EPSG-Oracle Plugin

Module Maintainer:	Jody Garnett
Status:	Construction of a epsg-oracle CRSAuthority that will work in a Java EE environment
Email Help:	jgarnett@refractions.net
Plug-in:	CRSAuthority
User Docs:	EPSG Oracle Plugin

Research

The epsg-oracle plugin is an experiment focused on cleaning up the JDBC Authority abstract classes to ensure the DataSource can be provided.

IP Review

- http://svn.geotools.org/geotools/trunk/gt/modules/unsupported/epsg-oracle/review.txt

Development

Actually Using Oracle

To develop this module you will need to follow the optional section in the developers guide for Oracle. This will place an oracle jdbc driver into your local maven repository where it can then be used during the online tests.

```
C:> cd C:\oracle\product\10.2.0\jdbc\lib
C:\oracle\product\10.2.0\jdbc\lib>mvn
install:install-file -Dfile=ojdbc14.jar
       -DgroupId=com.oracle
-DartifactId=ojdbc14 -Dversion=10.2.0
-Dpackaging=jar
```

The choice of maven profile (to use oracle or to not use oracle) is controlled with a **oracle** property.

```
mvn clean install -Doracle=true
```

Or to set up for testing in eclipse:

```
mvn eclipse:eclipse -Doracle=true
```

Using Online Tests

The other thing you will need to do for online tests is place a **oracle.properties** file describing **your** database in the magic location below.

C:\Documents and Settings\Jody\.geotools\epsg\oracle.properties

```
user=jody
password=***
url=jdbc:oracle:thin:@bilbi:1521:orcl
```

You can then run the online tests:

```
mvn -Doracle.jdbc=true test -P online
```

Ideas

Some ideas on the use of DataSource in GeoTools (and how we can set up a testing environment are recorded here): J2EE and Connection Pools

In addition the following problems have been noted ...

`org.geotools.referencing.factory`:

- `AbstractAuthorityFactory` - some features are just package-visible (`org.geotools.referencing.factory`)
  - They were package-private on purpose. They are usually implementation of public API defined somewhere else. We would need to know why access to those implementation class are wanted, and if there is any way to adress the need without making the implementation class public.
- `BufferedAuthorityFactory` had problem with `put(Object, Object)` not caching
  - Caching should work, at least in 2.4-SNAPSHOT. Need more details about why caching is considered to not work.

`org.geotools.referencing.factory.epsg`:

- `AuthorityCodes` is only package visisble

    - See previous comment about implementation class.
- `BursaWolfInfo` is only package visible
    - Should **NOT** be public. This is a very low level implementation detail.
- `DataSource` - ⚠️ this is WRONG we cannot extend `DataSource` on our own (we need to use one provided by others)
    - Already deprecated in 2.4-SNAPSHOT for many months. The only reason why it still there is to respect the "deprecate first, delete after next release" cycle.
- `DefaultFactory` requirements
    - Some kind of `DATASOURCE_NAME` to work in JBoss (should be configurable)
    - This is already configurable in 2.4-SNAPSHOT through `Hints.EPSG_DATASOURCE_NAME`.
    - Require `DEFAULT_BUFFER_MAX` and `DEFAULT_PRIORITY_DEC` as constructor parameters, either as `DefaultFactory(Hints, int, int)` to expose the parent constructor, or as new Hints of their own
    - `createFactory()` needs to wrap the `DataSource` obtained from JNDI into a class that implements the local `DataSource` interface.
    - Not needed anymore, since the local `DataSource` interface is now deprecated.
    - `createFactory()` cannot bind the DataSource into JNDI (will not always have permission)
    - 2.4-SNAPSHOT already do not bind anymore.
    - `createBackingStore()` needs to close the JDBC connection obtained from the `DataSource` (ther eby returning it to the pool)
    - We already close the connection (since 2.2 I believe), but after a timeout. The default timeout is 20 minutes. We can change that to a lower level, for example 2 minutes.
    - `FactoryUsingAnsiSQL` - should not cache the connection (the DataSource will do that)
    - We keep the connection until it is closed by the above-cited timeout. We recreate it from the `DataSource` after the timeout. 2.4-SNAPSHOT already do that.
    - `FactoryUsingOracleSQL` - addition to `'AS'`, the Oracle reserved word `'FILE'` is replaced in the query Strings. This necessary because one query uses `'FILE'` to rename a column in a `SELECT` for a column. This factory is used by the `AbstractDataSource`
    - `FactoryUsingSQL` - also caches the Connection instead of DataSource
    - `TableInfo` - not public
    - Again this is a low-level implementation detail that should never be public.

The following bug reports are important:

- http://jira.codehaus.org/browse/GEOT-909 - EPSG DefaultFactory does not work in an EJB environment
    - Need to supply a `DATASOURCE_NAME` hint - should be of the form `"java:EPSG"` to keep JBoss happy
    - Already done in 2.4-SNAPSHOT.
    - `FactoryUsingSQL` should not remove connection from a pool like `FactoryUsingSQL` does (need to connect and close on each use). Needed for a multi user environment like Java EE.
    - The connection is already closed after a timeout (20 minutes by default, but we can change that). It was already working like that in 2.2.
    - Need to either use a single factory (may become a bottleneck) or use a pool of factories (will need to fix the `FactoryUsingSQL` connection cache first)
    - We need a single instance of `BufferedAuthorityFactory` if we want caching to work. It would be possible to update `BufferedAuthorityFactory` in order to handle many instances of `FactoryUsingSQL`, but I would like to see if there is really a bottleneck there before to introduce this complication. I was assuming that in typical cases, a user will work with a small set of CRS (~5) appropriate for the area he is working on, in which case many instances of `FactoryUsingSQL` will not give us much.
- http://jira.codehaus.org/browse/GEOT-908 - FactoryUsingSQL uses Oracle reserved word in query
    - fixed?
- http://jira.codehaus.org/browse/GEOT-907 - Caching in BufferedAuthorityFactory does not work
    - fixed?

Outstanding Issues

This is a research module, and is not currently tracked using Jira. This is however associated with **referencing**:

> The JIRA server does not support trust requests. Issues have been retrieved anonymously.You can set the macro to always use an anonymous request by setting the `anonymous` parameter to `true`

JIRA Issues (80 issues)

Type	Key	Summary	Assignee	Reporter	Priority	Status	Resolution	Created	Updated	Due
	GEOT-4319	NADCONTransform does not work with ClasspathGridShiftLocator	Andrea Aime	Lucas Madar		Open	Unresolved	Nov 15, 2012	Nov 15, 2012	
	GEOT-1862	Build Failure of JDK1.6.0_06 with no JAI or ImageIO	Simone Giannecchini	Jody Garnett		Open	Unresolved	Jun 23, 2008	May 16, 2010	
	GEOT-1553	CRS equals comparion used by WorldImageReader isn't working	Simone Giannecchini	Judd Taylor		Open	Unresolved	Oct 29, 2007	Jun 01, 2012	
	GEOT-1660	An unsupported prj file	Unassigned	Jody Garnett		Reopened	Unresolved	Jan 09, 2008	Jun 01, 2012	
	GEOT-1578	Flipped axis CRS do miss some information compared to the	Unassigned	Andrea Aime		Open	Unresolved	Nov 11, 2007	May 21, 2010	

		original ones								
	GEOT-1783	OperationNotFoundException when sourceCRS is a ProjectedCRS + VerticalCRS	Unassigned	Martin Desruisseaux		Open	Unresolved	Apr 24, 2008	Jun 01, 2012	
	GEOT-1710	urn:ogc:def:crs:OGC:1.3:CRS84 is not recognized by the referencing subsystem	Unassigned	Andrea Aime		Open	Unresolved	Feb 15, 2008	May 21, 2010	
	GEOT-1704	FORCE_AXIS_ORDER_HONORING does not work if longitude first is provided as an hint instead as a system variable	Unassigned	Andrea Aime		Open	Unresolved	Feb 11, 2008	May 21, 2010	
	GEOT-1745	MapProjection: relax coordinate checks/ make them configurable	Unassigned	Andrea Aime		Reopened	Unresolved	Mar 20, 2008	May 21, 2010	

	GEOT-1835	EPSG factory needs to handle primary keys as integers	Unassigned	Martin Desruisseaux		Open	Unresolved	May 28, 2008	May 21, 2010	
	GEOT-2363	Postgres EPSG factory won't work against Postgres 8.3	Unassigned	Andrea Aime		Open	Unresolved	Mar 01, 2009	May 21, 2010	
	GEOT-2084	Consider making GeographicBoundingBoxImpl extend BoundingBox as well	Simone Giannecchini	Simone Giannecchini		Open	Unresolved	Oct 18, 2008	Jul 13, 2010	
	GEOT-2144	ScriptTest failure on Linux w/ Java 6	Unassigned	Jody Garnett		Open	Unresolved	Nov 09, 2008	Jun 01, 2012	
	GEOT-2565	CRS.envelope fails if the area of validity spans the antimeridian	Andrea Aime	Andrea Aime		Open	Unresolved	Jun 22, 2009	Oct 13, 2009	
	GEOT-2310	Add support for the azymuthal equidistant projection	Unassigned	Andrea Aime		Open	Unresolved	Jan 27, 2009	Jun 01, 2012	
	GEOT-1849	Tolerance error	Unassigned	Jon Blower		Open	Unresolved	Jun 11, 2008	Jun 01, 2012	

		when using EPSG:3408								
	GEOT-2902	Get back support for plate carré and similar projections	Andrea Aime	Andrea Aime		Open	Unresolved	Dec 21, 2009	Jun 01, 2012	
	GEOT-2939	Add support for the Gall stereographics projection	Andrea Aime	Andrea Aime		Open	Unresolved	Jan 31, 2010	Jun 01, 2012	
	GEOT-2933	Add support for the geostationary satellite projection	Andrea Aime	Andrea Aime		Open	Unresolved	Jan 27, 2010	Jun 01, 2012	
	GEOT-2934	CRS envelope transform may fail with an assertion if the target and source crs have an identity transform but different datum name	Andrea Aime	Andrea Aime		Open	Unresolved	Jan 27, 2010	Jun 01, 2012	
	GEOT-3123	Add Find functionality to	Unassigned	Jody Garnett		Open	Unresolved	May 31, 2010	Jun 01, 2012	

		Abstract EpsgMediator								
	GEOT-1182	Add support for cylindrical equidistant on elliptical datum	Simone Giannecchini	Andrea Aime		Open	Unresolved	Mar 05, 2007	Jan 20, 2011	
	GEOT-1179	Bursa-Wolf parameters selection in the EPSG database	Unassigned	Martin Desruisseaux		Open	Unresolved	Mar 02, 2007	Aug 27, 2012	
	GEOT-1217	Allow Formattable objects to be turned into WKT specifying both indent and strictness	Unassigned	Andrea Aime		Open	Unresolved	Apr 02, 2007	May 21, 2010	
	GEOT-909	EPSG DefaultFactory does not work in an EJB environment	Unassigned	Felix Mayer		Open	Unresolved	Aug 02, 2006	Jun 01, 2012	
	GEOT-3443	Need support for transformation from 2D to 3D CRS	Unassigned	Farrukh Najmi		Open	Unresolved	Feb 20, 2011	Feb 22, 2011	

	GEOT-4207	Tolerance check is itself inaccurate	Andrea Aime	Mark Thornton		Open	Unresolved	Jul 18, 2012	Nov 29, 2012	
	GEOT-4128	Have the default coordinate operation factory use the fallback mechanism provided by ManyAuthoritiesFactory	Andrea Aime	Andrea Aime		Open	Unresolved	May 06, 2012	May 06, 2012	
	GEOT-4359	Going from 2d to 3d CRS without exceptions	Andrea Aime	Jody Garnett		Open	Unresolved	Dec 27, 2012	Dec 27, 2012	
	GEOT-790	CRS Factories can block on loss of network connection.	Unassigned	Jesse Eichar		Open	Unresolved	Dec 19, 2005	Jun 01, 2012	
	GEOT-640	Avoid (OTHER,EAST,NORTH) axis directions for GeocentricCRS when possible	Unassigned	Martin Desruisseaux		Open	Unresolved	Jul 27, 2005	Jun 01, 2012	
	GEOT-671	Some coordinate transformation	Daniele Romagnoli	Alex Petkov		In Progress	Unresolved	Aug 23, 2005	Jan 20, 2011	

		codes are not supported.								
	GEOT-3571	Generate prj files with ESRI friendly nomenclature	Andrea Aime	Andrea Aime		Open	Unresolved	May 07, 2011	Jan 21, 2012	
	GEOT-3714	CRS.decode(CRS.asSRS(crs)) may lose the axis ordering	Andrea Aime	Andrea Aime		Open	Unresolved	Jul 10, 2011	Jul 10, 2011	
	GEOT-3467	MathTransform JTS	Jody Garnett	Jody Garnett		Open	Unresolved	Mar 12, 2011	Mar 13, 2011	
	GEOT-352	Need transformation from a geoidal to an ellipsoidal height	Unassigned	Martin Desruisseaux		Open	Unresolved	Dec 11, 2004	Jun 01, 2012	
	GEOT-3634	General Envelope transform using densification	Jody Garnett	Jody Garnett		Open	Unresolved	Jun 07, 2011	Feb 25, 2013	
	GEOT-4447	Problems projecting from EPSG 27572 to EPSG:4326	Andrea Aime	Guéganno Alexis		Open	Unresolved	Apr 11, 2013	Apr 11, 2013	
	GEOT-1882	plugin/epsg-extension esri/extn.properties need	Unassigned	Adrian Custer		Open	Unresolved	Jul 04, 2008	Jun 01, 2012	

		confirmation of origin								
	GEOT-1512	Add support for EXTENSION[name,value] elements in WKT parsing	Unassigned	Martin Desruisseaux		Open	Unresolved	Oct 15, 2007	Jun 01, 2012	
	GEOT-1513	Choose Hints default according KEY_RENDERING value	Unassigned	Martin Desruisseaux		Open	Unresolved	Oct 15, 2007	Jun 01, 2012	
	GEOT-1554	Orhographic reprojection fails if given an elliptical datum in the CRS	Unassigned	Judd Taylor		Open	Unresolved	Oct 29, 2007	Jun 01, 2012	
	GEOT-1495	WKT parser should emmit a warning when a unit is incompatible with an axis	Unassigned	Martin Desruisseaux		Open	Unresolved	Sep 14, 2007	Jun 01, 2012	
	GEOT-1656	Remove hack from WarpTransform2D when JAI 1.1.4 will be released	Simone Giannecchini	Simone Giannecchini		Open	Unresolved	Jan 04, 2008	Jun 01, 2012	
	GEOT-1	Referen	Unassig	Ashraf			Unresolv	Mar 03,	Jun 01,	

	721	ced Envelope swaps x-values with y-values after a few calls to the class using it	ned	Memon		Open	ed	2008	2012	
	GEOT-1724	General Envelope should accepts envelopes crossing the antimeridian	Unassigned	Martin Desruisseaux		Open	Unresolved	Mar 06, 2008	Jun 01, 2012	
	GEOT-1429	Add CRS:1 and CRS:88 authority codes	Unassigned	Martin Desruisseaux		Open	Unresolved	Aug 14, 2007	May 21, 2010	
	GEOT-1428	This coordref test fails!!	Unassigned	Rafal Glowinski		Open	Unresolved	Aug 13, 2007	Jun 01, 2012	
	GEOT-1425	Coordinate System Transformation Error?	Unassigned	Rafal Glowinski		Open	Unresolved	Aug 10, 2007	Jun 01, 2012	
	GEOT-1832	Move spherical parameters out of LambertAzimuthalEqualArea.Provider	Unassigned	Martin Desruisseaux		Open	Unresolved	May 23, 2008	May 21, 2010	
	GEOT-1827	Clean the various EPS	Unassigned	Martin Desruisseaux		Open	Unresolved	May 21, 2008	May 21, 2010	

		thresholds in MapProjection subclasses								
	GEOT-1826	EPSG:102172 is incorrect	Unassigned	Shaun Forbes		Open	Unresolved	May 19, 2008	Jun 01, 2012	
	GEOT-2353	Geotools-generated prj file incompatible with ESRI ArcMap	Andrea Aime	Larry Reeder		Open	Unresolved	Feb 20, 2009	Jun 01, 2012	
	GEOT-2117	Review GeoToolkit fixes	Unassigned	Martin Desruisseaux		Open	Unresolved	Nov 02, 2008	Nov 24, 2011	
	GEOT-2405	Erroneous ESRI aliases in projection parameter names	Unassigned	Martin Desruisseaux		Open	Unresolved	Mar 23, 2009	Jun 01, 2012	
	GEOT-2959	WKT referencing module does not close input streams used to load epsg file	Simone Giannecchini	Joshua Portway		Open	Unresolved	Feb 22, 2010	Jun 01, 2012	
	GEOT-2970	Geotools doesn't fall back to embedded hsqldb when jndi datasour	Unassigned	gtuser		Open	Unresolved	Mar 09, 2010	Jun 01, 2012	

		ce lookup fails								
	GEOT-1164	Make the WKT parser tolerant to Oracle syntax	Unassigned	Martin Desruisseaux		Reopened	Unresolved	Feb 15, 2007	Jun 01, 2012	
	GEOT-1268	Add a MapProjection.equivalent(MapProjection) method	Unassigned	Saul Farber		Open	Unresolved	May 14, 2007	Jun 01, 2012	
	GEOT-3419	Support for Google Projection's unofficial code EPSG:900913 in gt-epsg-extension	Andrea Aime	Milton Jonathan		Reopened	Unresolved	Feb 07, 2011	Sep 16, 2012	
	GEOT-4158	epsg-hsql: Update EPSG database to v7.11	Andrea Aime	Oscar Fonts		Open	Unresolved	May 28, 2012	May 28, 2012	
	GEOT-813	Filter returned referencing codes, f.e. 2D only	Unassigned	Matthias Basler		Open	Unresolved	Mar 02, 2006	Jun 01, 2012	
	GEOT-522	LocalizationGridTransform2D should defines	Simone Giannecchini	Martin Desruisseaux		Open	Unresolved	May 05, 2005	Jun 01, 2012	

		a WarpGrid								
	GEOT-598	NADCON transform need to cache the grid files in some temporary directory	Unassigned	Martin Desruisseaux		Open	Unresolved	Jun 26, 2005	Jun 01, 2012	
	GEOT-823	"Timer already cancelled" exception in DeferredAuthorityFactory	Unassigned	Martin Desruisseaux		Open	Unresolved	Mar 16, 2006	Jun 01, 2012	
	GEOT-403	Failures in OpenGIS test scripts	Unassigned	Martin Desruisseaux		Open	Unresolved	Feb 07, 2005	Jun 01, 2012	
	GEOT-3570	Only rendering 1/2 geotiff	Jody Garnett	Jody Garnett		Open	Unresolved	May 07, 2011	Apr 19, 2012	
	GEOT-3588	Wrong conversion when using a vertical CRS and feet	Andrea Aime	Nils Grøstad		Open	Unresolved	May 16, 2011	May 16, 2011	
	GEOT-3653	CRS transform assume GeneralEnvelope	Unassigned	Jody Garnett		Open	Unresolved	Jun 15, 2011	Jun 19, 2011	
	GEOT-3534	Winkel Tripel projection and	Unassigned	Alexander Karnstedt		Open	Unresolved	Apr 20, 2011	May 22, 2011	

		SVG rendering problems								
	GEOT-3472	Replace GeodeticCalculator.getGeodeticCurve	Andrea Aime	Michael Bedward		Open	Unresolved	Mar 14, 2011	Oct 23, 2012	
	GEOT-121	Port the last 2 projections from proj4j to cts-coordtrans	Unassigned	Rueben Schulz		Open	Unresolved	Mar 13, 2004	Jun 01, 2012	
	GEOT-401	CompoundCRS[Geographic/ProjectedCRS, VerticalCRS] should be treated as 3D-Geographic/ProjectedCRS	Unassigned	Martin Desruisseaux		Open	Unresolved	Feb 07, 2005	Jun 01, 2012	
	GEOT-380	NADCONTransform does not deal with grids crossing +-180 longitude	Rueben Schulz	Rueben Schulz		Open	Unresolved	Jan 22, 2005	Jun 01, 2012	
	GEOT-353	Add DatumAuthorityFactory implementation for	Unassigned	Martin Desruisseaux		Open	Unresolved	Dec 12, 2004	Jun 01, 2012	

		ISO-19775								
	GEOT-4459	Degenerate triangles from Delaunay triangular interferein rubbersheettransform builder	Andrea Aime	Frank Warmerdam		Open	Unresolved	May 01, 2013	May 01, 2013	
	GEOT-1307	Consider "osgb" as an authority	Unassigned	Pierrick Brihaye		Open	Unresolved	Jun 13, 2007	Jun 01, 2012	
	GEOT-584	spherical transverse mercator bug	Rueben Schulz	Rueben Schulz		Open	Unresolved	Jun 15, 2005	Jun 01, 2012	
	GEOT-411	[Abridged] Molodenski transforms should accept 'dim_source' and 'dim_target' arguments	Unassigned	Martin Desruisseaux		Open	Unresolved	Feb 10, 2005	Jun 01, 2012	
	GEOT-4260	Mapped Position.toString() incomplete	Andrea Aime	Frank Warmerdam		Open	Unresolved	Sep 17, 2012	May 03, 2013	