

ArcFM

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ArcFM™ Overview

ArcFM is a powerful extension of ESRI's ArcGIS® 9 platform that provides a complete enterprise utility solution for editing, modeling, maintenance, and management of facility information for electric, gas, and water/wastewater utilities. ArcFM takes advantage of an industry-standard architecture and programming environments, an easy-to-use interface, and powerful cartographic tools, giving utilities an optimized solution for the entire organization.

ArcFM consists of a family of models and a set of sophisticated tools that provide a comprehensive application for energy and water/wastewater utilities. ArcFM allows maintenance and viewing of data, using company specific business rules, and includes applications to configure the data models and tools to work together.

ArcFM supports the vertically integrated enterprise, making it easy to view, edit, map, and manage spatial data in a multi-utility context. ArcFM fits into the overall information technology through the use of open databases, industry-standard programming environments, and Component Object Model (COM) architecture.

Open Architecture, Open Database, Open Development Tools

ArcFM is implemented within the ArcInfo environment using an object-oriented architecture. The supported hardware platforms are Windows 2000 and Windows XP. ArcFM was developed using VB6, C++, and C# and these languages can also be used for customization and extension of the application.

ArcFM is an extension of ArcGIS, which relies on the effective use of components. ArcEditor, ESRI's professional GIS, sets the standard for applying geographic requirements and supporting spatial decision-making. From project GIS to a large spatial enterprise, ArcEditor is the scalable solution that provides a complete, integrated platform for creating, managing, and disseminating geographic information.

ArcFM/ArcMap Menu Interface

The ArcFM toolbar is the interface to most of the geo-processing and analysis components. ArcMap is the user interface for the query/display/edit environment, and is the foundation for ArcFM. Its foundation is the data management system of ArcSDE, which implies an RDBMS used as a data repository.

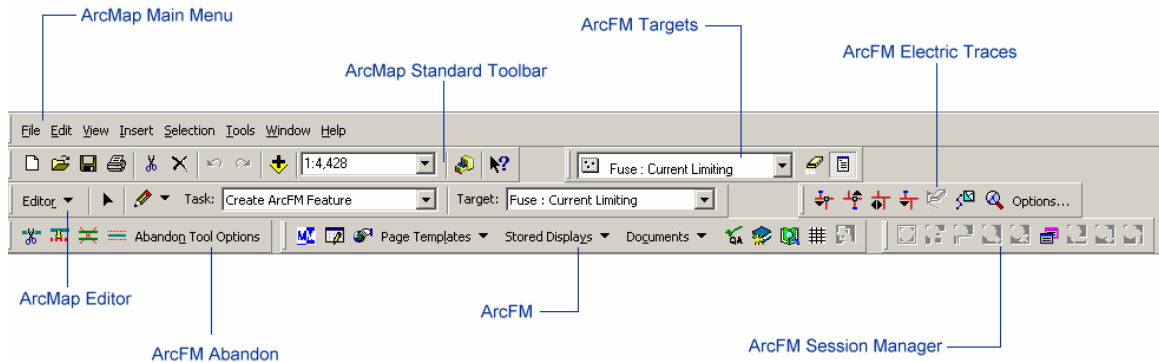


Figure 1: ArcMap and the ArcFM Toolbars

ArcMap Menu

The ArcMap Main Menu accesses the application's primary operations. The menu bar is identical in behavior to Microsoft Windows menu bars. Access keys are present for all menu bar items. This means, for example, that pressing Alt+F opens the File drop-down menu.

Clicking a menu bar item, such as File, Edit or View, displays drop-down menus that list tools associated with the menu topic. For example, the File menu contains options used to Open, Save, and Close a map document, as well as to exit the application.

ArcFM Toolbars

When selected, toolbars appear by default beneath the menu bar. To display a toolbar, right-click in the gray area and check or uncheck the desired toolbar. Toolbars are dockable. There is a single main interface containing tools applicable at all points in the application, and several additional toolbars with special-purpose tools.

ArcFM presents toolbars when their use is appropriate given the application context. For example, the editing toolbar will normally be inactive when no layer in the map document can be edited. Users can right-click in the menu bar, or on any toolbar, to display a pop-up menu for selecting any toolbar available. When tools are not valid, the individual tools will be disabled (grayed-out).

Arc Geodatabase

The following describes some of the key features of ArcInfo functionality within the ArcFM solution. For a more complete functional description, please refer to the ArcGIS and ArcFM online help and user guides.

Data Validation

A geodatabase supports three broad types of validation rules: attribute validation rules, network connectivity rules, and relationship rules. Both the ArcMap Editor and the ArcFM QA/QC tools help users identify invalid features.

Editing geometric network feature classes is one of the most tightly integrated geodatabase editing tasks. When a user creates new network features, topology is maintained on-the-fly, and is continuously updated as the user modifies network features.

When snapping network edges together, the editor uses the connectivity rules the administrator has defined for the network to determine the correct junction type for connecting the two edge features. When users adds junctions or connects edges to complex edges, the geometric network is automatically updated.

Using the editor with the network analyst tools in ArcMap helps maintain correct connectivity while geometric network features are being edited.

Types of data validation include:

- Domain values – range and domain values for attributes

- Default values – predefined default values for attributes

- Connectivity rules – rules to ensure valid feature connectivity

- Split/Merge rules – rules to ensure valid features may be split or merged

- Network properties – definition of what features are within an electric network or gas distribution and therefore may be traceable

- Relationship – for example, high voltage lines can connect to low voltage lines through a transformer, or different pressure systems can be joined through a regulator station

- Custom – developers implement in ObjectClassExtension

Electric, Gas and Water Object Models

ArcFM provides gas, water, waste water, and several electric enterprise object models from Miner & Miner, a Telvent company. These formal models, specified using Unified Modeling Language (UML), represents electric, gas, or water distribution facility features. Included within the model is a complete specification of all custom features, relationships, validation rules, domain specifications, default values, and subtypes. Additionally, users can build an instance of the model within a geodatabase using the ArcInfo CASE tool wizard. M&M also supplies a Multispeak-compliant model for the REA/Coop market.

Versioning

ArcFM's versioning capability allows single or multiple users to edit a database concurrently. Many users may never realize they are working with a version. A typical work session involves a user connecting to a version of the database, performing edits, saving

those edits, and performing more edits, if necessary.

Versioning allows multiple users to view and edit the same version at the same time. Each version has a unique name, but all versions have the same schema. This permits a user to have several pending projects for the same area or facilities. Creating versions of versions is also supported.

Versions can be used to create “what if” scenarios for systems/operations planning. These versions would not typically be posted to the master database and used only for evaluation/analysis purposes.

ArcFM Features

Attribute Editor

Displays Attributes

The ArcFM Attribute Editor is the key to editing and placing features on the map. The Targets tab displays the attributes of feature classes to be placed on the map, and the Selection tab displays existing features selected for editing. When a feature is selected, a right-click context menu provides options including highlighting and zooming to existing features as well as creating related features and objects.

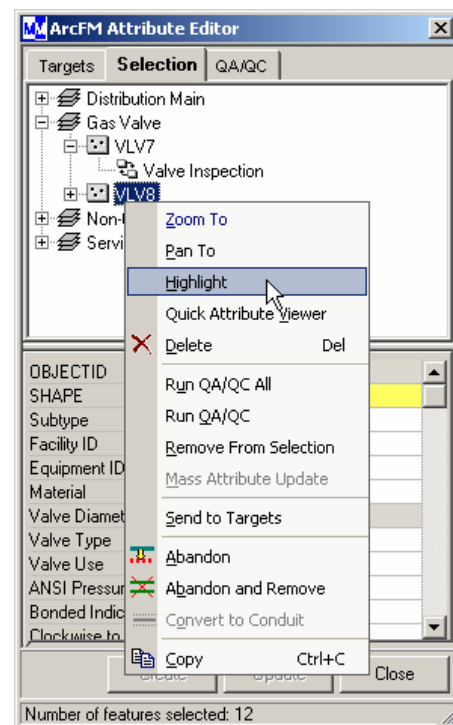


Figure 2: Selection Tab

Performs Validation

The QA/QC tool utilizes basic database validation principles such as relationship and connectivity rules to validate attribute values.

ArcFM users may also define custom validation rules programmatically and enable those rules in ArcCatalog using the ArcFM Properties Manager.

The QA/QC tool may be accessed on the ArcFM toolbar, or from the right-click Utility menus in the Locator tool and on the QA/QC tab or Selection tab of the Attribute Editor. The QA/QC tab displays messages that provide the user with information necessary to correct domain, relationship, or connectivity errors.

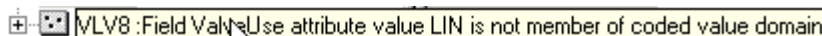


Figure 3: QA/QC Error Message

The QA/QC tool is linked with the Locator tool so users can quickly navigate to features based on an attribute value, feeder ID, or position on the map. Users can also display read-only screens based on Feeder Manager, underground conduit configuration, or attribute information.

The ArcFM's QA/QC tool can be used to validate selected features and generate a report or export the results to an XML file.

The QA/QC Version Difference tool allows users to compare the current version with the parent version using the QA/QC Validation rules to validate modifications.

Customizable Display

The editor grid can be customized to serve specific business processes. An administrator can change the order of attribute fields in the editor display as well as change the editability and visibility of a field (except the ObjectID field).

Automated Behavior

ArcFM autoupdaters automatically generate an attribute value at the onset of a specific event such as adding or deleting a feature. An example is the ArcFM Structure Relate autoupdater, which searches for an existing structure in the area around a new device. If one is found within its search tolerance (the default is 25 map units), it automatically relates the new device to the structure. Autoupdater objects can also:

- Split a line when junction is placed.
- Rotate a point feature to align with conductor or pipe features.
- Find features using a field defined as the ArcFM Display field.
- Find all tie devices (open, switchable devices) associated with a selected feeder system.
- Find features by value defined in any field for a given feature class.
- Update and display conductor and conduit annotation.

Mass Attribute Update

Modify Groups of Features

The Mass Attribute Update tool allows users to quickly and easily make modifications to a large group of features and update attribute fields for features that have the same subtype. For example, a group of non-wood poles can be changed to 45-foot steel poles in just a few clicks.

Phase Swap Tool

Swap Phase Designation

The Phase Swap tool gives users the ability to switch a branch of existing energized feeder from one phase to another.

Features Tab Tree

Favorites Overview

When users begin an edit session, the Features tab in the ArcMap Table of Contents is populated with available features and related objects. Features selected on this tab have default attribute values and appear on the Targets tab of the Attribute Editor ready to be edited and placed on the map. Cursor symbolization is also included. To save time, users and administrators can pre-set feature attribute values (and those of related features and objects) by creating user or system favorites. Users can also create composite favorites, which include multiple features to be placed on the map as a single item. For example, a service line composite favorite could include the fitting, service line, and meter setting. This saves users additional editing time.

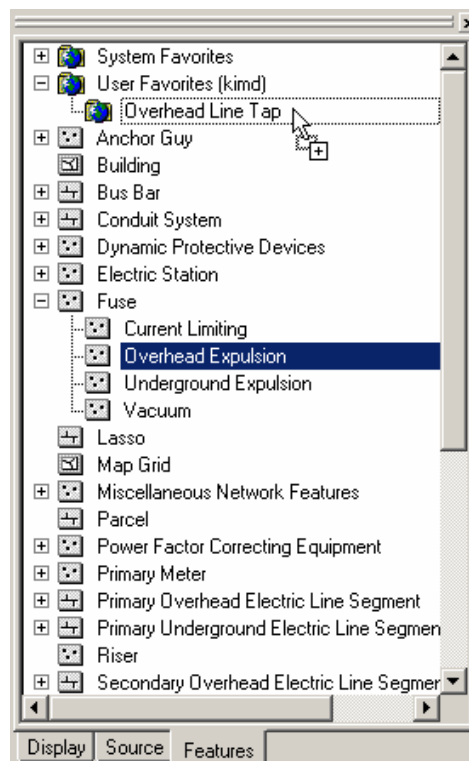


Figure 4: ArcFM Features Tab

Drag and drop functionality makes it easy to create favorites with a feature or its subtypes. Just click a feature class node to display subtypes. Clicking the node again hides the list.

Session Manager

*Follow a Workflow
Specific to Your
Business*

Session Manager gives users the power to establish and enforce particular version workflows and user roles tailored to their own business needs. Using Session Manager, a user may create a session, which travels through an approval process before ultimately being posted to the geodatabase or deleted from the system.

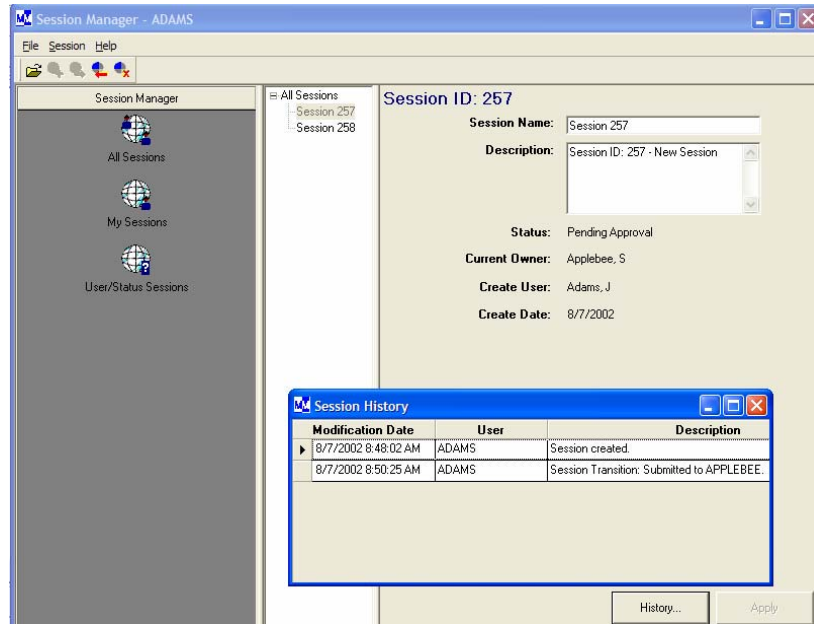


Figure 5: Session Manager

Process Framework Administration Tool

Create and Manage Your Workflow

The Process Framework Administration Tool allows an administrator to create new workflows for use in Session Manager (in ArcFM), and Workflow Manager (in Designer). The Process Framework Administration Tool can be used to add/remove users and change role permissions.

- Subtasks allow users to create customized tasks that may be used in Session Manager and Workflow Manager as well as custom Process Framework extensions.

Process Framework Database Upgrade Tool

The Process Framework Database Upgrade tool will update the database with enhancements available in the latest version.

QA/QC Tool

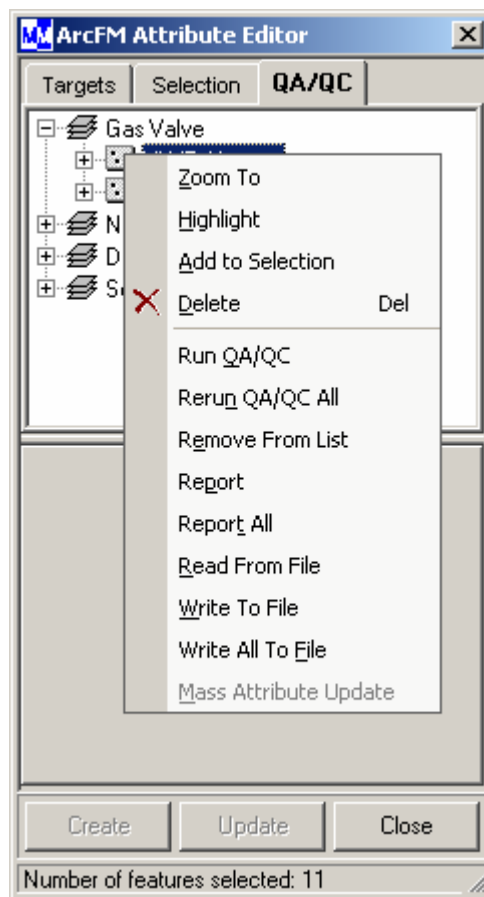


Figure 6: QA/QC Options

Validate Features and Attributes

The ArcFM QA/QC (Quality Assurance/Quality Control) tool ensures database integrity and validates features based on coded domain values, range domain values, connectivity rules, relationship rules, contingent validity rules, and the user's custom validation rules. Clicking the QA/QC tool on the ArcFM toolbar starts the process of verifying the validity of the selected set of features. Results and messages display on the QA/QC tab. Messages displayed with invalid features provide information to correct errors.

QA/QC Reporting

After running the ArcFM QA/QC tool, users have several choices for saving or printing the results:

Report: Users can create and print a report listing selected features with a valid/invalid message; they can choose from default styles or create their own.

Write to file: save information to track invalid data in a database.

Read from file: retrieve information a user saved using **Write to file**.

QA/QC Tool Options: choose between listing all features after running QA/QC and listing only invalid features for saving or reporting.

Query and Locator Tool

Navigate Quickly to Specified Features

ArcMap and ArcFM provide several ways to explore data and retrieve specific information. Users can hover on features with ArcMap's Identify tool to display a read-only attribute list. The Find tool lets users locate features in a selected layer containing a specific text string. The Measure tool lets users easily measure distances on the map. Map tips provide a quick way to browse map features. Like Tool Tips for toolbar buttons, map tips pop up while hovering the mouse pointer over a feature.

ArcFM query tools include the Locator, with several strategies for finding features including the Attribute Query, Feeder ID, and XY coordinates pointer to locate features within a user-defined search distance. Once the results of a search are compiled, users can utilize right-click tools to highlight, pan to features, zoom to features on the map, or add features to the selected set.

Routing and Direction Tools

These tools provide methods for locating and navigating to specific addresses on a map. All require the existence of an associated locator (.loc). Instructions for creating address locators using ArcCatalog are available in the ArcGIS Desktop Help.

Address Search

Marks the location on the map and zooms the display to it. Requires input of an address or intersection.

Direction Search

Uses two addresses to create driving directions and a route map.

Page Templates

Store Standard Map Elements

Page Templates lets users define and store standard map page elements to the ArcMap layout view. A page template defines the size, orientation, and map elements that are stored in the database for easy access. Page templates save time and standardize map documents by standardizing elements used on every map. A user can then select a page template for their layout without closing/opening a new document.

Stored Displays

Set Map Views Stored Displays allow users to change a large number of parameters in one step, for switching back and forth among different views. This tool allows users to set map views including standard symbology. These settings are saved in the database and retrieved when users log in.

ArcFM Data Source Wizard The ArcFM Data Source Wizard allows users to change data sources for the layers in stored displays, documents, and designs (only in Designer). This is especially useful when moving stored displays from one server to another.

Documents

Store Multiple Maps and Data Frames Documents combine Stored Displays and Page Templates so users can store multiple maps and multiple data frames. Stored Displays save multiple layers of a map while Page Templates define and store standard plotting page elements such as size, orientation, and graphic elements.

When switching between map documents, the data frame and layer properties such as borders, background colors, annotation styles, symbology, map elements, page dimensions, and page orientation are easily changed in one step.

Map Production

Schedule Map Printing Map Production allows users to select the page templates, stored displays, documents, and map sets that precisely define layers, scale, and map elements. Users can then select polygons (map grids, for example) and create map sets to be stored for easy retrieval and printing. Maps can be previewed in final format before printing. For convenience, plotting can be scheduled at a time that puts less demand on resources. Enhancements have been made to Map Production that provide a fully exposed API (application programming interface) which allows for greater flexibility in developing automated mapping and plotting solutions. In addition, users have the ability to organize map sets into map books.

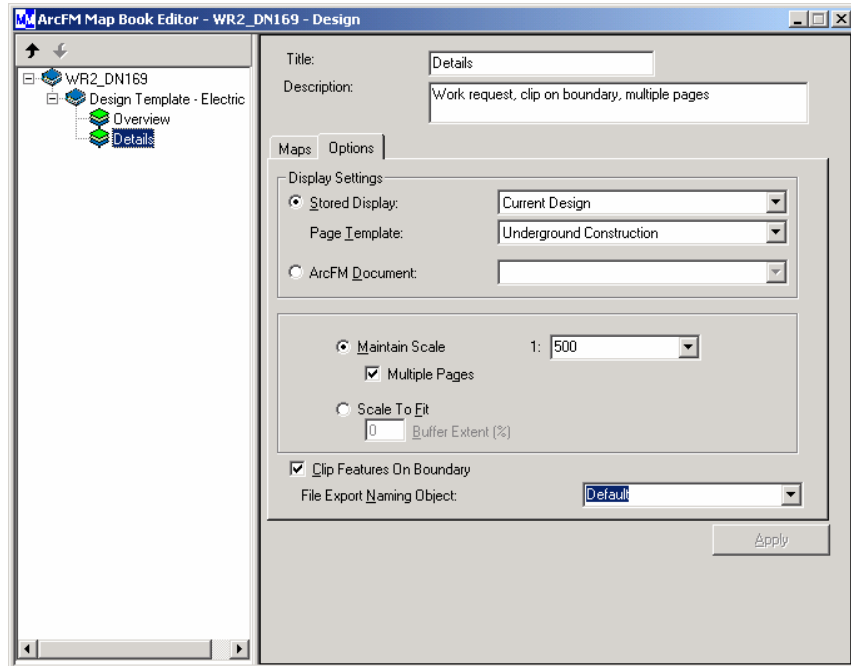


Figure 7: ArcFM Map Production Tool

Map Grid Generator

Define Custom Map Grids

Map Grid Generator allows users to generate customized map grids for use with Map Production. You may determine the area covered by the map grid as well as the size, orientation, and scale of the map sheets that compose the grid.

Map Insets

Enlarge a Specific Portion of the Map

Map Insets allows users to identify a specific portion of the map as a source, then enlarges the source in a destination window on the map. Users may also link external files to appear in the destination window. A Map Inset is an ArcFM feature, which is placed on the map and is visible within the map data frame in the Layout view.

Autotext Elements

Insert Text to Update Automatically

The Autotext Elements functionality provides a framework to easily create sources of updateable text (such as date, user name, and page number) without implementing a new custom page element every time. A user can place Autotext Elements in the Layout view and use Map Production to print maps containing text, which updates dynamically.

Abandon Tools

Define Features to be Abandoned and Removed

The Abandon Tool represents the process of abandoning pipes (or other features), removing them from the network, and converting them to conduit. Administrators configure the Abandon Tool in ArcCatalog using the ArcFM Properties Manager to define which features can be abandoned, whether they remain on the map, and whether they can be converted to conduit. Features are then displayed in the Abandon Tool Options dialog in ArcMap. For example, distribution mains can be deleted from the current feature class and moved to a new "Abandoned Pipe" feature class, or distribution mains could be abandoned to a new subtype and symbology. Features can also be removed entirely or converted to conduit for later use.

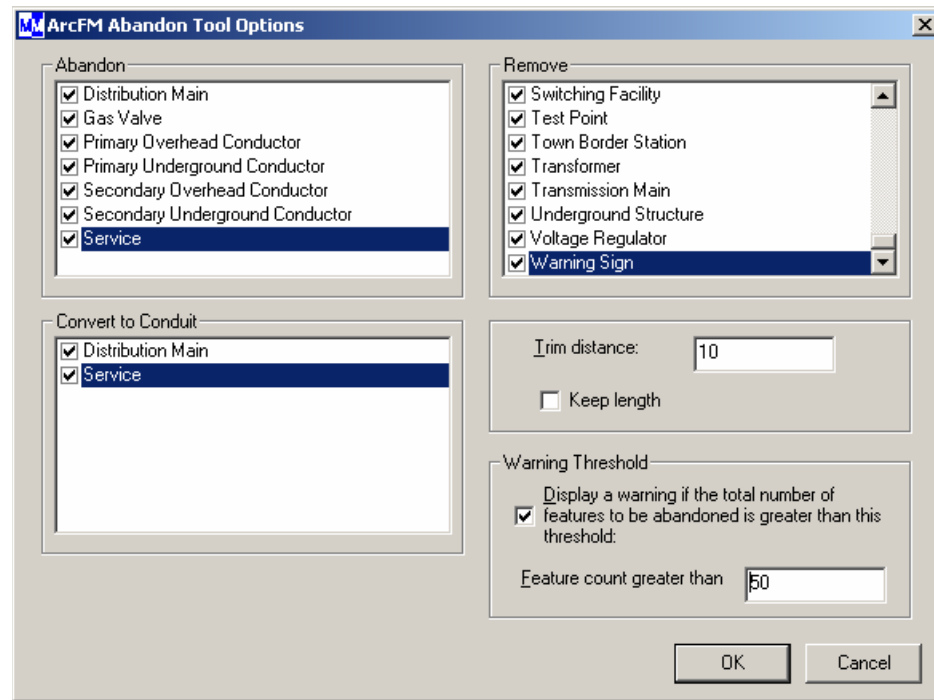


Figure 8: Abandon Tool Options

Inset Frames

Highlight Specific Features

The Inset Frames tool allows users to pull specific features from the current view and display them individually in separate windows in the Layout view. For example, a user can depict each Switching Facility in her current view in its own inset frame at a smaller scale.

Favorites

Predefine Attribute Values

The Favorites feature provides an efficient way to manage and edit often-used features. The administrator can set system-wide favorites in ArcCatalog, and users can view system-wide favorites categories in ArcFM. Users can also create their own favorites categories from the Features tab in ArcFM. As users add categories, the Features tab is dynamically updated.

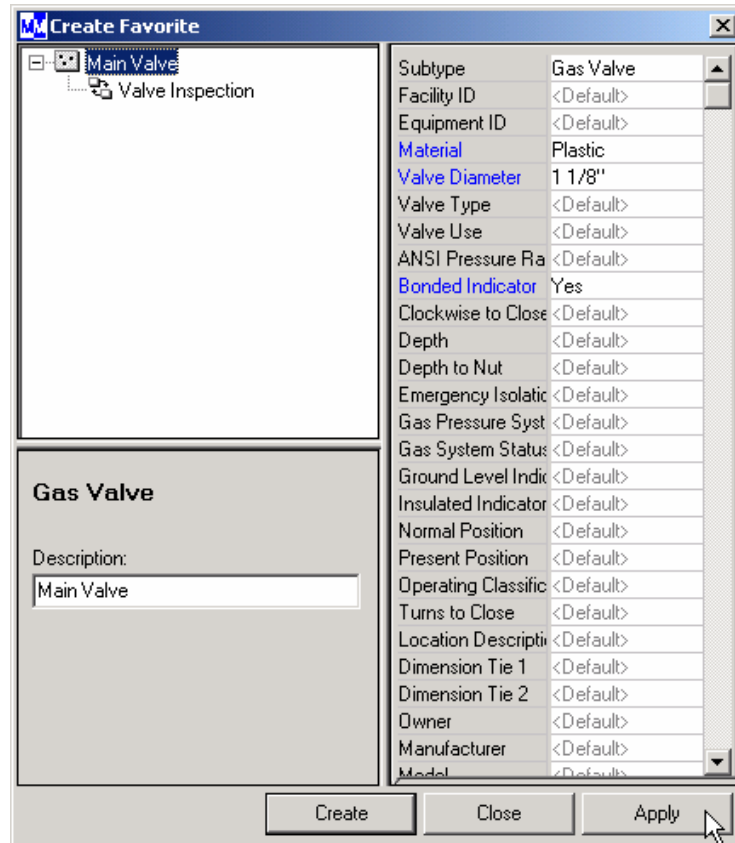


Figure 9: ArcFM's Create Favorite Dialog

Composite Features

Place Composite Features with One Click

Composite Features help users add sets of features more productively. In the electric domain, users can place switchgear cabinets or substations that contain internal busbars, switches, and fuses. ArcFM allows users to set the attributes for each feature and then place the composite on the map with one click.

Create Template

A template is composed of sketch points with spans between them to which point and line features can be associated. During this process, a user can define the offset and rotation of the features. The ArcFM Template Favorite Tool allows the user design template favorites with choice lists that prompt the user to make a selection during placement. Facilities are automatically placed as defined in the template.

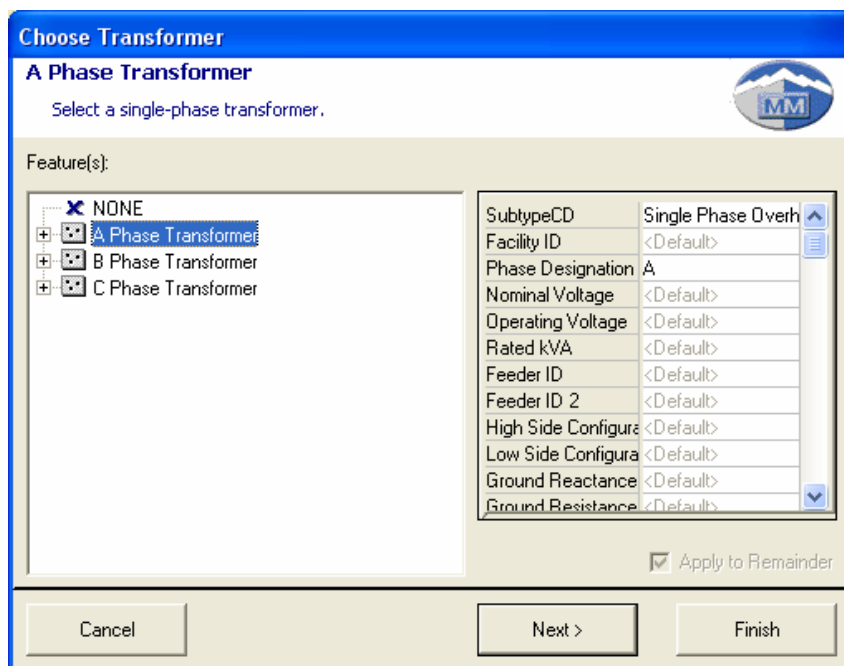


Figure 10: The ArcFM Template Tool Choice List

Graphics and Digital Ink

Graphics Tab

The graphics tab allows users to place graphics in the map without impacting the geometric network. This tab may be used with ArcFM Mobile or ArcFM Viewer with the Redliner extension to provide redlining capabilities in the field. Users may create customized graphic and text favorites and place them on the map using the Graphics tab. ArcFM also supports the use of Digital Ink to support redlining.

Network Tracing

Trace Network Connectivity

ArcFM provides four different tracing toolbars to meet each utility's business needs. The ArcFM Electric Traces toolbar allows electric utilities to easily perform upstream and downstream distribution traces. Separate toolbars are available for gas and water tracing. These trace tasks allow utilities to trace how natural gas or water is flowing through a network of connected features. If a utility has an underground network, the Conduit Manager Trace toolbar allows users to perform duct availability tracing. All trace results (electric, conduit, gas, water) may be displayed with a buffer. Buffer size can be easily determined using the Buffer Distance Tool.

Electric Trace Tasks

Upstream Protective Device – traces from a user-specified point upstream to user-specified protective devices.

Downstream Protective Device – traces from a user-specified point downstream to user-specified protective devices.

Electric Distribution – traces electric distribution equipment and feeders by phase.

Downstream Trace – traces all devices in a feeder system, by phase that are downstream from the trace flag.

Upstream Trace – traces all devices in a feeder system, by phase that are upstream from the trace flag.

Gas Trace Tasks

Gas Distribution System – encompasses all the pipes and devices that can be reached from a town border or regulator station.

Gas Pressure System – traces gas pipes and devices within a specific pressure system.

Gas Cathodic Protection System – identifies sections of a gas distribution system that utilize cathodic protection devices.

Gas Valve Isolation – identifies valves or other devices that need to be shut off to isolate a specific area. Users are allowed to include or exclude specific valves from the trace as necessary and place temporary sources and interruptions.

Gas Squeeze-Off – determines whether pinching the pipes at a selected location will disrupt the flow of gas to a specific area.

Water Trace Tasks

ArcFM supports a variety of trace tasks for water distribution networks. Water trace tasks allow users to check how water is flowing through a network of connected features:

Water Distribution System – encompasses all the pipes and devices that can be reached from a tank or a pumping station.

Water Pressure System – traces water pipes and devices within a specific pressure system.

Water Cathodic Protection System – identifies sections of a water distribution system that utilize cathodic protection devices.

Water Valve Isolation – identifies valves or other devices that need to be shut off to isolate a specific area. Users are allowed to include or exclude specific valves from the trace as necessary and place temporary sources and interruptions.

Water Squeeze-Off – determines whether pinching the pipes at a selected location will disrupt the flow of water to a specific area.

Feeder Manager

Automatically Update Energized Phase Information

With ArcFM Feeder Manager, users can easily manage complex feeder systems, generate a circuit map, locate all features or tie devices associated with a feeder, select features belonging to a particular feeder or group, and show feeder information graphically in a map display (loops, islands, and double feeds or extra feeds). The Feeder Manager tool writes Feeder ID and energized phase information to the ArcFM database in attribute fields of individual electrical features. It also assigns energized phase information to each feature in a circuit, indicating by name (A, B, or C) the phases of electric power that can reach the feature from the power source(s) for the circuit. Once assigned to ArcFM features, Feeder Manager uses autoupdaters to update information about circuit association or energized phases.

ArcFM Extensions to ArcCatalog

ArcFM Properties Manager

The Properties Manager in ArcCatalog is the key to configuring ArcFM functionality such as Feeder Manager and the Abandon tools. Model names and autoupdaters are assigned to perform crucial editing tasks at the onset of specific events. An example is splitting a complex edge when a device feature is connected to it or assigning the phase to automatically correspond to the conductor on which it is placed. Model names identify features and fields independently of database names.

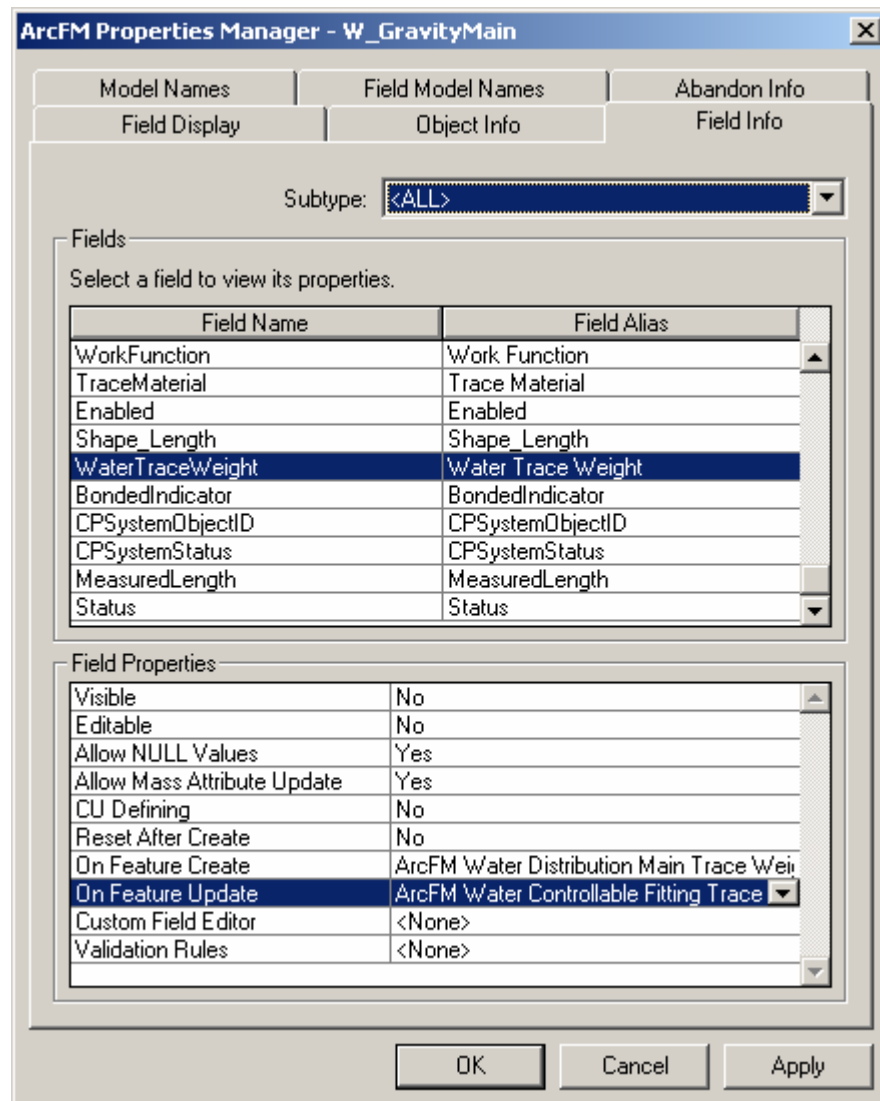


Figure 11: ArcFM Properties Manager

Administrators also use the Properties Manager to reorganize the appearance and behavior of feature attribute fields. Users can change, at the feature class or subtype level, whether an attribute field is visible or editable, and what order it appears on the Attribute Editor.

Properties Manager for Relationships

ArcFM lets users assign autoupdaters to relationship classes. The sample autoupdater included with ArcFM automatically adjusts the rated kVA of the transformer bank when a transformer unit is added or deleted.

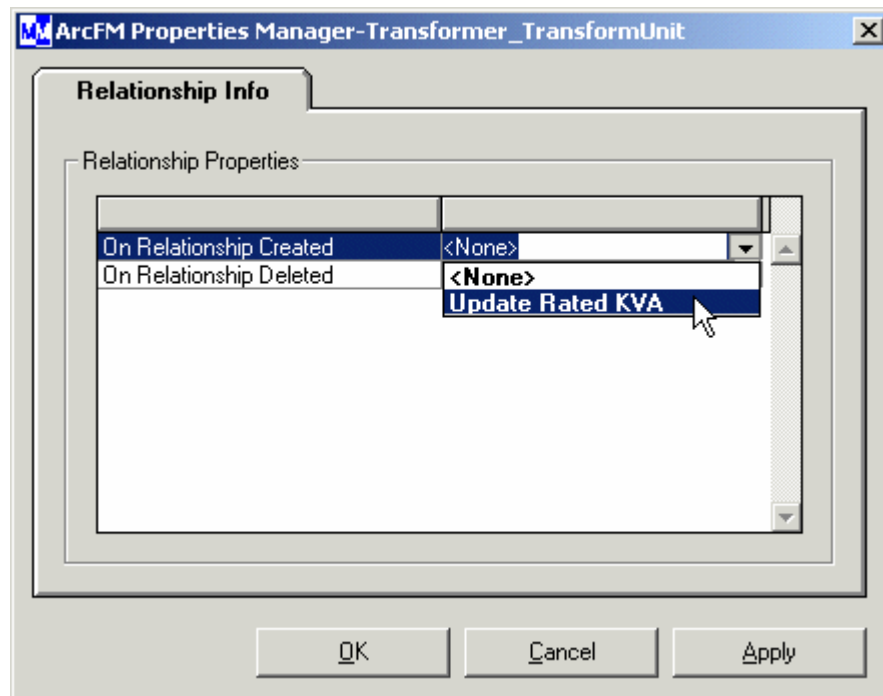


Figure 12: Properties Manager for Relationship Classes

Feature Autoupdaters

Administrators use the ArcFM Properties Manager to set specific behaviors (enabled by COM autoupdater objects) at certain events such as when a feature is added, updated, or deleted. This dialog also makes it easy to assign multiple autoupdater objects to a single event, reducing the need to programmatically create combo autoupdaters.

Field Autoupdaters

Similar to feature autoupdaters, administrators can set rules to fire when a single field is updated. One example is setting the angle of a point feature based upon the line it is snapped to. Field autoupdaters also maintain metadata such as recording the last user and the date a field was edited.

Field Display

Administrators can define the order in which fields are displayed on the Attribute Editor providing the opportunity to put the most important fields at the top of the grid where they can be seen

easily.

Custom Field Editors Custom Field Editors provide the implementation/customization programmers with the ability to create specialized field editors that are specific to their needs. The ArcFM installation provides default field editors.

Custom Validation Rules Custom validation rules offer users the ability to define a set of rules for determining the validity of any object in a geodatabase. These rules help users to build a database that conforms to their specific business domain and maintains data integrity.

ArcFM Solution Toolbar The ArcFM Solution toolbar provides quick and easy access to some powerful ArcFM tools such as the Snapping Manager and Geodatabase Extraction.

Context sensitive help is available for all buttons on the ArcFM Solution toolbar.



Figure 13: ArcFM Solution Toolbar

Snapping Manager Snap means that as a user places a feature, it connects to the target when it is within a certain distance, referred to as the snapping tolerance. The ArcFM Snapping Manager lets the user set up the snapping environment for a given workspace. The snapping environment in ArcMap is dynamically updated based on the currently edited feature class. Administrators can set and store the required snapping for network (and non-network) features. This relieves the user from changing the snapping environment as each new feature is added.

System Favorites ArcFM System Favorites lets users group and define the attribute values of frequently used features. Administrators create favorites that are used but not edited by users. Users can then place the feature on the map using the Attribute Editor Targets tab. Users cannot edit the attribute values defined for system favorites.

Geodatabase Extraction Utility Re-architected to increase performance, this tool provides a way to transfer user-defined features and object classes from an existing enterprise or personal geodatabase to a new personal geodatabase. The user identifies the template, which is the empty personal database that will contain extracted feature and object classes (a sample is included with Minerville); a destination for the new personal geodatabase; and values that define the polygon area for extraction. The tool also allows the optional extraction of the geometric network from the geodatabase.

XML Import/Export The ArcFM XML Import/Export utility lets users transfer information

Tools	such as model names, snapping, properties, geometric network definitions, and domains between geodatabases. The export tool allows users to export an entire geodatabase, dataset, or individual feature class. The import tool will import a database, dataset, or feature into a selected geodatabase. Both tools are on the ArcFM Solution toolbar, which can be found in ArcCatalog.
Create ArcFM System Tables	The administrator uses this tool once to generate tables required by ArcFM (and, if licensed, Designer) software to support Page Templates, Stored Displays, Documents, Favorites, and Snapping information.
ArcFM Object Converter	Use this tool to convert tables, feature classes, feature datasets, or geodatabases to ArcFM or ESRI objects in ArcCatalog. If users add new features or objects to the geodatabase, administrators will run the Object Converter tool to enable the autoupdaters for new features.
Upgrade ArcFM Solution Database	This tool gives users a simple method for making modifications required by the latest release of the ArcFM Solution.
Clean Up Orphaned Versions	This tool allows users to delete orphaned version data. Version information may be left when a node is deleted in a Process Framework extension, but a connection is not available to delete the corresponding data in ArcMap. This remaining information is marked as orphaned until this tool is used to delete it.

ArcFM Documentation

Upon the purchase of the software, Miner & Miner provides a large variety of manuals. The following documentation of ArcFM is available at no additional charge:

<i>Physical Sample Database</i>	Minerville is a personal geodatabase (MS-Access) that is provided with sample data for electric and gas distribution and landbase. This data is based on the ArcGIS Energy models.
<i>ArcFM Logical Data Model</i>	Visio diagrams for Miner & Miner's data models are provided as graphical representations of standard ArcFM geodatabases. Note – These are non-specific (or untailed) models. They are often a starting place for a gap analysis with users when beginning an implementation.
<i>ArcFM Physical Data Model</i>	Visio diagrams for gas or electric distribution and electric transmission data models from Miner & Miner, or water data model from ESRI, used to create geodatabase schema using ArcCatalog CASE Tools.
<i>ArcFM Object Model</i>	Visio diagram that graphically represents the structure of the COM architecture of ArcFM.
<i>Process Framework</i>	Visio diagram that graphically represents the structure of the COM

Object Model

architecture of Process Framework.

*ArcGIS Data Models
(PDF format)*

Printable documents that provide in depth information about the attributes in the ArcFM Data Model for implementation.

<i>Gas Distribution - ArcGIS Data Models (PDF format)</i>	Printable documents that provide in depth information about the attributes in the ArcFM Data Model for the Gas implementation.
<i>Water Distribution - ArcGIS Data Models (PDF format)</i>	Printable documents that provide in depth information about the attributes in the ArcFM Data Model for the Water implementation.
<i>Waste Water Distribution - ArcGIS Data Models (PDF format)</i>	Printable documents that provide in depth information about the attributes in the ArcFM Data Model for the Wastewater implementation.
<i>Electric Transmission- ArcGIS Data Models (PDF format)</i>	Printable documents that provide in depth information about the attributes in the ArcFM Data Model for the Electric Transmission implementation.
<i>Using ArcFM Solution Online Help</i>	The ArcFM online help provided in the Help menu of ArcMap offers procedures for performing various editing tasks with ArcFM functionality. Available in the Help menu of ArcMap, in the ArcFM Solution folder on the Start Menu, and in Miner and Miner\ArcFM Solution\Documentation\Help\UsingArcFMSolution.chm.
<i>Session Manager Online Help</i>	The online help provided in the Help menu of Session Manager offers procedures for performing various tasks in Session Manager. Available in the Help menu of Session Manager. This online help file is also integrated with the <i>Using ArcFM Solution</i> online documentation available in the ArcMap Help menu.
<i>Process Framework Administration Tool Online Help</i>	The online help provided in the Help menu of the Process Framework Administration tool offers procedures for performing various tasks in the Process Framework Admin tool. Available in the Process Framework Administration Tool Help menu. This online help has also been integrated with the <i>Using ArcFM Solution</i> online documentation available in the ArcMap Help menu. This file is only installed with the Administrator version of ArcFM.
<i>Configuring ArcFM Solution Online Help</i>	The ArcFM online help provided in the Help menu of ArcCatalog offers procedures for configuring ArcFM tools for use in ArcMap. Available in the Help menu of ArcCatalog, in the ArcFM Solution folder on the Start Menu, and in Miner and Miner\ArcFM Solution\Documentation\Help\ConfiguringArcFMSolution.chm. This file is only installed with the Administrator version of ArcFM.
<i>Set Up Process Framework Online Help</i>	This online help file offers procedures for configuring Session Manager and Workflow Manager (in Designer only) for use on Oracle and SQL servers. It has been integrated with the <i>Configuring ArcFM Solution</i> online documentation available in the ArcCatalog Help menu and in the ArcFM Solution folder on the Start Menu. This file is only installed with the Administrator version of ArcFM.

*ArcFM Solution
Developer Online Help*

This online help file provides information about how to customize your ArcFM Solution and the components necessary. It is available in the ArcFM Solution folder on the Start Menu and in Miner and Miner\ArcFM Solution\Developer Resources\ArcFMSolutionDeveloperHelp.chm.

*ArcFM Solution
Component Online
Help*

This online help file provides information on the classes, interfaces, and enumerations that developers may utilize to customize the ArcFM Solution. The help file has been integrated with the *ArcFM Solution Developer Online Help* available in the ArcFM Solution folder on the Start Menu.

- Customize ArcFM Online Help* This online help file discusses customizing specific ArcFM tools and offers code samples to support these discussions. The help file has been integrated with the *ArcFM Solution Developer Online Help* available in the ArcFM Solution folder on the Start Menu.
- Customize Process Framework Online Help* This online help file describes how to create custom Process Framework tools and offers code samples. The help file has been integrated with the *ArcFM Solution Developer Online Help* available in the ArcFM Solution folder on the Start Menu.
- Customize Session Manager Online Help* This online help file offers details about how to customize Session Manager. The help file has been integrated with the *ArcFM Solution Developer Online Help* available in the ArcFM Solution folder on the Start Menu.
- Project Samples Online Help* This online help file describes the Developer Samples and Shared Product Code provided with the ArcFM install. The help file has been integrated with the *ArcFM Solution Developer Online Help* available in the ArcFM Solution folder on the Start Menu.



Miner & Miner, a Telvent company, is a world leader in the development and implementation of geographic information system (GIS) software for utilities. M&M's ArcFM Solution and extended services assist electric, gas, water, and waste water utilities in increasing productivity, lowering costs, and improving services by allowing them to effectively manage spatial information.

Founded in 1946 as a full-service electrical engineering firm, M&M has been an equity partner of ESRI since 1987. This partnership has enabled M&M to become the world's leading developer of ArcGIS applications for the utility industry. M&M services include implementation, integration, and customization of software to fit the needs of individual utilities.

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