Release Notes 2.5.0

g9 2.5.0

September 9, 2016

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1 News and Changes

1.1 Maintain JDBC drivers

g9 2.4.0 added support for database schema import and a small predefined set of JDBC drivers were available. From this version you may define your own JDBC driver. It is available from the Database Model Import wizard with the button [Maintain JDBC Drivers]. Some drivers are preset as shown in the dialogs for Oracle and MySQL drivers below:
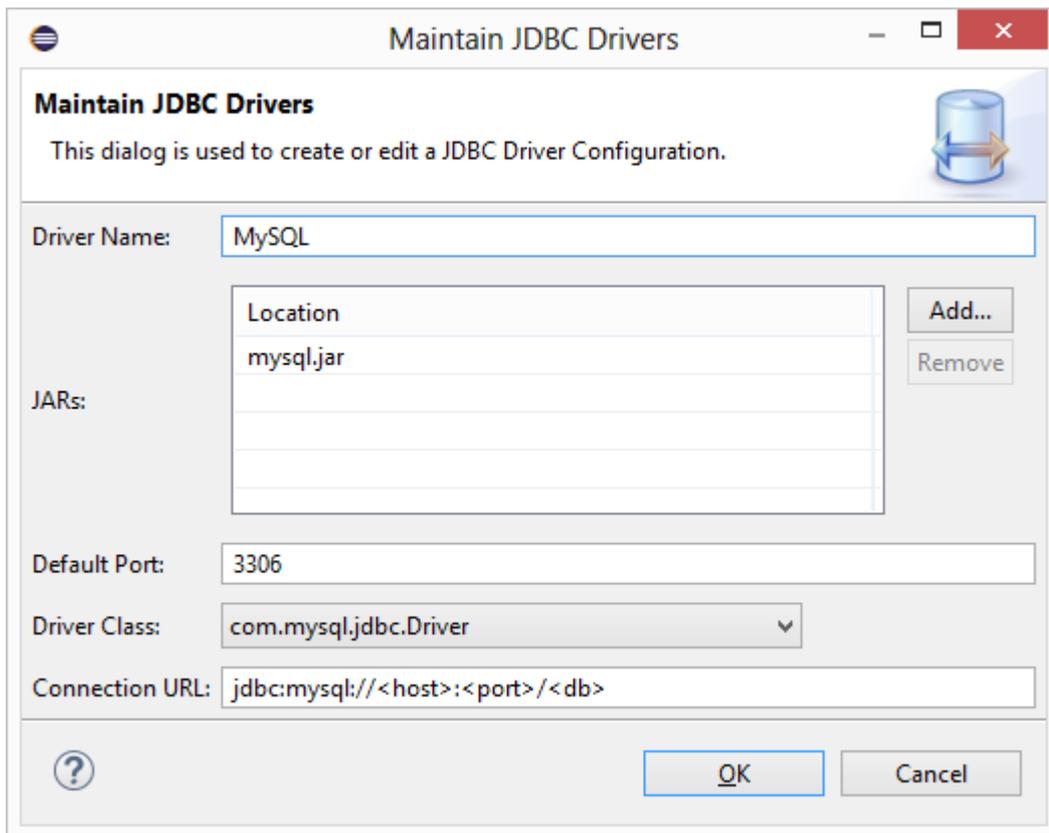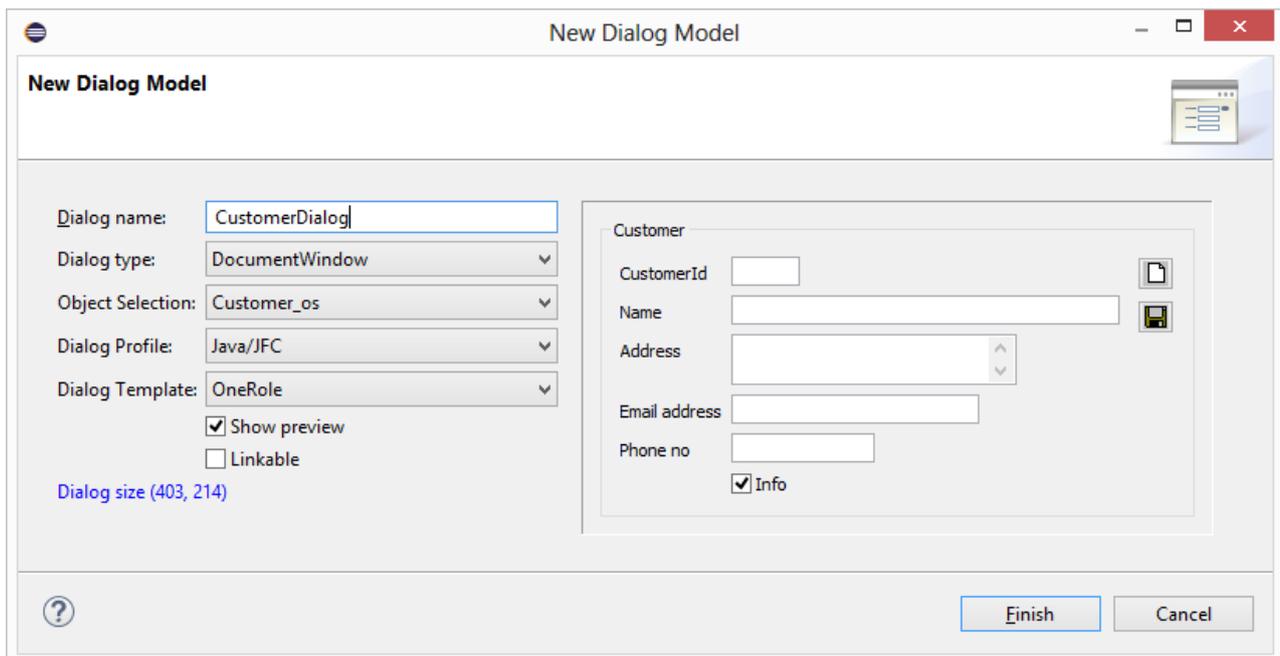
More information is available in the documentation, see Maintain JDBC Drivers.

1.2 New Dialog Preview

"Show preview" in the New Dialog Model wizard visualizes the new dialog inside the wizard dialog. The preview changes when the parameters are edited.

The shown preview is scaled to fit into the window size. The Dialog remembers its size until next use.

1.3 JGrape cleanup

The JGrape generator has a new property: *Generate cleanup of associations*. The property is *True* by default and implies that the result objects returned from JGrape generated code to the client will not contain association references to uninitialized database objects. In the Hibernate case none of the objects will be uninitialized hibernate proxy object.

This behavior concerns all calls to JGrape using the standard object selection methods of accessing /updating a database, both the search functions find and findall and all of the update functions.

All of these calls return one or more root objects and a cleanup is performed on this data-set before the objects are returned to the client. For objects below the root object in the object selection all association to objects not loaded by the database system, will be set to null. For the root object and any up-related objects from the root, the pointers to uninitialized objects will be set to the object(s) pointed to when the object selection is sent from the client.

The result of this cleanup is that the returned result object don't contain any uninitialized database object.

The cleanup of associations is done in the generated method `cleanupAssociations()`. This method has a hook methods, `hookCleanupAssociationsStart()` and `hookCleanupAssociationsEnd()` that can be used to override the generated cleanup behavior.

Compatibility with existing generated code: Setting the *Generate cleanup of associations* to false will prevent the JGrape generator to generate this cleanup code and the service code will behave as before.

1.4 Foreign keys support

When importing a database model from a DBMS, the system has specification of column names for the foreign key columns. These names was not preserved in the generated model files. Associations in a g9 domain model have a new property, *Member Column Names*. This property contains a comma separated list of column names to be used by database models. If present this list should contain the names of all columns created in the database model when creating foreign key columns for an association. The property is available in all model tools supported by g9:

Enterprise Architect
A new tagged value on associations, *g9 DB:Member Column Names* is added to the g9 UML profile. See Modeling Associations.

Java code
A new String field on the annotation @G9Association: *memberColumnNames*
When using JPA annotations the property for a single column is specified in the name field of the @JoinColumn annotation. For foreign keys consisting of multiple columns the @JoinColumns annotation is used. It will contain one @JoinColumn annotation for each column.

ECore/XCore models

The g9 annotation *memberColumnNames* on a EReference object (Ecore) or on a reference declaration (Xcore).

When importing a database model into Java, Xcore or Ecore the column names used in the DMBS for foreign keys will be preserved in the resulting code model. In g9 itself the foreign key column names are preserved in the associations and when creating a database model in g9, the foreign key columns in the database model will take their default name from the associations' *Member Column Names* property.

1.5 g9 plugins signed

From version 2.5.0 on, all plugins in the g9 update sites are signed with an Esito certificate.

2 Generated code and Model Changes

2.1 Changes in model files

Database Profile for MySQL has added datatype timestamp.

2.2 Changes in generated code

Regeneration of code is necessary.

3 Dependent versions

g9 runtime libraries uses 3. party open source libraries. Supported versions in this release are:

Library	Version		Library	Version
Spring	4.0.9.RELEASE		Hibernate	5.0.1.Final 5.0.7.Final
ICEfaces	4.1.1 4.0.0-GA		JSF	2.2.10
log4j	2.4.1		Jetty	9.2.6.v20141205
Jackson	2.6.3		Spring WS	2.2.2.RELEASE
Castor	1.3.3		JasperReports	6.2.0
Joda Time	2.4		Apache POI	3.9
EJB	3.2.0		Guava	18.0

Special version of g9 runtime library without support for Spring WS (available on demand):

Library	Version		Library	Version
Spring	4.2.6.RELEASE		Hibernate	5.0.1.Final 5.0.7.Final
ICEfaces	4.1.1 4.0.0-GA		JSF	2.2.10
log4j	2.4.1		Jetty	9.2.6.v20141205
Jackson	2.6.3		JasperReports	6.2.0
Joda Time	2.4		Apache POI	3.9
EJB	3.2.0		Guava	18.0

4 Improvements and corrected Errors

If nothing is written in the *Release Comment* section about an error, the error is corrected and a comment is not necessary.

4.1 g9

SUP-2455 - Compare Editor in text-compare mode will not save

SUP-3166 - TAD-613 - Compare Editor focus should return to selected element after changing elements
Release Comment: Focus remains close to where edits are being performed.

SUP-4433 - Errors when importing project - Save Visitor Pattern

SUP-4453 - Save after compare with System fails

SUP-4868 - Remove unsupported widgets ScrollBar and ViewPort from Dialog Profile

SUP-5021 - Should address be a required field when filling in license information?
Release Comment: The labels in the License information form dialog was out of sync with the documentation and the test for a legally entered form.

SUP-5059 - "Set Build" does not trigger a save of the .gproject file

SUP-5110 - Bad connection error message
Release Comment: Have removed wrapper message of PoolableConnetionFactory from the displayed connection error message.

SUP-5126 - Use SoftReferences for master models instead of WeakReference
Release Comment: WeakReferences get cleaned aggressively by garbage collector while soft references gets cleaned when in need of memory. This change results in a performance improvement.

SUP-5128 - Improve consistency for wizard and dialog texts and add parameters
Release Comment: Some labels and button titles have been slightly changed for the purpose of consistency.

SUP-5144 - Support for the Eclipse Installer bundle pool
Release Comment: The Eclipse Installer uses a shared bundle pool, and the g9 run-time files are found in this pool.

SUP-5146 - Import Genova 8 Project has stopped working

SUP-5157 - DB import may create illegal class and attribute names for Java
Release Comment: Dollar ($) and space are now used as a word separator in addition to underscore when creating camel cased Java names from the DB names. Special Latin1 and Latin2 characters, like diacritics and ø, are folded to an ASCII representation (to support a legal Xcore output).

SUP-5172 - IndexOutOfBoundsException in Compare editing

SUP-5176 - Setting g9 nature on a java project results in strange upgrade message

SUP-5177 - Persistent build problems
Release Comment: Incorrect matching of build problems would not delete old problems and thus duplicates would add to list.

SUP-5178 - Build problems are still present in the Problems View after project validation

SUP-5180 - WSg project should not validate resources, database profiles and dialog profiles

SUP-5184 - Multi-select editing on generator properties does not work

SUP-5189 - Missing key attribute info in Database Model Foreign keys
Release Comment: See Foreign keys support.

SUP-5192 - Size is wrong for application window in designer

SUP-5195 - Not possible to remove method from event

SUP-5198 - Refresh of dialog model is slow
Release Comment: A bug in validation of expressions resulted in exponential validation workload. Large dialogs will have a dramatic improvement in refresh times.

SUP-5199 - The foreign key column names should utilize the columnName property if present
Release Comment: When creating foreign key columns in a database model, the default name for a column will be taken from the corresponding associations *Member Column Names* property. If not present and the corresponding attribute has a Column name, the default name will be based on this name. Only if this name is not present too, will the name be based on the attribute name as in earlier versions of g9.

SUP-5200 - Dialog Profile changes when saved locally
Release Comment: Some names changed when the Dialog Profile was saved locally in a g9 project.

SUP-5201 - Compare Resources with System takes wrong file

SUP-5204 - Integrated preview for "New Dialog" wizard
Release Comment: The preview is no longer an uncontrollable separate window, but rather a capture that has been scaled and shown as an image inside the New Dialog wizard.

SUP-5206 - Default Column names for foreign keys should be based on column name from owner table's column names

SUP-5207 - The @G9Association java annotation should be available on both fields and methods

SUP-5209 - Internal id for associations are not unique in the domain model when modeling with java code
Release Comment: When updating the domain model from java code, the internal id-s for associations and attributes are changed. A full update with removal of the old model is needed.

SUP-5210 - Non-existing associations are created when updating domain model from java code
Release Comment: The error may occur if a class has multiple associations with equal opposite attribute specification (JPA annotation @ManyToOne(mappedBy=oppositeattribute).

SUP-5212 - Compare Editor does not forward/skip for Dialog templates
Release Comment: Issues with selecting first on entry and certain cases of not being able to go to next and previous have been fixed.

SUP-5213 - New Dialog wizard initial size issues
Release Comment: The wizard now remembers last size and location, size to a minimum.

SUP-5215 - New wizard for Dialog, OS, etc only works when project node itself is selected

SUP-5216 - Double-click should take you to property sheet also when viewing system resources

4.2 g9 Database Import

SUP-5122 - NPE when importing model from database without a current target project

SUP-5147 - NPE when connecting DB Import to Oracle

SUP-5155 - Import of a database schema containing more than one association between the same tables generates incorrect model code
Release Comment: When generating code the classes representing the tables will get variables with the same name representing the different associations. For self-associations this will always be the case as each direction will be represented with the same name.

SUP-5156 - NPE in Sybase DB import
Release Comment: The error occurred because Sybase did not deliver any name of foreign keys.

SUP-5159 - The String attributes from Sybase and PostgreSQL tables gets a precision and not a length
Release Comment: Precision and Scale is only set for numeric JDBC data types, otherwise Length (Byte) is set. If the Length (Byte) is MAX_INT (2147483647) the property becomes unset.

SUP-5161 - DB import from an Oracle database includes system tables in the import
Release Comment: Only tables included in the user's schema are included.

SUP-5164 - Db Import wizard should display an error message when some of the tables are missing package specification
Release Comment: In the DB Import wizard the Finish button is disabled if any of the included tables don't have a package specification. A table has a package specification if either the Root package has a value or if the table's Sub package has a value.

SUP-5165 - It should be possible to set the Include checkbox when editing properties for multiple tables in Database Import wizard
Release Comment: The Include property is part of the Table Configuration dialog when editing properties for multiple tables.

SUP-5181 - DbImport doesn't use target project char-set

SUP-5182 - SQL Server does not see foreign keys

SUP-5205 - Support for array columns
Release Comment: Array columns are now detected, and the imported model attribute is set to an array of String or Object according to the database schema.

SUP-5211 - Don't generate the "overwritten" JavaDoc line for Java classes imported from a database
Release Comment: The JavaDoc line "This file will be overwritten the next time it is generated from g9" is no longer generated for the Java classes imported from a database schema.

4.3 Swing generator

SUP-5185 - Run-time errors for Applications and Dialog Models with a lower case first letter in the name
Release Comment: The Swing generator now upper cases the names when necessary.

4.4 Java Domain generator

SUP-5151 - G9Group, G9Converter and G9Usertype are added when using JPA in the domain generator
Release Comment: The g9 annotations for Group, Converter and Usertype are now only generated when the generator parameter "Generate g9 annotations" is selected.

SUP-5154 - The JPA column annotation values for precision and scale are wrong

SUP-5174 - Unknown Java type for attribute gives exception
Release Comment: Attributes with unknown Java types as model type are now reported with a problem from the Java Domain generator.

SUP-5208 - Generate the @G9Exclude annotation on temporary foreign key parts and helper methods

4.5 Domain Xcore generator

SUP-5203 - Unnecessary to generate unique, notNull and index properties for primary keys
Release Comment: The unique, notNull and index properties are now only generated for non-PK attributes, group references and Usertypes.

4.6 Java runtime and JGrape Services generator

SUP-5190 - TAD-913 - Changes in association settings when returning data from JGrape generated code to client
Release Comment: See JGrape cleanup.

4.7 Java synchronization

SUP-5186 - Java synch without JPA setting results in unwanted lockFlag

Release Comment: The lockFlag attributes should be marked with the `@G9Exclude` annotation to avoid importing them into the g9 domain model. The Java Domain generator now generates a `@G9Exclude` annotation for lockFlag attributes when the *Generate g9 annotations* generator parameter is set to *True*.

SUP-5188 - Java synch with JPA gives 255 as default attribute length

Release Comment: When reading JPA annotations the default value for @Column.length is ignored for numeric data types while @Column.precision and @Column.scale are ignored when reading non numeric data types.

4.8 Web Services generator

SUP-5162 - The WS Client generator should not have the ObjectSelectionPackage parameter
Release Comment: The ObjectSelectionPackage parameter is not used by the generator.

4.9 Database MySQL

SUP-5187 - MySQL Database profile is missing type timestamp

4.10 Known Issues

4.10.1 Location of the g9 runtime libraries when using the Eclipse Installer (Oomph)

The Oomph based Eclipse Installer uses shared bundle pools for the Eclipse plugins. When using the Eclipse Installer, the location of the g9 runtime files will be in the *plugins* directory in one of the shared bundle pools, and not in the *plugins* directory under the Eclipse installation as reported by g9. Look for the *no.esito.g9.runtime_<version>/jar/mvn* directory in the plugins directory of the bundle pool. The bundle pool can be found in the *Bundle Pool Management* dialog in the Eclipse Installer. Usually, this will be a directory named <home.dir>/.p2/pool.

4.10.2 Known error regarding resource projects and upgrades

This is valid if the resource model needs an upgrade. If the resource model is located in a g9 resource project missing the .gproject file, two different error situations may occur:

1. g9 will ask you to run upgrade on the project each time eclipse Is restarted and the project node is expanded.

2. g9 will never ask you to upgrade the project.

In both cases do as follows: Open the project property and select g9; then press the Save button to create a new .gproject file. When the project has a .gproject file, run g9->Upgrade Project to upgrade the resource model.

4.10.3 New example projects can get cyclic dependency errors

This can happen occasionally due to issues with some versions of Xcore/Xtext. New Example projects can get into a cyclic dependency error situation, shown as an exclamation mark on the project node. In this situation "Clean" or reopening the project does not help, however it is usually resolved by restarting Eclipse.

4.10.4 Limitations and known errors for ICEfaces 4.1.1

1. The ACE dataTable component does not show the correct column widths when the header is hidden and Paging mechanism is Scrollbar.
2. Using nested Basic Containers in a Table with paging mechanism set to Scollbar results in misaligned header columns, as ACE does not handle this at runtime. Use paginators instead until this issue is fixed in ICEfaces.
3. The ICEfaces API for JavaScript effects has changed. Currently, JavaScript effect in the g9 runtime does not work with ACE components.
4. The ACE splitPane component's separator is currently not movable. Also, there is an issue with height calculation when scrollbar is enabled.

4.10.5 Slow Eclipse workspaces

If you experience that your Eclipse IDE is becoming slow, it is possible to improve. Here are some improvement suggestions:

1. Plugin cache - "eclipse.exe -clean"
   Reloads all plugin cache (safe - you won't lose anything)
2. Local history
   Remove ".metadata/.plugins/org.eclipse.core.resources/.history/"
3. Markers
   In sub-directories of ".metadata/.plugins/org.eclipse.core.resources/.projects/" remove ".markers" and ".markers.snap" files.
   https://codedrawer.wordpress.com/2011/07/25/slow-or-frozen-eclipse-ide-start-after-a-crash/
4. Settings
   When upgrading major version of Eclipse, settings are not cleaned up properly.
   Export your settings, then rename the ".metadata" directory, then import your settings.
   http://blog.pdark.de/2011/09/02/restoring-a-corrupted-workspace-in-eclipse/
5. Create a new Eclipse workspace and import your projects into it.

5 Distribution

The g9-2.5.0.zip distribution consists of the g9 plugin update site and can be downloaded from http://download.esito.no/downloads/tools/g9-2.5.0.zip.

The g9 plugins contain all generators and the Java run-time jars. A list of g9 plugins is displayed using *Help > About Eclipse*, press the g9 icon and the *Plug-in Details* button.

6 Installation

6.1 g9 requirements

The g9 tool-set consists of code that runs on Windows and Linux operating systems. The tool set runs as an Eclipse plug-in and requires Java version 8, and Eclipse Mars or newer. The g9 runtime, however, can be run with Java 7.

6.2 Esito update-site

The g9 Modeling Tools is available from update-site: **http://updatesite.esito.no/g9**.

1. Start Eclipse, go to *Help > Install New Software…*
2. In the *Install dialog*, click the *Add…* button located at the top right of the dialog to add an install site. This brings up the *Add Repository* dialog
3. You can install the most recent version from the remote update site.
    a. In the *Name* field, type **g9 update site**
    b. In the *Location* field, type **http://updatesite.esito.no/g9**
    c. Click OK to return to the Install dialog.
4. Select **g9 update site** in the *Work with* field and select the *Esito Modeling Tools*. Then select the *Next* button.
5. Click *Next* to confirm installation
6. Read and accept the license agreement. To continue installing, select "*I accept the terms of the license agreement*" and click *Finish*.
7. When prompted to restart Eclipse, click *Restart Now* to restart.

6.3 Local update-site

1. Unpack the g9-2.4.1.zip file to a directory of your choice, here called C:\g9
2. Start Eclipse, go to *Help > Install New Software…*
3. In the *Install dialog*, click the *Add…* button located at the top right of the dialog to add an install site. This brings up the *Add Repository* dialog
4. You can install the 2.4.1 version from C:\g9
    a. In the *Name* field, type **g9 local**
    b. Press the "Local…" button and browse to the unpack directory, giving file name C:/g9 in the Location attribute.
    c. Click OK to return to the Install dialog.
5. Select **g9 local** in the *Work with* field and select the *Esito Modeling Tools*. Then select the *Next* button.
6. Click *Next* to confirm installation
7. Read and accept the license agreement. To continue installing, select "*I accept the terms of the license agreement*" and click *Finish*.

8. When prompted to restart Eclipse, click *Restart Now* to restart.

6.4 Xcore modeling

To use Xcore for creating the domain models for g9, the Xcore and Xtext plugins must be installed. Some Eclipse packages already have Xcore and Xtext preinstalled. If not, the recommended update site for Xtext is "Xtext All In One - Releases" http://download.eclipse.org/modeling/tmf/xtext/updates/composite/releases/ . The recommended update site for Xcore is http://download.eclipse.org/modeling/emf/emf/updates/2.10.x/.

For Xcore modeling, the following plugin versions have been tested:

- EMF Xcore version 1.3.1, 1.3.2 and 1.4.0
- Xtext version 2.9.1, 2.9.2 and 2.10.0

6.5 Writing generators in Xtend

To be able to create your own generators in the Xtend language, the Xtend and Xtext plugins must be installed. Some Eclipse packages already have Xtend and Xtext preinstalled. If not, the recommended update site is "Xtext All In One - Releases"

For Xtend support, the following plugin versions have been tested:

- Xtend and Xtext versions: 2.9.1, 2.9.2 and 2.10.0