Setting up the Oil & Gas Governance Demo

October 2017: v1.4
Send feedback to: neil.williams@us.ibm.com

1. Provision and prep the IIS PoT image

This demo was created using both the IIS v11.5 PoT image and CAP. Instructions are verbose to help those new to IIS.

Information on using CAP is available at: https://ibm.ent.box.com/s/98yno9z7kgakwxxnbpap30o7unqspigs

Tips for using CAP are in sections 3 and 4.

Copy and extract the demopackage folder to your IIS client and server images. Tips for copying the demopackage folder to the IIS images are in sections 3 and 4.

2. Choose full import or manual asset creation

Full IMAM, DS/QS (dstage1 project), and IGC export files are available. The IMAM export will overwrite existing assets where there's a conflict. Follow the instructions in this section if you're ok with possibly overwriting your existing assets, otherwise skip to the section 3 for manual instructions. Alternatively take a snapshot or backup of your image before proceeding with the imports in this section.

Export files are in the `demopackage\full_istool_exports` directory.

Before performing the imports below, do the following:

1. Create the `oil_db` database and copy the PDF files as documented in section 3.
2. Disable workflow in IGC as documented in section 6.

Use istool to run the following import commands. Adjust file path as necessary [note quotation marks may not copy/paste well]. A tip on launching istool from CAP1 is in section 6.

```
import -dom is-server.ibm.com:9445 -username isadmin -password inf0server -archive
"C:\demopackage\full_istool_exports\oilandgasall.isx" -all

import -dom is-server.ibm.com:9445 -username isadmin -password inf0server -archive
"C:\demopackage\full_istool_exports\oilandgasdstage1.isx" -ds 'is-server.ibm.com/dstage1'

glossary import -dom is-server.ibm.com:9445 -username isadmin -password inf0server -
filename "C:\demopackage\full_istool_exports\oilandgasigc.xml"
```

Post-import:

1. The IGC Data Connection Mapping was not imported. Instructions for creating the mapping are in section 8 below. The mapping is required to show lineage.
2. Data stewards were apparently created but not added to any assets by the import. You may want to add them to assets for your demo, the `Permit` term at the very least. Valid stewards are Pete Hornberger and Jack Donaghy.
3. The "Permit Number Exists" policy was imported but the import did not assign associated data rules. See section 13 to assign the rules to the policy.
4. Proceed to sections 15 and 16 for setting up Data Connect and Watson Analytics.
5. Demo setup is now complete. Refer to the Demo Script file for instructions on presenting the demo.

For reference, here are the export commands used to create the export files:

```
export -dom is-server.ibm.com:9445 -username isadmin -password inf0server -archive
"C:\oilandgasall.isx" -all

export -dom is-server.ibm.com:9445 -username isadmin -password inf0server -archive
"C:\oilandgasdstage1.isx" -ds 'is-server.ibm.com/dstage1/*/*.*'

glossary export -dom is-server.ibm.com:9445 -username isadmin -password inf0server -
filename "C:\oilandgasigc.xml" -allcategories -allpoliciesrules -includeassignedassets -
includestewardship -includelabeledassets -includeassetcollections -includeTermHistory
```

3. Prepare the IIS Server

Create and import the database

Use the IIS server image (e.g. CAP2) to import the database. The dbexport folder was created with the "db2move OIL_DW export" command and contains everything necessary to create the source database (OIL_DW) in DB2.

Log in to the IIS server as db2inst1 and uncompress then copy the demopackage folder.

Hints for the CAP2 image:

- You will need to use the capadmin/C@Pdemo4U! user for WinSCP, Putty, and Filezilla.
- Use WinSCP or Filezilla (available on CAP1 if you don't have it on your laptop) to upload the folder to /tmp on CAP2. If using Filezilla, use the file manager feature to set protocol to sftp (quickconnect defaults to regular ftp).
- Use putty (available on CAP1) to log in as capadmin, then use `sudo su - db2inst1 -s /bin/bash` to switch to the db2inst1 user.
- Make a copy of the dbexport folder as user db2inst1 to avoid issues with permissions on the files, e.g. "`cp -R dbexport mydbexport`".

Move to the dbexport directory in the demopackage folder and execute the create_oildb.sh script using: `. ./create_oil_dw.sh`

The command should only take a couple minutes to run and should output messages telling how many rows were inserted (your prompt may initially appear to be frozen but it's just silently creating the database and doing the import). To verify the database was created and loaded correctly, run the following from the command line. You should see a count of 3716 rows:

```
db2 connect to OIL_DW

db2 "select count(*) from WELL_DATA"
```

If you need to manually create and the load the tables (e.g. using a non-DB2 database) the table DDL and csv files are in the dbfiles folder in DB2 syntax/format. You will need to create the database (`OIL_DW`) itself manually.

If you encounter any access permission issues with the database/tables, try assigning the permissions in the grant_db2_permissions.txt file in the dbfiles folder but this should not be necessary.

Copy PDF files to the WAS directory

Log in to the IIS server as root and copy blm_gold_book.pdf and eia_pdr_full.pdf from the demopackage folder to this directory: `/opt/IBM/WebSphere/AppServer/profiles/InfoSphere/installedApps/is-serverNode01Cell/igc-web.ear/igc-web.war/`

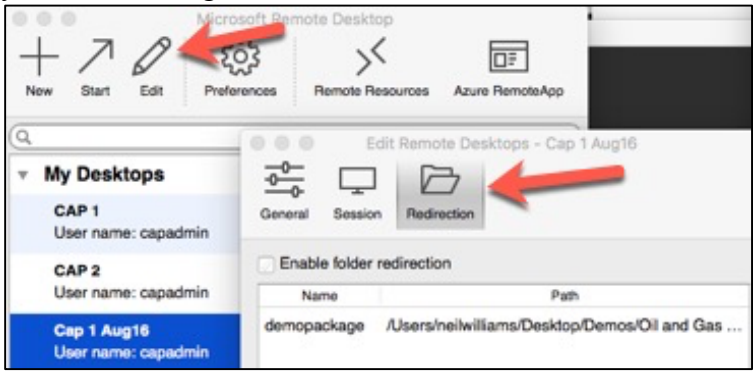
On the CAP2 image, you will need to use sudo to copy the file as root, e.g.:

```
sudo cp *.pdf /opt/IBM/WebSphere/AppServer/profiles/InfoSphere/installedApps/is-
serverNode01Cell/igc-web.ear/igc-web.war/
```

4. Login information

I used isadmin/inf0server for all IIS logins, except for the database connection in IMAM where I used db2inst1/inf0server.

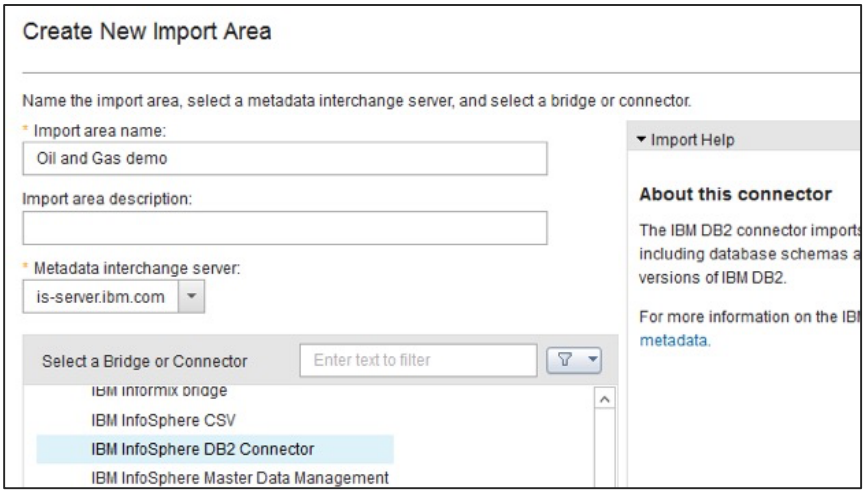
Hints for CAP users:

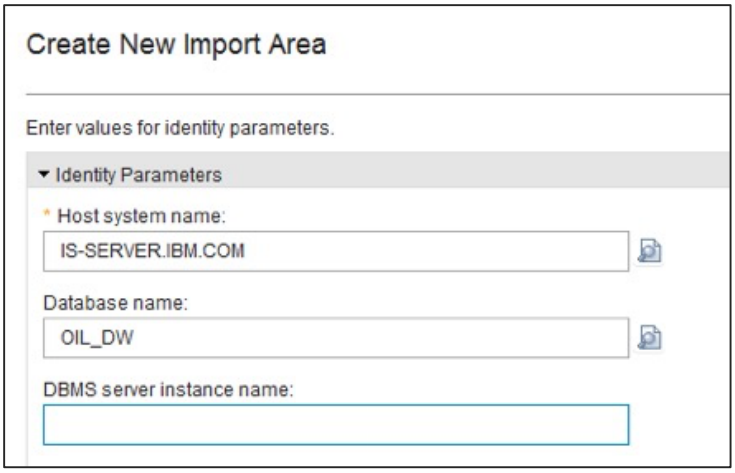
- Use RDP to connect to CAP1
  - Mac users can download "Microsoft RDP" from the App Store
  - Mac users: put the RDP port after the IP address in RDP setup, e.g. 169.45.105.204:3333
  - Mac users: Copy/paste from host to RDP session isn't supported. You can map a local folder to your CAP1 image via RDP folder redirection instead.
  - 

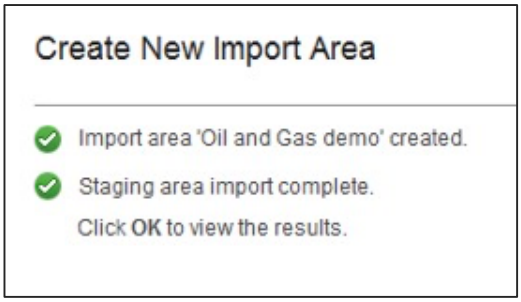
- OS username/password should be in your CAP confirmation email, e.g. capadmin / C@Pdemo4U!

5. Import the metadata via IMAM

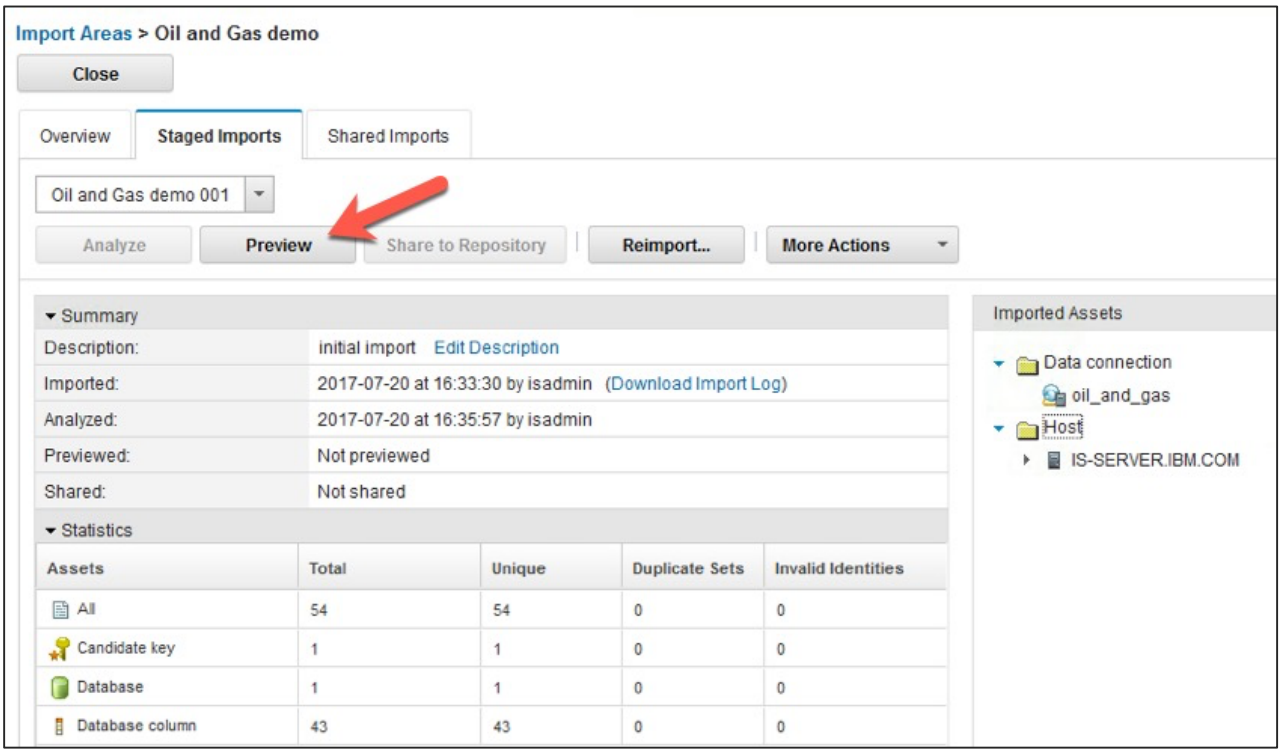
Once your database is ready to go, import and share the metadata from the `OIL_DW` database via IMAM. Use user db2inst1/inf0server in the connection parameters. The host is `IS-SERVER.IBM.COM`, the database server is DB2, and the database name is `OIL_DW`.

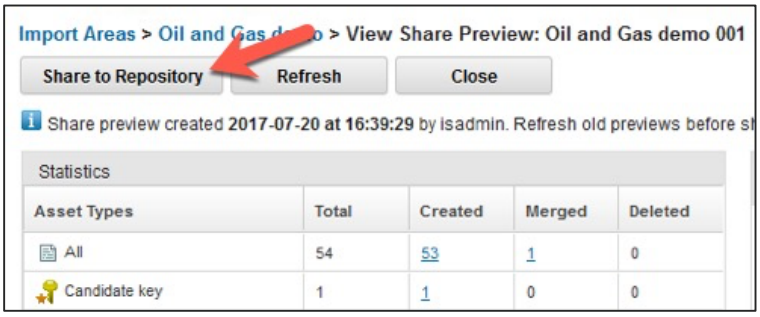






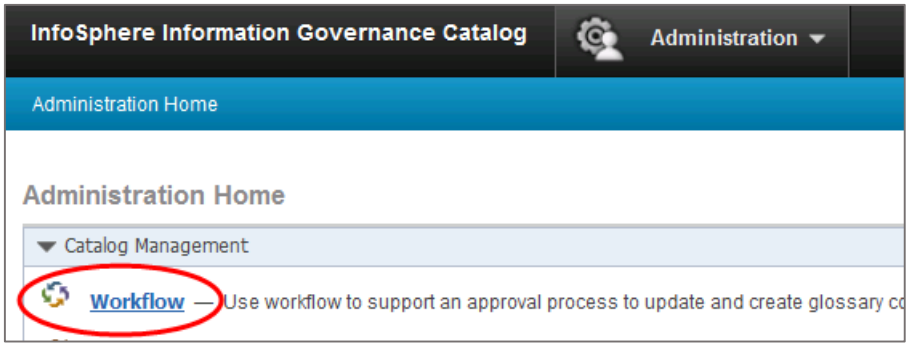
For the initial import you will need to **Preview** the import then **Share to Repository**. Note the number of assets in my import below as a sanity check.





6. ISTool IGC Import

Before importing, I recommend turning off workflow. If workflow is enabled, assets will be imported in draft state.



A full istool IGC export is in the file `istool_gasproduction_export.xml`. Copy the file to c:\ on your client (e.g. CAP1). For CAP1 I mapped my local c:\ drive to the image and copied the entire (uncompressed) demopackage folder.

Import `istool_gasproduction_export.xml` with istool and the command:

```
glossary import -dom is-server.ibm.com:9445 -u isadmin -p inf0server -f
"c:\istool_gasproduction_export.xml" -fm XML -mergemethod overwrite
```

CAP users: launch an istool command window from the programs list.

If you have any issues with the istool import, there is an alternate import file called `business-glossary-xml-export-nov-15.xml` which you can import via IGC under Administration -> Tools -> Import.

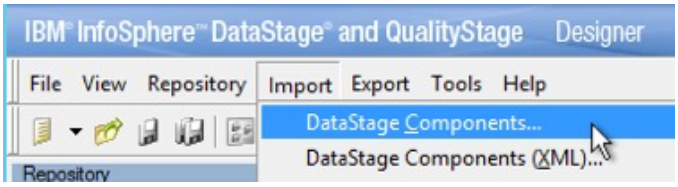
7. IGC Collection

The import did not create my collection, so create one for your demo with a name like “Well Assets”. Assign some of the demo terms and columns to the collection.

8. Create lineage in DataStage

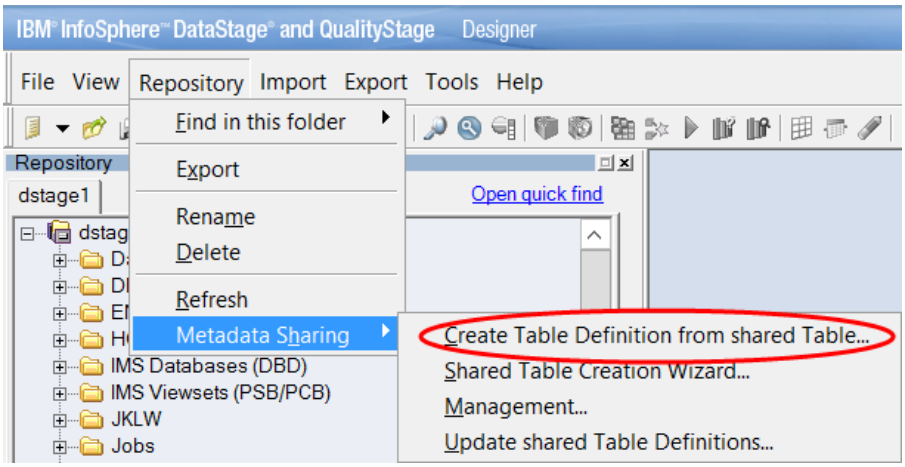
In DataStage you can import my project or create your own.

My DS project export is in the *dsexport* folder and can be imported directly from DataStage using the Import -> DataStage Components menu, then browsing to the *dsproject.dsx* file.

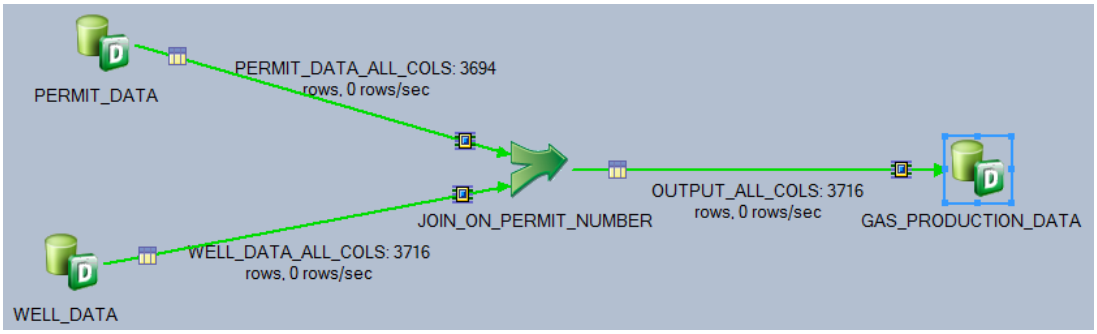


Once the import is complete you should have a project called `OIL_DW`.

To create your own project, you will need to import the shared table metadata and create/run a job.

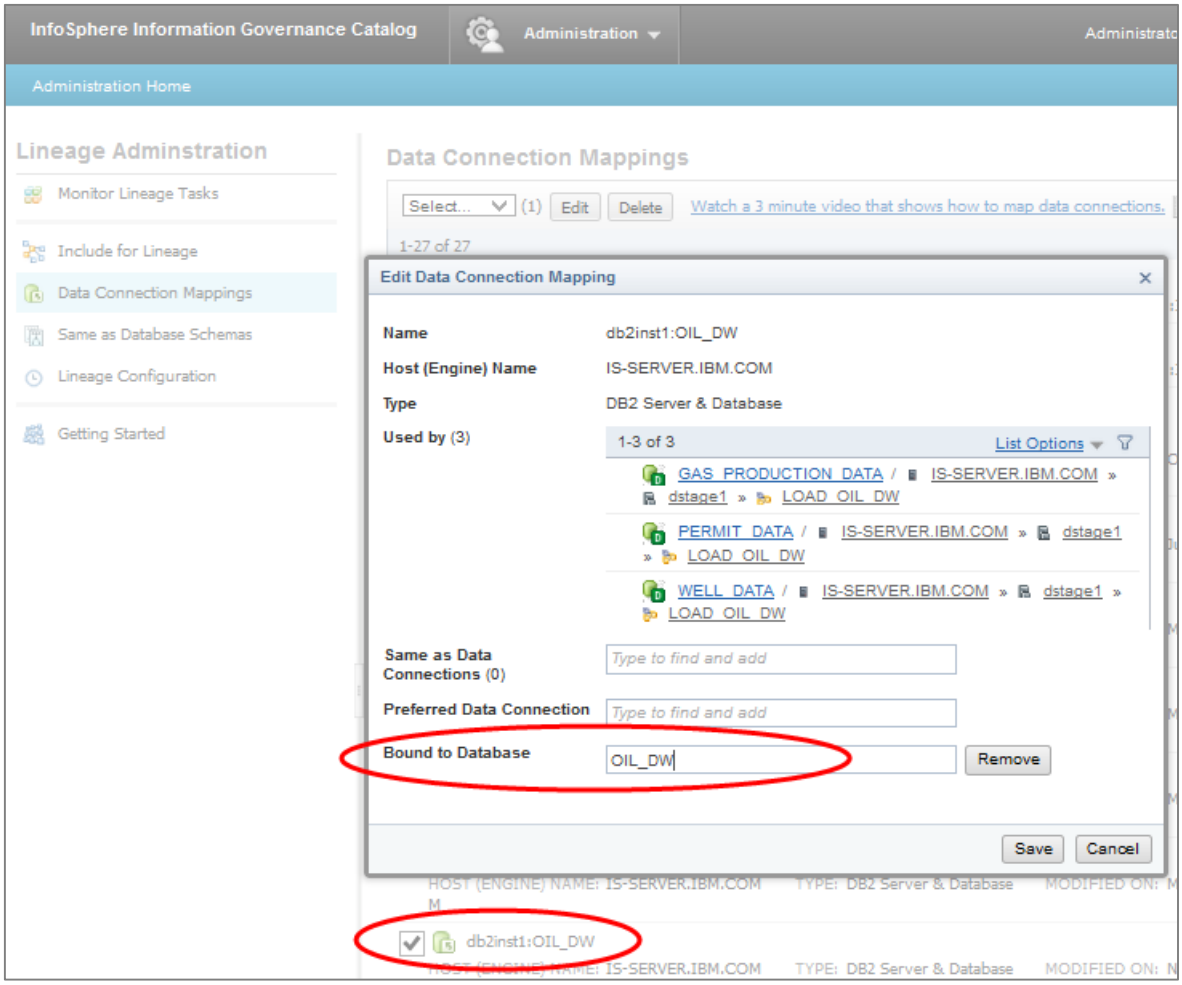


Create and run a DS job using your shared table definitions. I created a simple job joining `PERMIT_DATA` and `WELL_DATA` on `PERMIT_NUMBER` and writing the output to the `GAS_PRODUCTION_DATA` table. I used obvious names for the stages so they would make sense for the business analysts during the demo.



9. Map lineage in IGC

In order for lineage from your DS job to show in IGC you need to link the `OIL_DW` database in IGC to the `OIL_DW` connection (the connection won't show up in IGC until the DataStage job is run successfully or the project is imported). To do this in IGC go to: Administration -> Lineage Administration -> Data Connection Mappings. Edit the `db2inst1:OIL_DW` connection and enter `OIL_DW` in the “Bound to Database” field.



After doing the mapping, run lineage for the `GAS_PRODUCTION_DATA` table (you can find it assigned to the *Field* term) and you should have the lineage pictured below.

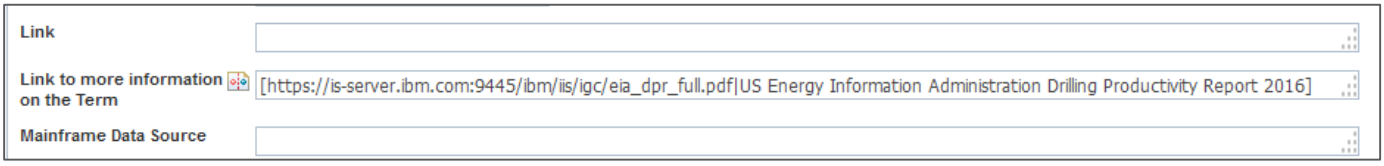
10. IGC PDF/document links in terms

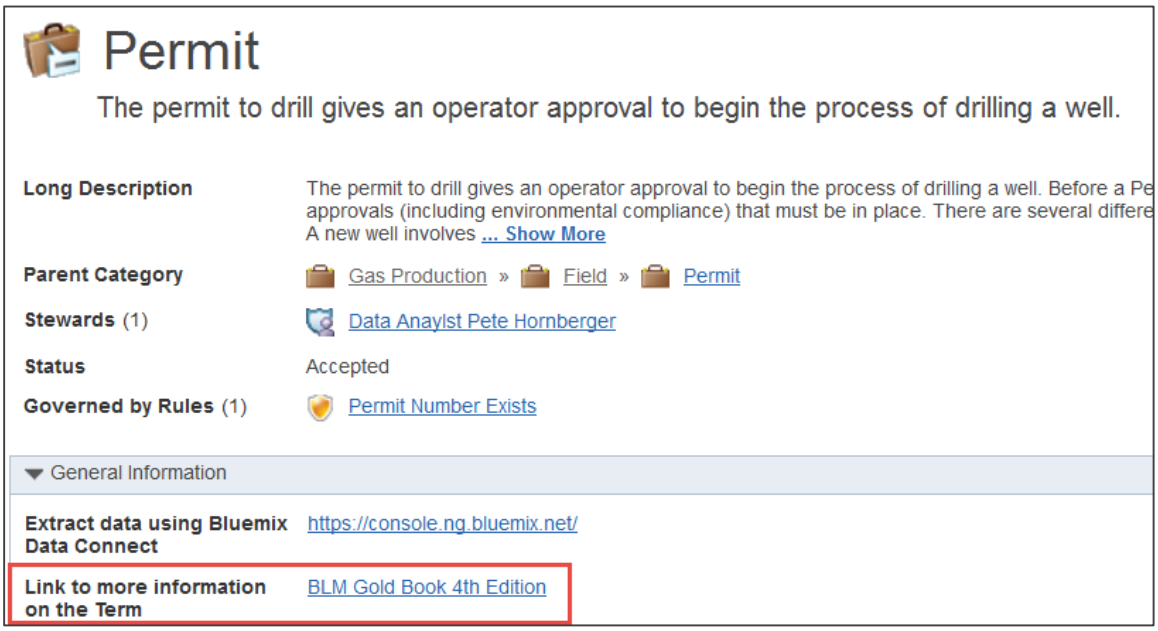
Copy the blm_gold_book.pdf and eia_pdr_full.pdf files to your client desktop and give them simple names, e.g. “BLM Gold Book”.

Check the *Permit* term in IGC to see if you need to link the PDF’s you previously copied to the WAS directory on the IIS server. You should have copied them to this directory in an earlier step:

/opt/IBM/WebSphere/AppServer/profiles/InfoSphere/installedApps/is-serverNode01Cell/igc-web.ear/igc-web.war

The links in the terms should have been imported but if they didn't or you need to edit them, use the format below and link to any term you feel appropriate for the demo. I linked to *field*, *permit*, and *well*.





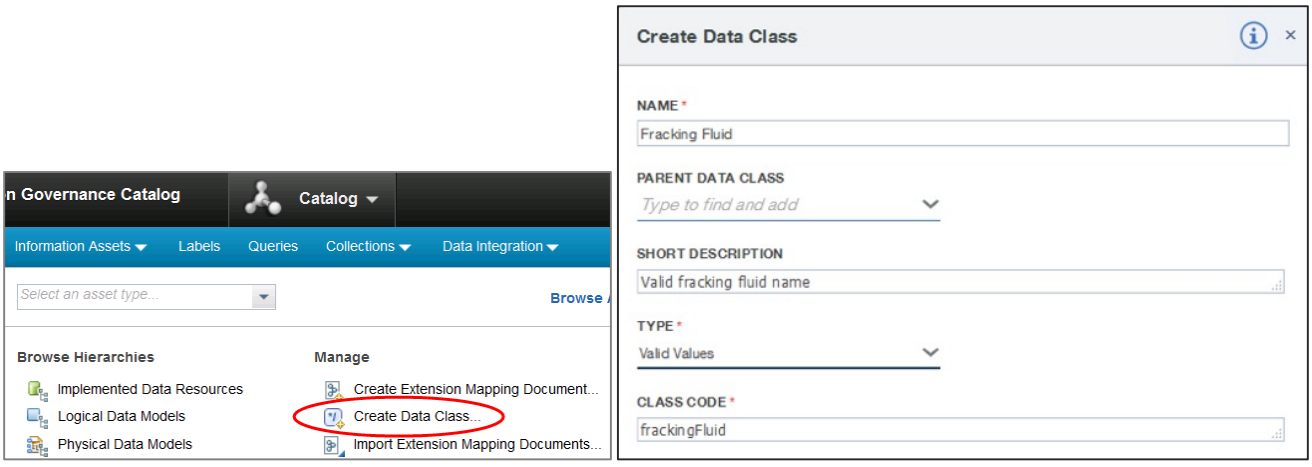
If your browser doesn't display the pdf, you may need to edit your browser settings to show PDF files in-line.

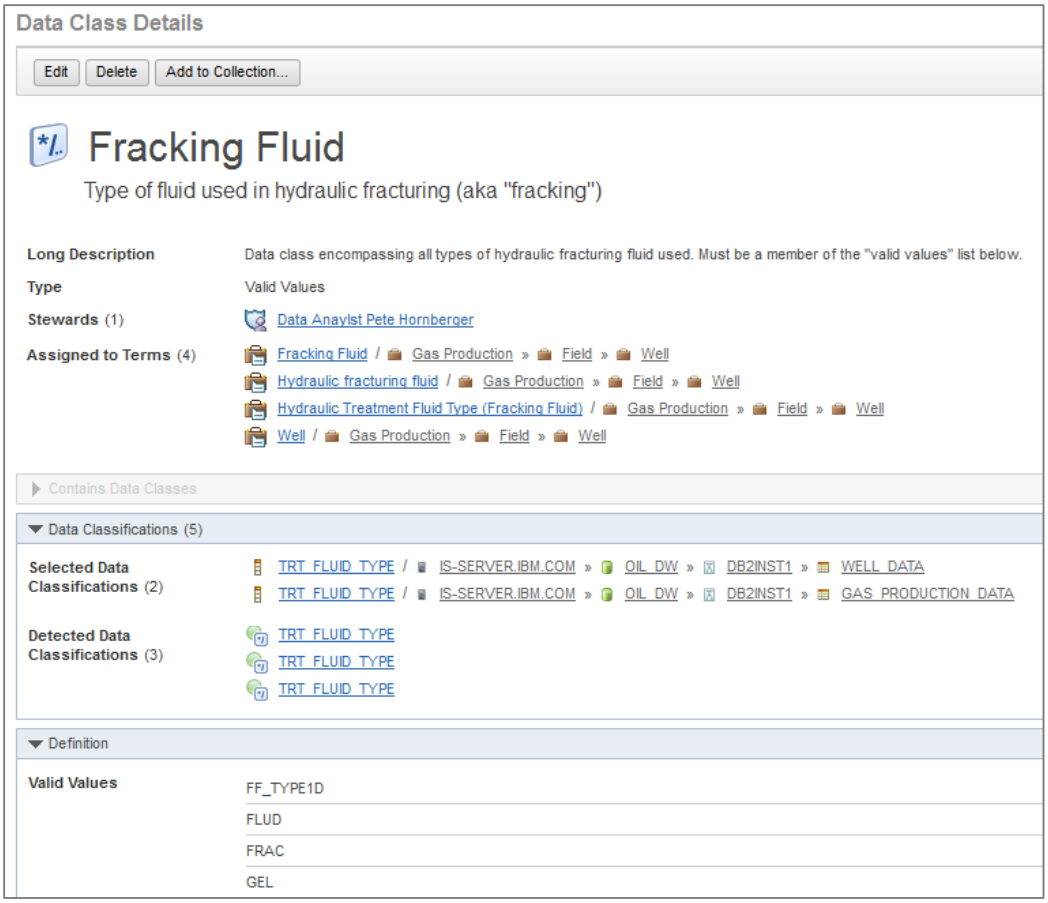
11. Create custom data class in IGC

My custom class did not come through in the import, so you should create it manually. Create a valid-values class in IGC called *Fracking Fluid* using the values from the `TRT_FLUID_TYPE` column in the `WELL_DATA` table. The values are `FF_TYPE1D, FF_TYPE2D, FLUD, FLUD_VAR3F, GEL, SLKW, U, X-LINKGEL.`

Assign the Fracking Fluid data class to the `TRT_FLUID_TYPE` column in both `WELL_DATA` and `GAS_PRODUCTION_DATA` tables. Also assign it to a few terms that will be easy to find in your demo, such as Well and Fracking Fluid. Be sure to check *Enabled: True* when defining your class.

See the image below for the links to define a custom class.





12. Import/create datarule in IA

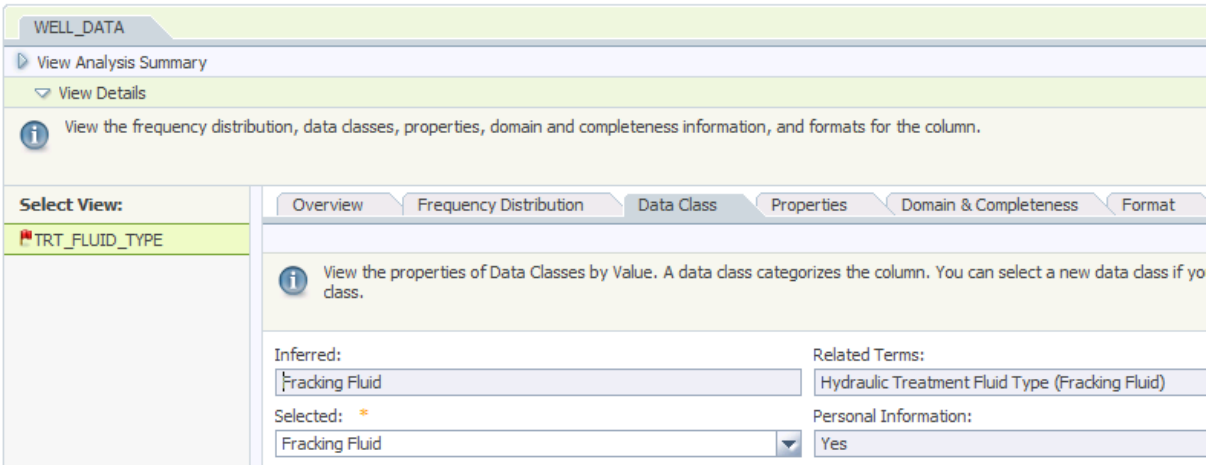
Copy the file `ia_oil_dw_export.isx` to your client image (e.g. CAP1) in the folder `c:\IBM\InformationServer\Clients\`

Use an istool command window to import with the command below. ***Note that the quotes at the end of the command are two single quotes, not one double-quote.*** Copy and paste if in doubt.

```
istool import -dom is-server.ibm.com:9445 -u isadmin -p inf0server -ar
ia_oil_dw_export.isx -ia ''
```

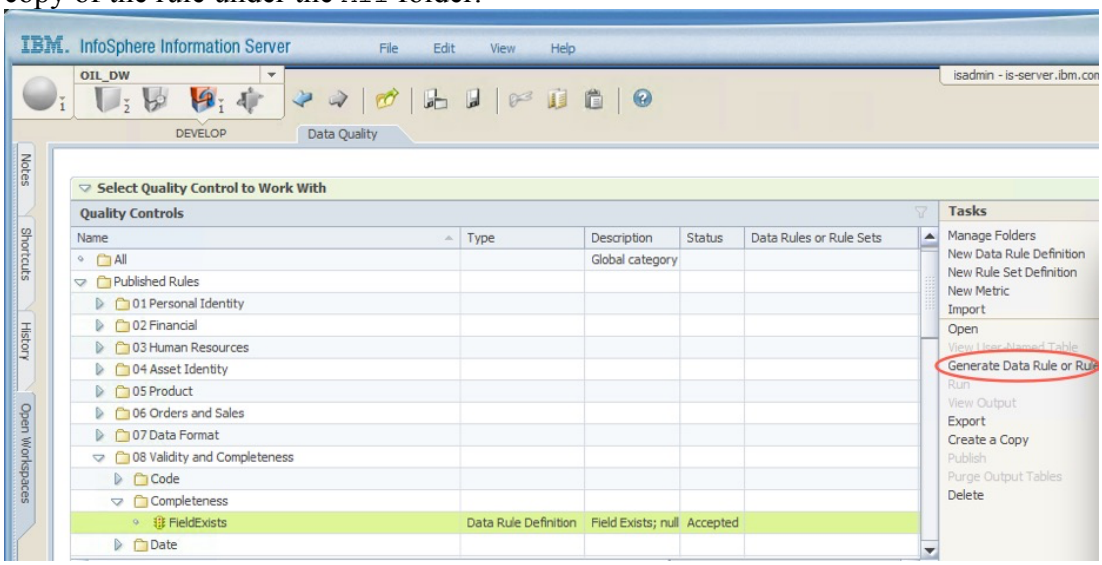
If you get an authorization error when running column analysis, granting the DB2 database and table permissions in the grant_db2_permissions.txt file in the demopackage/dbfiles folder may fix the issue.

Run column analyses on the `OIL_DW` tables to create data quality scores and column classification for your "Fracking Fluid" custom class. Verify that the `trt_fluid_type` column is correctly assigned to the `Fracking Fluid` data class.



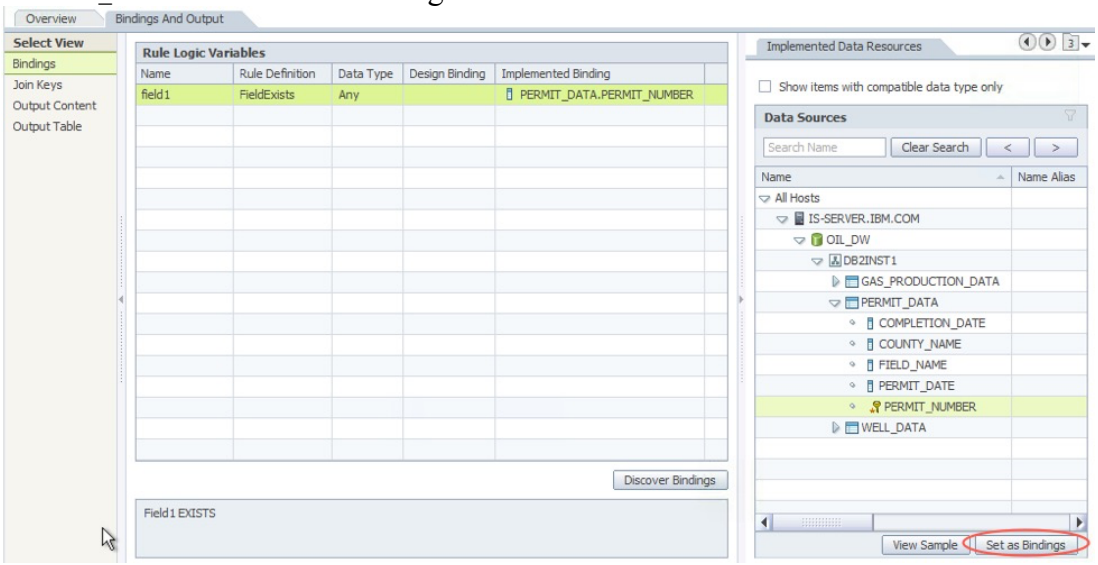
Manual instructions for creating the project and rules are below if you have any issues with the import.

1. Create a project call `OIL_DW` using the data source `OIL_DW` on host `IS-SERVER.IBM.COM`
2. Create two identical data rules for the `PERMIT_NUMBER` column in the `WELL_DATA` and `PERMIT_DATA` tables using the `FieldExists` global rule definition (found under published rules > 08 validity and completeness > completeness). When you click "Generate Data Rule…" with `FieldExists` highlighted, you be prompted to create a copy. Click ok, then you will see your copy of the rule under the `All` folder.

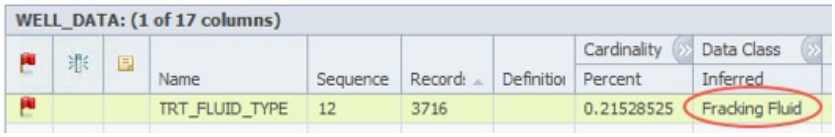


3. Click your copy of the `FieldExists` rule under the All folder, then click Generate Data Rule…
4. Give your data rule a useful name the business users will understand during your demo, like `PermitNumberExistsPermitData`. Add a data steward and owner, and set the status to Accepted. Under the Bindings and Output tab, select the PERMIT_NUMBER column of the

PERMIT_DATA table as the binding for the rule.

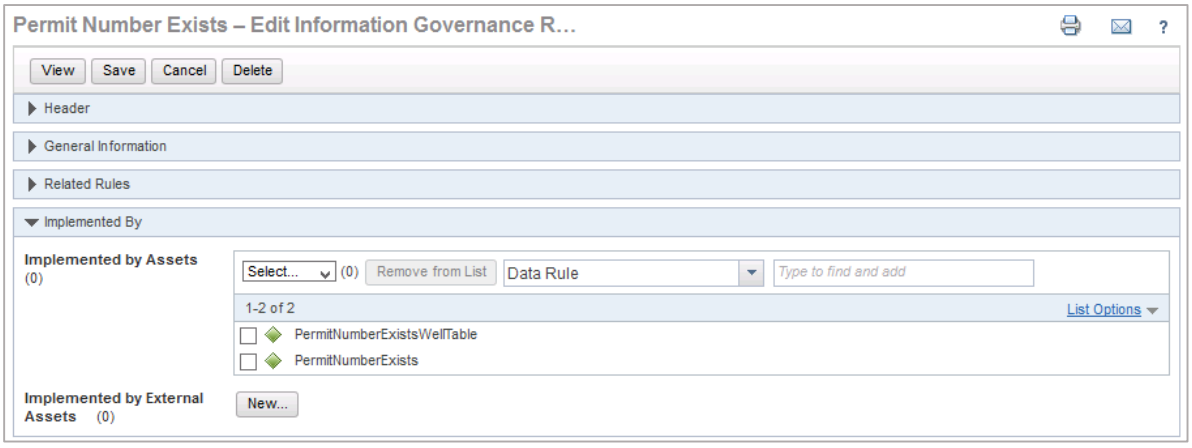


5. Validate, Save and Close your rule. Repeat the above steps to create an identical rule on the WELL_DATA table. Run your rules when finished, and view the output, which should show 100% met.
6. Run column analyses on the OIL_DW tables to create data quality scores and column classification for your "`Fracking Fluid`" custom class. Verify that the `trt_fluid_type` column is correctly assigned to the `Fracking Fluid` data class.



13. Assign the data rules to a governance rule in IGC

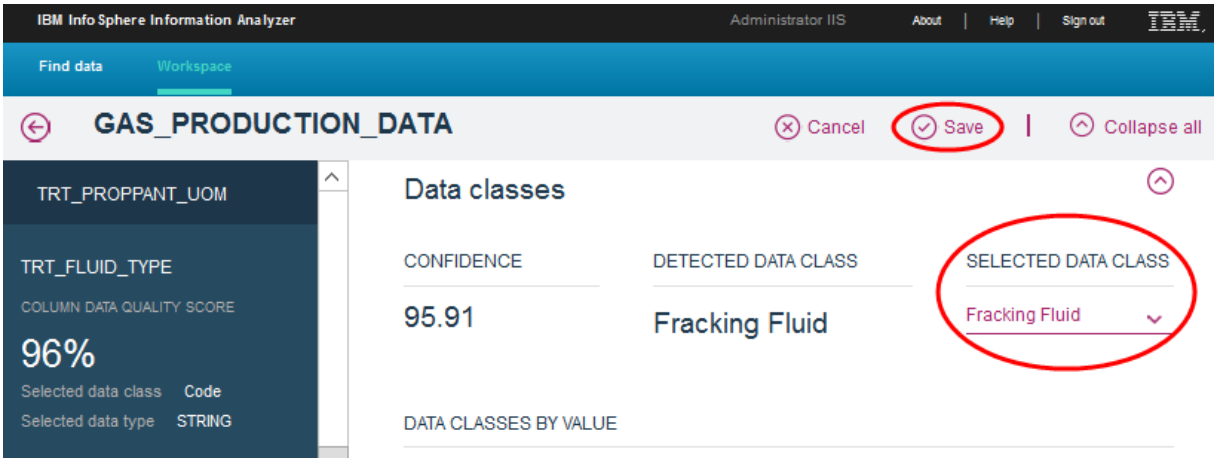
Once your data rules are ready, link them to the governance rule "`Permit Number Exists`" in IGC. The governance rule should have been imported; you can find it under the Permit, Field, and Well terms. If you don't have it, then create it and bind to the terms: Field, Permit, Permit Number, and Well. Also bind to technical assets such as the `PERMIT_NUMBER` column in the `WELL_DATA` and `PERMIT_DATA` tables, along with the tables themselves.



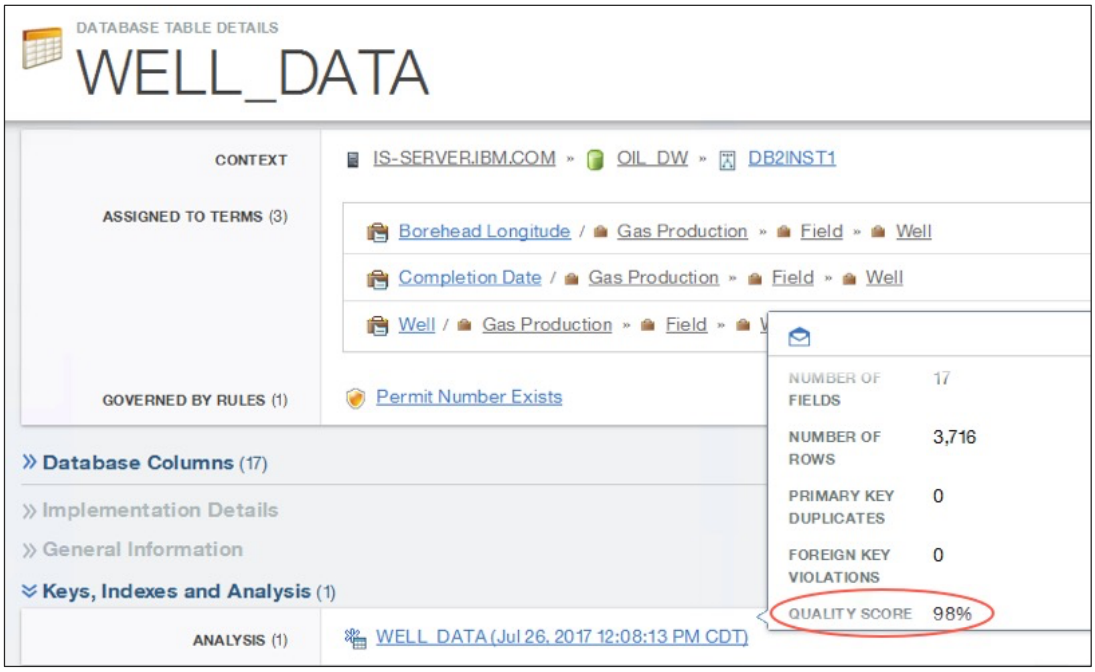
14. Analyze and verify tables in IA thin client

In the IA thin client open the OIL_DW workspace (or whatever you named your project in IA) and analyze/publish all the tables. Be sure to analyze and publish the GAS_PRODUCTION_DATA table.

You may need to manually set the custom “Fracking Fluid” data class in IA. Save and analyze/publish after your changes.



Once you’ve analyzed/published the tables in the IA thin client, the analysis results should be available in IGC:



15. Configure Bluemix Data Connect

If you don’t have a Bluemix or Watson Analytics account, you will need:

1. An IBM ID (*NOT* your W3 ID)
   a. If you do not have an IBM ID, create one at the IBM ID registration webpage: https://www.ibm.com/account/profile/us?page=reg
2. Your IBM ID to be linked to your W3 ID
   a. This step may no longer be necessary
   b. If having problems with signing on, you can link them at the Central Sign On webpage: https://w3-03.sso.ibm.com/tools/cso/index.jsp
3. An IBM Bluemix account (https://console.ng.bluemix.net/)
   a. If you have not used Bluemix, first attempt to LOG IN with your IBM ID (*NOT* your W3 ID)
   b. If unsuccessful, then you must SIGN UP
4. An IBM Watson Analytics account (https://watson.analytics.ibmcloud.com/)

a. Again, attempt to LOG IN with your IBM ID
b. Otherwise, you must TRY IT FOR FREE

If you're new to Data Connect, I recommend working through Rick Buglio's lab at: https://w3-connections.ibm.com/files/app#/file/e3bcbcff-2f1e-40ea-aec9-6a14f8cd97a2

Also see Rick's Connections page: https://w3-connections.ibm.com/profiles/html/profileView.do?userid=164578c0-5775-102b-8e72-f4f7902a5c09

For the demo, I show Bluemix Data Connect for filtering and joining the data. You could configure a Data Connect connection directly to your db2 database in the IIS image. Instead, I just loaded the `PERMIT_DATA` and `WELL_DATA` tables in dashDB and used that for the Data Connect part of the demo. Use the files in the demopackage/dbfiles folder to create and load your dashDB database if you want to do the same.

Once you have dashDB and/or Data Connect configured, join `WELL_DATA` and `PERMIT_DATA` and output the result to Watson Analytics. Change the column names in Data Connect to more understandable English terms to facilitate the Watson part of the demo. A description of the columns is in the 2nd tab of the spreadsheet "Anonymous Gas Production Data v2.xlsx" (spreadsheet and data courtesy of Shad Griffin).

Create an identical job using the "Data Flow" interface of Data Connect to show customers the alternate interface.

16. Verify Watson Analytics

Log on to Watson Analytics and verify that your dataset works. Your dataset will be in the *Personal* folder.

For the Watson demo, I start off by typing in the question "`first 12 months gas by frac fluid type`" and choose the "Packed Bubble" chart.