



November 30 – December 3, 2004 ♦ Las Vegas, Nevada

Publish Building FM Information to the Web Using Autodesk MapGuide®

Bill Kilp – faciliCAD LLC

Glenn Stazak – Stazak Consulting Services

FM33-1 Building Lifecycle Information can be entered, accessed, and edited within an AutoCAD® or Autodesk® Architectural Desktop drawing and published to a customizable web-based environment using Autodesk MapGuide technology and faciliCAD. Use MapGuide to view and report on space, people, and asset information from a web-based format that requires virtually no learning curve. This class is designed for CAD managers and users. It will be somewhat technical but interesting for its simplicity

Who Should Attend

CAD managers and users who need to share FM data

Topics Covered

- Overview of faciliCAD and MapGuide technologies
- Explore the database model
- Techniques for updating CAD Drawings and databases
- Explore methods for data updates using the database and SDF files
- Techniques for creating various types of reports
- Making Mapguide really perform

About the Speakers:

Bill Kilp

bkilp@facilicad.com

Bill has more than 15 years of experience as a CAD and FM software consultant and trainer. He worked as an architectural model builder and CAD manager before he founded Facility Solutions in 1990. Since then, he has become an Autodesk® Authorized Consultant, an Autodesk® eLearning Provider, and an Autodesk® Certified Instructor. In 2001, Bill and two other partners formed faciliCAD L.L.C.. They developed and released faciliCAD, a Computer-Aided Facility Management solution. Bill is responsible for product design and development, technical support, sales, and all day-to-day business activities.

Glenn Stazak

glenn@stazak.com

Glenn has a background in civil engineering, database architecture, and application development. His 10 years of experience at a municipality as a database administrator and software engineer led to a position at Autodesk. While at Autodesk, Glenn authored GIS and facilities management MapGuide demonstration applications and provided facilities management integration services for Autodesk's major accounts. He now develops a wide range of GIS and facilities management applications for clients of Stazak Consulting Service. Customer training is also an important facet of his business.

Overview of faciliCAD Technology

What is faciliCAD (Bill Kilp)

faciliCAD IS Facility Management Made Easy! faciliCAD facility management software targets both small and large facilities looking for an inexpensive and user friendly CAFM (Computer Aided Facility Management) application.

faciliCAD connects AutoCAD® drawings with a Microsoft SQL database, harnessing AutoCAD's power with Facility Management specific features. By easily linking graphical objects to database records, faciliCAD transforms typical CAD drawings into intelligent resources, extending their value beyond the design phase throughout the life of the building.

faciliCAD is the perfect FM solution for property managers, physical plant engineers, architects, and others who need to accurately account for people, space, furniture, equipment, and assets. Providing both graphical and non-graphical reports, faciliCAD brings clarity to any organization's facility management requirements.

Building Lifecycle Information can be accessed and edited through the faciliCAD Data Manager, the CAD Manager, or a customizable web based environment utilizing Autodesk® MapGuide technology.

Data Manager VS CAD Manager (Bill Kilp)

faciliCAD V2 includes both the Data Manager (Non-Graphic interface to the database) and the CAD Manager (all the features of the Data Manager plus a Graphical interface to the current Autodesk product line).

Introducing Autodesk Mapping Products (Glenn Stazak)

The Autodesk Mapping product family is comprised of many components that will empower the user to easily perform each step in the lifecycle of your data from creation to providing access to the information at the point of work.

The Autodesk Mapguide Solution (Glenn Stazak)

MapGuide is a powerful web-based data integration and distribution platform that helps organizations quickly develop web-based applications to deliver innovative services to the end user. Many diverse sources of data can be easily disseminated using Mapguide by leveraging the versatility of web-based technologies.

Map Authoring (Glenn Stazak)

A map can convey a great deal of information if it is well designed and uses fitting colors. The map authoring process includes selecting line types; fill patterns and adding themes using attached data. Choosing or creating symbols for different elements can help make the map more intuitive.

Explore the Database Model

Data Input with Data Manager (Bill Kilp)

The faciliCAD Data Manager interface is a non-graphic form based interface to the faciliCAD project database file. The faciliCAD Data Manager is used to input new data, to edit and extract existing data and to report on existing data. The Data Manager does not require AutoCAD to be present. Data Manager is an ideal solution to those with no CAD experience that need to create and edit existing data.

Data Input with CAD Manager (Bill Kilp)

The faciliCAD CAD Manager interface is a graphic interface to the faciliCAD project database file. The CAD Manager sits on top of AutoCAD, Architectural Desktop or Autodesk Map. The faciliCAD CAD Manager is used to input new data, to edit and extract existing data and to report on existing data graphically. It is important to note that any and all data can be created and entered from the CAD Manager.

Advantages of defined data model (Glenn Stazak)

In any application the data model plays a key part in usability and versatility. With faciliCAD you leverage the experience of professionals who have collectively been in the business for 30 years, this provide a well thought out solution for storing data in logical objects.

Techniques for Updating CAD Drawings and Databases

Data Manager

The faciliCAD Data Manager interface is a non-graphic form based interface to the faciliCAD project database file. The faciliCAD Data Manager is used to input new data, to edit and extract existing data and to report on the project database. The Data Manager does not require AutoCAD to be present. Data Manager is an ideal solution to those with no CAD experience that need to create and edit existing data.

The Data Manager can be used to create the faciliCAD Environment data to be applied to the current project. The faciliCAD Environment Data includes, Location (Country, State, County...Floor), Room Types, Organizational Hierarchy, Asset Catalog Items and Employees. Once the faciliCAD Environment data is created, room records can be created and data can be attached to the room records.

The Data Manager contains a Location Bar that allows the user to drill down to the desired floor for adding and editing information. Once a floor is selected, room records can be created and edited. Employees and Assets can be placed or removed to rooms and moved from room to room. Assets can be linked to Employee records and moved when an Employee is moved

Also contained in the Data Manager are a Query Builder and a Report viewer. Both features will use the current project database as a datasource. Changes made in the Data Manager are dynamically displayed in the Queries and Reports.

CAD Manager

The faciliCAD CAD Manager interface is a graphic interface to the faciliCAD project database file. The CAD Manager uses AutoCAD, Architectural Desktop or Autodesk Map as the graphic engine. The faciliCAD CAD Manager is used to input new data, to edit and extract existing data and to report on existing data graphically.

It is important to note that any and all data can be created and entered from the CAD Manager.

The faciliCAD CAD Manger interface is a simple interface. All the commands can all be found under one pulldown menu.

Use the Project Manager to Create and set up a location hierarchy, Open drawing files and open the Select Project window. The “Select Project” window allows for Project Creation, Selection, Editing Connection and Deletion.

The “Select Project” window, also contains “faciliCAD Today” faciliCAD Today will display any Web Page. For example: faciliCAD Today could point to a MapGuide site that is linked to the faciliCAD data. This would allow Non-CAD people to query and display graphically the faciliCAD data.

Once a project drawing is created and opened, Spatial Boundaries can be linked, and defined, Employees and Assets can be placed, edited and managed.

Updating Data from Data Manager to CAD Manager (Bill Kilp)

Any additions or changes made in the Data Manager are directly entered into the project database (Microsoft SQL Database file). In the CAD Manager, Import Data to Drawing is used to update the current drawing with any changes that have been made in the Data Manager. Graphic symbols representing Employees and Asset will be moved, deleted or added to reflect changes that were made in the Data Manager.

Updating Data from CAD Manager to Data Manager (Bill Kilp)

When changes are made in the linked AutoCAD drawing using faciliCAD commands, the database is updated automatically, as it is using the Data Manager. If however, AutoCAD commands are used to copy and or move Employees and Assets, it is then required that Database Updates be applied. These updates can be applied by the object (Rooms, Employees, Assets...) or all updates can be applied using the Export Data to Database command.

Explore Methods for Data Updates Using the Database and SDF files

SDF files explained (Glenn Stazak)

The native file format for storing geometry for use in MapGuide is the Spatial Data File (SDF); data of a single type such as Point, Line, Polygon or Annotation can be stored in this binary file. There are many methods for creating and updating these files; they range from design application to stand alone Windows application.

Using faciliCAD to create SDF files (Bill Kilp)

faciliCAD includes the ability to create MapGuide SDF files. SDF files are used by MapGuide along with the database information to publish both Non-Graphic and Graphic information to the internet and intranet. Toggle On the SDF radio button to automatically generate SDF files for use with AutoCAD MapGuide. Once selected, an SDF file will be created the first time a drawing is saved in AutoCAD. The SDF files will be saved in the directory designated in the Buildings dialog box. Once the SDF file is saved for the first time preceding AutoCAD saves will update the existing SDF file.

Using Autodesk ADT to create SDF files (Bill Kilp)

After you download and install the SDF Component Toolkit a simple dialog box is used to specify settings for exporting data to SDF files. After you specify a project name, level name and directory location you select the drawing items to be exported. The toolkit can also provides an XML file and the necessary MapGuide Server Datasource files.

Using Autodesk Map to create SDF files (Glenn Stazak)

Use Autodesk Map 's SDF Export dialog box to specify settings for exporting data to SDF files. Several options can be set while exporting; these include Key, Name and URL. Coordinate system conversion is possible while saving the file. You must specify a single data type; the options include Point, Line, Polygon or Annotation.

Using the SDF Loader (Glenn Stazak)

The SDF Loader is a command-line utility that converts map data from a variety of GIS data file formats. You can build batch files that run in the off-hours to do automatic updates of your latest DWG updates. The SDF Loader can also write spatial data in Spatial Data Loader (SDL) format, which is the ASCII equivalent of SDF.

Other supported integration and access (Glenn Stazak)

Storage of the spatial data is not limited to the Spatial Data File; MapGuide Supports integration and access for all major GIS and CAD data formats. You can create layers of a particular geometry type (points, polylines, polygons) directly from a DWG file. You can even create theme maps with object data or link templates as the attribute data source. You can now easily share spatial data using the Open GIS Consortium (OGC) Web Map Service (WMS) 1.1.1 Implementation Specification for data exchange. Additionally ESRI® SHP and coverage's, MicroStation® DGN™, MapInfo® Interchange File, Atlas BNA, comma-separated files (CSV), are also supports. Most relational databases via OLE DB and ODBC, including Oracle®, SQL Server, Microsoft® Access, dBASE® are accessible to MapGuide.

Techniques for Creating Various Types of Reports

Extracting Database Reports with Data Manager (Bill Kilp)

A Runtime version of Crystal Reports has been built into faciliCAD to display the reports included with the software. If a full copy of Crystal Reports is present, faciliCAD will detect the full copy and use it instead of the Runtime version. A full copy of Crystal Reports can be purchased from Crystal Decisions on line at <https://secure.crystaldecisions.com/default.asp>. A full copy is required for editing of existing reports and creation of new reports. The Report Viewer will display real time reports that reflect the current values in the database. If records are changed using the forms in the Data Manager, the reports will dynamically update to show the changes. The faciliCAD Support Tools can be installed on any PC. The Support Tools contain the faciliCAD Report Viewer. This is the same interface found in the Data Manager and the CAD Manager for displaying the current database information. The Runtime version of Crystal Reports must also be installed for the Report Viewer to function.

Extracting Graphic Reports with CAD Manager (Bill Kilp)

Thematic report by Room are theme based graphic reports. faciliCAD V2 CAD Manager includes Thematic reports for Organizational Types, Chargeback Assignments, ProRate Assignments, Room Types Clusters, Suites and Zones. The Organizational Type report titles will vary to match the organizational structure defined. When a Thematic Report is applied to the current drawing, the drawing will reflect the values from the report using AutoCAD colors and hatch patterns. Thematic reports are placed on layers specified in the Layer Keys. Thematic reports are created as AutoCAD blocks and can be erased or turned off using the AutoCAD Layer Manager.

Creating Queries and Displaying them Graphically with CAD Manager (Bill Kilp)

The Query Builder is used to create and run queries on the current project database. Queries can also be saved and used at a later date. They can be saved for the current user only or be made public for use by anyone logging into the project. Queries can be created in either the Data Manager or the CAD Manager. Queries can be run in either application. Queries can be used in the CAD Manager along with Query Thematics. Query Thematics will highlight the results of the query in the current drawing. The query results are created using AutoCAD colors and hatch patterns. Query Thematic reports are created as AutoCAD blocks and can be erased or turned off using the AutoCAD Layer Manager.

Display faciliCAD information in MapGuide (Bill Kilp & Glenn Stazak)

A custom MapGuide site can be created to display the faciliCAD data both Graphically and Non-Graphically. When data is edited in either the faciliCAD Data Manager or the CAD Manager, the changes will be reflected in the MapGuide site. Although it is possible to customize a MapGuide site to allow for edits to be made to the database, it is recommended that the changes be made in faciliCAD and viewed in the MapGuide site. When changes are made using the faciliCAD applications, rules are applied to respect standards of data entry.

Reports and Searches in the browser (Glenn Stazak)

An essential part of a useful application is the ability to provide detailed reporting. Map functionality can be enhanced by adding user defined searches and filters. Multiple web languages such as java, java script, vb script and cold fusion can be used in designing reports and searches. User satisfaction is assured by common Window's event driven report launching.

Making MapGuide Really Perform

Documentation (Glenn Stazak)

Autodesk provides the developer with a library of reference material including white papers and developers guides, which are available for down load on the MapGuide Website <http://www.Mapguide.com>. These document covers what you need to know to develop applications and are filled with sample snippets of code to get you started.

MapGuide API (Glenn Stazak)

The Application Programming Interface (API) gives the programmer a set of routines, protocols, and tools for building software. Use standardized programming languages such as Java, JavaScript, JScript, Visual Basic, or VBScript with the API to develop applications that programmatically access and control Autodesk MapGuide Viewer.

SDF Toolkit (Glenn Stazak)

This toolkit is a development library that allows developers to read and write SDF files. Functionality enhancements such as adding and removing points, lines and polygons can be incorporated into application to give end users drawing tools within the web browser.

Dynamic Authoring Toolkit (Glenn Stazak)

The Dynamic Authoring Toolkit supports applications that author Map Window Files (MWF) dynamically. The toolkit converts the MWF format to the MWX format, which you can modify using standard third-party text editors and XML parsers. XML-based development is easier to master than an API with hundreds of methods, so you can quickly and efficiently develop dynamic map solutions for the end users.