

A guide to  
**GEMINI v2.2**  
GeoNetwork schema plugin



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## Introduction

The GEMINI2.2 schema plugin is developed in order to:

- provide a GEMINI2.2 compliant metadata,
- reuse internal GN structures as much as possible
- ease the metadata compilation following the GEMINI2.2 requirements and guidelines
- make possible the full compilation of ISO19139 metadata which can be useful to the client organization, while exporting only the GEMINI2.2 relevant data.

## Exporting GEMINI metadata

GeoNetwork allows to export metadata in at least 2 ways:

- through the CSW interfaces, which expose a standard API for querying and retrieving data
- through the GUI: once a result has been found in a research, the XML file can be exported in ISO19139 format, in DC format, and in any other format the schema makes available.

We'll make sure that the metadata exported in that way will be valid according to the profile specification (provided that such metadata has been properly edited and validated)

## Reuse GeoNetwork structures

GeoNetwork allows to add schema plugins in order to handle schemas not provided natively in GN. Some standard schemas are already defined, and the editors for such schemas are quite fully implemented.

When creating an application profile for an existing schema, we'll want to reuse as much as possible from the original schema. This is exactly what have been done with GEMINI 2.2: we're reusing most of the visualization/editing XSL files belonging to the ISO19139 schema, adding customizations where needed, but the core templates are the basic 19139 ones.

In order to get this benefit, you need to follow some internal constraints.

The major constraint so far is the fact that the GN default ISO19139 schema is a bit old, and still refers to the GML namespace using the URI <http://www.opengis.net/gml>, which refers to GML 3.1.1, while most recent profiles need <http://www.opengis.net/gml/3.2>. This means that all the existing ISO19139 XSL files will be looking and matching elements not provided in the GEMINI profile.

This is not a mere syntax change, but a real change of version of the referred GML standard.

As a first approximation, we'll only deal with this problem as a syntax change in the namespace URI, since most of the changes between the two versions are about removing deprecated elements and some quite uncommon specifications.

In order to be able to reuse the default ISO19139 XSL files, we'll be storing GEMINI

metadata inside GeoNetwork using the <http://www.opengis.net/gml> URI, which is not valid according to the GEMINI specification; this is not really an issue, because this is only an *internal* representation of the metadata; as told in the previous section, we'll take care of converting the metadata in the proper GEMINI format during the export stage, both for CSW and for GUI export.

GeoNetwork requires some kind of discriminant to recognize the schema a metadata record is following. We introduced a fixed string for both `metadataStandardName` and `metadataStandardVersion` elements, respectively set to "UK GEMINI" and "2.2", to allow the system to recognize the schema the GEMINI records belong to. Please note that these elements are *not* required nor defined in the GEMINI specifications, and are related to this GeoNetwork schema plugin only.

## Guided GEMINI metadata compilation

GeoNetwork provides a metadata editor which is dynamically created according to the XSD schema, some XML files driving the XSD parsing, and some XSL files which can finely customize the metadata element rendering.

Each profile implemented as a schema plugin will provide its own set of XSD, XML and XSL files for such purposes.

Creating the GEMINI schema plugin

- the XSD files have been modified in order to
  - reflect the GML URI change as used inside GeoNetwork (as described in the previous section)
  - limit the maximum cardinality from N to 1 where required
  - raise the minimum cardinality from 0 to 1 (*optional* to *mandatory*) where required
- the XML files have been modified in order to remove some elements from the default GUI which are not required in GEMINI (e.g. the point of contact `individualName`)
- the XSL files have been modified in order to change the way some elements are displayed, e.g.
  - limit the language choice to the ones commanded by the GEMINI specification;
  - `metadataStandardName` and `metadataStandardVersion` are displayed in readonly mode also while editing the metadata

Beside these tools, GeoNetwork may provide user guidance by the output of schematron rules, which performs internal document checks according to the different specification that the metadata shall follow. All the assertion checks provided as XSL file in the GEMINI2.1 implementation in GN have been ported and translated back as proper schematron rules. Furthermore, some other rules were added, related to recommendation that were not already checked for.

## Full ISO19139 metadata

The GeoNetwork editor related to the GEMINI schema profile still retains the ability to edit

the full set of elements documented in ISO19139 (except for the cardinality restrictions explained in a previous section). This allow to keep information that may be useful to the specific GN instance user, while providing, at the same time, export facilities that only exposes elements described in the GEMINI specification, (as described in the first section of this document).

# Implementation

In the spreadsheet at <http://goo.gl/0axlw3> there are the details about what has been changed in order to follow the GEMINI recommendations.

The spreadsheet has these columns:

- *Section*: section of the GEMINI v2.2 specification document where the metadata element is described;
- *Title*: section title
- *Page*: section starting page
- *Element name*: ISO19115 element name
- *ISO ref*: element reference number in the ISO19115 specifications. Reference numbers are usually maintained across document versions.
- *ISO*: element cardinality for ISO19115
- *GEMINI*: element cardinality for GEMINI22
- *Notes*: notes about doc/implementations, etc
- *Implementation*: details about what has been done
- *File*: the file(s) involved in the customization.

Implementation notes for a single element element may be spread on multiple lines if different files are concerned: eg: the customization of an element may require changes to the XSD files, to the schematron rules and to the templates: in such case 3 different lines will have details about each different concern.

## Installing the schema plugin

The GEMINI v2.2 schema plugin is in the official repository (on the branch 2.10.x, since it can be applied on GeoNetwork 2.10 instances):

<https://github.com/geonetwork/schema-plugins/tree/2.10.x/iso19139.gemini22>

We set up a build task on our jenkins machine, so you can find the latest built version here:

<http://build.geo-solutions.it/geonetwork/2.10.x/GEMINI22/>

You can install the GEMINI22 schema plugin by following the standard procedure:

1. Login as administrator
2. Go in Administration → Add a metadata schema/profile
3. Fill the form:
  - a. name for the schema: "iso19139.gemini22"
  - b. URL of Schema Zip Archive:  
<http://build.geo-solutions.it/geonetwork/2.10.x/GEMINI22/iso19139.gemini22.zip>
  - c. Add the schema

Then add the GEMINI templates in the Administration screen.

You may also build a customized .war file already containing the GEMINI schema plugin by adding the full iso19139.gemini22/ directory beside the other ones in WEB-INF/data/config/schema\_plugins/.