

MicroStation V8i Overview

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Main Themes for MicroStation V8i

Key Themes of MicroStation V8i

- Conceptual Design
- Drawing Composition and Dynamic Views
- Geo-Coordination
- Print Organizer
- Customization
- Rendering and Animation

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3D Modeling Enhancements

Solid modeling creation and modification tools

- Several new tools have been included for creating and modifying solids. These are located in the Create Solids and Modify Solids toolboxes.

Linear Solid

- The **Linear Solid** tool lets you create a wall like solid (rectangular section) by drawing a line string.

Replace Face

- The **Replace Face** tool lets you replace a face of a solid with a selected surface. The result is a solid that has the selected surface as one of its faces.

Surface modeling creation and modification tools


- The following new surface modeling tools are located in the Create Freeform Surfaces, Modify B-spline Surfaces, and Surface Utilities toolboxes.

Loft Surface by Vertices

- The **Loft Surface by Vertices** tool lets you construct a B-spline surface between two profiles, which can be edges of existing solids or surfaces. During construction, 3D handles let you interactively control the matching points for the profiles.

Surface by Edge Curves

- Previously known as the **Construct Surface by Edges** tool, the **Surface By Edge Curves** tool, lets you select 2 to 6 curves to create a surface. This enhanced version of the tool lets you select edges of solids or surfaces as the curves, as well as the standard curve types – lines, line strings, shapes, arcs, curves, B-spline curves, complex chains, and complex shapes.
- When 3 or more edges are selected, they must form a closed loop.



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3D Modeling Enhancements

Surface by Corner Points

- The **Surface By Corner Points** tool lets you construct a surface by entering four points, which may be non-planar.

Surface Handlebar

- With the **Surface Handlebar** tool you can modify the shape of a surface by manipulating handles. After identifying the surface, handles display that let you adjust the surface.

Twist Surface


- The **Twist Surface** tool lets you twist a B-spline surface, or a mesh element, about a defined axis.

Planar Slice

- The **Planar Slice** tool is a simplified replacement for the Generate Section utility and lets you create a planar section by Element, Points, or by View.

Unroll Developable Surface

- The **Unroll Developable Surface** tool lets you unroll a surface onto a plane using an approximation process. The Number of Points setting determines how many sample points are taken to create the surface.



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3D Modeling Enhancements

Mesh modeling creation and modification tools

- Enhancements to the mesh modeling tools includes the addition of the following new tools:

Place Grid Mesh


- The **Place Grid Mesh** tool lets you define a mesh element by entering a grid of points defining the vertices of the resultant mesh element.

Developable Mesh from Curves

- The **Developable Mesh from Curves** tool lets you use two curves and create a mesh approximation of the developable surface between them. The resulting mesh will be made up of quadrilateral facets. You then can use the Unfold Mesh tool to lay the mesh onto to a plane.

Convert Mesh to Surface


- The **Convert Mesh To Surface** tool lets you convert a mesh element to a B-spline surface. The mesh element should be of the kind that does not wrap around. Typically, meshes that are used to represent DTMs are good candidates for this tool.



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AutoCAD Interoperability

- In the MicroStation V8i Edition, support for reading and writing the DWG file format to AutoCAD 2009 is extended.



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Auxiliary Coordinate Systems (ACS) Update


A major enhancement to the Auxiliary Coordinate Systems functionality is the ability to assign ACS's to individual views.

Per view Auxiliary Coordinate Systems

- A new tool in the ACS toolbox lets you assign Auxiliary Coordinate Systems to each view. You can create an ACS for a view with the Define ACS by View tool. You can make the ACS view-independent by turning on a check box. When a view-independent ACS is active, and the ACS triad setting is enabled for the view, the X, Y arrows are displayed as dashed in the view.
- To retain the per-view ACS setting for the next session, you must select File > Save Settings.
- When a model created in an earlier version is opened and the ACS Plane lock is not enabled, a view-independent ACS with an origin of the view center at active depth is created. This lets you start working with the geometry created in the same place as it would have been in the earlier version (at the Active Depth).

Depth Lock is no longer used

- Active Depth is no longer used, because the location of unsnapped points is controlled by the ACS for a view. Instead of Depth Lock, you now can enable ACS Plane Snap to force unsnapped points to fall on the plane of the ACS.



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Change Attributes Enhancements


Enhancements to the Change Attributes tool make it easier to select attributes from an existing element to apply to another.

Match element attributes by selection

- The Change Attributes tool now has an option to match the element attributes in the tool settings to those of a selected element in the model.

Change Entire Element option

- If on, the attributes for the entire element are changed.
- For example, where you want to change the color for a text style to green, where the existing text color is red and the underline color blue. If Change Entire Element is off, only the text will change color. If Change Entire Element is on, both the text and the underline will change to the new color.



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Color Enhancements

The following color books are provided in this edition:

- Natural Color Systems® (NCS)
- PANTONE® Goe



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Detailing Symbols Enhancements

In the past, detailing symbols were controlled by the Detailing Symbols Settings dialog (Element > Detailing Symbols Settings). In this release, Detailing Symbols are now controlled by styles. The new [Detailing Symbol Styles dialog](#) replaces the Detailing Symbols Settings dialog (Element > Detailing Symbol Styles). This allows you to better control the level, symbology and use of cell bubbles, etc.

Some detailing symbol tools renamed

- The following tools in the Detailing Symbols toolbox have been renamed:
- The Place Arrow Marker tool is now the [Place Section Callout tool](#).
- The Place Detail Marker tool is now the [Place Detail Callout tool](#).
- The Place Section Marker tool is now the [Place Drawing Title tool](#).


Detailing symbol styles

- Detailing Symbol styles allow an administrator to define standards via symbology settings and placeholder fields that can be updated after placement (using the [FIELD UPDATE key-in](#)). The benefit to using these styles is that when you change a setting in the style, the change is propagated to all detailing symbols using that style.

Detailing symbols integrated with dynamic views

- When you create a section callout, you have the option of creating the corresponding saved view of the section in the design model.
- When saved views are added to a sheet, existing section callouts that have empty fields are updated with relevant information. A link between the section callout and the drawing title is created so you can easily navigate between sheets.

Detailing symbols integrated with saved views




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Dynamic Views

Dynamic Views is a general name that encompasses several related technologies which share a common goal of making model analysis and documentation more interactive and intuitive. One of these technologies allows clipping of models and generating section graphics on the fly. Section views, detail views, and elevation views are types of dynamic views.

Gone are the days when MicroStation designs were just static views, replaced by the ability to create live, intelligent sections of a design composition that update automatically (through the use of detailing symbols with smart fields and links) as the design evolves.

For more information on dynamic views, see the [Drawing Composition Workflow](#).



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Dynamic Views

Create dynamic views from detailing symbols

- You can create dynamic views when creating detailing symbols on sheets. These callouts allow you to create section views in your design composition that are linked to section callouts placed on sheets. Any modifications to the detailing symbol on the sheet are reflected in its corresponding saved view in the design model. Conversely, modifications to the saved view in the design model are also reflected in its associated detailing symbol on the sheet.

Control dynamic sections with detailing symbols


- You can control a dynamic view using its edit handles. Select the view in the Saved Views dialog, turn on the Show column, and select the saved view box to see the clip volume edit handles. Any modifications made to the edit handles are reflected on all detailing symbols that are associated to that view.

Attach dynamic view as references for model and sheet composition

- You can attach a saved view as a reference on a sheet. The display settings and level masks of the saved view are used in the reference. If you move a detailing symbol associated with the saved view, it will change the saved view in the design model, and because the saved view was placed on a sheet, it will also change on the sheet. The power of dynamic views is that you can change the detailing symbol and have the reference update automatically.

Associate dimension to dynamic volumes and sections

- Section graphics are graphics that are generated on the fly while displaying section views. The dimensioning tools are capable of creating dimensions associated to the section graphics.
- Additionally, the hatch pattern of a solid's section graphics can be controlled by applying the relevant element template to the solid in the design model.



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Dynamic Views

Control display of dynamic volumes and section using display styles

- The display of dynamic volumes and dynamic sections can be controlled using display styles. Display styles for these clippings can be applied by selecting a display style from the Clip Volume Settings area of the View Attributes dialog.
- Display styles can be selected from delivered styles or you can create new display styles on the Display Styles dialog.

Create dynamic views with clip volumes

- You can create a dynamic view by creating a [clip volume](#) and saving it in a saved view. To do so:
 - Create a [fitted section clip volume](#) in a design model.
 - Create a saved view using the new clip volume.
 - Turn on the display of the saved view's boundary in the Saved Views dialog and select it to control its size, depth, and clipping.



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Format Interchange Enhancements

Format Interchange enhancements in this edition allow you to import and export files in additional formats. Exported file formats support [Dynamic Views](#), another new feature. In addition, there are enhancements related to importing and referencing SKP files, and the supported raster file formats.

Dynamic view support for exported formats

- If you print a dynamic view to 3D PDF, or if you export a dynamic view to a 3D export format such as SketchUp or OBJ, the results that you see will match the dynamic view. For example, you have a dynamic view that is divided by a section plane such that half of the model is transparent. When you print the dynamic view to 3D, the resulting PDF matches the dynamic view.
- Import OpenNurbs (Rhino 3DM) format**
- OpenNURBS (Non-Uniform Rational B-Splines) is an open source toolkit for reading and writing models in the 3DM format. It allows other applications to exchange 3D geometry data with Rhino 3D software. As of this edition, you can import Rhino (3DM) files into MicroStation.
- Use the [OpenNurbs File Settings dialog](#) to import a 3DM file.
- Import Google 3D Warehouse (SKP) version 6 format**
- In this edition you can read in SketchUp 6 files using the same methods that you used in previous editions of MicroStation. MicroStation continues to save them as SketchUp 5 files.
- Retain geographic coordinates during import and reference of Google 3D Warehouse (SKP) file format**
- If you have defined a Geographic Coordinate System in a model, you can:
 - Attach SketchUp files that contain location information by using the Geographic-AEC Transform and Geographic-Res-projected reference orientation modes.
 - Automatically place SketchUp models that contain location information. After you select the model, a dialog appears in which you can confirm that you want to place the model by geo-coordinates.



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Geographic Coordinate System Support

[Attach reference file using geographic coordinate system transform](#)


- When MicroStation is aware of the geographic location of the data in a model, geographically aware data can be conveniently referenced. MicroStation knows the location and orientation of both models and can calculate the coordinates of any point in the reference model in the master model.

[Attach reference file using AEC coordinate system transform](#)

- The geo-referencing method Geographic – AEC Transform calculates the linear transform that gives the best approximation to the results you would get by performing the full re-projection algorithm. The approximation is acceptable for smaller scale data. The primary advantage of this geo-referencing method is that it gives the same performance as any other reference attachment since re-projection is not necessary.

[Set geographic coordinate system as ACS](#)

- When a geographic coordinate system is assigned to a model, that coordinate system appears in the Auxiliary Coordinate System dialog. When it is made the active Auxiliary Coordinate System, it is possible to enter data to MicroStation in Longitude, Latitude format, and you can set coordinate readout to show Longitude and Latitude.



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Geographic Coordinate System Support

[Construct geographic coordinate system from Google Earth placemarks](#)


For users that use structure-centric coordinate systems, selecting a standard GCS from the Library is not possible. Instead, given some information about geographic positioning of your model, MicroStation can calculate an Azimuthal Equal Area GCS that will allow you to realize all the benefits of Geo-Coordination. You tell MicroStation about the geographic positioning of your design using Geographic Placemarks. A Placemark is a cell that contains text fields labeled Name:, Longitude:, Latitude:, and Altitude:. The longitude, latitude, and altitude fields specify the geographic position relative to the WGS 84 datum, which is the datum reported by GPS devices and also used by Google Earth. The corresponding position in the design file is specified by placement point of the cell. The scale and rotation of the cell does not affect its meaning as a Geographic Placemark.

[Support for multiple geographic coordinate system libraries](#)

- Multiple geographic coordinate system libraries can be used to choose a GCS.

[Edit Re-projection Settings](#)

- You can re-project design data from one geographic coordinate system to another. This can be done either permanently or temporarily depending on if the GCS came from a model or a referenced model.



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Global Origin Enhancements

A new Global Origin dialog displays when you key in [GO=](#) or [ACTIVE ORIGIN](#). Its two options let you define coordinates for a monument point, to relocate the global origin, or you can set it back to the default position at the center of the design plane.

[Global origin settings by monument point](#)

- The Monument Point option for Mode, in the Global Origin dialog, lets you input values for x, y, and z (for 3D), which are located at the monument point that you select in the model.

[Global origin settings by design plane center](#)



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Global Positioning System Device Support

MicroStation contains an interface to Global Positioning System (GPS) devices. The Global Positioning System consists of a constellation of satellites in earth's orbit that broadcast radio-navigation signals from which GPS devices can calculate reliable positions on a cost-free, continuous, worldwide basis. Please refer to <http://www.gps.gov/> for more information.

Track GPS position in MicroStation

- The Track tool displays the specified cell at the geographic location within the current model. Since the location within the model can be determined only if there is a geographic coordinate system assigned, the tool is disabled if there is no GCS.

Create line string based on GPS device input


- The Trail tool places a line string along the track of the GPS device as it moves.

Place data point based on GPS device input

- The Data Point at GPS Position tool places a data point in MicroStation at the current GPS position.

Center View based on GPS device input

- The Center View at GPS Position tool centers the current view at the current GPS position.



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Graphics Display Enhancements

A display style consists of a render mode and optional settings and overrides that you can specify. Display styles are created and managed in the [Display Styles dialog](#). Additional display modes are provided by default.

Display styles

- Whereas in previous editions, on a per-view basis, you applied a view display mode with companion settings, in this edition you can apply a display style that encompasses both the render mode and the settings, plus optional overrides.
- Display styles are typically saved as shared resources in DGN libraries.

Display style options

- In addition to a render mode — Wireframe, Hidden Line, Filled Hidden Line, or Shaded — a display style also specifies optional settings and overrides.

Set the display style of views, saved views, and dynamic views

- Display styles apply to saved and dynamic views as well as normal views.

Create, copy, and delete display styles


- The Display Styles dialog (Settings > Display Styles) contains tools for managing display styles.
- These tools work the same as those in other dialogs that contain tools for managing styles, such as the Dimension Styles dialog.

Standard display styles

- There are some [standard display styles](#) that are always available for selection. These styles cannot be deleted.

Improved hidden line display mode

- You can change the following settings and overrides for the hidden line render mode. None are set by default.



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Levels Enhancements

Enhancements to the Level Manager include ways to simplify the use and manipulation of levels and level numbers.

Right-click jump to active level in Level Manager

- This feature allows you to jump to the active level in the Level Manager and the Level Display dialogs. The Jump to Active Level item has been added to the right-click menu from the right pane of the Level Manager dialog and to the lower pane of the Level Display dialog. This is particularly useful when working with a large number of levels because it eliminates the need to scroll through the level list to find the active level.

Auto(System)-generated versus user-assigned level numbers



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Project Explorer and Link Set Update


Project Explorer provides hierarchical storage for information related to design such as DGN and DWG files, models, references, Adobe PDFs, Microsoft Word documents, Microsoft Excel workbooks, and their contents. The Model Manager dialog serves the purpose of managing models in the master file. It is convenient for you to be able to list models hierarchically stored in the active project in the [Project Explorer dialog](#).

Additional link types for Project Explorer

- Three link types have been added to the Project Explorer.

Link to another link set

- You can create a link to a link set by clicking the Create Link icon in the [Project Explorer dialog](#) and selecting LinkSet Link. This opens the [Create Link dialog](#) where you can select the link set to be linked using the Select LinkSet icon.
- In the Project Explorer dialog, you can create a copy of a link set or link folder by holding down the <Ctrl> key and dragging the selected link set or link folder to a new location. This is the same as right-clicking the link set or link folder, then performing the copy and paste functions.



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Project Explorer and Link Set Update

Link to external folder


- You can create a link (link type of Folder Link) to a physical folder containing DGN, DWG, DXF or other files. Folders can be dragged from Windows Explorer directly in the Project Explorer dialog or created via the PROJECT CREATE LINK FOLDER [folder-path] key-in to a folder containing DGN, DWG, DXF or other files. Multiple folder paths can be specified via this key-in.
- If you create a link to a folder, in the Project Explorer dialog you will see the name of the folder in black, indicating you can copy or delete the folder and all the files and sub-folders within the folders. The files and sub-folders under the folder cannot be moved or deleted independently.
- Right-click the linked folder in Project Explorer and choose Open from the pop-up to open Windows Explorer at the location of the linked folder.

Link to configuration variable

- You can create a link to a configuration variable (such as MS_CELLLIST or MS_DGNLIBLIST) by clicking the Create Link icon in the [Project Explorer dialog](#) and selecting Configuration Variable Link. This opens the [Create Configuration Variable Link dialog](#) where you can set up the configuration variable to be linked.

Harvested folders (link to configuration variable with filtering)

- A [harvested folder](#) displays models or named views that are contained in a set of files. Using harvested folders, you can keep track of sheets and views, because the folders are an up-to-date view of what is actually in the files. MicroStation generates the contents of a harvested folder by searching for specified resources within a set of files. When resources are added, removed, or renamed, harvested folders can be refreshed to reflect the changes. Several pre-defined harvested folders are delivered with MicroStation, including folders to display sheet models and several types of saved views.



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Raster Manager Enhancements

The changes and enhancements in Raster Manager are designed to improve the performance of Raster Manager's attachment and manipulation tools and options.

Attach raster from Web Map Servers

- You can now attach raster files from a [WMS Map Server](#).

Configure raster display to utilize independent process

- Display rasters using a process independent of other MicroStation operations. Any new raster display request will interrupt the previous request, and start the new one. Therefore if the user executes multiple zoom-in operations, only the last operation will be completely processed. The full resolution data will then display as it becomes available. Choose this setting in the [Preferences dialog Raster Manager category](#).

Geographic coordinate system support

- Raster Manager supports the coordinate system defined in MicroStation. It is now possible to display rasters on-the-fly from one coordinate system to another. See the [Raster Manager dialog](#) for information about the assigned coordinate system.

Drape raster images


- Raster Manager no longer needs Descartes to drape rasters over a digital elevation model. See the section called for further details.

TIFF64 format support

- Raster Manager now supports the TIFF64 file type. This new file format can now [support raster files](#) larger than 4 GB.

Configuration variables for IMG files

- Two [configuration variables](#) have been added for working with IMG files.
- [MS_RASTER_IMG_CHANNELS](#) — Sets the band number to use for Red, Green, Blue and Alpha channels when a file whose format is IMG is attached.
- [MS_RASTER_IMG_STRETCH](#) — Sets the band number to use for Red, Green, Blue and Alpha channels when a file whose format is IMG is attached.



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References Enhancements


A major enhancement to references is the ability to edit a reference from within the active model. In addition, the active model's annotation scale applies to annotations in references.

Activate Reference for in-place editing

- A new capability lets you [edit a reference in-place](#). That is, you can edit a reference from within the active model. To do this you first must activate the reference.
- When a reference is activated:
- Only operations on the activated reference are permitted.
- By default, all elements in references above the activated reference in the file hierarchy, as well as the active model, are displayed with an override color. You can control whether or not an override color is used, and what the color is.
- If you activate another reference, the currently activated reference is automatically deactivated.
- The reference is locked so that it cannot be edited in another session.
- DGN library data, such as levels and level filters, is not available in an activated reference file.

References support active model annotation scale

- In the past you may have added annotations to design models that are referenced into sheets. You also may have added annotations directly on the sheet. If the annotations were too small, you would have changed the model's annotation scale, but that would have affected only the annotations directly on the sheet. The annotations in the reference were not changed. Therefore, the only way you could change the annotations was to exchange into the reference and scale them.
- Now the active model's annotation scale applies to annotations in references, too. If you change the scale of the annotations on the sheet, the scale of the annotations in the references changes as well.
- To make a reference's annotations use the active model's annotation scale, you must turn on this option. In the References dialog there is a new column named Use Active Annotation Scale.



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Reference Enhancements

Detail scale


- Detail scale helps you represent the Master:Ref scale in terms of the sheet scale. For example, if your sheet scale (annotation scale) is 1/8" = 1", and you want to place a detail reference of scale 1/4" = 1", simply pick the new scale from the Detail Scale combo box. It automatically computes the Master:Ref scale as 2:1.

Synchronize with saved view

- When you attach a saved view, you can specify that the display of the reference should always be synchronized with the original saved view. In the Reference Attachment Settings dialog, turn on the Synchronize with Saved View check box.
- In order to change the appearance of a reference, you have to modify the saved view that it is synchronized with. This is to ensure fidelity of display properties such as view attributes, level masks, clip volume, display styles and others.

Drawing title

- When attaching a reference on a sheet, you can optionally create a drawing title. A drawing title describes a drawing on a sheet. If there are four references on a sheet (top, front, right, and isometric), you create four drawing titles to demarcate the four references. It plays a crucial role in automatically linking call-outs across sheets. Properties such as Name, Detail Scale, and Identifier are displayed in the call-outs in the form of fields.



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Selection Enhancements

Enhancements to selection include additional options on the Element Selection tool and drag support on the manipulation tools.

Expanded Element Selection criteria

- Five attributes tabs, hidden by default, are added to the Element Selection tool. To display one or all of these tabs, right-click on the attributes section of the tool settings window. From the menu that opens, turn on the desired attributes.

Text Styles

- You can select the required text style from a list.

Dimension Styles

- You can select the required dimension style from a list.

Multi-line Styles

- You can select the required multi-line style from a list.

Transparency


- You can select the required transparency from a list.

Display Priority

- You can select the display priority from a list.

Drag selection support during manipulative commands

- Selecting elements for a manipulation now supports drag selection.
- After selecting a manipulation tool, you can now select multiple elements by dragging a window around them.



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Text Enhancements


Text enhancements include a placeholder field and the ability to change case by a selection set or fence. The Text Styles dialog now allows for distances relative to text height and multi-select to edit styles. The Advanced tab of the Text Styles dialog uses a property pane format and allows for comparisons between styles. Word Processor updates include an insert field, subscript and superscript icons and right-click operation to change the case. The Edit Text tool retains its text settings and the Find/Replace Text tool supports data fields.

Placeholder fields

- A placeholder field is a field placed in a model as target for future population. This target displays as the field name until a value is provided via a link.
- Placeholder fields are generally one of three types:
 - Fields pointing to the properties of a parent cell
 - Fields pointing to the properties of a parent Digital Signature cell
 - Fields pointing to the properties of a link target attached to a parent cell
- The Insert Field functionality has been enhanced to accommodate placeholder fields. The Field Type Picker dialog has been added allowing you to select the type of field being created.
- Three new field types (Place Holder Cell Properties, Place Holder Link Properties, and Place Holder Digital Signature Cell Properties) have been added to the previously existing types (Element Properties, Model Properties, and File Properties).
- The Field Type dialog has two entry points from the Text Editor — Word Processor dialog: selecting Insert Field from the right-click menu (previously existing entry point) or the new icon.

Change Case by selection set or fence

- This tool is used to change the case of a piece of text. Case change options include Upper Case, Lower Case, Title Case, and First Capital. This tool also supports text selection via a fence.



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Text Enhancements

Text Style dialog enhancements

Distances relative to text height

- Distances (used for spacing and/or backgrounds, for example) are now relative to text height. This behavior is similar to how the Dimension Styles dialog works. In the past, these distances were an absolute value in master units. If the text height changed dramatically, the spacing could become inappropriate. Now, if the text height changes, the spacing adjusts relative to the change in the text height.

Multi-select to edit styles

- You can now edit properties of multiple styles at the same time and the changes are propagated through all the selected styles. When selecting multiple styles for edit, the properties of the last selected style display. If there are differences in properties in the selected styles, the titles of those properties appear in bold. If these properties are changed so they match in all the selected styles, the bold is removed.
- Property names are blue if the modification to the property is different than what is in use in the file.

Property pane on Advanced tab

- The Advanced tab of the Text Style dialog now uses a property pane style format. This was done to improve functionality, reliability and consistency with the Dimension Styles.

Advanced tab allows comparison between styles

- Two new modes (Comparison and Differences) have been added to the Advanced tab of the Text Styles dialog. Comparison mode shows a side by side comparison of the properties of two selected text styles. Differences mode shows the differences of the properties of two selected text styles.
- Text Styles dialog in Comparison mode*
- Text Styles dialog in Differences mode*



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Text Enhancements

Word Processor enhancements

Insert Field, Subscript, and Superscript icons

- Three new icons have been added to the Text Editor — Word Processor dialog.
- The Insert Field icon opens the new Field Type Picker dialog, used to select the type of field to be created. See [Placeholder Fields](#) for more information.
- The Superscript and Subscript icons

Right-click to change case

- The Change Case > Upper Case and Change Case > Lower Case menu items have been added to the right-click menu of the Text Editor — Word Processor dialog.

Font Enhancements

- Two changes have been made to the way fonts are handled.

Font configuration file

- MstFontConfig.xml, an XML-based [configuration file](#), is used for the handling of fonts. This file has two sections: language-based font specifications and font details, and can be modified with any text or XML editor. The file is installed in: ..\Workspace\System\Fonts.

Font configuration variables

- Three new font-related [configuration variables](#) have been added for specifying names for files and directories.

Edit Text tool retains text settings


- In the past, the Edit Text tool would change the active settings whenever you edited a piece of text. This behavior has been changed so settings revert to the previous settings when the Edit Text tool is closed. This change affects the active settings only and not the text styles.

Find/Replace Text supports data fields

- The Find/Replace Text tool can now find and replace text in enter data fields.

ISOREC font #27 added

- The ISOREC font #27 from the AUIFont library has been added in this edition. It is an ISO standard font.



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User Interface Enhancements

MicroStation Manager is renamed

- The MicroStation Manager has been renamed to File Open



User Preferences Enhancements

Preference options for the Raster Manager, Reference and View Options categories have been added.

Raster Manager

- The following user preferences related to rasters can be set in the Preferences dialog.

Disable Delete Element tool on Selected Rasters

- If on, the rasters in the selection set will not be deleted by the Delete Element tool.

Display Raster Using an Independent Process

- If on, displays rasters using a process independent of other MicroStation operations. Any new request to display raster interrupts the previous request, and starts the new one. Therefore if the user executes multiple zoom-in operations, only the last operation will be completely processed. Also, the display engine uses any data already in memory to provide immediate display. The full resolution data then displays as it becomes available.

Display Raster Border

- Three new raster border display modes are available:
- When Selected - The borders display only when the rasters are selected.
- Never - The borders never display and users must look at the Raster Manager dialog to know which rasters are selected.
- Always - The borders of all rasters are always displayed.

Manage memory usage for raster files

- A new tab in the Raster Manager category of the Preferences dialog allows managing the memory usage. You can limit the memory usage to a certain percentage. You can also determine the raster load mode:
- Automatic – Rasters are loaded in memory until the memory limit is reached, afterward the Standard mode is used.
- Standard – Cache files are created if required.
- RAM – Rasters are always loaded in memory (not recommended).



User Preferences Enhancements

Reference

- A new option has been added to the Reference category of the Preferences dialog (Workspace > Preferences).

Control active reference override color

- If this option is on, sets the override color of everything not in the active reference or nested to the active reference.

View Options

- New options have been added to the View Options category of the Preferences dialog (Workspace > Preferences).

Design model background color

- This options allows you to set the color used as the design model background color.

Sheet model background color

- This options allows you to set the color used as the sheet model background color.

Element highlight color override

- This options allows you to set the color used to highlight the active element.

Selection set color override

- This options allows you to set the color used to display the selection set.



Views Enhancements

Saved views can now be displayed as a graphical element within design and sheet models. Once displayed, a saved view can be selected and manipulated like a standard element. The View Attributes dialog is enhanced and expanded to include sections for Presentation and Clip Volume Settings.

Manipulate saved view with modification tools


- The Saved View dialog has a new column, Show. When Show is enabled for a saved view, graphics display its view parameters. In any view, the saved view graphics can be selected with the Selection tool, or by a fence, and manipulated like a standard element.

To modify a saved view graphically

- In the Saved View dialog, turn on the Show column.
- Click the Show column for the Saved View parameters to be displayed.
- Use the Selection tool to select the saved view graphics.
- Use the handles on the saved view graphics to modify the saved view.
- Views showing the saved view graphics (selected) and the modification handles.
- The Saved View dialog has a new column, Show. When Show is enabled for a saved view, graphics display its view parameters. In any view, the saved view graphics can be selected with the Selection tool, or by a fence, and manipulated like a standard element.

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- Use the handles on the saved view graphics to modify the saved view.
- Views showing the saved view graphics (selected) and the modification handles.



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View Attributes dialog

The View Attributes dialog allows you to apply a selected display style to a specific view or to all views. Added sections allow you to set global brightness, apply a saved view to a model, and view the forward, back, cut, outside clip volume.

Control presentation, view setup, and clip volume settings


- Changes to the View Attributes dialog allows for better control of how the contents of a view display. In the Presentation section, you can choose a display style and global brightness, as well as turn on or off other display attributes. The View Setup section allows you to recall a saved view and to select the model to which the settings are applied. The Clip Volume Settings allow you to view different clip volume areas.

Display forward, back, cut, outside clip volume

- The Clip Volume Settings section allows you to view the Forward, Back, Cut and Outside area of the clip volume.

Apply display styles to clip volume

- Options in the Clip Volume Settings section allow you to apply display styles to the clip volume. The drop-down menu lists available display styles or click the magnifying glass icon to open the Display Styles dialog.



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Visualization Enhancements

The Visualization section has revamped with all tools reorganized into six toolboxes that are accessed from the Visualization toolbox.

- Each of the Visualization toolboxes contain tools pertinent to an area of visualization.
- Render — to render a view, save images to disk, save panoramas, query illumination, or create render setups.
- Lights — to place lights or sky openings, manage lights, or create light setups.
- Cameras — to set up a view camera, or view, or to match a view to a photograph.
- Materials — to define, apply, manipulate, query, or preview materials, and to manage environment maps.
- Material Projections — to attach, manipulate, or remove, material projections.
- RPC tools — to place or edit ArchVision RPC cells.



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Visualization Enhancements

Lighting levels consistent across all render modes from Smooth to Particle Trace

- Changes to the way that lighting is processed means that lighting levels are now consistent across all render modes from Smooth to Particle Trace.
- Solar lighting is now consistent across all render modes, but note that Sky Lighting is not yet supported for Smooth.
- The display/color modes settings for Radiosity now look like those for Particle Tracing. The Intermediate/Final display options have been removed and a new toggle has been added for Ray Trace Specular Effects.
- A new option in the Ray Tracing settings dialog lets you set brightness mode to either Adapt to Brightness or Brightness Multiplier.

Brightness slider added for Smooth and Phong render modes

- Smooth and Phong render modes now have a brightness slider to let you adjust the finished rendering.

Ambient & Flashbulb Intensities now defined in Lux (lumens per square meter)

- Ambient and Flashbulb Intensities now have a physical value, Lux.

Smooth shading supports shadows

- Smooth shading (in hardware) now supports shadows. That is, you can set the Display Style to display as Shadowed (Smooth shading with shadows).
- Hardware shadows are possible using the following Display Styles: Illustration with Shadows, Monochrome with Shadows, and Transparent with Shadows.

Lighting

- Lighting has been enhanced and simplified, with new dialogs and new modifying methods for directional lights.



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Visualization Enhancements

Light Manager consolidates all lighting controls into single dialog

- The new Light Manager dialog lets you control all light sources in the model and its references.
- For lighting in the active model, you can adjust settings, rename source lights, select previously saved setups, define North, or open the Light Setups dialog.
- For source lighting in references, you can view the settings and turn on or off the lights.

Light Setups store all lighting settings in DGN or DGN Library

- The Light Setups dialog lets you create lighting setups with the lights in the model. That is, you can create setups that have different light states, such as on/off or changes in intensity (dimming), or with the same lights having different settings, such as the difference between day and night conditions. The position of the brightness slider for all render modes can be stored in a light setup.

Select Light Setup from all rendering tools and dialogs

- The Light Setups dialog can be accessed from all render tools and dialogs.

Define Solar Lighting location from Google Earth


- The Get Latitude and Longitude from Google Earth icon in the Light Manager lets you obtain Latitude and Longitude settings by <Ctrl> clicking on the required location in Google Earth.

Define sun and sky color from sun position

- Physically based Sun and Sky color can now be determined from sun position (and also can be used as the environment).

New Place Light tool

- A new improved Place Light tool incorporates all the settings required for the various light sources and Sky Openings. It provides better visual feedback, particularly for placing spotlights.



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Visualization Enhancements

Light Handles for positioning and targeting lights

- You now can reposition and/or target directional light sources using their handles. To do this, you use the Element Selection tool to select the required light source and then drag the handles for the position and target to their new locations.

To position and/or target a directional light source

- Use the Element Selection tool to select the light source.
- Use the handles to reposition or retarget the light source.
- Where two or more light sources are targeting the same point, you can select them all and retarget them together in one operation.

Improved area light rendering performance

- Rendering of area lights has been improved to increase performance.

Distant Lights now treated as fill lights

- Distant Light sources now are simple fill lights and are no longer treated as suns. They now:
- Can provide light in any direction, including upwards, under all circumstances.
- No longer have sky lighting applied to them (only Solar has this option).
- Are not confined to sky openings when present.




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Visualization Enhancements

Default Lighting

- A new lighting view attribute, Default Lighting, has been added. When off, user-defined scene lighting, any Global Lighting, (ambient, flash and solar) or Source Lights (area, distant, point and spot lights) will be used.
- Default Lighting consists of a shadow casting light over the viewer's shoulder, plus some ambient and a flash. This lighting is ideal for modeling in 3D, as it always provides very good illumination of a model relative to the observer. Because Default Lighting is a view attribute, you must turn it on (enabled) for it to be used to illuminate your model.
- To use Default Lighting, you must enable it for any view(s) where you want use it. This is done by clicking the Adjust View Brightness tool on the view border and turning on the Default Lighting toggle. When the Brightness tool is clicked, you will see a brightness slider and a toggle for enabling Default Lighting; checking the option turns on the Default Lighting for the view. The icon on the Adjust View Brightness tool changes to reflect the current state.
- When the Display Mode of a Display Style is Shaded, that is, anything other than wireframe and hidden line, then the hardware renderer uses Default Lighting or the user-defined lights (Scene Lighting), depending on the Default Lighting view attribute.
- If a Light Setup other than From View is chosen, the Render tool overrides this view attribute and uses scene lighting.
- When using the Render tool, to see the effects of Default Lighting, turn on Default Lighting for the view you are rendering; make sure that Light Setup: From View is chosen. To render a view using scene lighting, you can choose any light setup other than From View, or render a view with Default Lighting off. If you choose Light Setup: From View and enter a data point, the current state of the view attribute Default Lighting for that view determines which lighting is used.



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Visualization Enhancements

Render Settings and Setups

- Rendering settings and setups have been consolidated.

Single Render Settings dialog with basic and advanced interface

- The Render Setups dialog has been reorganized. It has been consolidated into a single dialog with basic and advanced options.

Select Render Setup from all rendering tools and dialogs

- All rendering tools and dialogs let you select Render Setup.

Distributed Rendering

- Distributed Rendering now is included and does not have to be downloaded as a separate package. Its basic requirement is that all processors taking part in the rendering have access to all the DGN, texture, RPC, and raster files to be used in the rendering. It is also necessary that all processors taking part in the rendering have access to the output path.

Simplified setup for Distributed Rendering

- Setting up this new version of Distributed Rendering is simple and it does not require any external database server as was required previously. To use Distributed Rendering, you must first launch the Distributed Processing Controller from the MicroStation start menu. The first time that you start the controller you are prompted to define your Shared Directory. This determines where Distributed Rendering stores the information it needs to configure your controller and pass data back and forth between multiple machines. All machines that will participate in the rendering must have access to this shared directory.



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Visualization Enhancements

- When Distributed Rendering is available, the Bentley Distributed Processing Scheduler icon appears in the System tray.

Using Distributed Rendering to save images and animations

- You can use Distributed Rendering to save an image, to save multiple images or to save an animation.

Distributed Rendering Related dialogs

- The Scheduler is accessed by right-clicking the Process Controller tray icon and choosing Open Scheduler. The Job Monitor is accessed by right-clicking the Process Controller tray icon and choosing Open Job Monitor.

Scheduler

- The Scheduler dialog is used to schedule times that your system is available for contributing to processing images.

Job Monitor


- The Job Monitor dialog displays the progress of your distributed rendering tasks.

Animation

- Animation now has support for additional formats and codec's.

Support for AVI and WMV video format output with user-selectable codec's

- Animation now supports AVE and WMV video format output with user-selectable codec's. When you select Windows AVI or Windows Media (WMV) as the Format, the Codec option menu lets you select from a number of codec's.



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