Tech-Gration: GIS - CYME Integration

Detailed Design Document

Tech-Gration - CYME GIS Interface

1) **Scope** The present detailed design specifications (DDS) document describes the functionality implemented in the Tech-Gration project. It presents the workflow for using the Tech-Gration in the target environment, the software architecture, the user interface for the Configuration Tool, the software requirements, and information for using the Tech-Gration in batch mode.

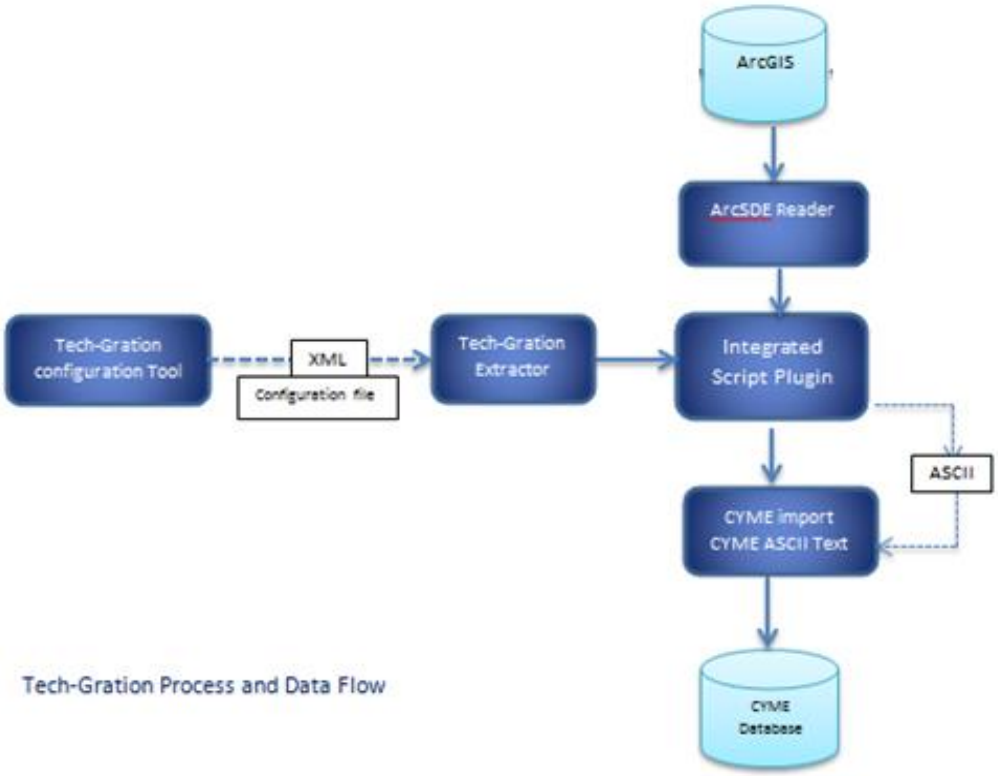
Also, please refer to the "Tech-Gration - Data Mapping" document for the detailed mapping and naming conventions between ArcGIS and CYME.

2) **Introduction** The **Tech-Gration** solution extracts all necessary information from your GIS and Other enterprise systems to automatically generate up-to date and accurate distribution network models, ready for planning and operational studies executed with the Cyme Software. One of the biggest challenges for distribution system engineers is to have a complete, up-to-date network model to work with. The **Tech-Gration** solution eases the technical complexity that distribution system engineers have to face in gathering and integrating relevant system data into a single network model. It extracts the required information and builds the most complete network possible for the CYME software, on demand or automatically.

3) Tech-Gration Architecture

3.1) Tech-Gration Process and Data Flow

We Used ETL Process Extract Transform & Load, Extraction from GIS Database ,Transfer GIS Data into CYME Model and then Load CYME Model into CYME Database. Extracting from **GIS** (MS SQL) and other enterprise systems to CYME databases in MS SQL, in batch mode or on demand from the Configuration Tool.



Tech-Gration Process and Data Flow

The Tech-Gration extracts from the ArcGIS system the network connectivity model in a format supported by the CYME application, and creates the network databases required by CYME to perform power engineering analysis. The process is controlled by the Tech-Gration Extractor application and consists of the following steps:

- **Step 1**

  The first step is to extract the network model that resides in the ArcGIS system. Each circuit (feeder) is read separately with all electrical objects that are needed for mapping into the CYME model.

- **Step 2**

  During the second step, each circuit from the ArcGIS model is transformed into the CYME model. It is in this step also that the Tech-Gration integrates the Feeder Demands into the model.

- **Step 3**

  The ASCII files for each feeder are imported into the CYME database in MS SQL database format.

- **Step 4**

  After the importation, user can perform analysis on all imported feeders and the load model is saved in the CYME Network Database.

3. Tech-Gration Software Component

a) Configuration Tool

The Tech-Gration Configuration Tool is a user interface application that allows the user to configure the parameters needed for the extraction process. The user can select the database connections, the networks to extract and various options to control the extraction process. The Tech-Gration customization is defined in section this document. The configuration is saved locally in XML files used by the Extraction Tool.

b) Extraction Tool

The Tech-Gration Extraction Tool is the application that controls the various components of the Tech-Gration. It reads the configuration file created by the Tech-Gration Configuration Tool. During extraction, it also collects the errors and a warning issued by all of the Tech-Gration components and reports them to the log file.

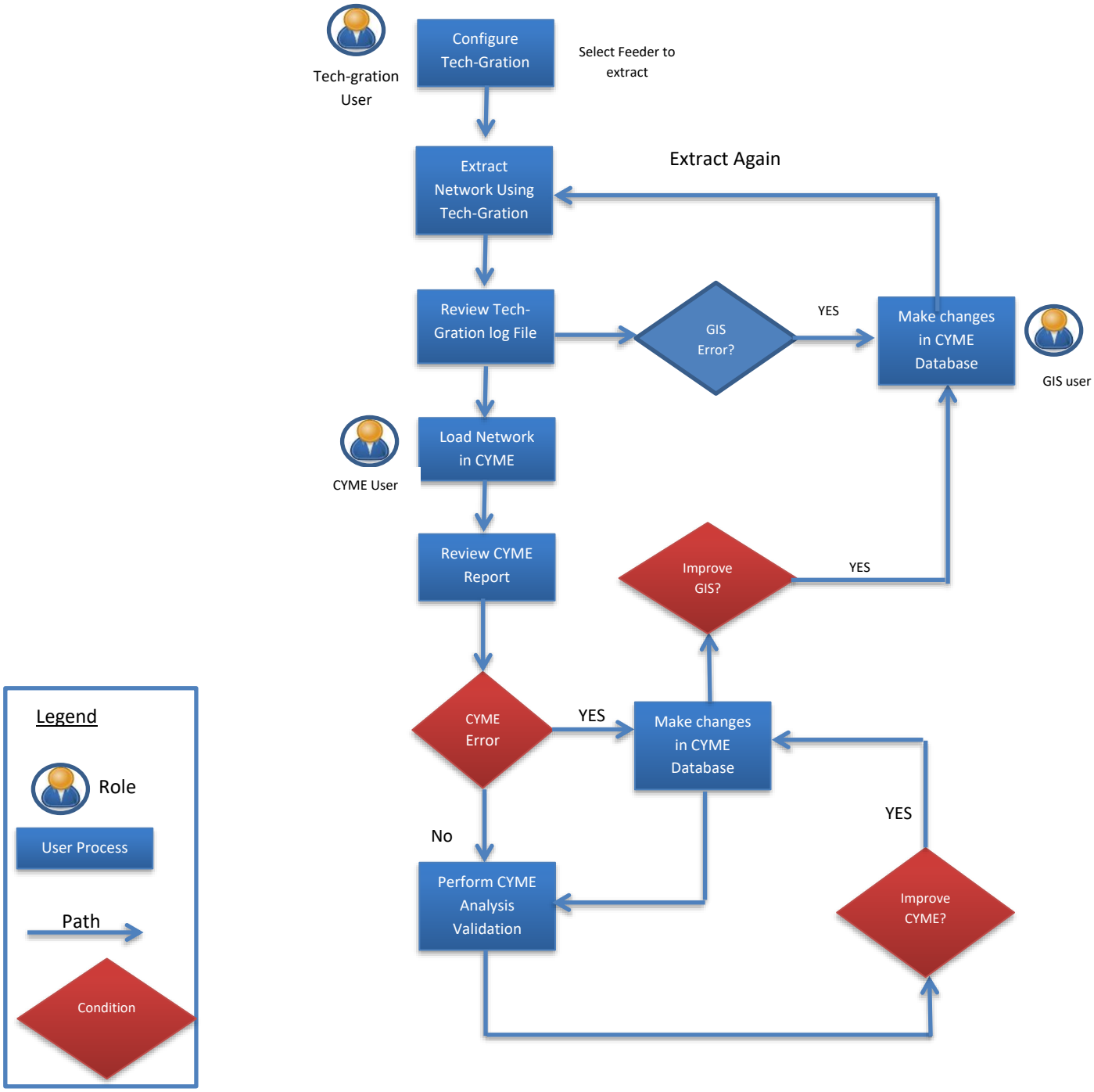
c) Reader for ArcSDE

Reading features for each circuit from ArcGIS will be done directly in Tech-Gration for ArcSDE.

d) CYME Import ASCII

The ASCII files produced by the Tech-Gration are imported in the CYME database or file which is compatible with the version of CYME.

4 Tech-Gration workflow



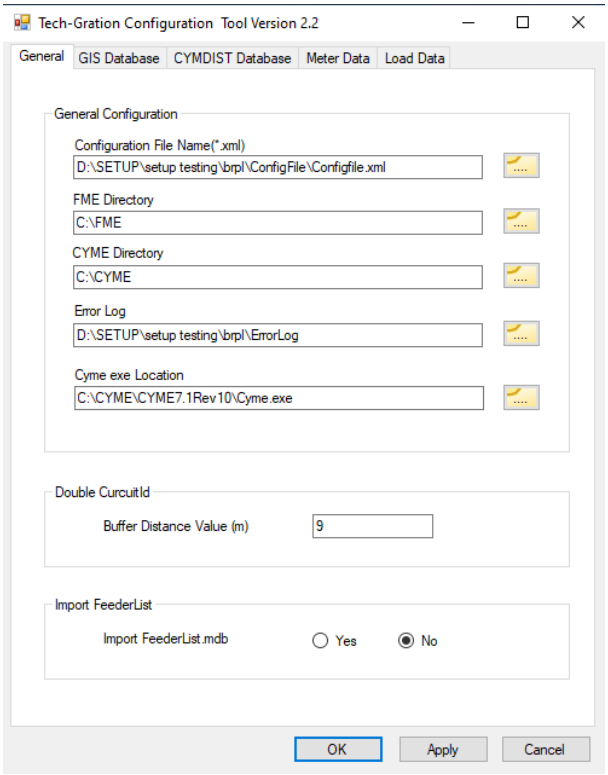
5 User design Interface

6.1 Tech-Gration Configuration Tool

The Configuration Tool user-interface is a Windows interface displaying tabs: General, GIS Database, Meter data (Peak), CONSUMER, CYME Database, and Import Feeder. It allows the user to create new configurations, to open an existing configuration file, to save the changes and to start the extraction process.

6.1.1 General Tab

The configurations are stored into XML formatted files. Only one configuration can be activated at a time.



- **Configuration File Name**

  Displays the active configuration file and allows browsing for an existing configuration file using the Browse button.

- **FME Directory**

  To select the CYME installation directory.

- **CYME Directory**

  To select the CYME installation directory.

- **Error Log File**

  To select the log file used by the Tech-Gration to report errors encountered during the extraction process.

- **Extraction Type**

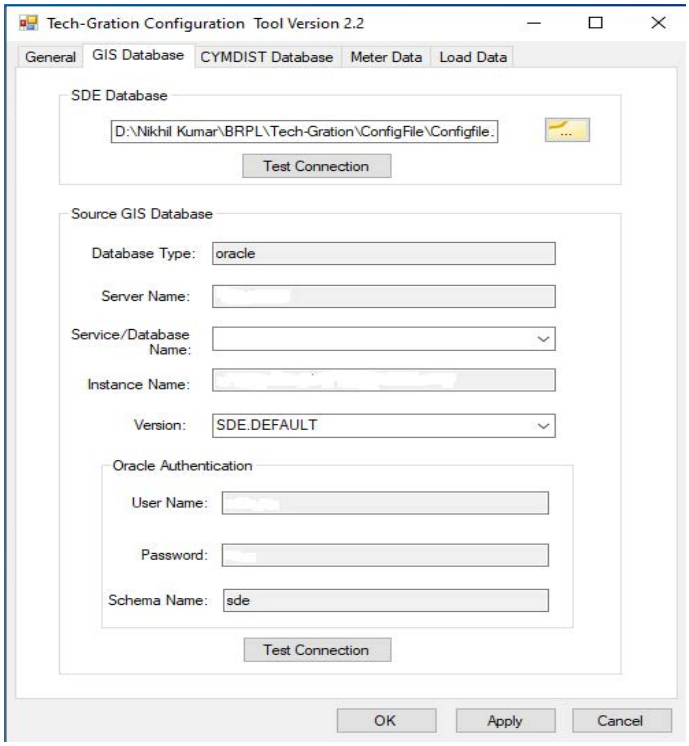
  Run Tech-Gration in two modes Manual or Scheduler.

  Manual: User Can run as per there selection.

  Scheduler: User can schedule extraction (Time can set in Task scheduler daily) .In this section Tech-Gration will run daily at schedule time and read updated Feederid list from GIS and extract only updated feeder from GIS.

- **Action Buttons:**
  - The **OK** button saves the active configuration.
  - The **Run** button launches the Tech-Gration extraction process.
  - The **Apply** button exits the Tech-Gration Configuration tool.

6.1.2 GIS Database Tab



- **Database Type**

  Displays the GIS database type. It can only be SDE.

- **SDE Path**

  Browse SDE file.

- **Server Name**

To specify the server host or IP address where the ArcSDE database resides.

- **Service Name/Database Name**

  Specifies the SQL Service name/Database name.

- **Instance Name**

  To specify the ArcSDE instance name in the.

- **Version**

To specify the SDE version to use, for example SDE.DEFAULT.

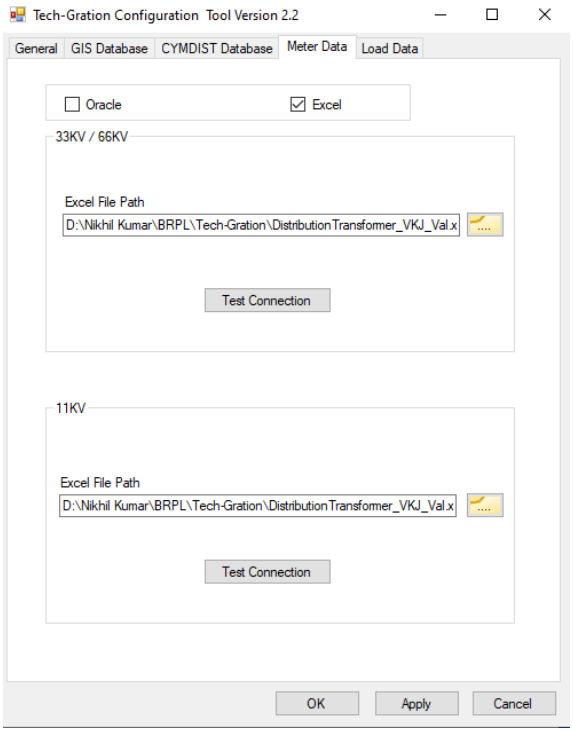
- **Oracle Authentication**

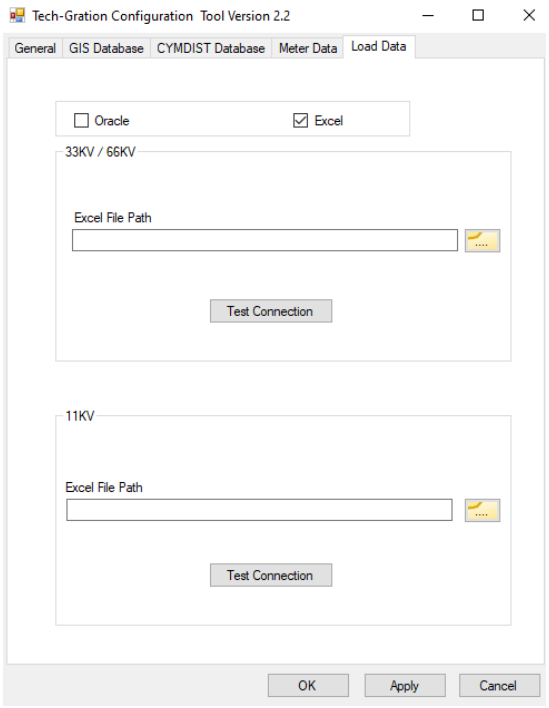
  To enter the Oracle User Name and Password for the user account.

- **Test Connection**

To verify if the selected ArcSDE connection is valid.

6.1.3 Meter & Load Data (Peak Demand and 11KV Outgoing Feeder load) Database Tab





- **Meter Demand File Path**

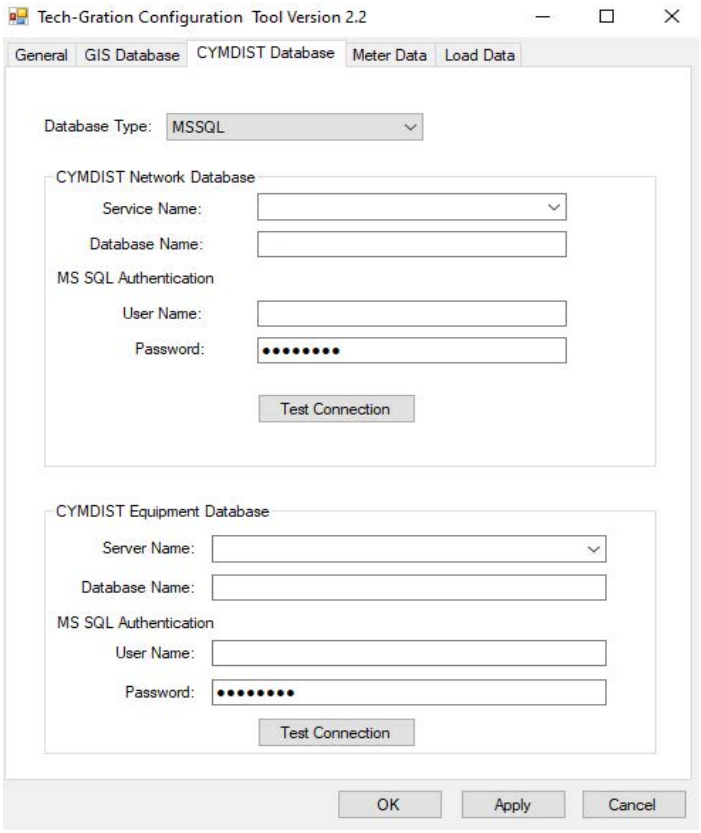
  Browse Meter Demand CSV File.

- **11KV Outgoing Feeder Load for EHV Network File Path**

  Browse Load CSV File.

In this tab Pass credential for Meter data(Peak demand) and 11KV outgoing Load Database.(Detail of table available in Data Mapping document)

6.1.4 CYME Database Tab

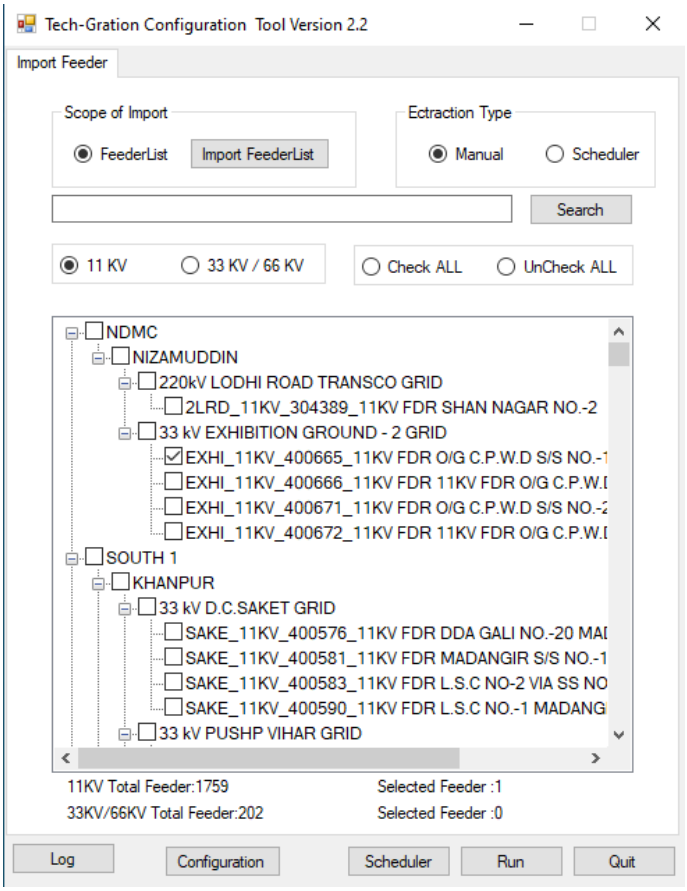


CYME software use Two diffrerent type of database .

1) Network
2) Equipment.

Need to Pass credential for both database.

6.1.5 Import Feeder Tab



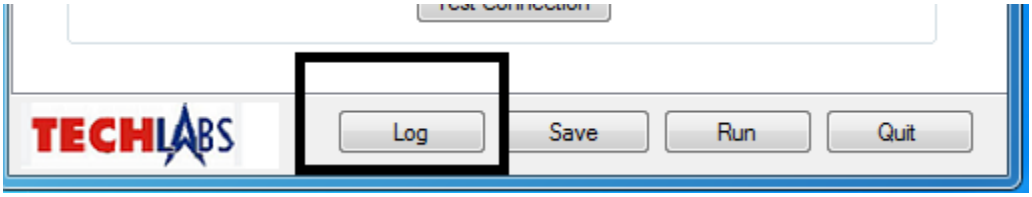
In this Tab get List of Feeder from GIS Database .

a) Click on Import Feeder List

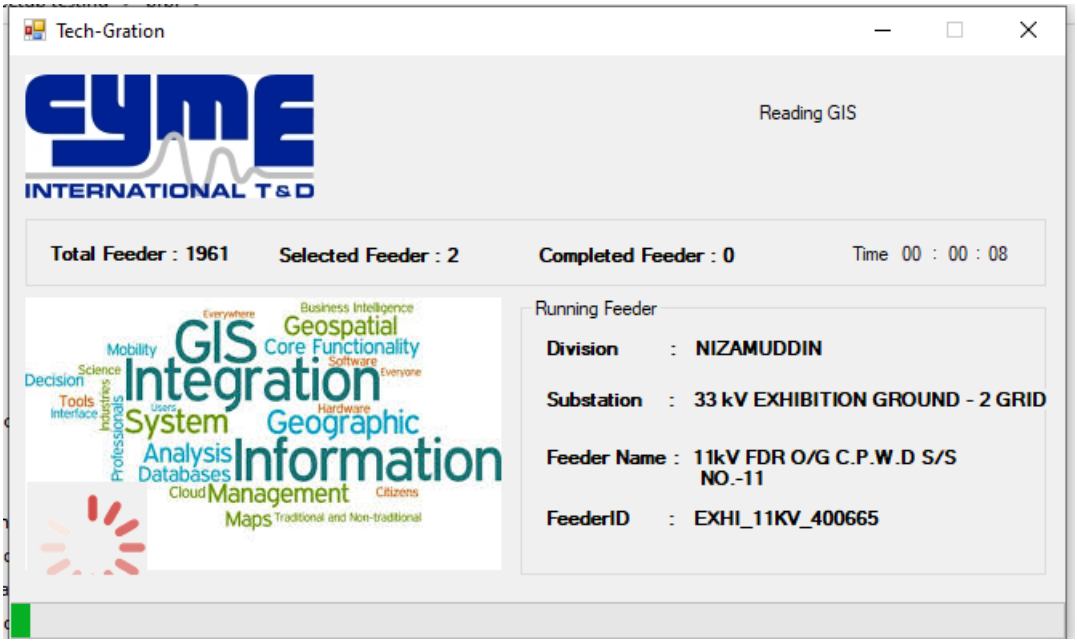
b) Select Feeder ,

c) Run

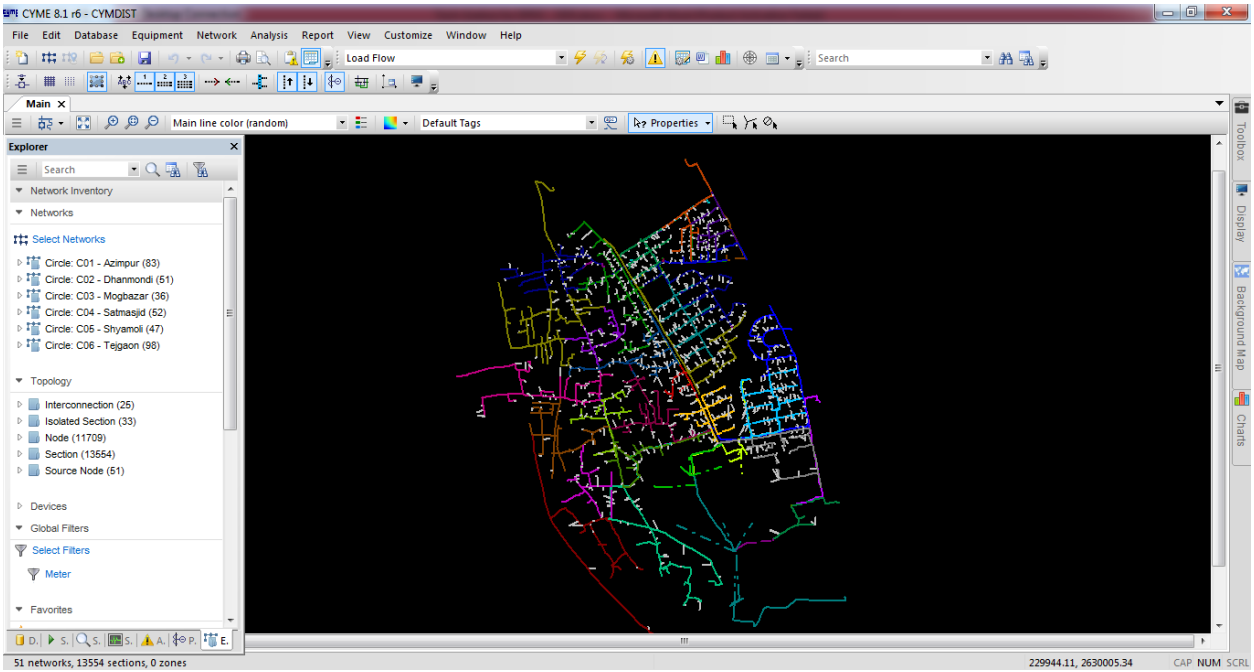
6.1.6 Log



Feeder will be extract one by one from GIS data and Import into CYME database.



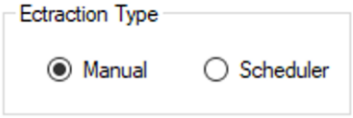
6.1.7 OUTPUT



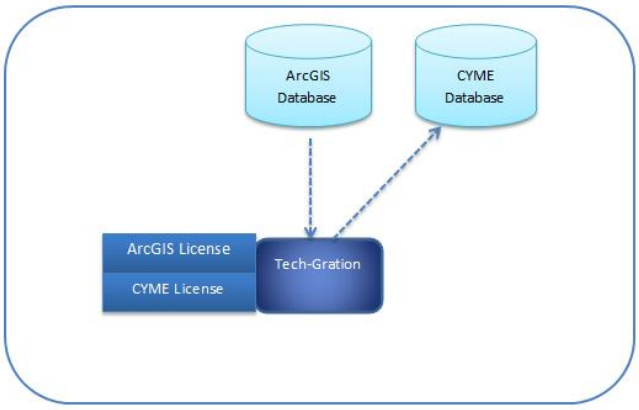
6.1.8 Running the Tech-Gration in Scheduler

In addition to running the Tech-Gration using the Configuration Tool [**Run**] button, it is possible to run the Tech-Gration with a scheduler.

To run in scheduler mode, first create and save a configuration file using the **Configuration Tool**. Once created, the file will be used to start the extraction process.



6.1.9 Access & Authorization on Tech-Gration work Station



Access & Authorization on Tech-Gration work Station