



Case Study: Louisville Gas & Electric



Key Facts:

Industry: Utilities

Problem: Migrating MicroStation design files into a corporate GE Smallworld database

Solution: FME

Location: Kentucky, USA

The Organization

Louisville Gas and Electric Energy (LG&E) is a Fortune 500 diversified energy services company providing retail gas and electric distribution services to more than 1 million retail electric and natural gas customers, both within the United States and internationally. LG&E has nearly \$5.0 billion in assets and employs more than 5,000 people.

The Challenge

LG&E implemented GE Smallworld as a replacement for the Synercom AM product. However, at the time that GE Smallworld was selected to replace Synercom, the electric and gas distribution lines of business were designing in AutoCAD and MicroStation respectively. When GE Smallworld was introduced, the designers were already accustomed to the drafting capabilities of the CAD products and viewed CAD as necessary for complex designs. The GE Smallworld GIS did not provide the same drafting capabilities and, as a result, disjoint systems were used for record keeping and designing.

LG&E required a system to be developed which would allow them to move standardized MicroStation design files, produced by the engineering division, into the corporate GE Smallworld database. The engineering data consisted of electrical, gas and cadastral data.

The Solution

LG&E chose Safe Software as a one-stop solution for the challenge at hand. Safe's FME® software provided the tools for the tasks and Safe's consulting team – working in conjunction with LG&E developers – provided the necessary expertise to bring it all together. The system developed, using a combination of MicroStation, FME and GE Smallworld, consists of routines and

procedures to filter the incoming data, rubber sheet it to a common landbase, and, finally, insert it correctly into a GE Smallworld database.

Defining the MicroStation to GE Smallworld Relationship: Key to the solution was a method for defining how features in the MicroStation layers mapped to the corresponding GE Smallworld objects. This was solved through the use of a spreadsheet (in the form of 2 "csv" files) which was termed the "Digital Standard." The Digital Standard provided the framework for:

- a standardized DGN format
- standardized GE Smallworld object definitions
- filtering of invalid features during the QA process
- mapping of DGN features and attributes to the corresponding GE Smallworld objects

The Translation Process: The actual translation is a multi-stage process being driven by the Digital Standard and, ultimately, converting the DGN features to GE Smallworld objects. In order to facilitate the process, the initial stages of the translation convert the data to FME's interim format, referred to as FFS, which can easily be written to and read from disk, and which improves efficiency within FME. The steps involved in the translation process are:

- create connectivity vectors for rubber sheeting
- QA DGN data
- rubber sheet input features
- import data into GE Smallworld

Creating connectivity vectors for rubber

sheeting: The initial approach recommended for rubber sheeting was through the use of survey control points, however, as the GE Smallworld implementation had virtually no control points, an alternative solution had to be devised. The alternative was to use reference points on both the source DGN and destination GE Smallworld in order to create connectivity vectors. Thus, the rubber sheeting became a four stage process:

- Define reference points within the MicroStation DGN file.
- Define corresponding reference points within the GE Smallworld database at the location where the drawing is to be imported and write them to a csv file.
- Using FME, read the MicroStation DGN data and merge it with the GE Smallworld csv coordinates to create a new csv containing corresponding pairs of control points (which are the start and end points of the connectivity vectors).
- Using FME, read the new input csv file and build connectivity vectors joining the reference point pairs, then write an FME FFS recording of the vectors.

QA DGN data: The MicroStation DGN data is read by FME and QA'd according to the Digital Standard. Any features that do not match a row in the Digital Standard are deemed to have failed QA and are output to an FME FFS file, QA.FFS. Successful features pass through the QA process for further translation.

Rubber sheet input features: This process uses an FME Mapping File to read the connectivity vectors and, using the WarpFactory, warps each feature so that all features are rubber sheeted to fit the MicroStation drawing into the corresponding area \ region in GE Smallworld.

Import data into GE Smallworld: The final stage of the process is the actual import of the DGN drawing into GE Smallworld. Using the GE Smallworld FME interface, an FME Mapping File translates the DGN features to their corresponding GE Smallworld objects as defined by the Digital Standard.

Learn More

To find out how FME can help address your data interoperability challenge, or to download a free evaluation copy of FME, visit www.safe.com.

