



Software **E**ngineering
& **P**roject **M**anagement

SEPM Products Release 2012-01

New Features

Document Data

Key	Value
Abstract	This Document describes new features in the SEPM products 2012-01
Version	2012-01 - January 2012

Disclaimers

All logos and trademarks in this document are property of their respective owners.

Contact

Software Engineering and Project Management

Gerliswilstrasse 42
CH-6020 Emmenbrücke
Switzerland

Tel +41 79 632 28 20
Fax +41 41 260 57 20

www.sepm.ch
support@sepm.ch

Contents

1	Overview	5
1.1	Changes Overview	5
1.1.1	X-Translator	5
1.1.2	SEPM NEPLAN Interface	5
1.1.3	SEPM X-Database	5
1.2	Product Changes.....	6
1.2.1	New Products.....	6
1.2.2	Discontinued Products.....	6
2	SEPM X-Translator	7
2.1	Reference Frame LV95	7
2.1.1	Introduction	7
2.1.2	Reframe ACP	7
2.1.3	SEPM X-Translator Integration.....	8
2.2	Formats.....	9
2.2.1	Smallworld.....	9
2.2.2	DWG	9
2.2.3	Shape.....	10
2.3	User Interface.....	11
2.3.1	Representation of Styles	11
2.3.2	SEPM Simple GUI.....	11
2.4	Other Changes.....	12
2.4.1	Sample Module of a GSS X-Translator Service.....	12
2.4.2	Sample Modules for Batch Exports	12
2.4.3	Authorisation of the 'SEPM Simple GUI'	13
2.5	SEPM X-Translator Database	14
2.5.1	Survey Objects.....	14
3	SEPM NEPLAN Interface	15
3.1	SEPM Update Mode.....	15
3.1.1	Description	15
3.1.2	Usage.....	16
3.2	SEPM NEPLAN Import.....	17

3.2.1	Description	17
3.2.2	Usage.....	18
3.3	Other new functionality	18
3.3.1	User data variables.....	18
3.3.2	Improvements of the "remove switches" algorithm	19

4 SEPM X-Database 20

4.1	X-Database SIA 405.....	20
4.1.1	Data model "SIA405 Abwasser 2008"	20

1 Overview

This document describes new features and data models available in the products **SEPM X-Translator**, **SEPM X-Raster**, **SEPM X-Database** and **SEPM Interfaces** at version **2012-01**.

1.1 Changes Overview

1.1.1 X-Translator

The following functionality is new:

- ❖ Support for the **Swisstopo "Reframe" Library** for the conversion of coordinates in LV03/CH1903 and LV95/CH1903+ and vice versa.
- ❖ An example module is available for **GSS** integration
- ❖ An example module is available for **automated batch export**
- ❖ New data models have been added to the **SEPM X-Translator database**
- ❖ **Practical improvements** for different formats

1.1.2 SEPM NEPLAN Interface

The following functionality is new:

- ❖ **SEPM NEPLAN Update Mode**: An existing NEPLAN project can be updated with current data from the GIS
- ❖ The **SEPM NEPLAN Import** allows changing any attribute in a NEPLAN project, also those that can't be transferred through CDE (static network data) or SCE (dynamic network data) files
- ❖ Some **minor improvements** have been implemented thanks to first customer installations

1.1.3 SEPM X-Database

The **SEPM X-Database SIA 405** now also contains data and styling models for "SIA Abwasser 2008" (SIA wastewater, 2008). Wastewater data available in INTERLIS 2.3 can now be loaded.

1.2 Product Changes

1.2.1 New Products

The following new products are now available from SEPM:

- ❖ SEPM X-Translator Add-On: Conversion of coordinates in LV03/CH1903 to LV95/CH1903+ and LV95/CH1903+ to LV03/CH1903 during import and export

1.2.2 Discontinued Products

The following products are no longer available:

- ❖ SEPM X-Database Open Street Map (OSM)

2 SEPM X-Translator

2.1 Reference Frame LV95

2.1.1 Introduction

A change of the geographic reference frame is currently being implemented in Switzerland from the current LV03/CH1903 to the new LV95/CH1903+. Swisstopo offers a programming library, which provides the non-linear transformation from the old to the new system and vice versa. ("reframeLib.dll", FINELTRA-Transformation).

Based on this foundation SEPM has implemented a Smallworld ACP to convert coordinates inside Magik efficiently. This conversion algorithm has also been integrated into the SEPM X-Translator to cover the following use cases:

- ❖ Smallworld GIS database is in LV03/CH1903:
 - Export data into the LV95 system
 - Import of data from the LV95 system
- ❖ Smallworld GIS database is in LV95/CH1903+:
 - Export data into the LV03 system
 - Import of data from the LV03 system

This conversion software is offered by SEPM as an optional module. The coordinate conversion can then be used for all licensed formats.

2.1.2 Reframe ACP

Coordinate conversion is done through the following API (Reframe ACP):

```

_pragma(classify_level=advanced,topic={x_translator})
_method reframe_acp.compute_reframe( p_mode, p_coords )
  ## Parameters   : P_MODE : The following modes are supported:
  ##               0 : CH1903 -> LV95
  ##               1 : LV95 -> CH1903
  ##               P_COORDS : A list of coordinates in meters
  ## Returns     : A new transformed list of coordinates
  ## Function    :
```

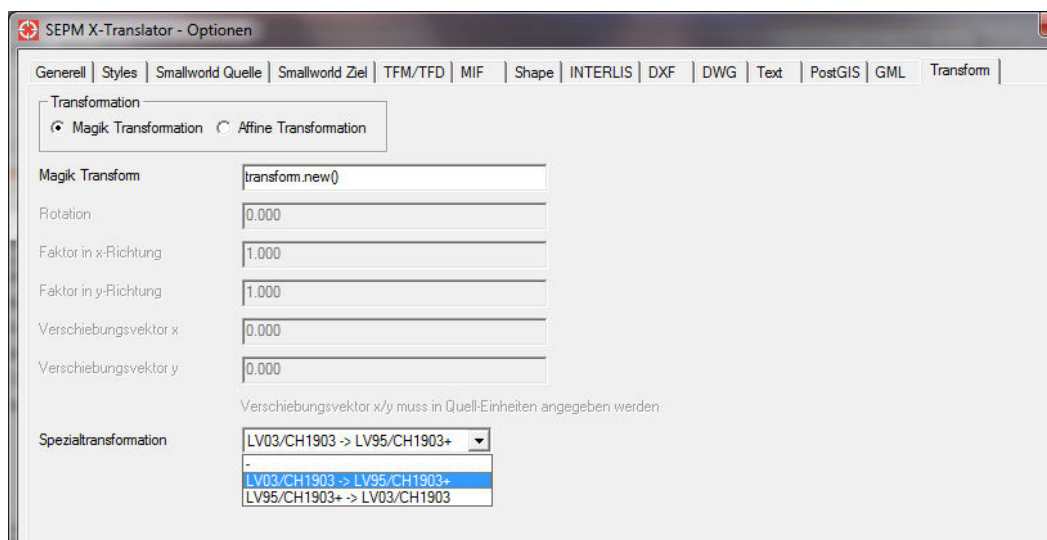
Example:

```
[user]MagikSF> c1
$
sw:sector:[1-2]
[user]MagikSF> print(c1)
$
sector(1,2):
1      coordinate:(689248.3870,205976.9920)
2      coordinate:(689246.8890,205977.3980)
[user]MagikSF> c2 << reframe_acp.compute_reframe(0,c1)
$
sw:coords_rope:[1-2]
[user]MagikSF>
[user]MagikSF> print(c2)
$
coords_rope(1,2):
1      coordinate:(2689249.118,1205976.816)
2      coordinate:(2689247.620,1205977.222)
[user]MagikSF> c3 << reframe_acp.compute_reframe(1,c2)
$
sw:coords_rope:[1-2]
[user]MagikSF>
[user]MagikSF> print(c3)
$
coords_rope(1,2):
1      coordinate:(689248.3870,205976.9920)
2      coordinate:(689246.8890,205977.3980)
[user]MagikSF>
```

The library "reframeLib.dll" also contains other algorithms (e.g. conversion of height systems or conversion to and from WGS84), which are currently not covered by the SEPM reframe_acp. These can also be implemented if required.

The reframe ACP can be licensed from SEPM also for other tasks.

2.1.3 SEPM X-Translator Integration



You can select the required conversion under *Special Transform* in the *Transform Tab*.

It is also possible to support other custom coordinate transformations. All that is needed for this is a Magik-Method taking a list of coordinates as a parameter and returning a new list of converted coordinates, for example:

```

__pragma(classify_level=restricted,topic={x_translator})
__method x_translator_settings.convert_coords_lv03_lv95( p_coords )
    ## Parameters   : P_COORDS : List of source coordinates (LV03)
    ## Returns     : List of transformed coordinates (LV95)
    ## Function    :

    __return reframe_acp.compute_reframe( 0, p_coords )
__endmethod
$

```

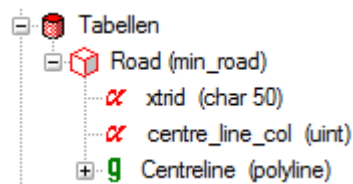
This method can then be registered in the *x_translator_settings* for selection under *Special Transform*.

2.2 Formats

2.2.1 Smallworld

Attribute with colour information

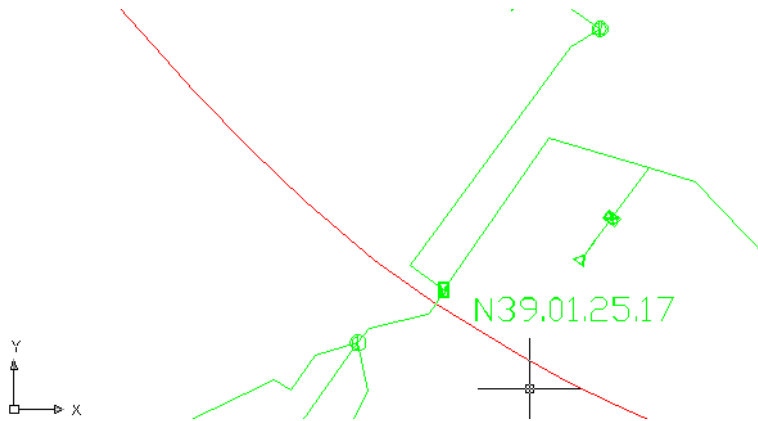
The option *Generate point/label attributes* has been renamed to *Generate geometry attributes*. When this option is active, for each geometry in the source model an attribute with the suffix "_col" gets generated. During the export it is filled with the colour code (rgb24_code) of the corresponding style.



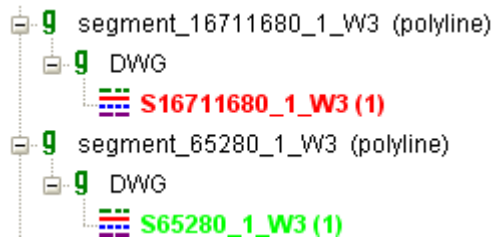
Attribute centre_line_col contains the colour code of the Centreline geometry

2.2.2 DWG

When importing in the mode *Layer = Collection (Explode Styles = Yes)* styles are no longer numbered with a counter (e.g. coverage0, coverage1, etc.), but the style name is created based on style properties (colour, pattern, line width). Thanks to this change the geometry name is always the same for similar DXF/DWG files and can be used for configuring a stable import mapping.



DXF file with red and green line on the same layer



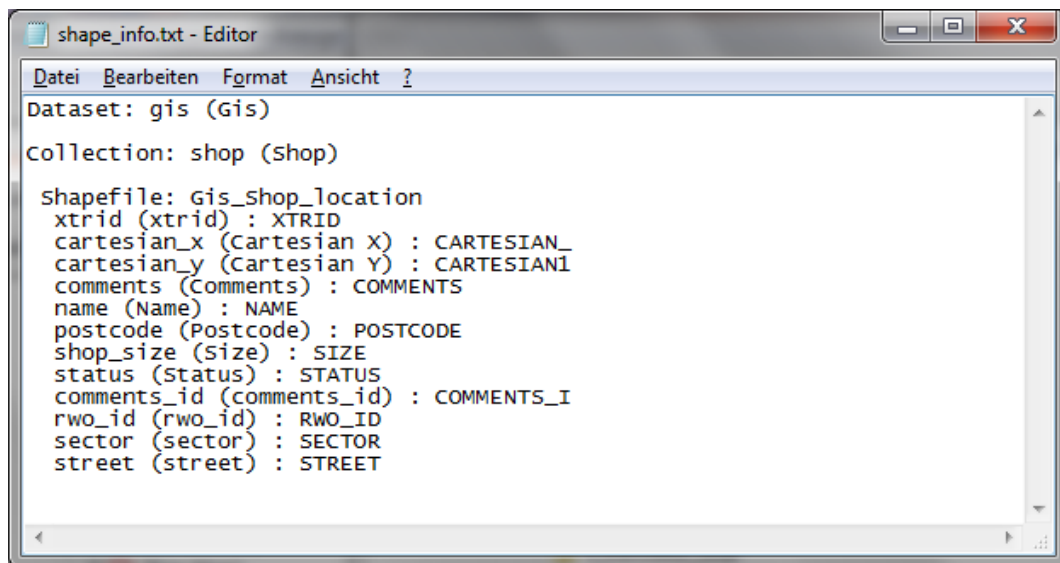
Geometry name for the red lines is now always 'segment_16711680_1_W3'

2.2.3 Shape

File 'shapeinfo.txt'

The limitation of 11 characters of the DBF-Format for attribute names makes it often difficult to identify the name of the original attribute. To simplify identification, a new text file "shape_info.txt" gets generated containing the original and the DBF attribute names.

In the following example shows how this can be used to see that the Smallworld attributes *cartesian_x* and *cartesian_y* were mapped to the attributes *CARTESIAN_* und *CARTESIAN1*:



File shapeinfo.txt

New option 'Create empty Shape files'

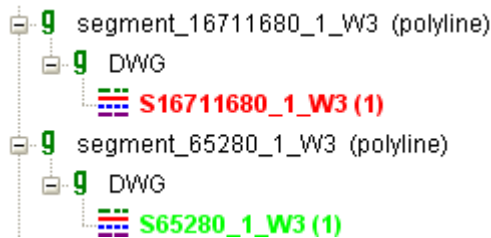
Create empty Shape files

When this option is active, Shape files are also created when there are no geometries in the source data.

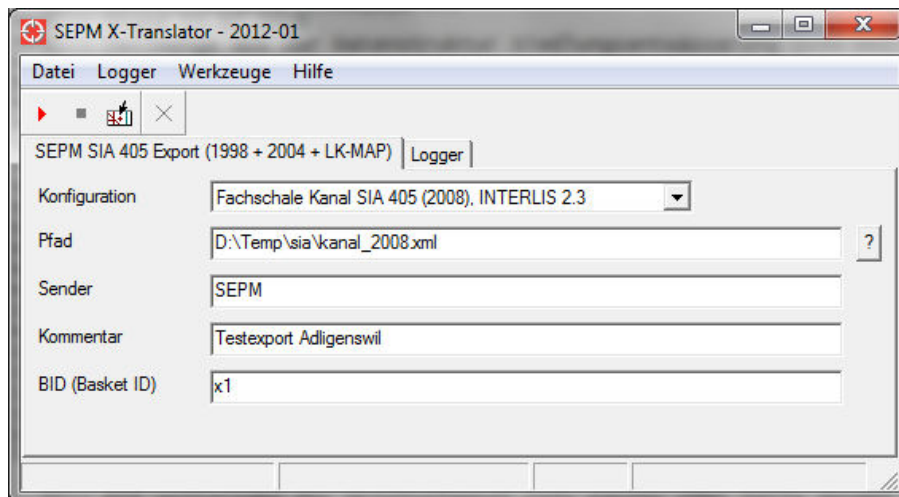
2.3 User Interface

2.3.1 Representation of Styles

The tree structure of the source and target model now shows the styles in their corresponding colours along with other style information, which helps with the interpretation in many cases.



2.3.2 SEPM Simple GUI



For INTERLIS exports it is now possible to activate text items for entering values for the *sender*, *command* and *BID (Basket ID)*.

2.4 Other Changes

2.4.1 Sample Module of a GSS X-Translator Service

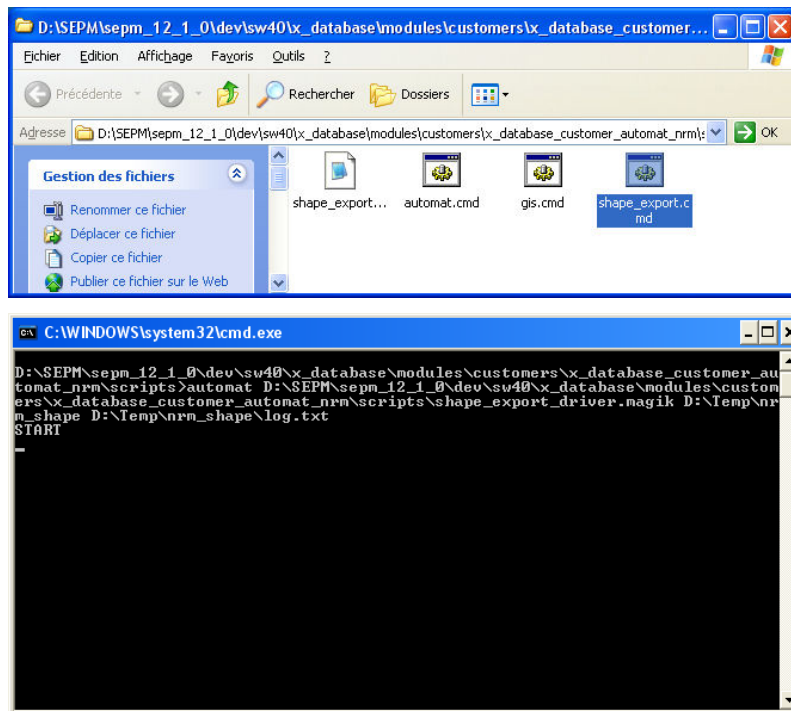
The module *x_translator_gss* contains an example X-Translator configuration for a *Smallworld GeoSpatial Server* service.

This allows adding a download feature ("download to DXF") to a GSS-based web application.

This module is not covered by maintenance, but must be specifically adapted in each case.

2.4.2 Sample Modules for Batch Exports

The modules *x_database_customer_automat_nis* (NIS Strom 4.0) and *x_database_customer_automat_nrm* (Network Resource Manager) contain examples for the automation of X-Translator exports started through Windows batch files.



*Dobule click **shape_export.cmd** to start a data transfer*

These modules are not covered by maintenance, but must be specifically adapted in each case.

2.4.3 Authorisation of the 'SEPM Simple GUI'

The SEPM Simple GUI can now be authorised through a Smallworld authorisation group. Use the setting `x_translator_settings.simple_gui_auth_group` for that:

```
_pragma(classify_level=advanced,topic={x_translator},usage=redefinable)
x_translator_settings.define_shared_constant(
    ##
    ## Users that are not in this authorisation group are not
    ## allowed to launch the X-Translator Simple GUI
    ##
    ## Set to _unset to disable this feature
    ##
    :simple_gui_auth_group,
    hash_table.new_with(
        :neplan_nis, "X-Translator NEPLAN"
    ),
    :public)
$
```

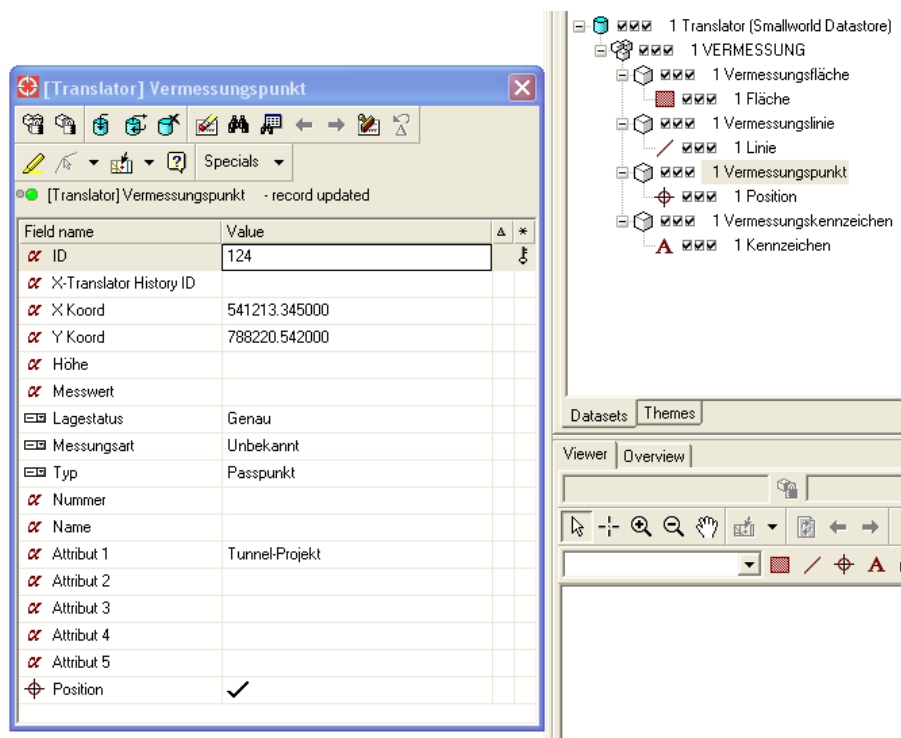
This setting refers to the key of the setting `x_translator_settings.simple_gui_config`. In the example above only users being part of the authorisation group *X-Translator NEPLAN* are allowed to use the SEPM NEPLAN interface.

2.5 SEPM X-Translator Database

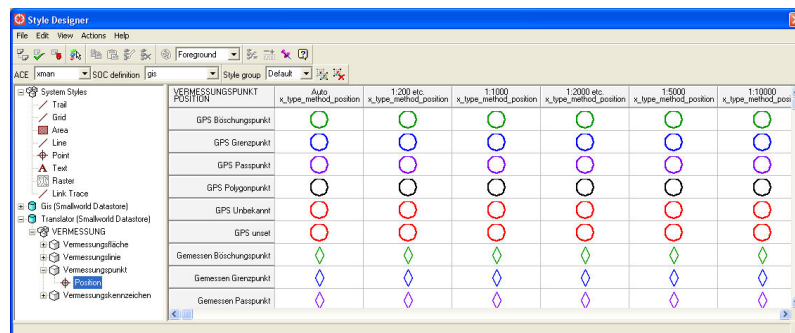
2.5.1 Survey Objects

Often an easy way to import a few geometries into a Smallworld database is needed, but there are now free or adequate objects available. Often this kind of data is only needed temporarily and is used for construction purposes or similar.

With an (optional) upgrade of the X-Translator database new **survey objects** (survey point, survey area, survey line and survey label) are available. They represent simple objects without any logic that can be used in the scenario described above.



Survey objects der X-Translator Database



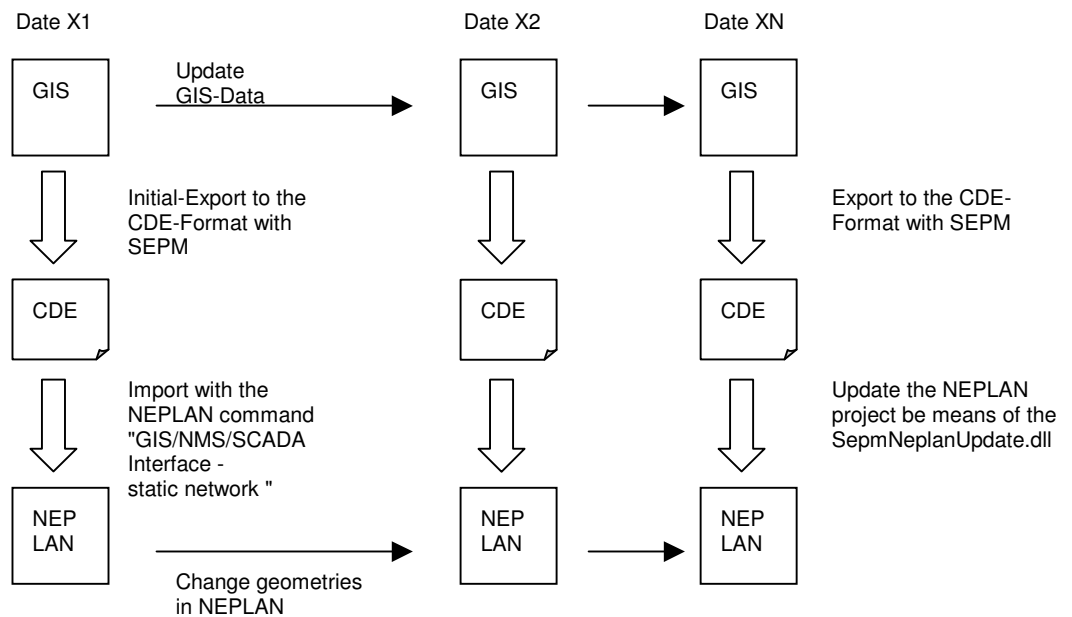
Predefined substyle methods can be activated

3 SEPM NEPLAN Interface

3.1 SEPM Update Mode

3.1.1 Description

The **SEPM NEPLAN Update Mode** allows periodic update of a NEPLAN project with fresh data from the GIS:



The following workflow is supported

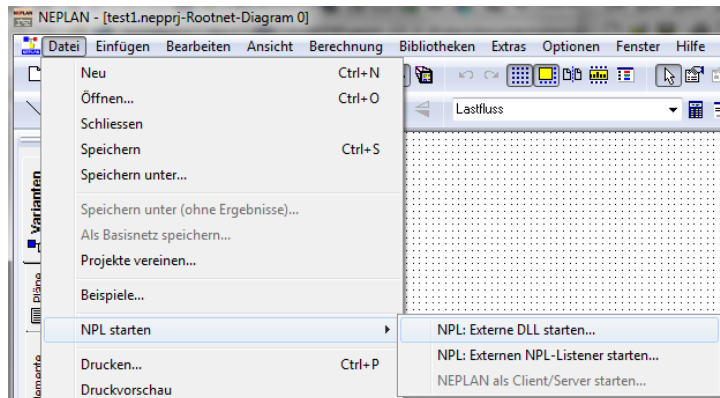
- ❖ In the beginning an initial export from the GIS to NEPLAN (e.g. the complete medium tension network) is done through the CDE format (X1)
- ❖ In the GIS master database changes are made
- ❖ In NEPLAN geometries may only be moved
- ❖ Regularly (e.g. every month, date X2 etc.) current data from the GIS are saved into the CDE format. The SEPM NEPLAN Add-On *SepmNeplanUpdate.dll* is now run to update the NEPLAN project

The following rules apply:

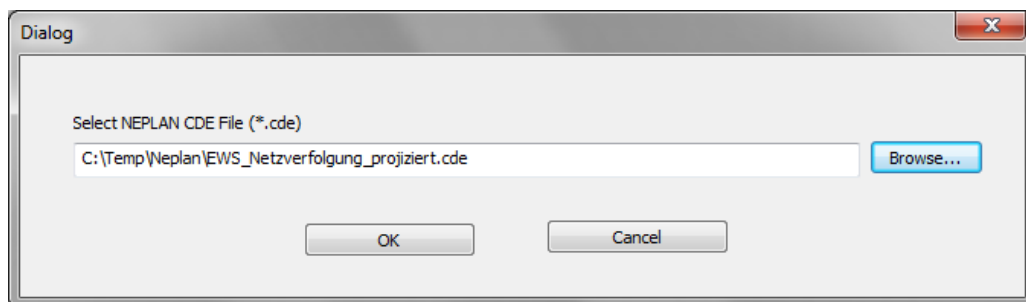
- ❖ Always complete data sets are exchanged and compared (brute force approach)
- ❖ If the GIS object already exists in NEPLAN, the parameters *Description*, *Un*, *Type* and *Length* are updated to their new value
- ❖ If the GIS object does not yet exist in NEPLAN, it gets created at the edge of the NEPLAN project. The user can now drag it to desired place.
- ❖ If an object exists in NEPLAN but not in the GIS, it is shown in the log file. The user should then manually delete the object in NEPLAN.

This version is suitable for testing and should not yet be used in a production environment. A productive version is planned for a future version of the SEPM NEPLAN interface.

3.1.2 Usage



The function is implemented as an external NEPLAN DLL, which can be called through the command *NPL: Start external DLL...* in NEPLAN. After selecting the ***SepmNeplanUpdate.dll*** the following dialog appears:

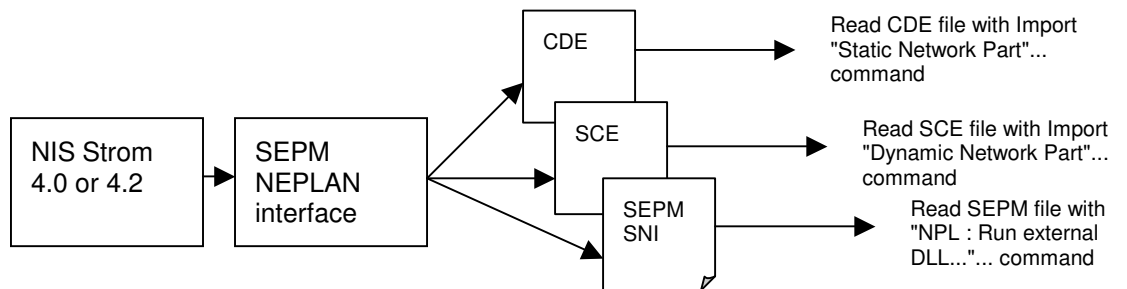


The current NEPLAN project is then updated based on the data in the selected CDE file.

3.2 SEPM NEPLAN Import

3.2.1 Description

Along with the CDE and SCE files another text file with extension "SNI" (for "**SEPM NEPLAN Import**") gets now generated. This allows transferring data from the GIS to NEPLAN that are not covered by the CDE or SCE formats.



Currently the following variables are supported.

NEPLAN object	API on RWO	NEPLAN Variable
FUSE	neplan_dyn_i	lr
LOAD	neplan_dyn_type	Node type: 0=PQ,1=PC,2=IC,3=PI,4=SC,5=EC
LOAD	neplan_dyn_j	lload
LOAD	neplan_dyn_c	Cosphi

In principle this mechanism allows changing any attribute of a NEPLAN object available through NPL. Requirements are gathered by SEPM to extend the list of supported variables if necessary.

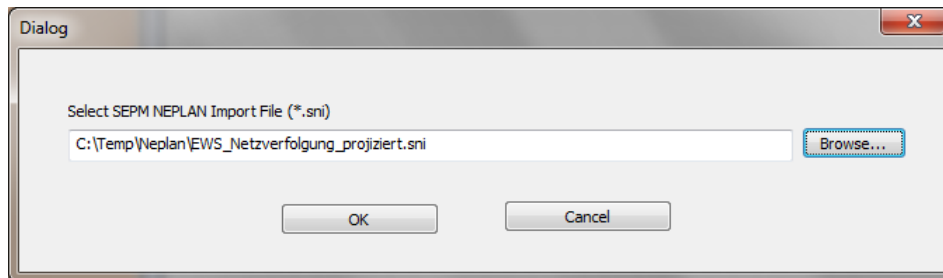
SNI file example

```

SEPM_NEPLAN_IMPORT      1.0
UPDATE      LOAD  HAK1049      Lftype Integer 2
UPDATE      LOAD  HAK1049      lload  Double 0.000
UPDATE      LOAD  HAK1049      Cosphi  Double 0.95
UPDATE      FUSE  HAK1049-N-S  lr      Double 0.000
UPDATE      FUSE  TEI3874-S    lr      Double 160.000
UPDATE      FUSE  TEI3875-S    lr      Double 160.000
UPDATE      FUSE  TEI9772-S    lr      Double 125.000
  
```

3.2.2 Usage

Select in NEPLAN the command *NPL : Start external DLL...* After selecting the **SepmNeplanImport.dll** the following dialog appears:



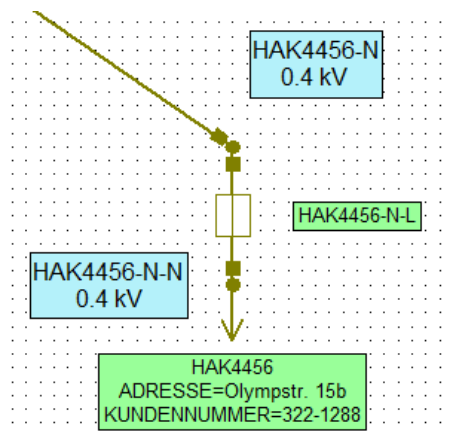
Select a SNI file in this dialog and click Ok. The log file then shows the changed values:

```
SetParameterInt: Parameter [Lftype] of Element [HAK1049] has been changed to [2]
SetParameterDouble: Parameter [Iload] of Element [HAK1049] has been changed to [0.000000]
SetParameterDouble: Parameter [Cosphi] of Element [HAK1049] has been changed to [0.950000]
SetParameterDouble: Parameter [Ir] of Element [HAK1049-N-S] has been changed to [0.000000]
SetParameterDouble: Parameter [Ir] of Element [TEI3874-S] has been changed to [160.000000]
SetParameterDouble: Parameter [Ir] of Element [TEI3875-S] has been changed to [160.000000]
SetParameterDouble: Parameter [Ir] of Element [TEI9772-S] has been changed to [125.000000]
```

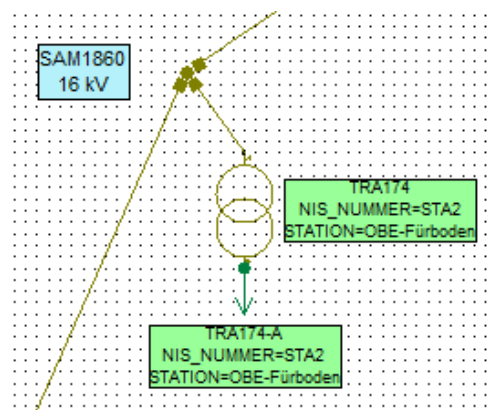
3.3 Other new functionality

3.3.1 User data variables

For each NEPLAN export configuration a different set of NEPLAN user data variables can now be defined. For example, for mid tension exports other user variables are often required when compared to the distribution network.



Distribution network: customer number and address are exported from the GIS

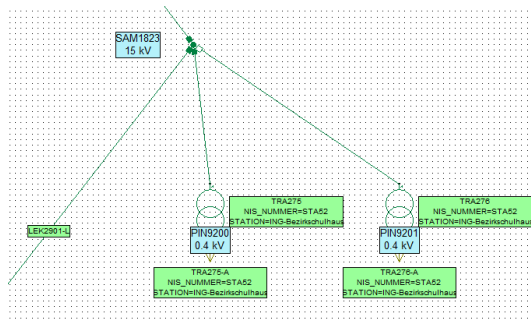
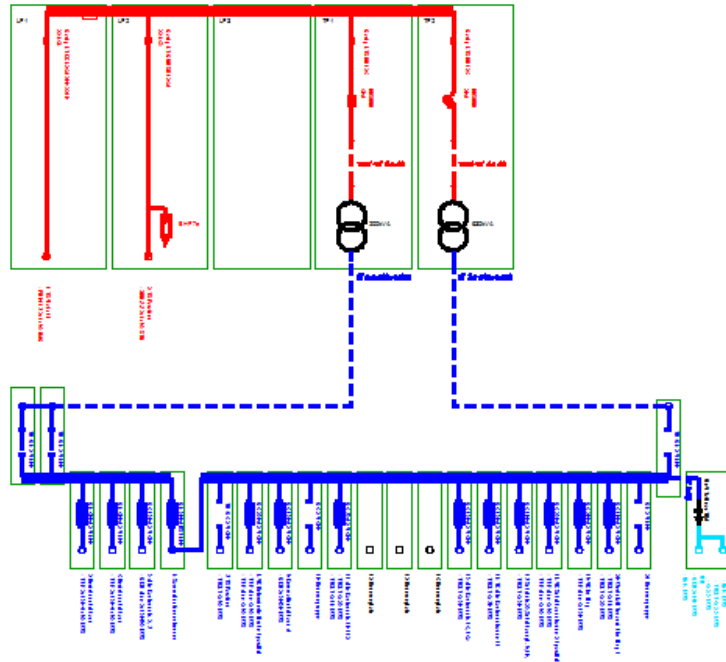


Medium tension: Substation name and number are used.

3.3.2 Improvements of the "remove switches" algorithm

The algorithm "remove switches" (is_remove_switches) has been improved in such a way that also switches at transformers are now eliminated.

The following example shows the effect of the different parameters when exporting the same source situation:



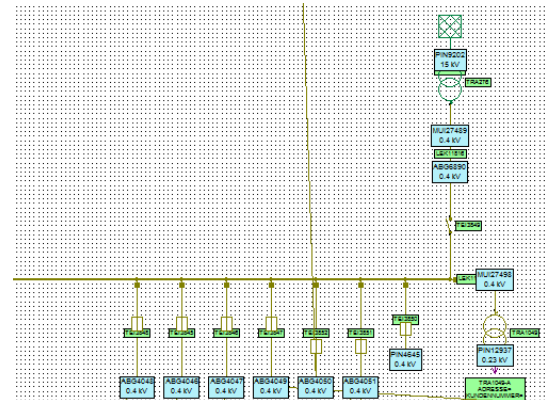
Medium tension

Busbar is point

Switches Feeder-Busbar and Transform-Busbar are eliminated

Only medium tension is exported

On the secondary side of the transformers loads are generated



Distribution network

Busbar is line

Switches and Fuses are all exported

Only distribution tension is exported

On the primary side of the transformers feeders are generated

4 SEPM X-Database

4.1 X-Database SIA 405

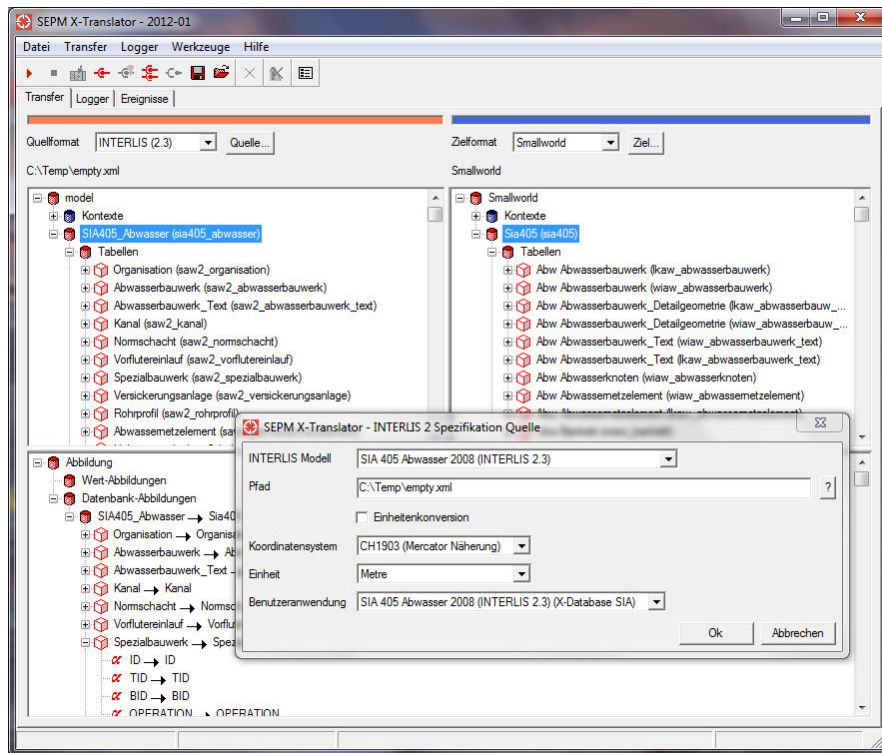
4.1.1 Data model "SIA405 Abwasser 2008"

The data model "SIA 405 Abwasser 2008" (SIA wastewater 2008) has been integrated into the **SEPM X-Database SIA405**, based on the model *SIA405_Abwasser_2008_2_d.ili* as defined in INTERLIS 2.3.

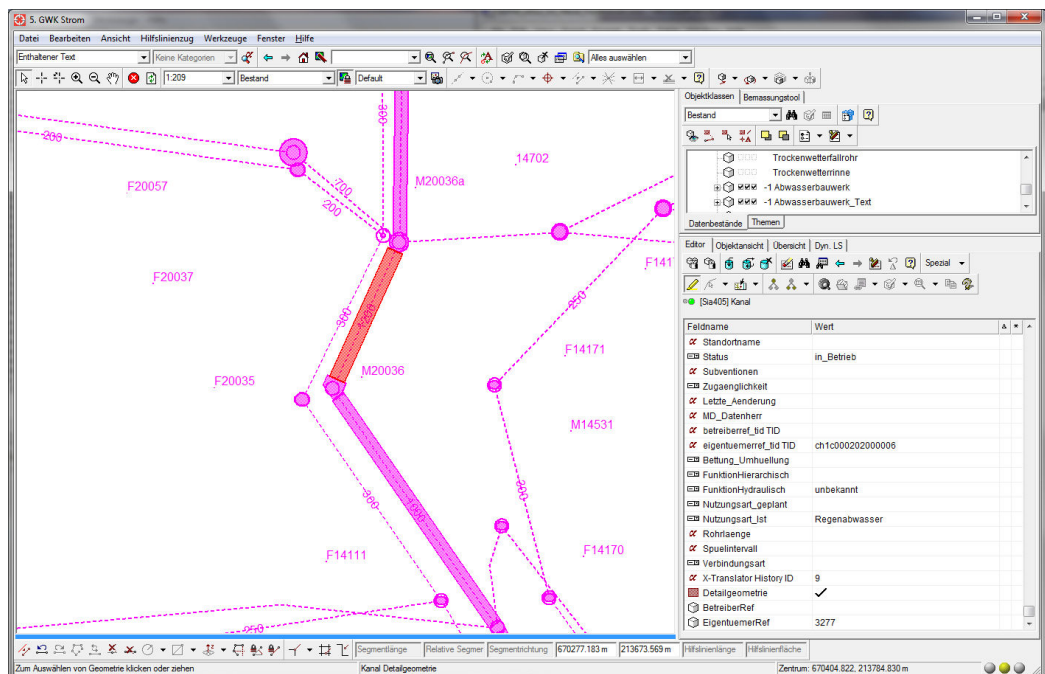


Object control view of the new 2008-wastewater objects

The user application "SIA 405 Abwasser 2008 (INTERLIS 2.3) (X-Database SIA 405)" can be used to read corresponding data.



X-Translator INTERLIS 2 source format



Data imported into the SEPM X-Database SIA 405