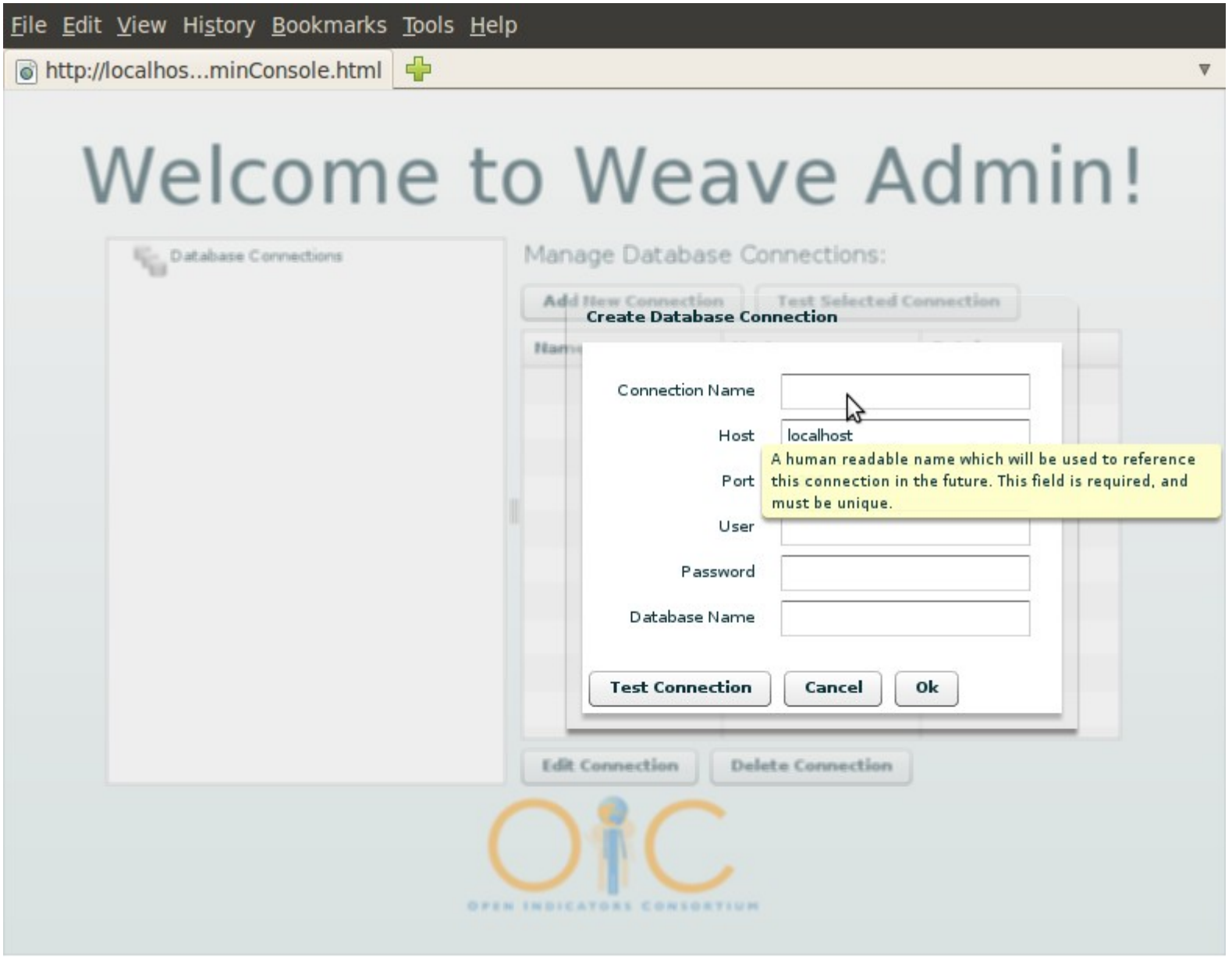
- A new data server implementation
  - Uses a configuration database instead of an XML file
    - no more sqlconfig.xml
  - Implemented using the Grails web framework
    - Can be deployed in any servlet container
    - Not necessarily Glassfish, could be Tomcat, Jetty, etc.
- A new admin console
  - Completely revised user interface
  - Exposes the configuration structure visually as a tree
  - Each element in the tree has its own view

The Weave on Grails Admin Console

The database connection view

Adding a database connection

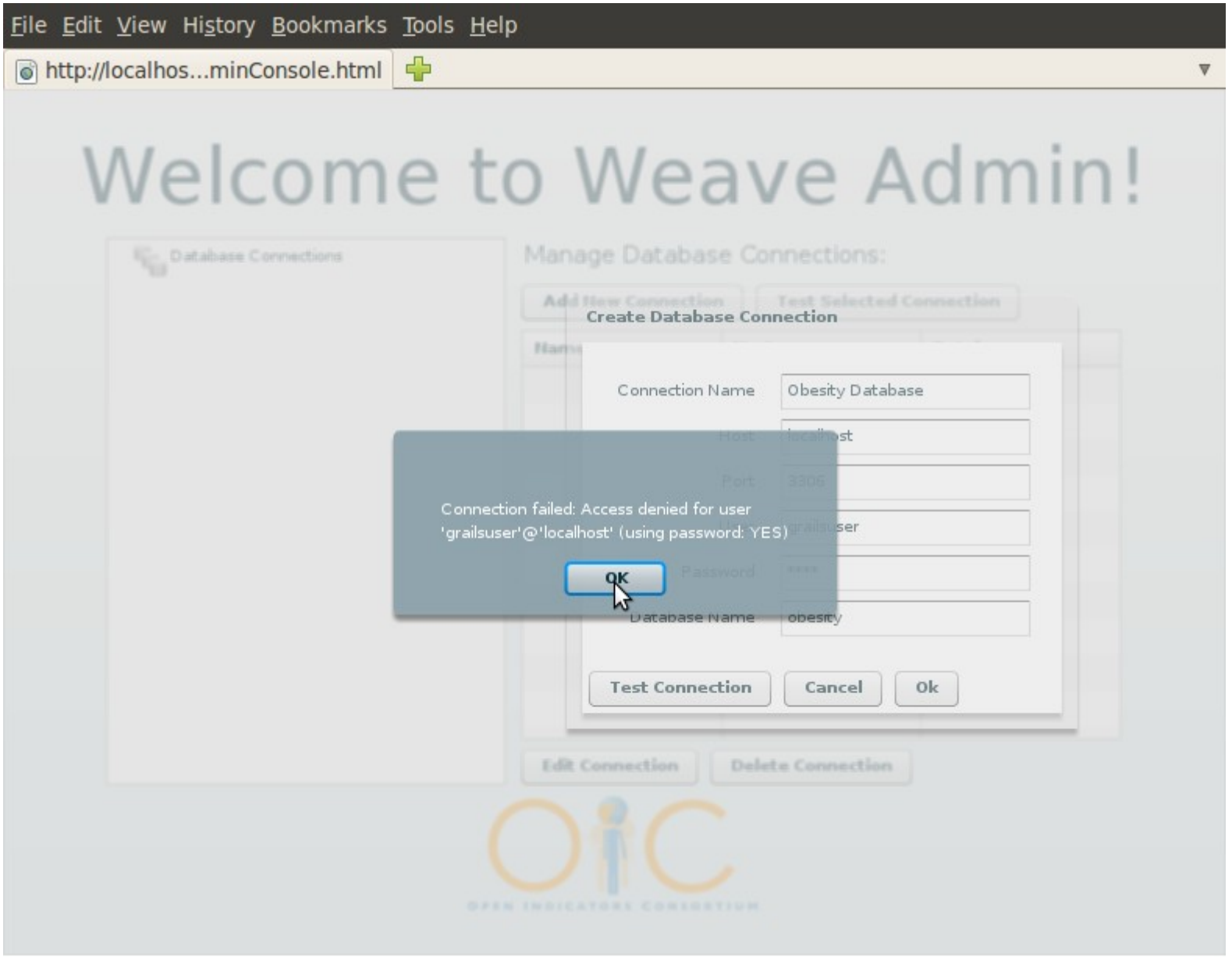
Adding a database connection



Tooltips are provided

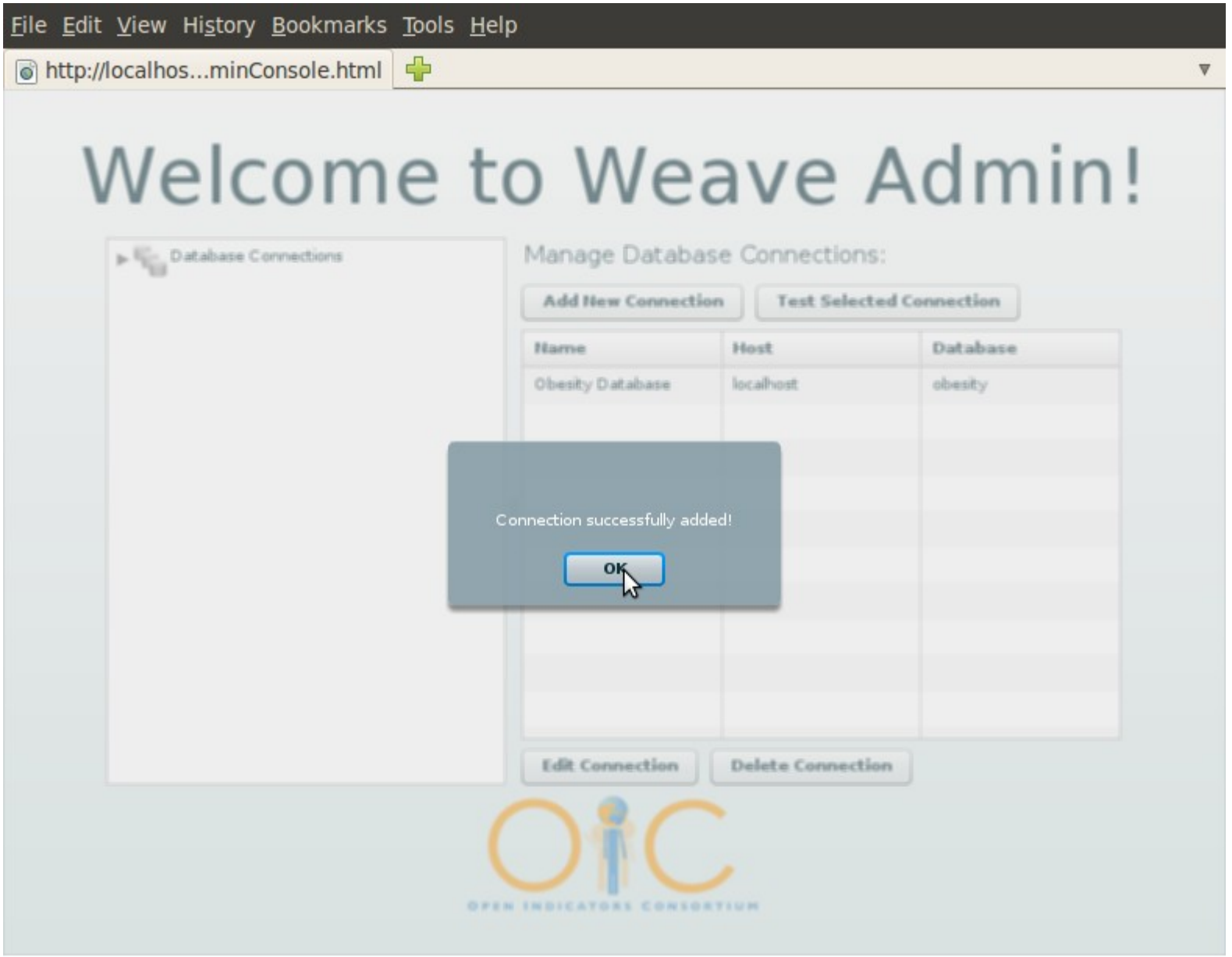
Testing the connection

Oops! Wrong password

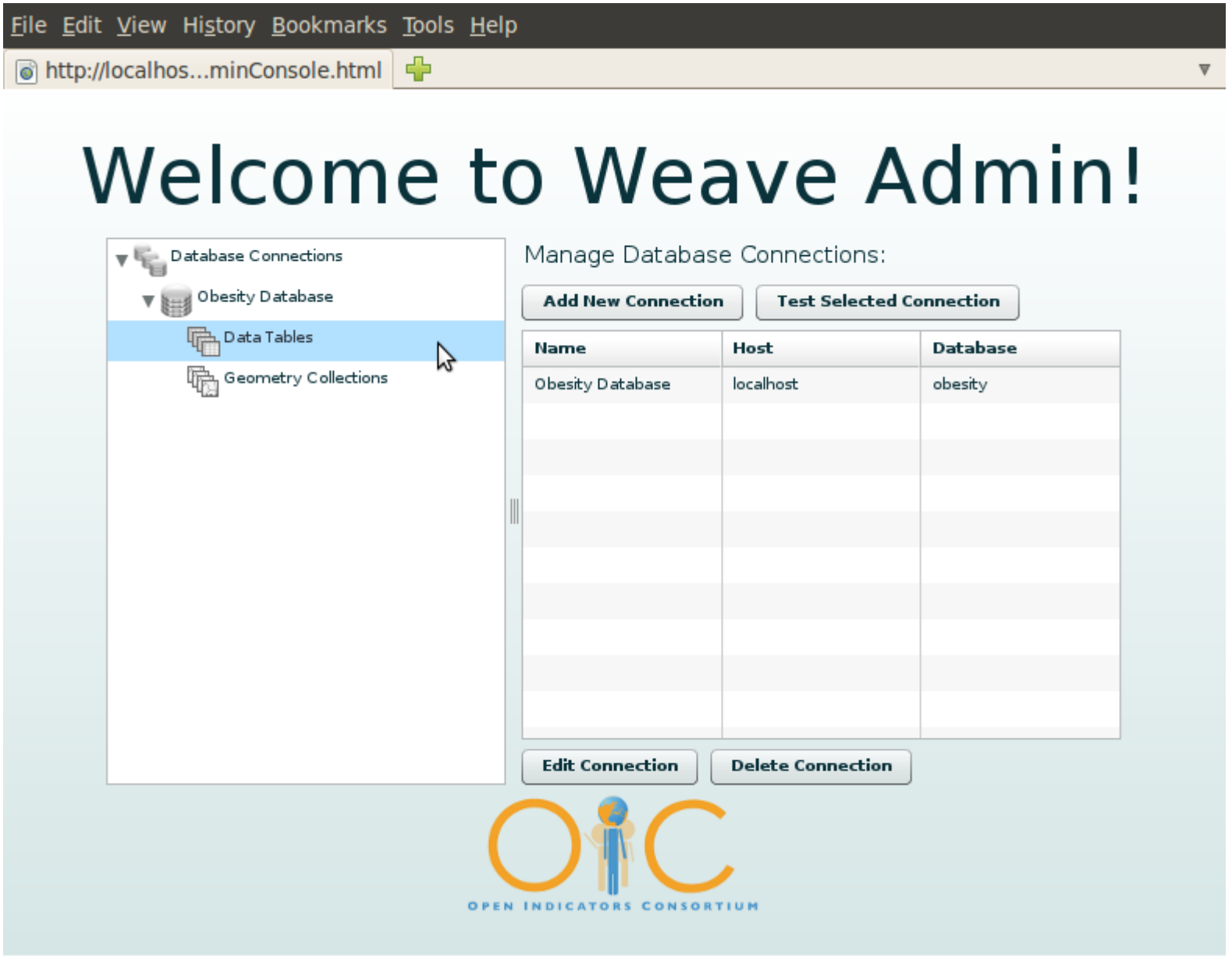


Useful error messages were a primary goal

Confirmation of success

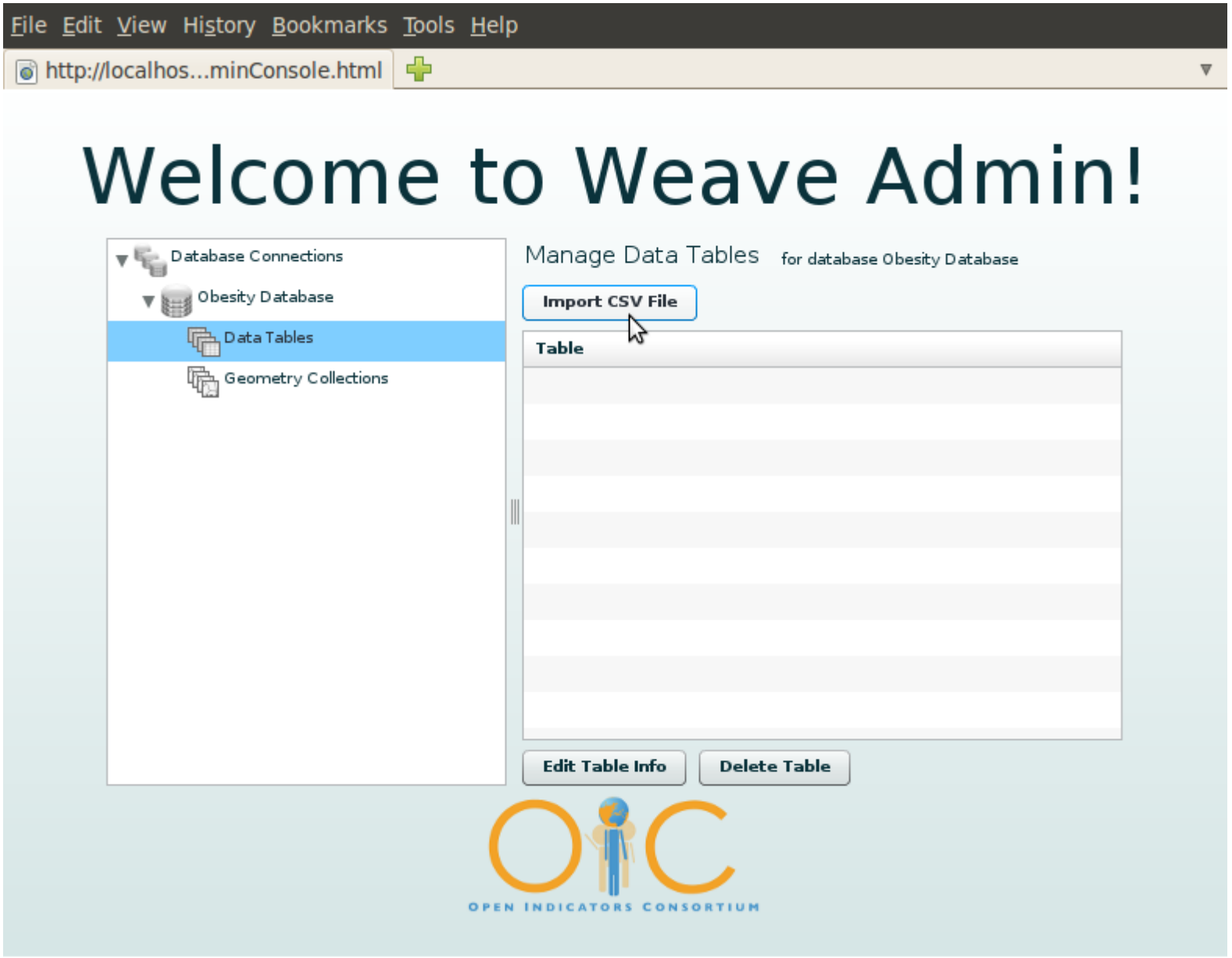


The data as a tree

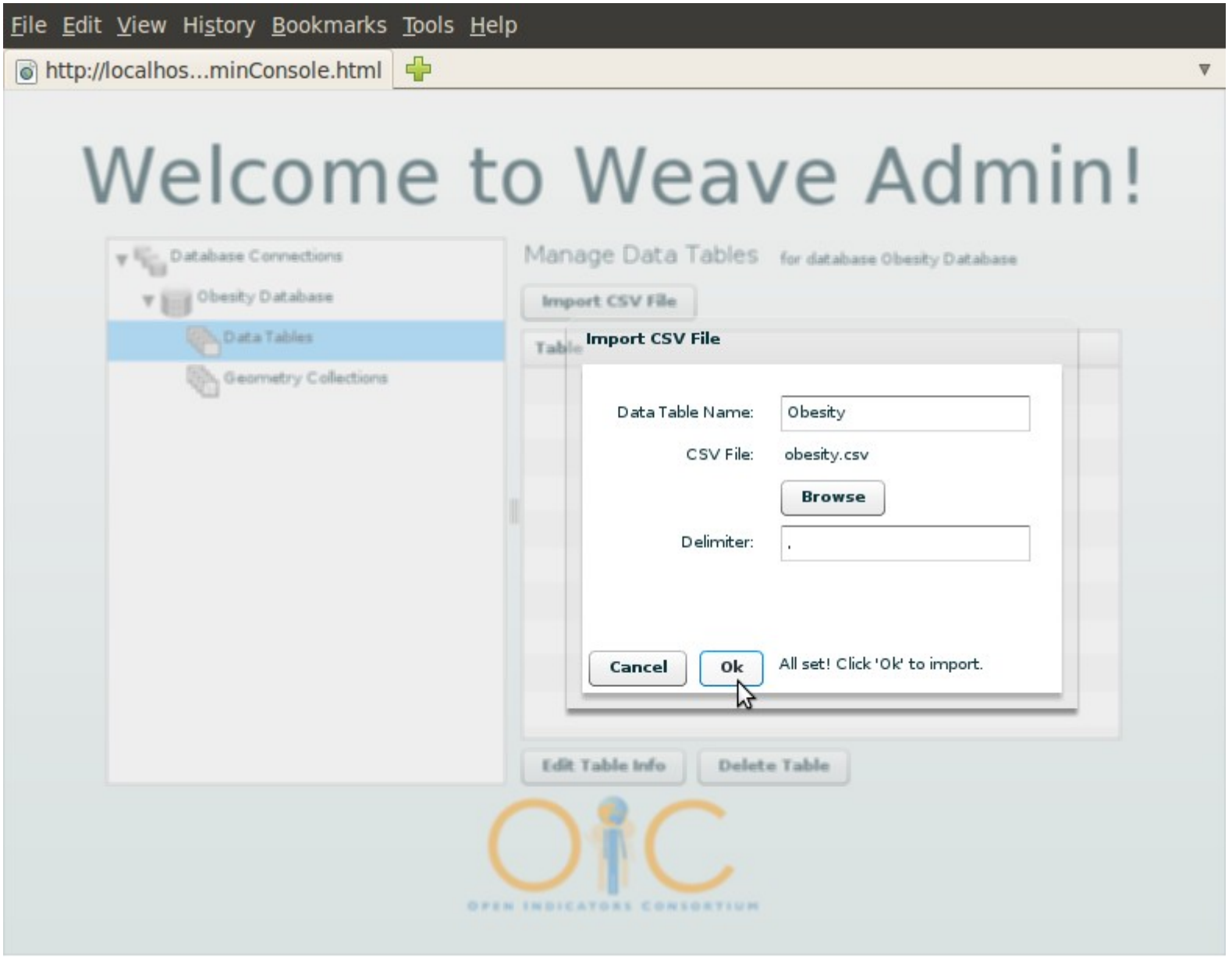


Connections contain tables and geometry collections

The data table view

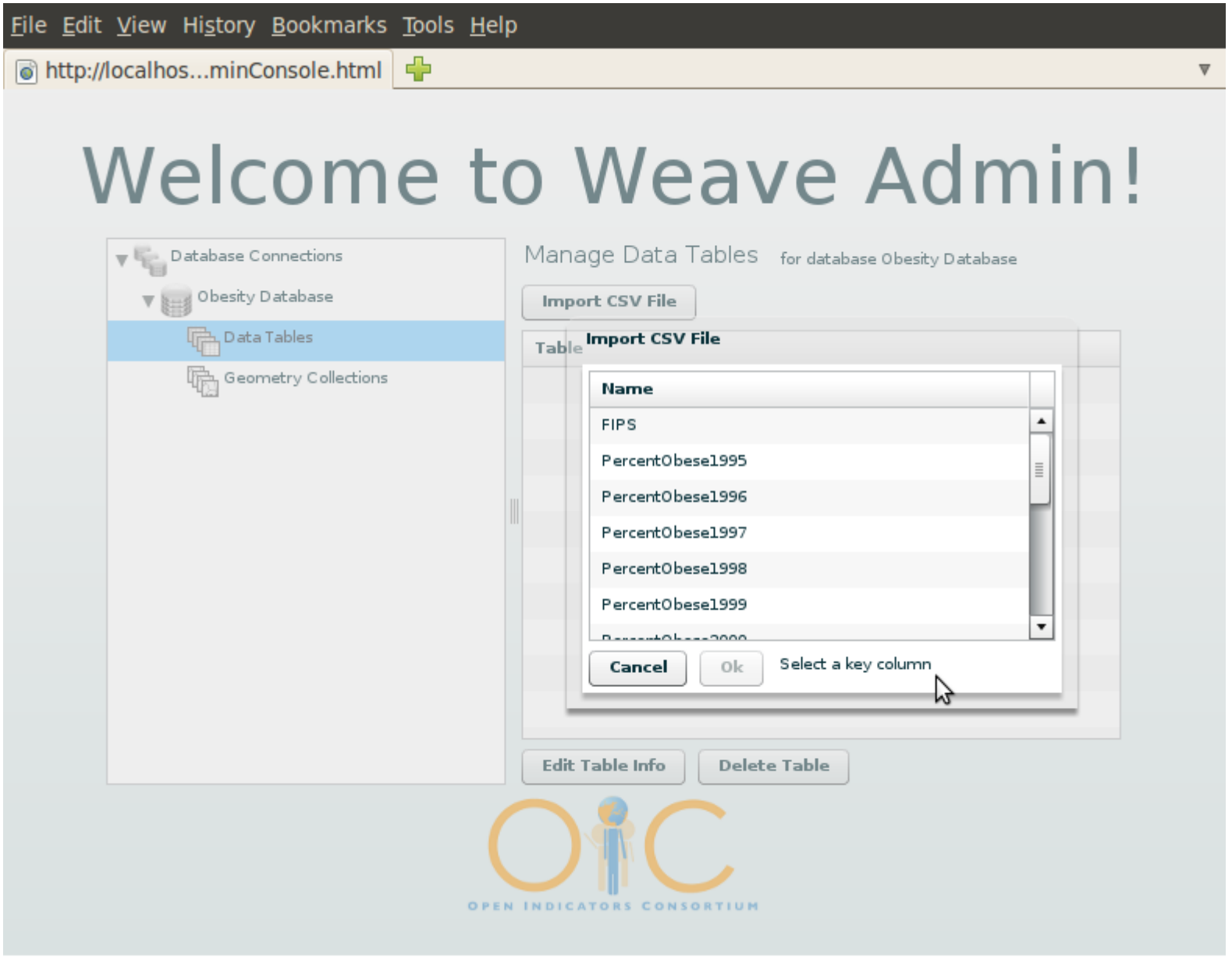


Importing a CSV file

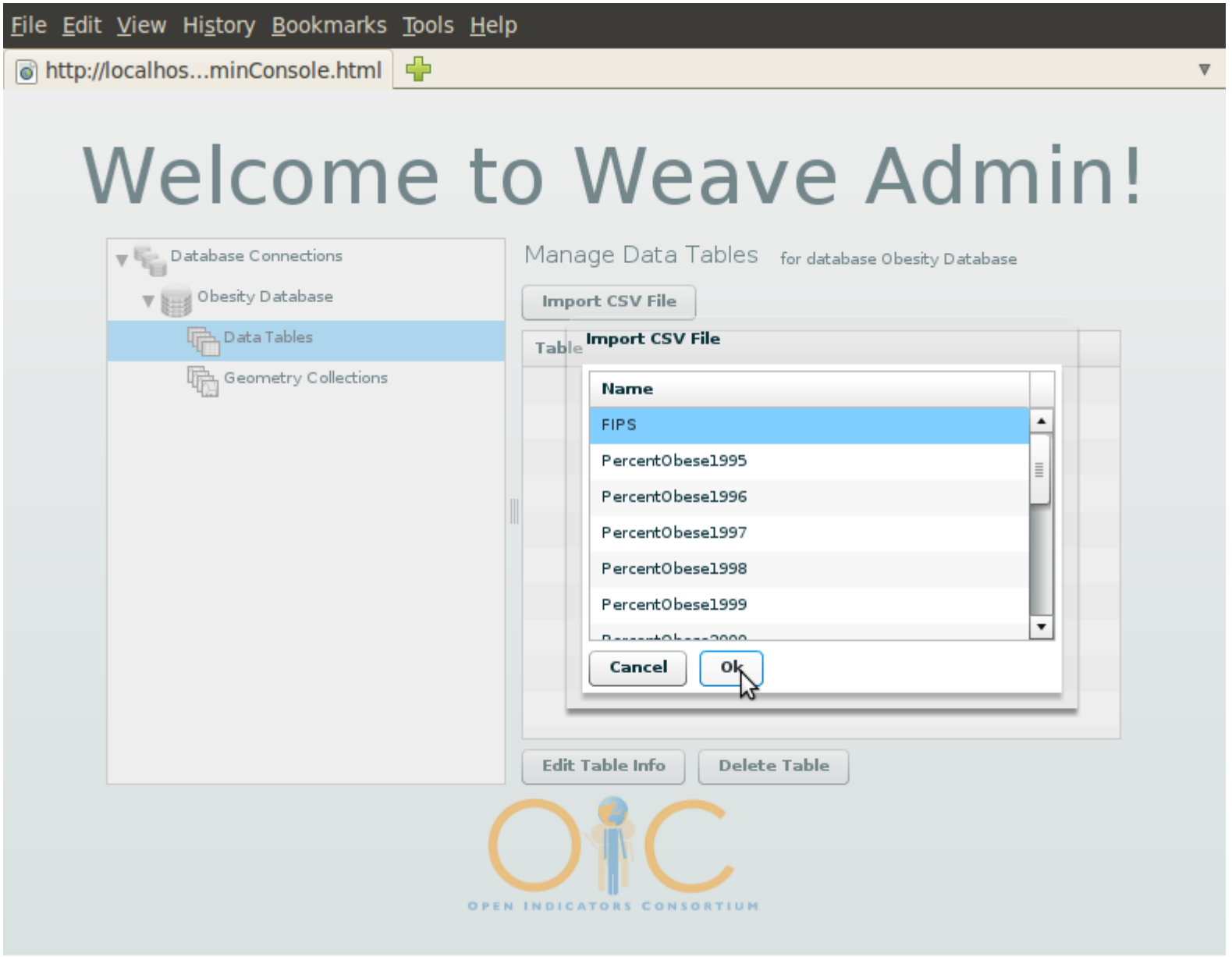


The interface guides you through each step

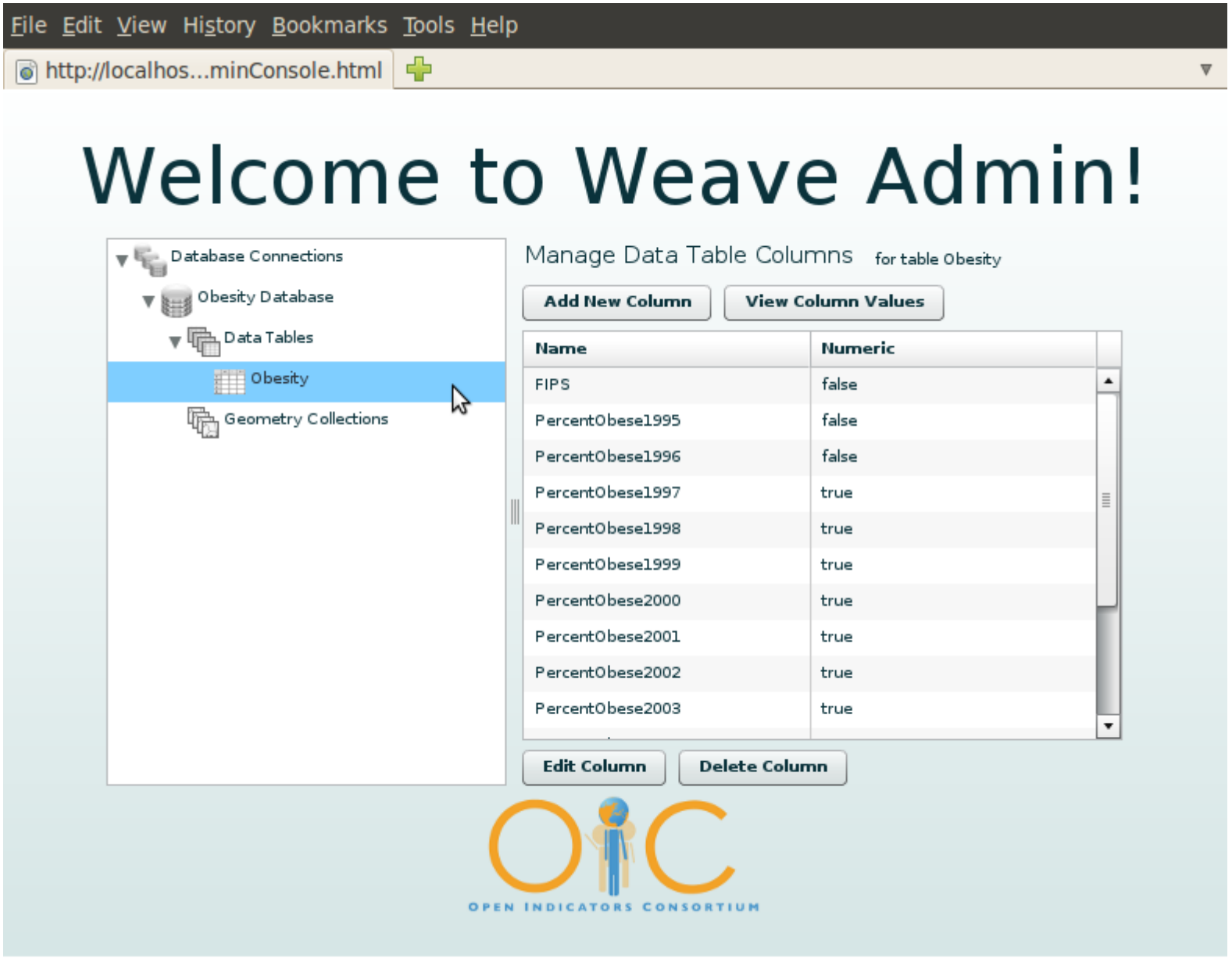
Importing a CSV file



Now a key column is selected

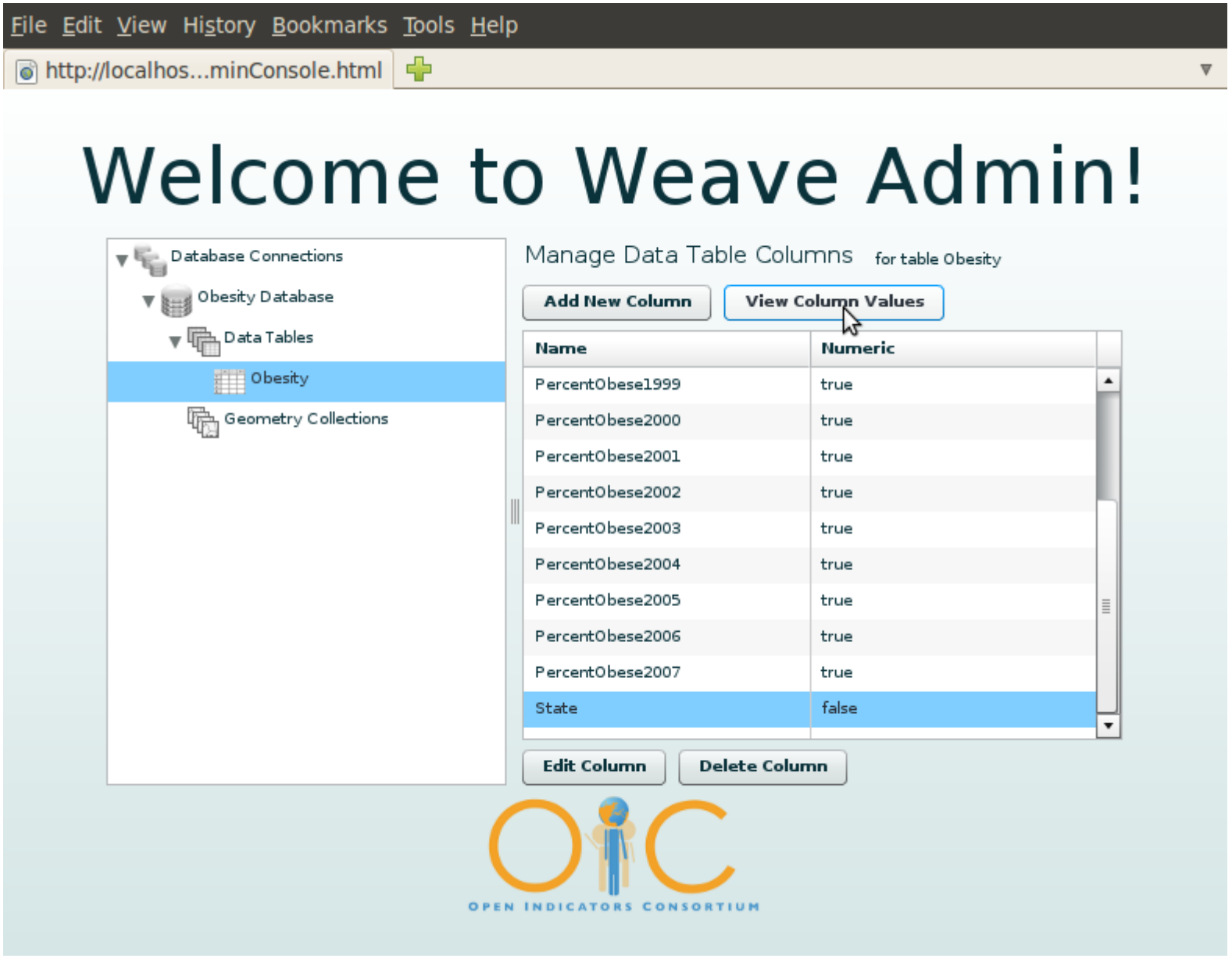

File Edit View History Bookmarks Tools Help
http://localhos...minConsole.html
Welcome to Weave Admin!
Database Connections
Obesity Database
Data Tables
Geometry Collections
Manage Data Tables for database Obesity Database
Import CSV File
Table
Import CSV File
Name
FIPS
PercentObese1995
PercentObese1996
PercentObese1997
PercentObese1998
PercentObese1999
Cancel
Ok
Edit Table Info
Delete Table
OPEN INDICATORS CONSORTIUM

The column view



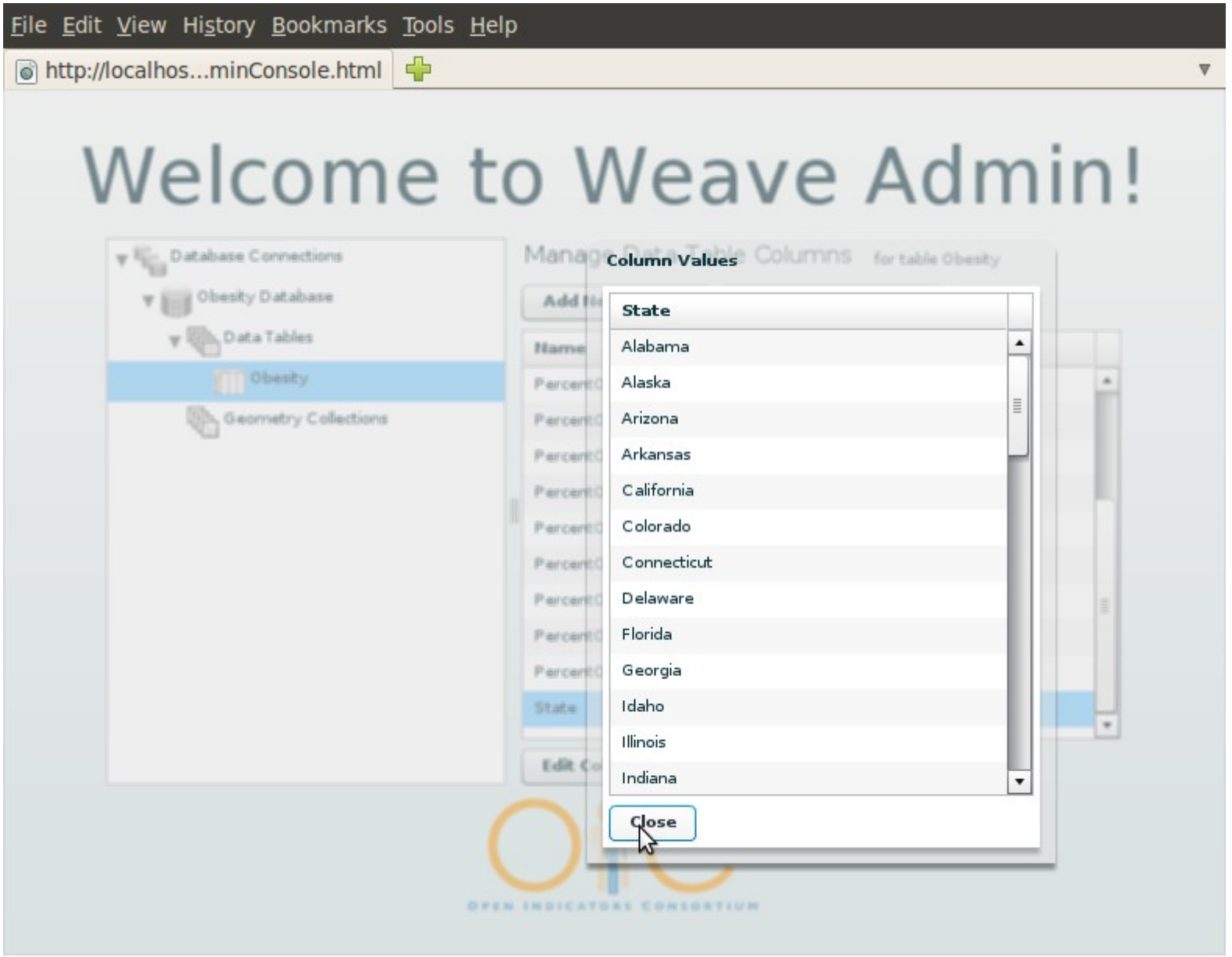
Now all columns are shown

The column view

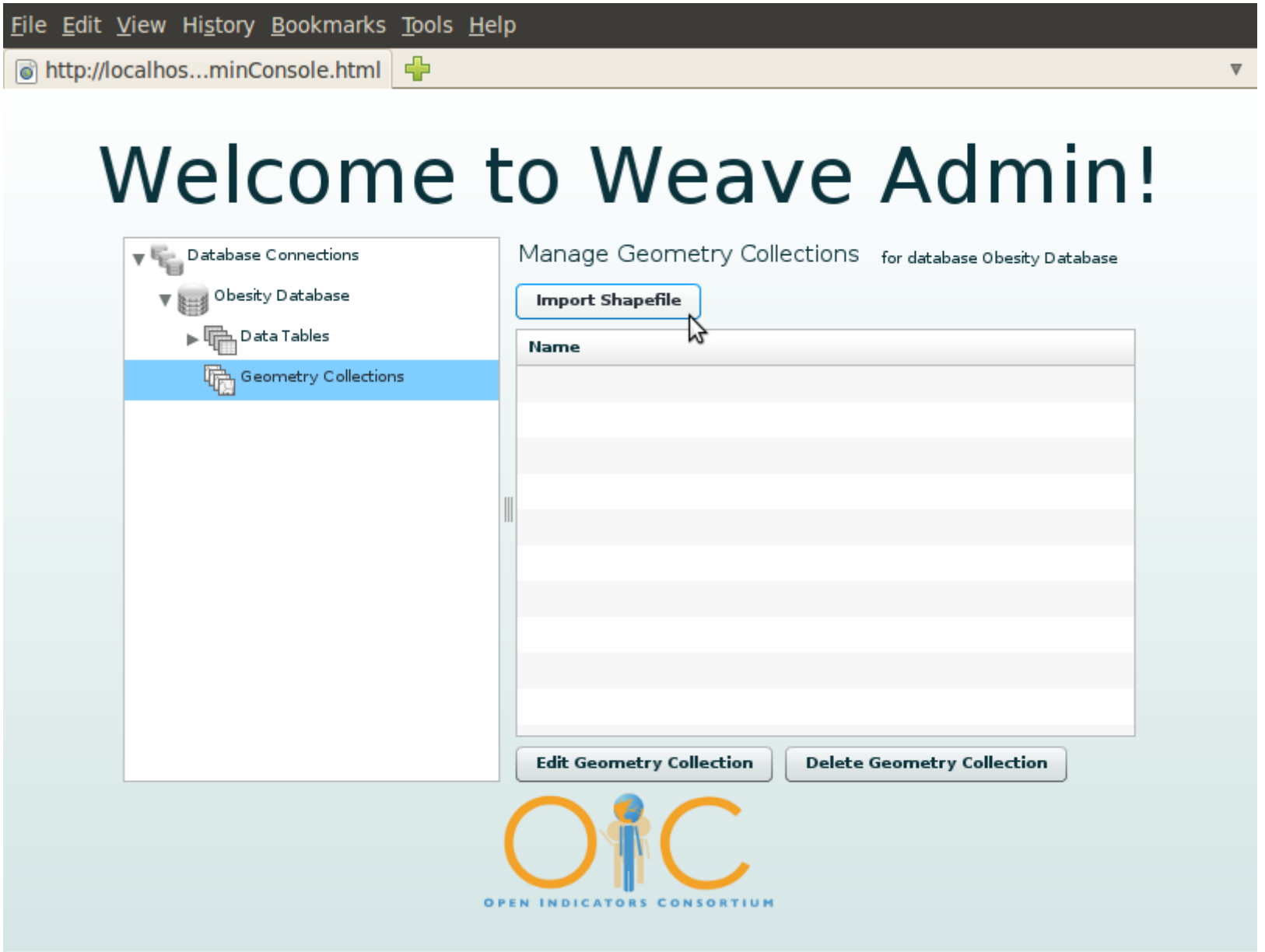


Column values can be seen

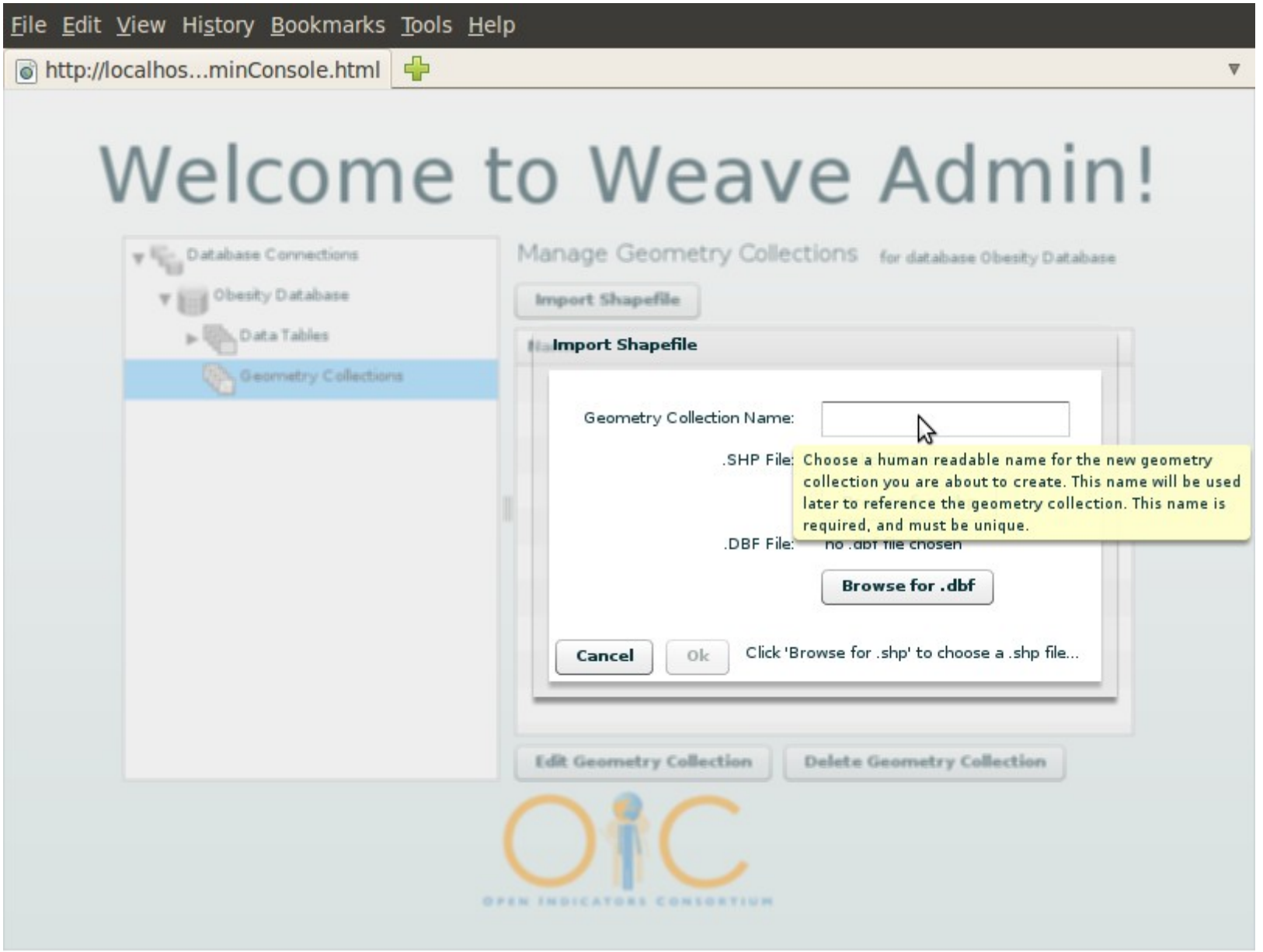
The column view



The geometry collection view

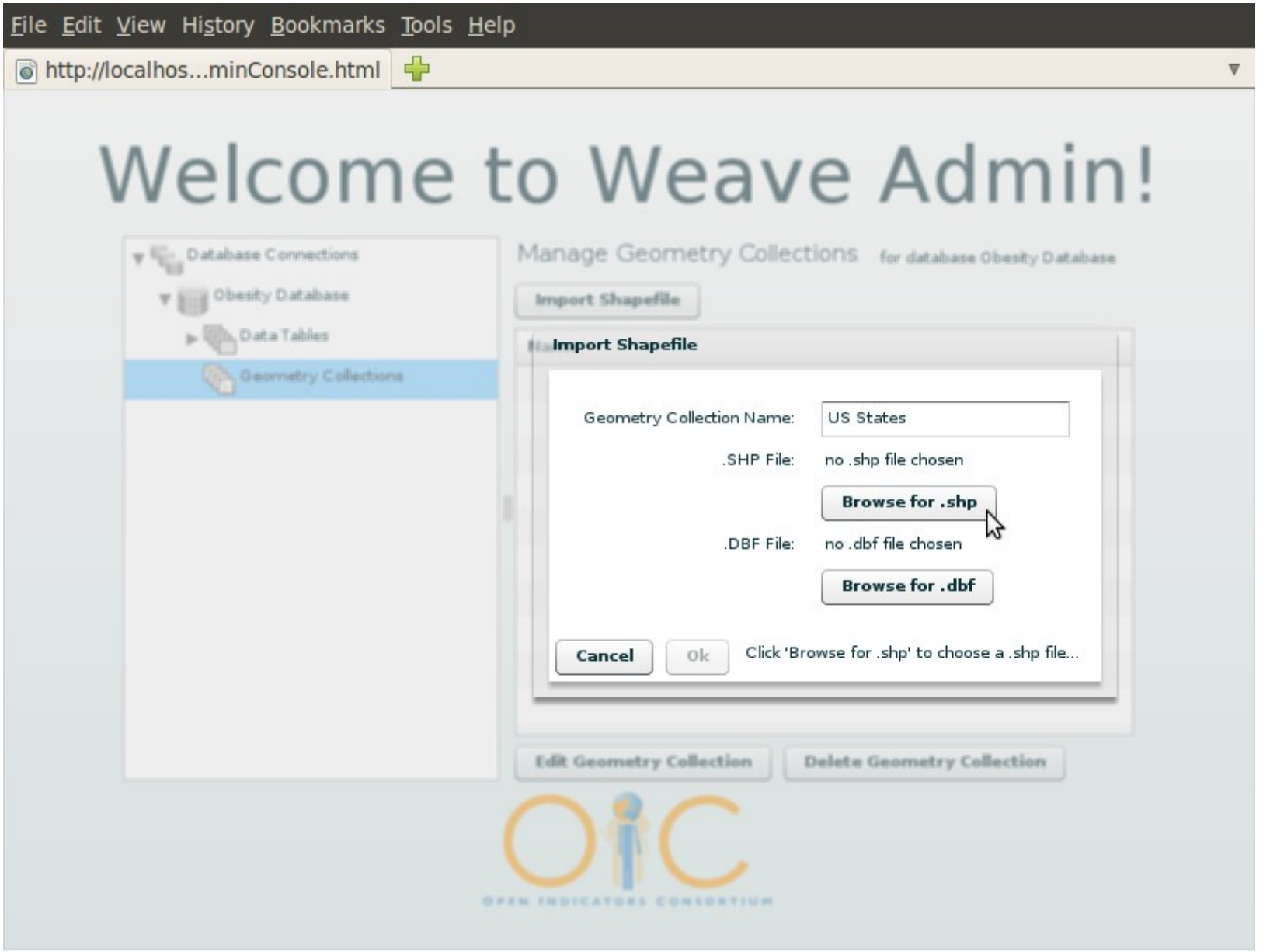


Importing a shapefile



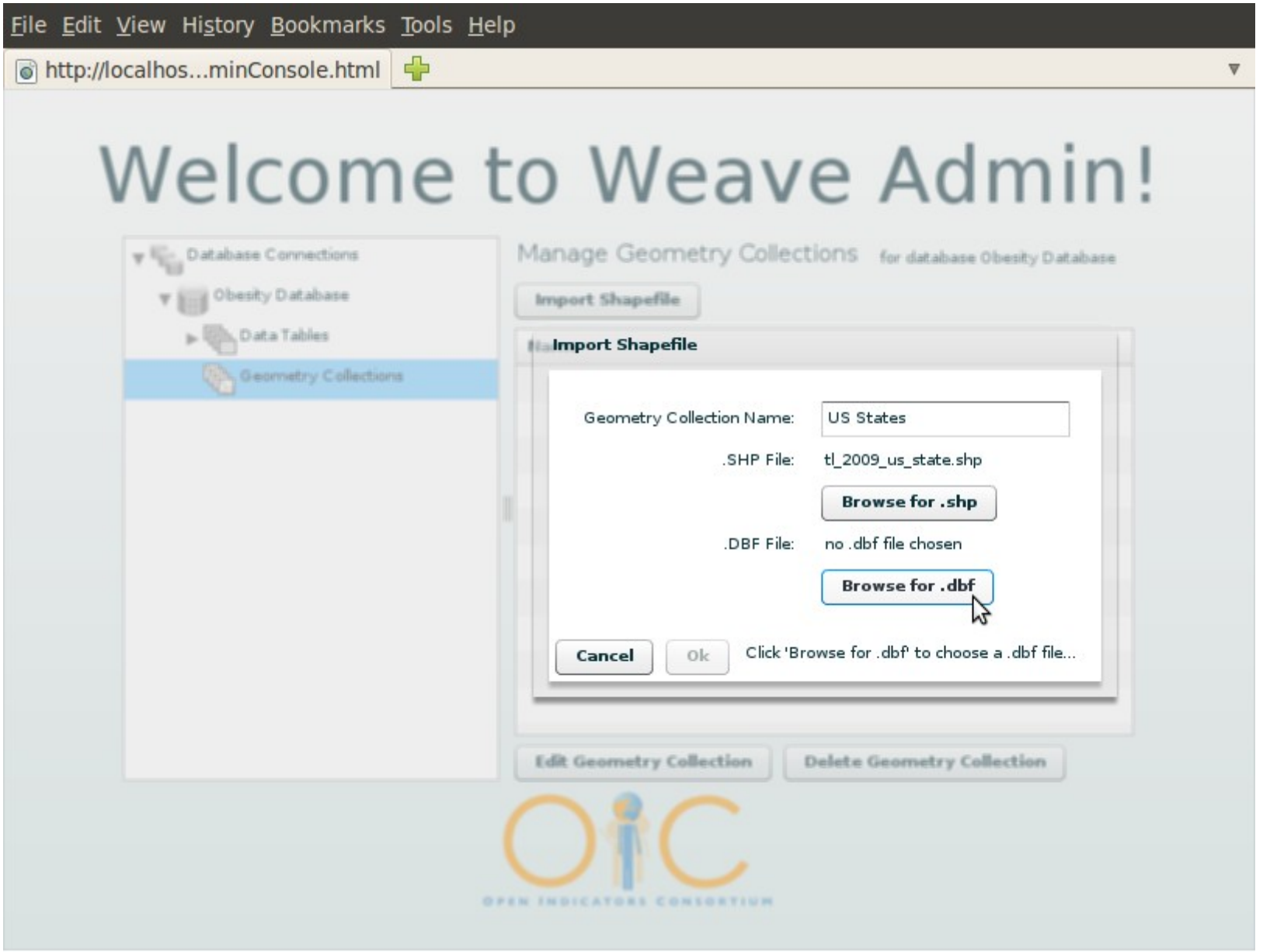
The interface guides you through each step

Importing a shapefile



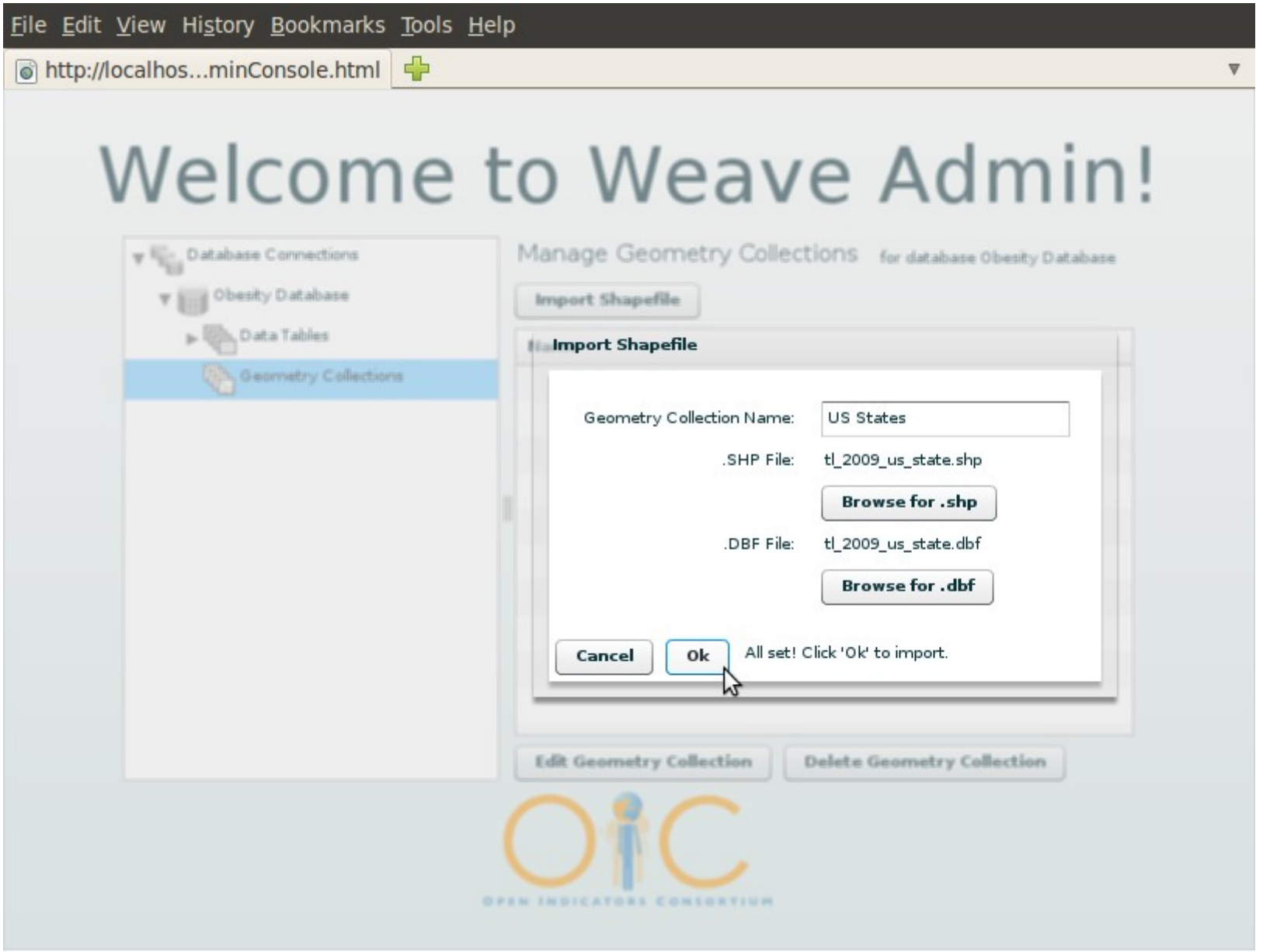
.shp and .dbf are chosen individually

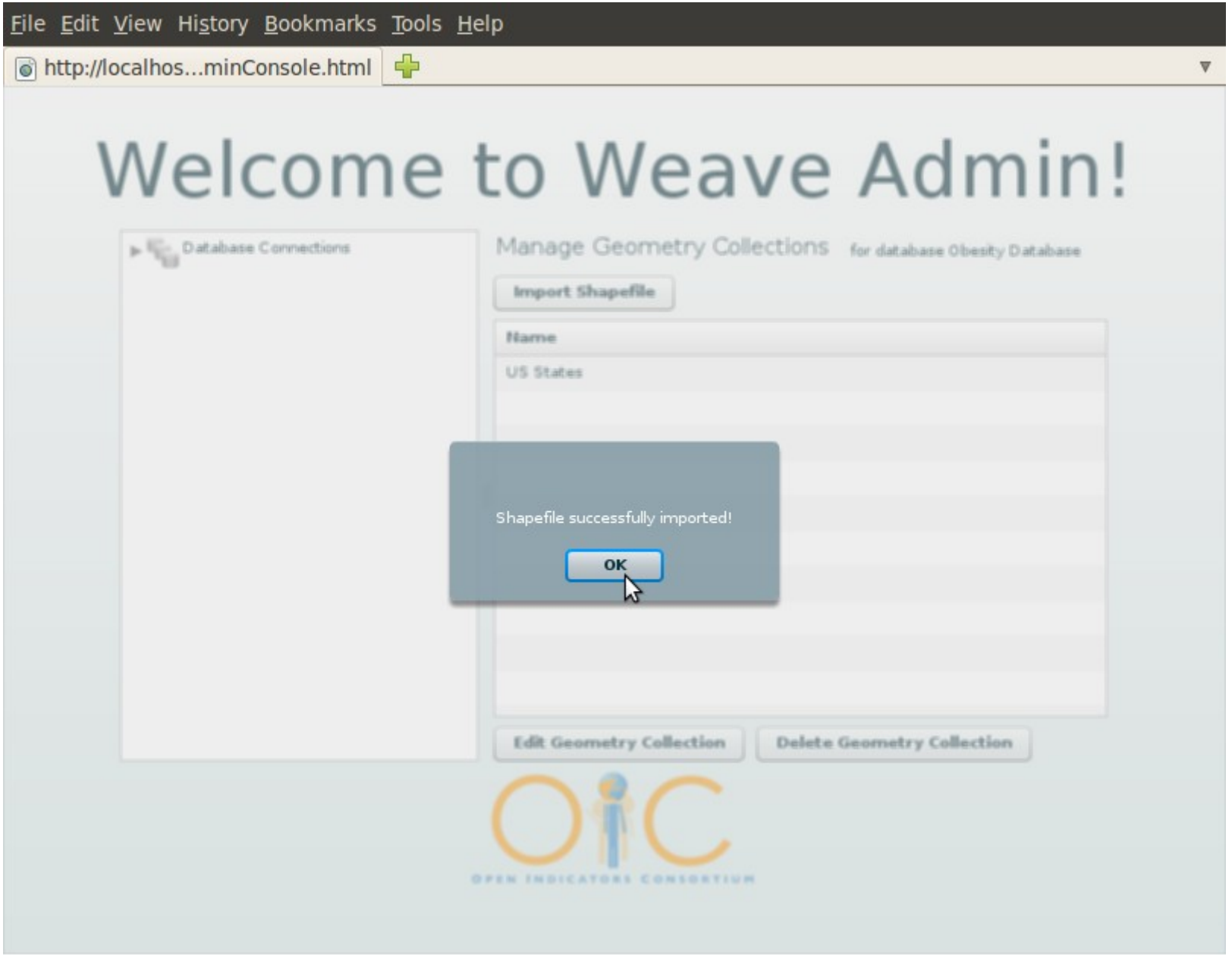
Importing a shapefile



to ensure no files are left out

Importing a shapefile




File Edit View History Bookmarks Tools Help
http://localhos...minConsole.html
Welcome to Weave Admin!
Database Connections
Manage Geometry Collections
for database Obesity Database
Import Shapefile
Name
US States
Shapefile successfully imported!
OK
Edit Geometry Collection
Delete Geometry Collection
OPEN INDICATORS CONSORTIUM

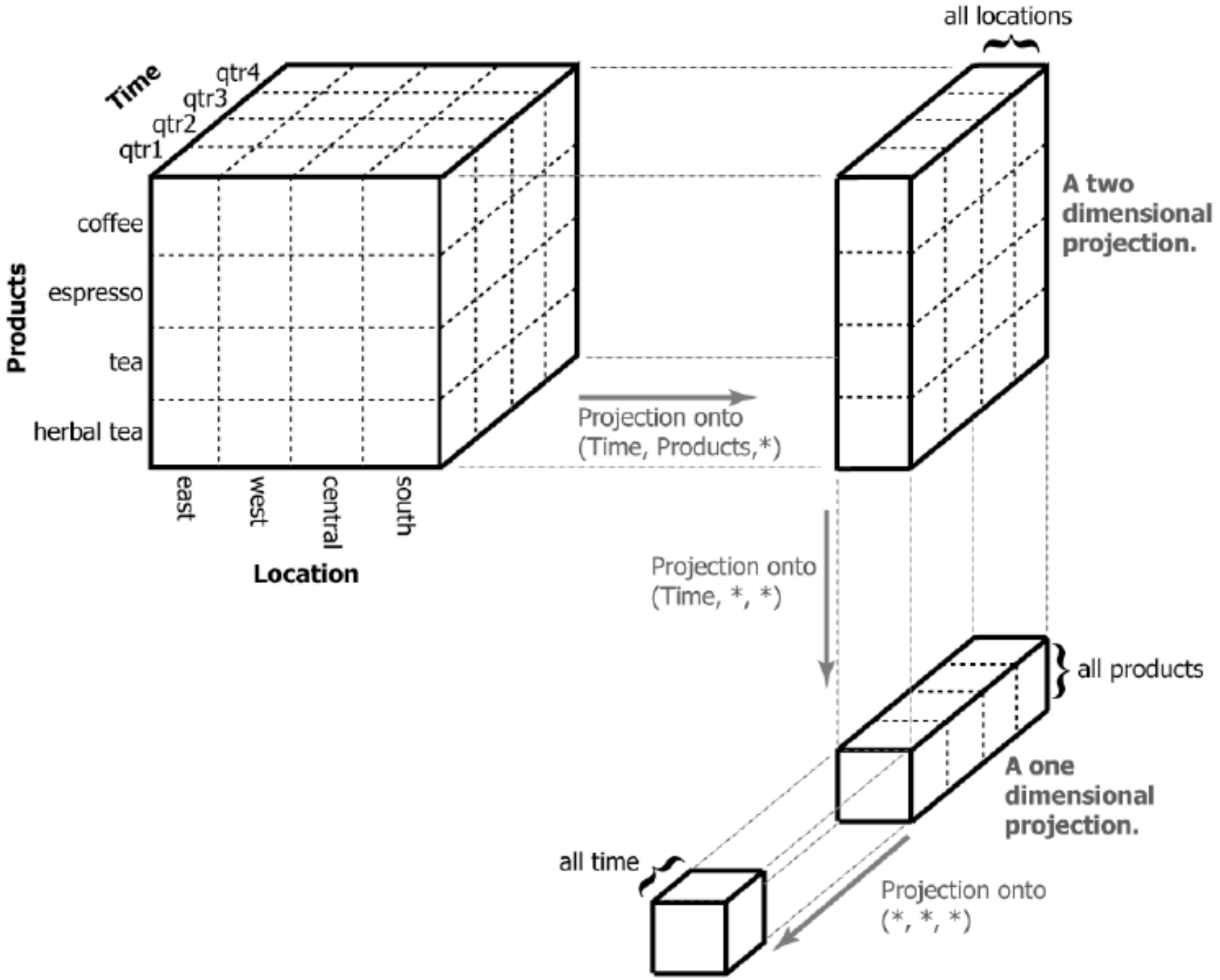
The final view

The Weave Ontology

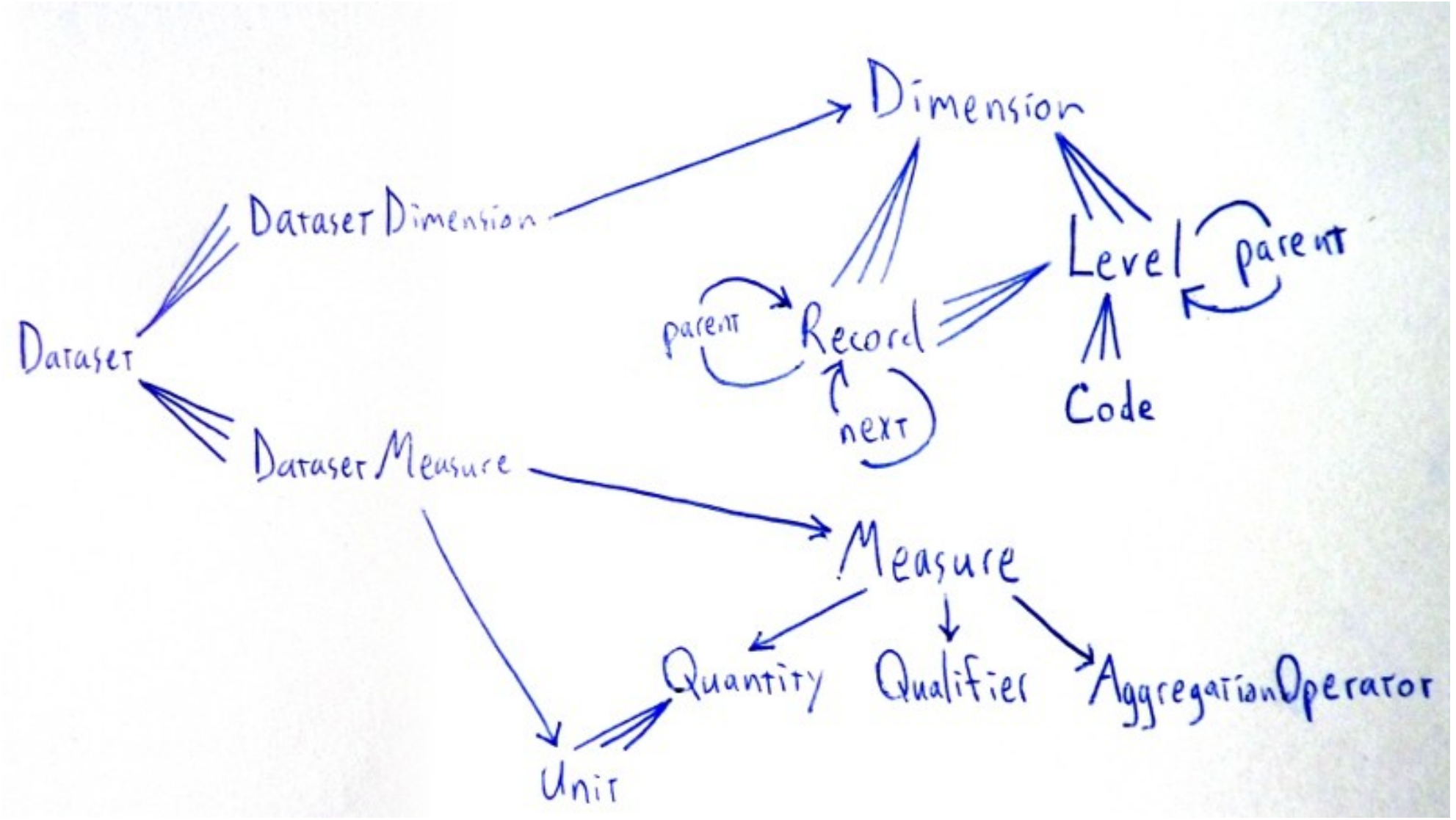
The Weave Ontology

- Not finished, but significant progress made
- Currently Curran's research topic in Konstanz
- Intertwined with the concept of a data cube
- Will support
  - rich aggregation metadata capability
    - Explicit linkages between region levels
  - metadata about records (shared across data sets)
  - metadata about units and measures (indicators)
  - metadata about data sets (using Dublin Core)
    - Such as author, source, date, etc.

Projecting a three dimensional data cube



Conceptual Ontology structure



An example dataset:
The BLS Employment Dataset

as dimensions and measures

- Raw data at ftp://ftp.bls.gov/pub/special.requests/cew/
- Covers Time from 1990 to 2007
  - Data for years, quarters, and months
- Covers Space for all US States
  - Data for States and Counties
- Covers the NAICS Industry hierarchy
- Covers Ownership
  - Government (Federal, State, Local) and Private
- Contains measures employment, annual pay, total wages, and number of establishments (among others)
- This is the “competency test dataset” for the Weave ontology

Weave Data Model Problems

- Hierarchical key types are not linked
  - US Counties and US States are totally independent
- Key types referring to the same things not linked
  - Like US State codes and US State abbreviations
- Columns representing the same measure with different units are not compatible
  - Population in thousands not comparable with Population in millions
- No way of resolving when two datasets provide comparable columns

Solutions provided by the Ontology

- Hierarchical key types are linked
  - Via the data cube dimension hierarchy structure
- Key types referring to the same things are linked
  - US State codes and US State abbreviations are different RecordCodes for the same record set
- Columns representing the same measure with different units are compatible
  - Population in thousands and Population in millions are two different Units within the same Quantity
- Resolving when two datasets provide comparable columns is possible
  - Because Datasets use universal Measure URIs to describe their contents

The end.