

Geographic Data Management System (GDMS) Reader

The Geographic Data Management System (GDMS) Reader allows the Feature Manipulation Engine (FME) to access files in the GDMS format.

All three `VERTICES`, `CROSSREF`, and `TEXTDATA` input file types are supported for import.

Overview

GDMS is a Wang-based mapping system used by municipalities around the world. GDMS is first generation mapping system technology, now owned by ESRI and called the Spatial Database Engine (SDE). GDMS supports several geometry types, annotation, and only limited attribution.

The GDMS File reader module provides the FME with access to the three GDMS file formats known as `VERTICES`, `CROSSREF`, and `TEXTDATA`.

The `VERTICES` and `CROSSREF` files should be provided as a matching pair, where the `VERTICES` file holds the geometry of features and the `CROSSREF` file holds attribute information. Points, line, polygons, and donuts are contained in these files.

The `TEXTDATA` file holds both geometry and attributes for text annotation features. These features include text, polyline or polygon, circle, and symbol elements.

GDMS data files are binary and hold two-dimensional (2D) features.

While GDMS data sets consist of the three separate files, as described above, the precise format of these files is specified using `DEF` lines within the mapping file. There is no default extension that the FME recognizes as a GDMS input file.

FME does not automatically translate GDMS files, as some modification to the `DEF` lines is required. The FME does, however, automatically generate a mapping file that can be used as a good starting point for customized GDMS translations.

GDMS Quick Facts

Format Type Identifier	GDMS
Reader/Writer	Reader
Licensing Level	Base
Dependencies	None
Dataset Type	Directory
Feature Type	Geometry based name
Typical File Extensions	N/A
Automated Translation Support	Yes
User-Defined Attributes	No
Coordinate System Support	No
Generic Color Support	No
Spatial Index	Never
Schema Required	Not applicable
Transaction Support	No
Geometry Type	gdms_type

Geometry Support			
Geometry	Supported?	Geometry	Supported?
aggregate	no	point	yes
circles	yes	polygon	yes
circular arc	no	raster	no
donut polygon	yes	solid	no
elliptical arc	no	surface	no
ellipses	no	text	yes
line	yes	z values	no
none	no		

Reader Overview

First the GDMS reader parses the `DEF` lines and keywords to determine the location of the input data sets, as well as their precise format. The FME then proceeds to the following two steps:

1. If no `VERTICES` or `CROSSREF` files are specified or found, this step is ignored.
 The GDMS reader opens the `VERTICES` and `CROSSREF` input files and immediately starts reading from both files, using the `Map Layer` and `Unique ID` to attach attributes from the `CROSSREF` file to the `VERTICES` appropriate features. The GDMS reader then returns these features to the rest of the FME for processing.
 It is assumed that the `VERTICES` and `CROSSREF` files are both sorted by `Map Layer` and `Unique ID` before these files are passed to the FME. Note that features within the `VERTICES` may have zero, one, or more corresponding `CROSSREF` entries.
2. If no `TEXTDATA` file is specified or found, this step is ignored.

The GDMS reader opens the `TEXTDATA` input file and immediately starts reading features, returning them to the rest of the FME for processing.

Each returned feature has its feature type set to the geometric type of the feature, as follows: `gdms_point`, `gdms_line`, `gdms_polygon`, `gdms_text_symbol`, `gdms_text_line`, `gdms_text_polygon`, `gdms_annotation`.

Reader Directives

The suffixes listed are prefixed by the current `<ReaderKeyword>` in a mapping file. By default, the `<ReaderKeyword>` for the GDMS reader is `GDMS`.

DATASET

Required/Optional: *Required*

This keyword's value is the directory containing the GDMS files to be read.

Example:

```
GDMS_DATASET C:\Data\GDMS\Input
```

Workbench Parameter: [<WorkbenchParameter>](#)

SYSTEM_UNITS

Required/Optional: *Optional*

This setting determines the scaling factor of coordinates within the GDMS files. All coordinates are multiplied by this value. The default value is `1.0`.

Example:

```
GDMS_SYSTEM_UNITS 1000.0
```

Workbench Parameter: [<WorkbenchParameter>](#)

X_OFFSET

This setting determines the X offset of coordinates within the GDMS files. This value is added to all X coordinates. The default value is `0`.

Example:

```
GDMS_X_OFFSET 300.0
```

Y_OFFSET

This setting determines the Y offset of coordinates within the GDMS files. This value is added to all Y coordinates. The default value is `0`.

Example:

```
GDMS_Y_OFFSET 300.0
```

Workbench Parameter: [<WorkbenchParameter>](#)

DEF**Required/Optional:** *Required*

The precise format of all three GDMS input file types must be specified on separate DEF lines before these files are read. These definition lines also provide the file names of each input file. The full path name of each file is determined by using the directory location from the DATASET keyword and the file name from the DEF line.

The syntax of the DEF lines depends on which file and record type it specifies. The first symbol of the DEF line indicates the further syntax and use of the rest of the DEF line as follows:

```
GDMS_DEF <definition type> ...
```

Each definition type is given in the following table. Refer to *Example Mapping File from GDMS to Shape* on page 902 for a list of attribute names and definitions for each definition type.

Definition Type	Use and Syntax
VERTICES_RECORD_1	This DEF line specifies the VERTICES file location and the format of the VERTICES record type 1. The full syntax of this DEF line is: <pre><ReaderKeyword>_DEF VERTICES_RECORD_1 \ GDMS_VERTICES_FILENAME <filename> \ [<attrName> <fieldType>]*</pre>
VERTICES_RECORD_N	This DEF line specifies the format of the VERTICES record type 2. The full syntax of this DEF line is: <pre><ReaderKeyword>_DEF VERTICES_RECORD_N \ [<attrName> <fieldType>]*</pre>
CROSSREF_RECORD	This DEF line specifies the CROSSREF file location and the format of the CROSSREF record. The full syntax of this DEF line is: <pre><ReaderKeyword>_DEF CROSSREF_RECORD \ GDMS_CROSSREF_FILENAME <filename> \ [<attrName> <fieldType>]*</pre>
TEXT_LAYER_HEADER	This DEF line specifies the TEXTDATA file location and the format of the TEXTDATA header record. The size of the header record is also explicitly given. The full syntax of this DEF line is: <pre><ReaderKeyword>_DEF TEXT_LAYER_HEADER \ GDMS_TEXT_LAYER_FILENAME <filename> \ GDMS_RECORD_SIZE <number of bytes> \ [<attrName> <fieldType>]*</pre>
TEXT_LAYER_TEXT	This DEF line specifies the format of the Text element record within the TEXTDATA file. The size of the record is also explicitly given. The full syntax of this DEF line is: <pre><ReaderKeyword>_DEF TEXT_LAYER_TEXT \ GDMS_RECORD_SIZE <number of bytes> \ [<attrName> <fieldType>]*</pre>

Definition Type	Use and Syntax
TEXT_LAYER_POLY	<p>This DEF line specifies the format of the Polyline/Polygon element record within the TEXTDATA file. The size of the record is also explicitly given. The full syntax of this DEF line is:</p> <pre><ReaderKeyword>_DEF TEXT_LAYER_POLY \ GDMS_RECORD_SIZE <number of bytes> \ [<attrName> <fieldType>]*</pre>
TEXT_LAYER_CIRCLE	<p>This DEF line specifies the format of the Circle element record within the TEXTDATA file. The size of the record is also explicitly given. The full syntax of this DEF line is:</p> <pre><ReaderKeyword>_DEF TEXT_LAYER_CIRCLE \ GDMS_RECORD_SIZE <number of bytes> \ [<attrName> <fieldType>]*</pre>
TEXT_LAYER_SYMBOL	<p>This DEF line specifies the format of the Symbol element record within the TEXTDATA file. The size of the record is also explicitly given. The full syntax of this DEF line is:</p> <pre><ReaderKeyword>_DEF TEXT_LAYER_SYMBOL \ GDMS_RECORD_SIZE <number of bytes> \ [<attrName> <fieldType>]*</pre>

<attrName> — The attribute names may be specified as anything, but note that for several of the DEF linetypes some reserved attribute names are expected somewhere within the line.

<fieldType> — The field types specify the exact length and byte location where each attribute is found within the record being defined. The interpretation of the primitive date type for this region of the record is also indicated by the field type. The following table gives the possible field types.

Tip: These types are the same as the ones available to the CAT type in the *Relational Table Reader*.

Field Type	Description
Integer(<width>, <position>)	<p>Integer fields hold integer values stored in ASCII format.</p> <p>The width parameter is the total number of bytes allocated to the field.</p> <p>The position parameter is the starting byte of the field in the GDMS record. The bytes are numbered starting from 1.</p>
Real(<width>, <position>)	<p>Real fields hold floating point values stored in ASCII format.</p> <p>The width parameter is the total number of bytes allocated to the field, including the decimal point.</p> <p>The position parameter is the starting byte of the field in the GDMS record. The bytes are numbered starting from 1.</p>

Field Type	Description
String(<width>, <position>)	String fields hold fixed length strings. The <code>width</code> parameter is the number of bytes that the field holds. When a character field is retrieved, any padding blank bytes are stripped. The <code>position</code> parameter is the starting byte of the field in the GDMS record. The bytes are numbered starting from 1.
BigEndian(<width>, <position>)	BigEndian fields hold integer values stored in big-endian binary format. The <code>width</code> parameter is the total number of bytes allocated to the field. The only valid <code>width</code> values are: 1 to interpret the field as an 8 bit integer 2 to interpret the field as a 16 bit integer 4 to interpret the field as a 32 bit integer The <code>position</code> parameter is the starting byte of the field in the GDMS record. The bytes are numbered starting from 1.

[Workbench Parameter: <WorkbenchParameter>](#)

Feature Representation

In addition to the generic FME feature attributes that FME Workbench adds to all features (see *About Feature Attributes* on page 7), this format adds the format-specific attributes described in this section.

GDMS features consist of both geometry and attributes. The attributes on the features depend on whether the feature is a result of input `VERTICES` and `CROSSREF` files, or whether it is from a `TEXTDATA` file. The `gdms_feature_type` identifies the entity's geometric type and has these ranges:

```
gdms_line |
gdms_text_line |
gdms_point |
gdms_text_symbol |
gdms_polygon |
gdms_text_polygon |
gdms_annotation
```

GDMS Feature Types

The `DEF` lines specify many attributes for each GDMS record. All features derived from these records have all of these user-defined attributes. The only exceptions are the coordinate point and flag attributes. These attributes are used to construct the geometry of the feature and are not kept as attributes.

Refer to *DEF* on page 898 for a listing of GDMS attributes.

Lines

gdms_type: gdms_line

GDMS line features represent linear features in 2D. Line features do not have any specific attributes.

gdms_type: gdms_text_line

GDMS line features represent linear features in 2D. Line features do not have any specific attributes.

Points

gdms_type: gdms_point

GDMS point features represent point features in 2D. Point features do not have any specific attributes.

gdms_type: gdms_text_symbol

GDMS text symbols represent point features in 2D and have the following specific attributes:

- gdms_angle
- gdms_length
- gdms_size
- gdms_symbol_number
- gdms_text_layer_number

Polygons

gdms_type: gdms_polygon

GDMS polygon features represent polygon features in 2D. Polygon features do not have any specific attributes.

gdms_type: gdms_text_polygon

GDMS text polygon features represent polygon features in 2D. Polygon features do not have any specific attributes.

Annotations

gdms_type: gdms_annotation

GDMS annotations represent point features in 2D and have the following specific attributes:

- gdms_text
- gdms_angle
- gdms_height
- gdms_text_layer_number

Example Mapping File from GDMS to Shape

The example below shows an FME mapping file used to translate some features from the GDMS format into ESRI Shape format. The mapping file defines the data set location, and gives the correlation lines between GDMS features and Shape.

```
#=====
#=====
#
# This mapping file was automatically generated by the FME
# on 08/18/98 14:53:26 for lossless translation between GDMS and SHAPE.
#
# You may edit this mapping file to customize its operation. Comments are
# placed throughout to assist you.
#
# Modification History:
#
#      Name          Date      Description
#      =====      =====      =====
#
#=====
#=====
# The following line defines the title presented to the user when this
# mapping file is run through the FME GUI. You may modify this
# if a more meaningful title would be appropriate.

GUI TITLE GDMS to SHAPE Translation

#=====
# The following line names the log file to which useful statistics about
# the translation will be written. This line can be uncommented and
# updated if you do wish to keep these statistics.

# LOG_FILENAME translation.log

#=====
# The following line instructs the FME to log any features that do not
# match any of the source feature patterns listed further down in
# this file. If you are modifying this mapping file, this will be
# useful to describe exactly which features you are losing
# during translation, if the statistics indicate that features are
# not being correlated or grouped. Uncorrelated features do not
# match any source specification; ungrouped features do not have
# any corresponding _DEF line.

# FME_DEBUG UNGROUPED UNCORRELATED

#=====
# The following two lines define the type of reader and writer to be
# used for this translation. If you want to translate your data
# back into its original format, you may make a copy of this file
# and switch the reader and writer types. If you rerun the FME, you
# will get your original data back again (together with any modifications
```

```
# you made in the meantime). Note that several formats are NOT
# bi-directional (for example, GIF can only be used as a WRITER)
# so a reverse translation may not always be possible.
```

```
READER_TYPE GDMS
```

```
WRITER_TYPE SHAPE
```

```
#####
# The following GUI line prompts for a directory to be used as the
# source of the GDMS files.
# The user input is stored in a macro, which is then used to define
# the data set to be read.
```

```
GUI DIRNAME SourceDataset Original GDMS File Directory:
```

```
#####
# The DEF lines below are an outline for the VERTICES and CROSSREF file
# structures.
# Notice that most keywords and attribute names must be maintained
# while their type and/or precise location may be freely altered.
```

```
GDMS_DEF VERTICES_RECORD_1 \
  GDMS_VERTICES_FILENAME VERTICES \
  gdms_map_layer BigEndianInt(2,1) \
  gdms_ID BigEndianInt(4,3) \
  gdms_record_number BigEndianInt(2,7) \
  gdms_entity_type BigEndianInt(1,9) \
  gdms_num_coords BigEndianInt(2,10) \
  gdms_max_x BigEndianInt(4,12) \
  gdms_min_x BigEndianInt(4,16) \
  gdms_max_y BigEndianInt(4,20) \
  gdms_min_y BigEndianInt(4,24) \
  gdms_def_anno_x BigEndianInt(4,28) \
  gdms_def_anno_y BigEndianInt(4,32) \
  gdms_def_anno_angle BigEndianInt(2,36) \
  gdms_def_symbol_num BigEndianInt(2,38) \
  gdms_point_flag_1 BigEndianInt(1,54) \
  gdms_point_flag_2 BigEndianInt(1,55) \
  gdms_point_flag_3 BigEndianInt(1,56) \
  gdms_point_flag_4 BigEndianInt(1,57) \
  gdms_point_flag_5 BigEndianInt(1,58) \
  gdms_point_flag_6 BigEndianInt(1,59) \
  gdms_point_flag_7 BigEndianInt(1,60) \
  gdms_point_flag_8 BigEndianInt(1,61) \
  gdms_point_flag_9 BigEndianInt(1,62) \
  gdms_point_flag_10 BigEndianInt(1,63) \
  gdms_point_flag_11 BigEndianInt(1,64) \
  gdms_point_flag_12 BigEndianInt(1,65) \
  gdms_point_flag_13 BigEndianInt(1,66) \
  gdms_point_flag_14 BigEndianInt(1,67) \
  gdms_point_flag_15 BigEndianInt(1,68) \
  gdms_point_x_1 BigEndianInt(4,69) \
  gdms_point_y_1 BigEndianInt(4,73) \
  gdms_point_x_2 BigEndianInt(4,77) \
  gdms_point_y_2 BigEndianInt(4,81) \
  gdms_point_x_3 BigEndianInt(4,85) \
```

gdms_point_y_3	BigEndianInt(4,89)	\
gdms_point_x_4	BigEndianInt(4,93)	\
gdms_point_y_4	BigEndianInt(4,97)	\
gdms_point_x_5	BigEndianInt(4,101)	\
gdms_point_y_5	BigEndianInt(4,105)	\
gdms_point_x_6	BigEndianInt(4,109)	\
gdms_point_y_6	BigEndianInt(4,113)	\
gdms_point_x_7	BigEndianInt(4,117)	\
gdms_point_y_7	BigEndianInt(4,121)	\
gdms_point_x_8	BigEndianInt(4,125)	\
gdms_point_y_8	BigEndianInt(4,129)	\
gdms_point_x_9	BigEndianInt(4,133)	\
gdms_point_y_9	BigEndianInt(4,137)	\
gdms_point_x_10	BigEndianInt(4,141)	\
gdms_point_y_10	BigEndianInt(4,145)	\
gdms_point_x_11	BigEndianInt(4,149)	\
gdms_point_y_11	BigEndianInt(4,153)	\
gdms_point_x_12	BigEndianInt(4,157)	\
gdms_point_y_12	BigEndianInt(4,161)	\
gdms_point_x_13	BigEndianInt(4,165)	\
gdms_point_y_13	BigEndianInt(4,169)	\
gdms_point_x_14	BigEndianInt(4,173)	\
gdms_point_y_14	BigEndianInt(4,177)	\
gdms_point_x_15	BigEndianInt(4,181)	\
gdms_point_y_15	BigEndianInt(4,185)	\
GDMS_DEF VERTICES_RECORD_N		\
gdms_map_layer	BigEndianInt(2,1)	\
gdms_ID	BigEndianInt(4,3)	\
gdms_record_number	BigEndianInt(2,7)	\
gdms_point_flag_1	BigEndianInt(1,9)	\
gdms_point_flag_2	BigEndianInt(1,10)	\
gdms_point_flag_3	BigEndianInt(1,11)	\
gdms_point_flag_4	BigEndianInt(1,12)	\
gdms_point_flag_5	BigEndianInt(1,13)	\
gdms_point_flag_6	BigEndianInt(1,14)	\
gdms_point_flag_7	BigEndianInt(1,15)	\
gdms_point_flag_8	BigEndianInt(1,16)	\
gdms_point_flag_9	BigEndianInt(1,17)	\
gdms_point_flag_10	BigEndianInt(1,18)	\
gdms_point_flag_11	BigEndianInt(1,19)	\
gdms_point_flag_12	BigEndianInt(1,20)	\
gdms_point_flag_13	BigEndianInt(1,21)	\
gdms_point_flag_14	BigEndianInt(1,22)	\
gdms_point_flag_15	BigEndianInt(1,23)	\
gdms_point_flag_16	BigEndianInt(1,24)	\
gdms_point_flag_17	BigEndianInt(1,25)	\
gdms_point_flag_18	BigEndianInt(1,26)	\
gdms_point_flag_19	BigEndianInt(1,27)	\
gdms_point_flag_20	BigEndianInt(1,28)	\
gdms_point_x_1	BigEndianInt(4,29)	\
gdms_point_y_1	BigEndianInt(4,33)	\
gdms_point_x_2	BigEndianInt(4,37)	\
gdms_point_y_2	BigEndianInt(4,41)	\
gdms_point_x_3	BigEndianInt(4,45)	\
gdms_point_y_3	BigEndianInt(4,49)	\
gdms_point_x_4	BigEndianInt(4,53)	\

```

gdms_point_y_4      BigEndianInt(4,57)      \
gdms_point_x_5      BigEndianInt(4,61)      \
gdms_point_y_5      BigEndianInt(4,65)      \
gdms_point_x_6      BigEndianInt(4,69)      \
gdms_point_y_6      BigEndianInt(4,73)      \
gdms_point_x_7      BigEndianInt(4,77)      \
gdms_point_y_7      BigEndianInt(4,81)      \
gdms_point_x_8      BigEndianInt(4,85)      \
gdms_point_y_8      BigEndianInt(4,89)      \
gdms_point_x_9      BigEndianInt(4,93)      \
gdms_point_y_9      BigEndianInt(4,97)      \
gdms_point_x_10     BigEndianInt(4,101)     \
gdms_point_y_10     BigEndianInt(4,105)     \
gdms_point_x_11     BigEndianInt(4,109)     \
gdms_point_y_11     BigEndianInt(4,113)     \
gdms_point_x_12     BigEndianInt(4,117)     \
gdms_point_y_12     BigEndianInt(4,121)     \
gdms_point_x_13     BigEndianInt(4,125)     \
gdms_point_y_13     BigEndianInt(4,129)     \
gdms_point_x_14     BigEndianInt(4,133)     \
gdms_point_y_14     BigEndianInt(4,137)     \
gdms_point_x_15     BigEndianInt(4,141)     \
gdms_point_y_15     BigEndianInt(4,145)     \
gdms_point_x_16     BigEndianInt(4,149)     \
gdms_point_y_16     BigEndianInt(4,153)     \
gdms_point_x_17     BigEndianInt(4,157)     \
gdms_point_y_17     BigEndianInt(4,161)     \
gdms_point_x_18     BigEndianInt(4,165)     \
gdms_point_y_18     BigEndianInt(4,169)     \
gdms_point_x_19     BigEndianInt(4,173)     \
gdms_point_y_19     BigEndianInt(4,177)     \
gdms_point_x_20     BigEndianInt(4,181)     \
gdms_point_y_20     BigEndianInt(4,185)     \

GDMS_DEF CROSSREF_RECORD      \
GDMS_CROSSREF_FILENAME      CROSSREF      \
gdms_map_layer      BigEndianInt(2,1)      \
gdms_ID      BigEndianInt(4,3)      \
gdms_attr_number      BigEndianInt(1,7)      \
gdms_map_layer_2      BigEndianInt(2,8)      \
gdms_attr_number_2      BigEndianInt(1,10)      \
gdms_attr_value      String(48,11)      \
gdms_hex_date_yymmdd      String(3,59)      \

#=====
# The DEF lines below are an outline for the TEXTDATA file structure.
# Notice that most keywords and attribute names must be maintained
# while their type and/or precise location may be freely altered.

GDMS_DEF TEXT_LAYER_HEADER      \
GDMS_TEXT_LAYER_FILENAME      TEXTDATA      \
GDMS_RECORD_SIZE      44      \
gdms_text_layer_number      BigEndianInt(2,1)      \
gdms_grid_x      String(3,3)      \
gdms_grid_y      String(3,6)      \
gdms_ID      BigEndianInt(4,9)      \

```

```

gdms_record_number      BigEndianInt(2,13)      \
gdms_unique_flag        BigEndianInt(1,15)      \
gdms_max_x               BigEndianInt(4,17)      \
gdms_min_x               BigEndianInt(4,21)      \
gdms_max_y               BigEndianInt(4,25)      \
gdms_min_y               BigEndianInt(4,29)      \
gdms_ID_point_x         BigEndianInt(4,33)      \
gdms_ID_point_y         BigEndianInt(4,37)      \
gdms_length              BigEndianInt(2,41)      \
gdms_record_type        BigEndianInt(2,43)

GDMS_DEF TEXT_LAYER_TEXT                                \
GDMS_RECORD_SIZE      44                                \
gdms_element_type     BigEndianInt(4,1)                 \
gdms_alligned_length  BigEndianInt(2,5)                 \
gdms_true_length      BigEndianInt(2,7)                 \
gdms_height            BigEndianInt(4,9)                 \
gdms_width             BigEndianInt(4,13)                \
gdms_spacing           BigEndianInt(4,17)                \
gdms_angle             BigEndianInt(2,21)                \
gdms_annotation_x     BigEndianInt(4,37)                \
gdms_annotation_y     BigEndianInt(4,41)

GDMS_DEF TEXT_LAYER_POLY                                \
GDMS_RECORD_SIZE      12                                \
gdms_element_type     BigEndianInt(4,1)                 \
gdms_point_count      BigEndianInt(2,5)                 \
gdms_fill_flag        BigEndianInt(1,7)

GDMS_DEF TEXT_LAYER_CIRCLE                              \
GDMS_RECORD_SIZE      20                                \
gdms_element_type     BigEndianInt(4,1)                 \
gdms_center_x         BigEndianInt(4,5)                 \
gdms_center_y         BigEndianInt(4,9)                 \
gdms_radius           BigEndianInt(4,13)                \
gdms_fill_flag        BigEndianInt(1,17)

GDMS_DEF TEXT_LAYER_SYMBOL                              \
GDMS_RECORD_SIZE      20                                \
gdms_element_type     BigEndianInt(4,1)                 \
gdms_symbol_x         BigEndianInt(4,5)                 \
gdms_symbol_y         BigEndianInt(4,9)                 \
gdms_symbol_number    BigEndianInt(2,13)                \
gdms_angle            BigEndianInt(2,15)                \
gdms_size             BigEndianInt(4,17)

#=====
# The lines below are used for scaling and shifting the input GDMS data set.
# All features will have their coordinates scaled and shifted as outlined
# below, but their attributes (such as a circle radius or text size) will
# not be affected.

GDMS_SYSTEM_UNITS      100.0
GDMS_X_OFFSET          0
GDMS_Y_OFFSET          0

GDMS_DATASET "$ (SourceDataset) "
```

```

=====
# The following GUI line prompts for a directory to be used as the
# the destination for the ESRI SHAPE files.
# The user input is stored in a macro, which is then used to define
# the data set to be written.

GUI DIRNAME DestDataset Destination Shape File Directory:

SHAPE_DATASET "$(DestDataset)"

=====
# The main body of the mapping file starts here. Each of the
# _DEF lines describes the data model of the particular feature
# type, and the correlation lines describe how the feature is
# transformed from the source type to the destination type.
# You may edit the following lines to add or remove attributes, change
# attribute definitions, or invoke other FME functions as the
# features are translated.
=====

#=====

SHAPE_DEF gdms_points \
    SHAPE_GEOMETRY      shape_point \
    1                   char(48) \
    2                   char(48) \
    3                   char(48) \
    4                   char(48) \
    5                   char(48) \
    6                   char(48) \
    7                   char(48) \
    8                   char(48) \
    9                   char(48) \
    MAP_LAYER           number(5,0) \
    GDMS_ID              number(5,0) \
    NUMBER               number(5,0) \
    TYPE                 number(5,0) \
    NUM_COORDS           number(5,0) \
    GDMS_MAX_X           number(11,0) \
    GDMS_MIN_X           number(11,0) \
    GDMS_MAX_Y           number(11,0) \
    GDMS_MIN_Y           number(11,0) \
    DEF_ANNO_X           number(11,0) \
    DEF_ANNO_Y           number(11,0) \
    ANNO_ANGLE           number(11,0) \
    SYMBOL_NUM           number(11,0)

GDMS gdms_point \
    gdms_type            gdms_point \
    gdms_attribute_1    %gdms_attribute_1 \
    gdms_attribute_2    %gdms_attribute_2 \
    gdms_attribute_3    %gdms_attribute_3 \
    gdms_attribute_4    %gdms_attribute_4 \
    gdms_attribute_5    %gdms_attribute_5 \
    gdms_attribute_6    %gdms_attribute_6 \
    gdms_attribute_7    %gdms_attribute_7

```

```

gdms_attribute_8      %gdms_attribute_8      \
gdms_attribute_9      %gdms_attribute_9      \
gdms_map_layer        %gdms_map_layer        \
gdms_ID               %gdms_id                 \
gdms_record_number    %gdms_record_number    \
gdms_entity_type      %gdms_entity_type      \
gdms_num_coords       %gdms_num_coords       \
gdms_max_x            %gdms_max_x            \
gdms_min_x            %gdms_min_x            \
gdms_max_y            %gdms_max_y            \
gdms_min_y            %gdms_min_y            \
gdms_def_anno_x       %gdms_def_anno_x       \
gdms_def_anno_y       %gdms_def_anno_y       \
gdms_def_anno_angle   %gdms_def_anno_angle   \
gdms_def_symbol_num   %gdms_def_symbol_num   \

SHAPE gdms_points    \
  1      %gdms_attribute_1  \
  2      %gdms_attribute_2  \
  3      %gdms_attribute_3  \
  4      %gdms_attribute_4  \
  5      %gdms_attribute_5  \
  6      %gdms_attribute_6  \
  7      %gdms_attribute_7  \
  8      %gdms_attribute_8  \
  9      %gdms_attribute_9  \
MAP_LAYER      %gdms_map_layer  \
GDMS_ID        %gdms_id  \
NUMBER         %gdms_record_number  \
TYPE           %gdms_entity_type  \
NUM_COORDS     %gdms_num_coords  \
GDMS_MAX_X     %gdms_max_x  \
GDMS_MIN_X     %gdms_min_x  \
GDMS_MAX_Y     %gdms_max_y  \
GDMS_MIN_Y     %gdms_min_y  \
DEF_ANNOX     %gdms_def_anno_x  \
DEF_ANNOY     %gdms_def_anno_y  \
ANNO_ANGLE    %gdms_def_anno_angle  \
SYMBOL_NUM    %gdms_def_symbol_num  \

#=====

SHAPE_DEF gdms_lines    \
  SHAPE_GEOMETRY      shape_polyline  \
  1      char(48)      \
  2      char(48)      \
  3      char(48)      \
  4      char(48)      \
  5      char(48)      \
  6      char(48)      \
  7      char(48)      \
  8      char(48)      \
  9      char(48)      \
MAP_LAYER      number(5,0)  \
GDMS_ID        number(5,0)  \
NUMBER         number(5,0)  \
TYPE           number(5,0)  \

```

NUM_COORDS	number(5,0)	\
GDMS_MAX_X	number(11,0)	\
GDMS_MIN_X	number(11,0)	\
GDMS_MAX_Y	number(11,0)	\
GDMS_MIN_Y	number(11,0)	\
DEF_ANNO_X	number(11,0)	\
DEF_ANNO_Y	number(11,0)	\
ANNO_ANGLE	number(11,0)	\
SYMBOL_NUM	number(11,0)	\
GDMS gdms_line		\
gdms_type	gdms_line	\
gdms_attribute_1	%gdms_attribute_1	\
gdms_attribute_2	%gdms_attribute_2	\
gdms_attribute_3	%gdms_attribute_3	\
gdms_attribute_4	%gdms_attribute_4	\
gdms_attribute_5	%gdms_attribute_5	\
gdms_attribute_6	%gdms_attribute_6	\
gdms_attribute_7	%gdms_attribute_7	\
gdms_attribute_8	%gdms_attribute_8	\
gdms_attribute_9	%gdms_attribute_9	\
gdms_map_layer	%gdms_map_layer	\
gdms_ID	%gdms_id	\
gdms_record_number	%gdms_record_number	\
gdms_entity_type	%gdms_entity_type	\
gdms_num_coords	%gdms_num_coords	\
gdms_max_x	%gdms_max_x	\
gdms_min_x	%gdms_min_x	\
gdms_max_y	%gdms_max_y	\
gdms_min_y	%gdms_min_y	\
gdms_def_anno_x	%gdms_def_anno_x	\
gdms_def_anno_y	%gdms_def_anno_y	\
gdms_def_anno_angle	%gdms_def_anno_angle	\
gdms_def_symbol_num	%gdms_def_symbol_num	\
SHAPE gdms_lines		\
1	%gdms_attribute_1	\
2	%gdms_attribute_2	\
3	%gdms_attribute_3	\
4	%gdms_attribute_4	\
5	%gdms_attribute_5	\
6	%gdms_attribute_6	\
7	%gdms_attribute_7	\
8	%gdms_attribute_8	\
9	%gdms_attribute_9	\
MAP_LAYER	%gdms_map_layer	\
GDMS_ID	%gdms_id	\
NUMBER	%gdms_record_number	\
TYPE	%gdms_entity_type	\
NUM_COORDS	%gdms_num_coords	\
GDMS_MAX_X	%gdms_max_x	\
GDMS_MIN_X	%gdms_min_x	\
GDMS_MAX_Y	%gdms_max_y	\
GDMS_MIN_Y	%gdms_min_y	\
DEF_ANNO_X	%gdms_def_anno_x	\
DEF_ANNO_Y	%gdms_def_anno_y	\
ANNO_ANGLE	%gdms_def_anno_angle	\

```

SYMBOL_NUM          %gdms_def_symbol_num

#=====
SHAPE_DEF gdms_annotations \
  SHAPE_GEOMETRY      shape_point \
  TEXT_ANGLE          number(14,6) \
  TEXT_SIZE           number(14,6) \
  TEXTSTRING          char(254) \
  GDMS_ID             number(10,0) \
  ID_POINT_X          number(10,0) \
  ID_POINT_Y          number(10,0) \
  LENGTH0             number(5,0) \
  TYPE0               number(1,0) \
  GRID_X              char(3) \
  GRID_Y              char(3) \
  LENGTH              number(10,0) \
  GDMS_MAX_X          number(10,0) \
  GDMS_MAX_Y          number(10,0) \
  GDMS_MIN_X          number(10,0) \
  GDMS_MIN_Y          number(10,0) \
  NUMBER              number(5,0) \
  TYPE1               number(5,0) \
  SPACING             number(10,0) \
  NUMBER1             number(5,0) \
  LENGTH1             number(5,0) \
  FLAG                number(1,0) \
  GDMS_WIDTH          number(10,0) \
  GDMS_TEXT           char(254) \
  GDMS_ANGLE          number(5,0) \
  HEIGHT              number(10,0)

GDMS gdms_annotation \
  gdms_ID              %gdms_id \
  gdms_ID_point_x     %gdms_id_point_x \
  gdms_ID_point_y     %gdms_id_point_y \
  gdms_aligned_length %gdms_aligned_length \
  gdms_element_type   %gdms_element_type \
  gdms_grid_x         %gdms_grid_x \
  gdms_grid_y         %gdms_grid_y \
  gdms_length         %gdms_length \
  gdms_max_x          %gdms_max_x \
  gdms_max_y          %gdms_max_y \
  gdms_min_x          %gdms_min_x \
  gdms_min_y          %gdms_min_y \
  gdms_record_number  %gdms_record_number \
  gdms_record_type    %gdms_record_type \
  gdms_spacing        %gdms_spacing \
  gdms_text_layer_number %gdms_text_layer_number \
  gdms_true_length    %gdms_true_length \
  gdms_unique_flag    %gdms_unique_flag \
  gdms_width          %gdms_width \
  gdms_text           %gdms_text \
  gdms_angle          %gdms_angle \
  gdms_height         %gdms_height

SHAPE gdms_annotations \

```

```

GDMS_ID          %gdms_id          \
ID_POINT_X      %gdms_id_point_x   \
ID_POINT_Y      %gdms_id_point_y   \
LENGTH0         %gdms_aligned_length \
TYPE0           %gdms_element_type  \
GRID_X          %gdms_grid_x        \
GRID_Y          %gdms_grid_y        \
LENGTH          %gdms_length        \
GDMS_MAX_X      %gdms_max_x         \
GDMS_MAX_Y      %gdms_max_y         \
GDMS_MIN_X      %gdms_min_x         \
GDMS_MIN_Y      %gdms_min_y         \
NUMBER          %gdms_record_number \
TYPE1           %gdms_record_type   \
SPACING         %gdms_spacing       \
NUMBER1         %gdms_text_layer_number \
LENGTH1        %gdms_true_length    \
FLAG            %gdms_unique_flag   \
GDMS_WIDTH      %gdms_width         \
TEXTSTRING      %gdms_text          \
TEXT_ANGLE      %gdms_angle         \
TEXT_SIZE       %gdms_height        \

#=====

SHAPE_DEF gdms_polygons          \
  SHAPE_GEOMETRY  shape_polygon   \
  GDMS_ID          number(10,0)    \
  ID_POINT_X      number(10,0)    \
  ID_POINT_Y      number(10,0)    \
  TYPE0           number(1,0)     \
  FILL_FLAG       number(1,0)     \
  GRID_X          char(3)          \
  GRID_Y          char(3)          \
  LENGTH          number(10,0)     \
  GDMS_MAX_X      number(10,0)     \
  GDMS_MAX_Y      number(10,0)     \
  GDMS_MIN_X      number(10,0)     \
  GDMS_MIN_Y      number(10,0)     \
  COUNT          number(5,0)       \
  NUMBER          number(5,0)       \
  TYPE1           number(5,0)       \
  NUMBER1         number(5,0)       \
  FLAG            number(1,0)       \

GDMS gdms_text_polygon          \
  gdms_ID          %gdms_id          \
  gdms_ID_point_x  %gdms_id_point_x  \
  gdms_ID_point_y  %gdms_id_point_y  \
  gdms_element_type %gdms_element_type \
  gdms_fill_flag   %gdms_fill_flag   \
  gdms_grid_x      %gdms_grid_x      \
  gdms_grid_y      %gdms_grid_y      \
  gdms_length      %gdms_length      \
  gdms_max_x       %gdms_max_x       \
  gdms_max_y       %gdms_max_y       \
  gdms_min_x       %gdms_min_x       \

```

gdms_min_y	%gdms_min_y	\
gdms_point_count	%gdms_point_count	\
gdms_record_number	%gdms_record_number	\
gdms_record_type	%gdms_record_type	\
gdms_text_layer_number	%gdms_text_layer_number	\
gdms_unique_flag	%gdms_unique_flag	\
SHAPE gdms_polygons		
GDMS_ID	%gdms_id	\
ID_POINT_X	%gdms_id_point_x	\
ID_POINT_Y	%gdms_id_point_y	\
TYPE0	%gdms_element_type	\
FILL_FLAG	%gdms_fill_flag	\
GRID_X	%gdms_grid_x	\
GRID_Y	%gdms_grid_y	\
LENGTH	%gdms_length	\
GDMS_MAX_X	%gdms_max_x	\
GDMS_MAX_Y	%gdms_max_y	\
GDMS_MIN_X	%gdms_min_x	\
GDMS_MIN_Y	%gdms_min_y	\
COUNT	%gdms_point_count	\
NUMBER	%gdms_record_number	\
TYPE1	%gdms_record_type	\
NUMBER1	%gdms_text_layer_number	\
FLAG	%gdms_unique_flag	\