The INTERLIS 2 reader and writer module (ili2fme) provides the Feature Manipulation Engine (FME) with access to INTERLIS 2 transfer files.

ili2fme is licensed under the LGPL (Lesser GNU Public License).

ili2fme includes software developed by The Apache Software Foundation (http://www.apache.org/).

ili2fme is in stable/production state.

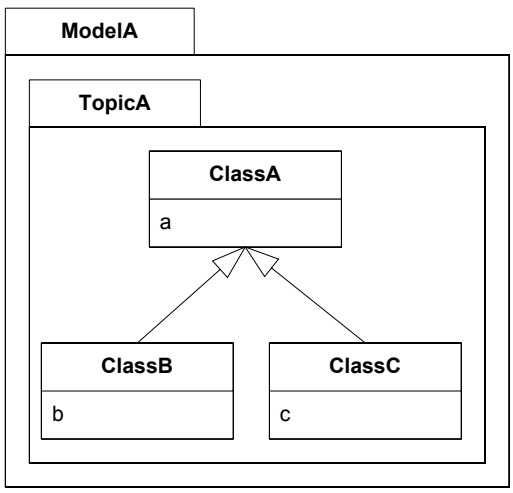
The current version of ili2fme can be found at http://www.eisenhutinformatik.ch/interlis/ili2fme/.

This chapter assumes you are familiar with FME and the INTERLIS 2 format. For more information about FME, please read the FME documentation. For more information about INTERLIS 2, go to http://www.interlis.ch.

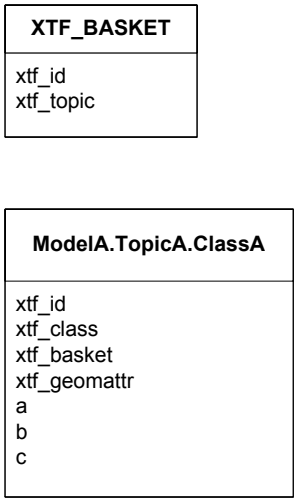
Please send comments about ili2fme to ce@eisenhutinformatik.ch.

Overview

Features read from a INTERLIS file consist of a series of attribute values. They may have no geometry. The attribute names are as defined in the INTERLIS model. The feature type of each INTERLIS feature is the qualified INTERLIS name (for INTERLIS 2 the base class name, for INTERLIS 1 the table name). The mapping of the inheritance hierarchy is done with a super type strategy. Attributes of non-root classes are shifted to the root, as illustrated by the following figure:



INTERLIS model



FME feature schema

INTERLIS 2 Quick Facts

Format Type Identifier ch.interlis.ili2fme.Ili2fme

Reader/Writer	Both
Dataset Type	File
Feature Type	Class name
Typical File Extensions	.xtf, .xml, .itf, .ili
Automated Translation Support	Automated reading
User-Defined Attributes	Yes
Coordinate System Support	No
Generic Color Support	No
Spatial Index	Never
Schema Required	Yes
Transaction Support	No
Geometry Type Attribute	xtf_geomtype
Geometry Support	

Geometry	Supported	Geometry	Supported
aggregate	no	polygon	yes
circles	no	donut polygon	yes
circular arc	no	line	yes
elliptical arc	no	point	yes
ellipses	no	text	no
none	yes	3D	yes

Reader Overview

FME considers a INTERLIS transfer file to be a collection of features. The feature types are determined by scanning the transfer file and then reading the appropriate INTERLIS model/schema files. The model files have the extension .ili and should be located in the same folder as the transfer file and/or in the folder ${FME}/plugins/interlis2/ilimodels. A transfer file may need multiple model files. There are no DEF lines required.

Reader Keywords

The following table lists the keywords processed by the INTERLIS 2 reader. The table shows only the suffixes prefixed by the current <ReaderKeyword> in a mapping file. By default, the <ReaderKeyword> for the INTERLIS 2 reader is `ch.interlis.ili2fme.Ili2fme`.

Keyword Suffix	*Value*
Models	Required INTERLIS-Models to read the dataset (without extension .ili; separated by semicolons ';'). Or the special value XTF (the value XTF has special meaning

	independently of the extension of the data file), in which case the models are determined by inspecting the transfer file. Default Value: XTF
ModelDir	Folder containing the .ili-Files. These files are scanned for INTERLIS-Models. You may use %XTF_DIR as placeholder for the directory of the data file that you will read. Multiple directories may be separated by semicolons ';'. Default Value: unset/empty

Writer Overview

The INTERLIS 2 writer module stores features into a INTERLIS transfer file. The Models keyword (see below) must be set to the name of the output model/schema. The appropriate INTERLIS model/schema files are then read before the output starts. The model files have the extension .ili and should be located the same folder as the transfer file and/or in the folder ${FME}/plugins/interlis2/ilimodels. A transfer file may need multiple model files. There are no DEF lines required.

The appropriate feature types are expected by the writer, as if the same model would have been read by the INTERLIS 2 reader.

Writer Keywords

The following table lists the keywords processed by the INTERLIS 2 writer. The table shows only the suffixes which will be prefixed by the current `<WriterKeyword>` in a mapping file. By default, the `<WriterKeyword>` for the INTERLIS 2 writer is `ch.interlis.ili2fme.Ili2fme`.

Keyword Suffix	*Value*
Models	Specifies the INTERLIS-Models (without extension .ili) that the written dataset should adhere to(separated by semicolons ';'). Default Value: no default value.
ModelDir	Folder containing the .ili-Files. These files are scanned for INTERLIS-Models. You may use %XTF_DIR as placeholder for the directory of the data file that you will write. Multiple directories may be separated by semicolons ';'. Default Value: unset/empty

Feature Representation

In addition to the generic FME feature attributes that FME Workbench adds to all features (see *About Feature Attributes* on page 1), this format adds the format-specific attributes described in this section.

Attribute	*Description*
xtf_id	Value of the TID XML-attribute out of the INTERLIS 2 transfer file. Unique across all feature types.
xtf_class	Qualified name of the INTERLIS 2 class name. This is different from the feature type name in the case of non base classes. In the figure above would ModelA.TopicA.ClassB be a possible value be.
xtf_basket	Value of the BID XML-attribute out of the INTERLIS transfer file. May be used as foreign key to a feature of the feature type XTF_BASKET (see below). On writing, this may be used to write multiple baskets of the same topic.
xtf_geomattr	Name of the geometry attribute read. A INTERLIS 2 class may define multiple geometry attributes. Only one is read by this reader (see also the section on Limitations).

The reader creates an additional feature type XTF_BASKET. And the writer expects this feature type as well. This technical feature type has two attributes: xtf_id and xtf_topic.

Attribute	*Description*
xtf_id	For each basket in the INTERLIS 2 transfer file, the value of the BID XML-attribute.
xtf_topic	Qualified name of the INTERLIS 2 topic name. In the figure above would ModelA.TopicA be a possible value.

Features written to the INTERLIS transfer file are expected to have the same structure, as they would have had when read.

Limitations

- multiple geometries per object/feature
- geometries in structs
- arcs
- custom line forms
- line attributes
- same attribute name in different classes with the same base class
- incremental transfer
- recursive structure attributes

Installation

Requirements

For the current version of ili2fme, you will need a JRE (Java Runtime Environment) installed on your system, version 1.4.1 or later.

The JRE (Java Runtime Environment) can be downloaded for free from the Website http://www.java.com/.
ili2fme was tested with FME Version 2006 GB (20060620 - Build 2651) and 2004 ICE 3 (20041108 - Build 1378).

Files

To install ili2fme, choose a directory and extract the distribution file there.

Copy the files and subdirectories of "${ili2fme}/FME Suite" to your FME directory.

FME requires that the path to the directory containing the file jvm.dll is on the PATH (Typically this DLL is in the folder c:/program files/java/j2re/bin/client/). Edit the PATH variable (select Windows Start menu::Control Panel::System::Advanced::Envirnoment Variables), if this is not the case. DO NOT MOVE/COPY the jvm.dll to another directory!

Add your standard INTERLIS models to the directory "${FME}/plugins/interlis2/ilimodels".

At runtime, ili2fme requires the following files:

```
${FME}/xerces-c_2_6-interlis2.dll
${FME}/plugins/iom_fme.dll
${FME}/plugins/ili2c.jar
${FME}/plugins/ili2fme.jar
${FME}/metafile/ch.interlis.ili2fme.Ili2fme.fme
${FME}/formatsinfo/interlis2.db
```

Configuration

To use ili2fme with the FME Universal Viewer, FME requires you to set an

environment variable: FME_VIEWER_THREADING=SINGLE (FIXME: same place as PATH).

ili2fme doesn't use or require any windows registry entries or user settings file.

On FME version before 2006GB:
Add the contents of the file "${ili2fme}/formats/formats_db-preFME2006GB.txt" to the file "${FME}/formats.db".
Add the contents of the file "${ili2fme}/formats/gallery_db-preFME2006GB.txt" to the file "${FME}/gallery.db".

How to migrate/update an existing ili2fme installation

Just copy the files and subdirectories of the new "${ili2fme}/FME Suite" to your FME directory.

FAQ

Usage

I am getting the following error: "missing model Roads"

In the folder of your data-file or your folder ${FME}/plugins/interlis2/ilimodels there is no .ili-file containing a "MODEL Roads". Move the file Roads.ili to the folder of your data-file or the folder ${FME}/plugins/interlis2/ilimodels.

My destination format is INTERLIS 2 and I'm getting the follwing error: "model name not specified"

You must change the Parameter "Models" to the name of the INTERLIS model (without extension .ili) that you intend to write (on the Destination Dataset).

My destination format is INTERLIS 2 and I'm getting the follwing error: "missing mandatory attribute xtf_class."

The appropriate feature types are expected by the writer, as if the same model would have been read by the INTERLIS 2 reader. That means: Every feature type must have the Attributes xtf_id, xtf_class, xtf_basket, xtf_geomattr. There must be a feature type XTF_BASKET with attributes xtf_id and xtf_topic.

I have an INTERLIS model "Roads.ili". Should I place into the folder ${FME}/plugins/interlis2/ilimodels?

Yes, if you read or write data according to that model more than once. (ili2fme will also look in the folder of your data-file for INTERLIS models.)

Is the ordering of the model names as a value of the FME-keyword "Ili2fme_Models" significant?

No, any ordering will do.

If a model imports other models (like "Units" or "CoordSys"), should I name all models as value of the FME-keyword "Ili2fme_Models"?

No, but all required models (including indirectly imported ones), all required .ili-files, should be in the folder of your data-file or the folder $(FME)/plugins/interlis2/ilimodels.

If a model imports other models (like "Units" or "CoordSys"), which one should I name as value of the FME-keyword "Ili2fme_Models"?

Use the most specific one (the one that imports directly or indirectly all the other ones). The imported models will be used automatically.

If a model extends another one, which one should I name as value of the FME-keyword "Ili2fme_Models", the base model or the extended one?

Use the extended one. The base model will be used automatically.

I would like to convert to a particular INTERLIS model. How can I import the feature types?

Import the INTERLIS model file (file with the extension .ili), instead of a INTERLIS data file. (You have to change the Filetype in the file selector dialog to "All Files" to see the ili-files.)

Mapping

How to map XTF_GEOMATTR, XTF_ID, XTF_CLASS, XTF_BASKET if INTERLIS 2 is the destination format?

XTF_GEOMATTR is the name of the INTERLIS attribute that will hold the geometry of the Feature. Typically a constant like "Geometry" (the actual value depends on your INTERLIS model).
XTF_ID is the XML attribute TID and should be unique across all feature types. Typically the value of the primary key of the source feature.
XTF_CLASS the qualified name of the destination INTERLIS-class. Typically a constant like "ModelName.TopicName.ClassName" (the actual value depends on your INTERLIS model).
XTF_BASKET is the foreign key of a feature of type XTF_BASKET.

If an attribute is of type enumeration (like „color: (red,green,blue);": Is it possible to get the values (0,1,2,...) instead of the resolved names?

No. In INTERLIS 2 the resolved name is the value. In INTERLIS 2 there is no mapping of an enumeration to a numeric.

How to specify at export the kind of transfer (FULL, INITIAL, UPDATE) and the kind of feature operation (INSERT, UPDATE, DELETE)?

These values are required for incremental transfer. The current version of ili2fme doesn't support incremental transfer.

How are foreign keys mapped?

The value of the REF XML-attribute of the role (association end) gets the property value of the feature, that contains the role.

How are 1-1 associations mapped?

Like defined by the INTERLIS 2-encoding rules. The end class of the second role (association end) gets the property with the reference/foreign key. The property gets the name of the first role.

How are BAG/LIST-attributes mapped?

BAG/LIST-attributes are mapped as list attribute.

How is inheritance mapped?

ili2fme uses a super class strategy. All attributes of specialized classes are shifted to the root class of the inheritance tree.

My INTERLIS model contains a lot of classes, but in FME, I see only a few of them as feature types. Why?

ili2fme uses a super type strategy to map the inheritance tree of the INTERLIS classes. Only root classes in INTERLIS become feature types in FME.

Configuartion

I've modified the file formats.db. Why does FME still report: "No Reader named `ch.interlis.ili2fme.Ili2fme' is available in this FME version"?

- Maybe jvm.dll is not found by FME.
- Maybe jvm.dll is found, but in the wrong directory.

FME requires that the path to the directory containing the file jvm.dll is on the PATH (Typically this DLL is in the folder c:/program files/java/j2re/bin/client/). Edit the PATH variable, if this is not the case. (Do not move jvm.dll!)
The Java Runtime Environment (JRE) requires that jvm.dll is in the directory as installed by the JRE. Therefore you can not move the jvm.dll to another directory.
Check that no directory set in the PATH variable before the entry for the JRE location, contains a jvm.dll.

Changes

ili2fme 1.2.0 (2006-05-09)

- version info added to DLL and jar
- log error msg to fme if iom_java.dll can not be loaded
- xtf-reader: log model name if extracted from xtf
- xtf-reader: do just schema read (if ili-file given instead of xtf-file)
- bug xtf-writer: doesn't write struct elements
- bug: don't free iom native objects from gc thread

ili2fme 2006-03-29

- xtf-writer: improved error message if XTF_BASKET features missing
- xtf-writer: improved error message if xtf_id,xtf_basket,xtf_class attributes in a feature type missing
- xtf-writer: improved error message if MODELS and MODEL_DIR not present in the mapping file
- xtf-writer: test if attribute value exists before getting it
- xtf-reader: create feature types of all directly or indirectly used ili-models
- apply subclass strategy to CLASSes of model INTERLIS (e.g. METAOBJECT)
- bug: doesn't work with universal translator
- bug: work around FME to handle UNC-filename (translate "//share/file" back to "\\share/file")

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