Bentley Map Customization

Jeff Bielefeld

Session Overview

- **Bentley Map Customization** - In this session attendees will be provided information on various techniques that can be used to customize the Bentley Map environment to increase productivity of data capture and maintenance workflows. Using the Bentley Geospatial Administrator, attendees will be shown a number of techniques that can be used to further extend the intelligence of their XFM data model and the resulting data capture and maintenance environment.

Agenda

- Answer some of the most “Frequently Asked Questions” related to the use of the Bentley Geospatial Administrator application.
- Demonstrate a number of techniques that can be used when defining feature classes in the Bentley Geospatial Administrator.

Bentley Map

Frequently Asked Questions

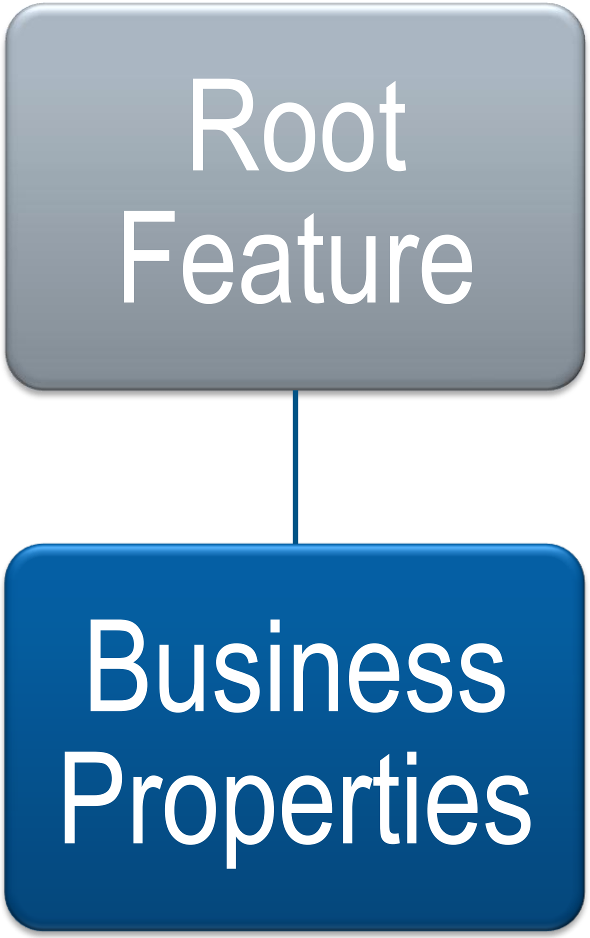
Frequently Asked Questions

- **Question** – What is XFM?
- **Answer** – As previously mentioned, the term XFM stands for “**X**ML-Based **F**eature **M**odeling” which provides an extensible XML-based metadata driven framework upon which geospatial feature classes, their business properties and behaviors can be modeled. Let’s take a brief look at some of the key benefits of the XFM data modeling platform.

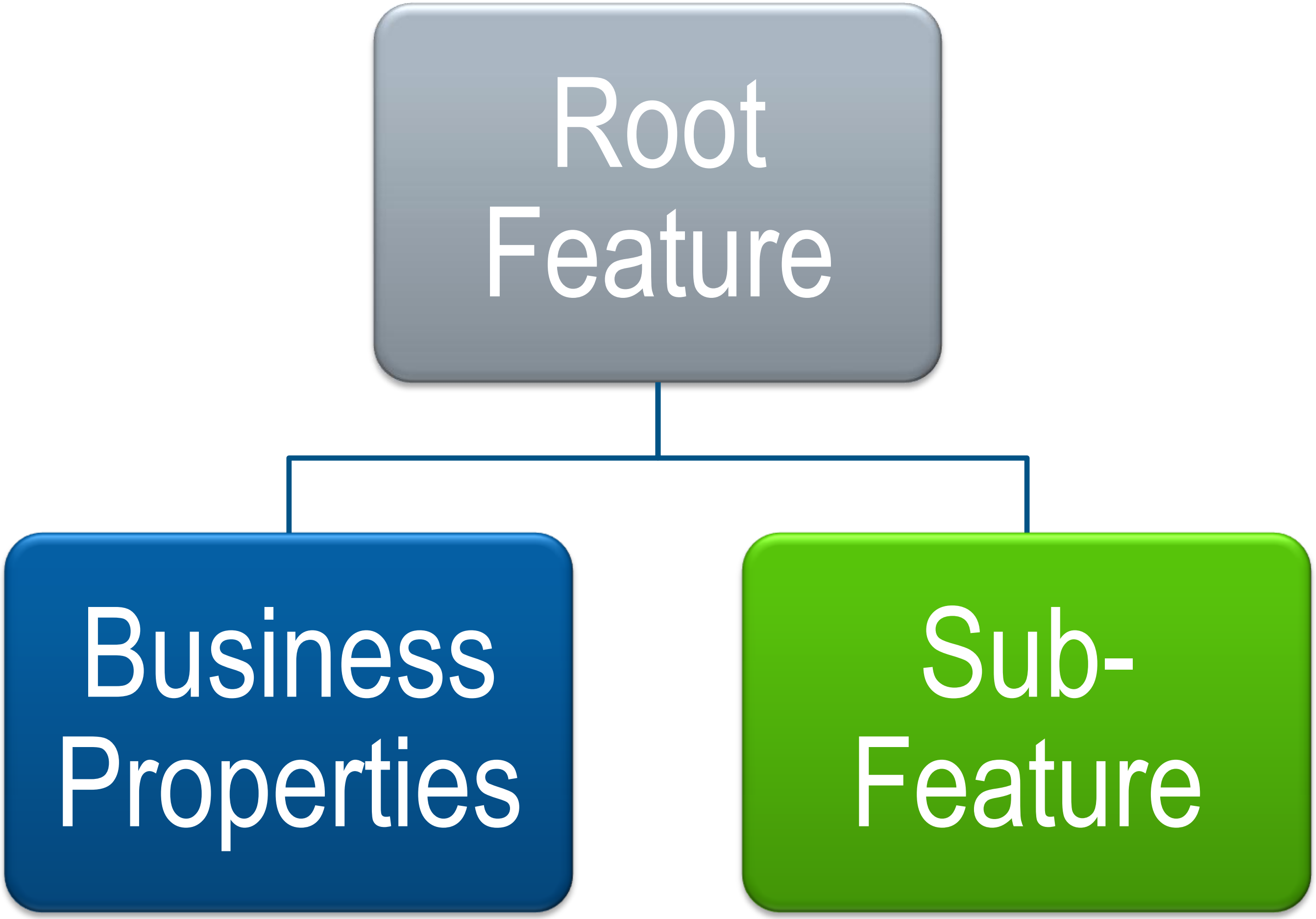
Frequently Asked Questions

- **Question** – What is a Bentley Map XFM feature?
- **Answer** – In the simplest terms, a Bentley Map XFM feature is nothing more than one or more MicroStation elements with optionally one or more sets of non-graphic business properties.

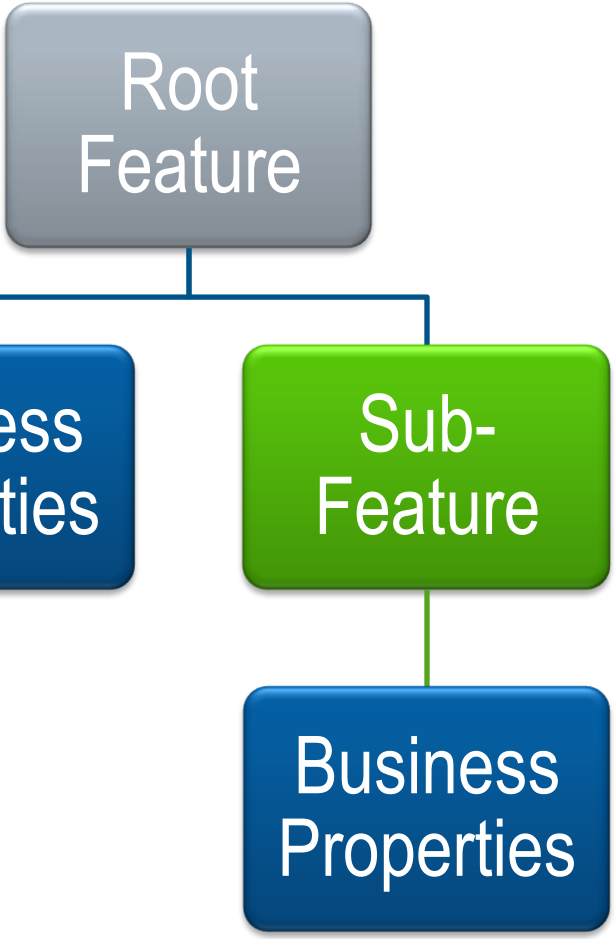
Bentley Map XFM Feature Instance



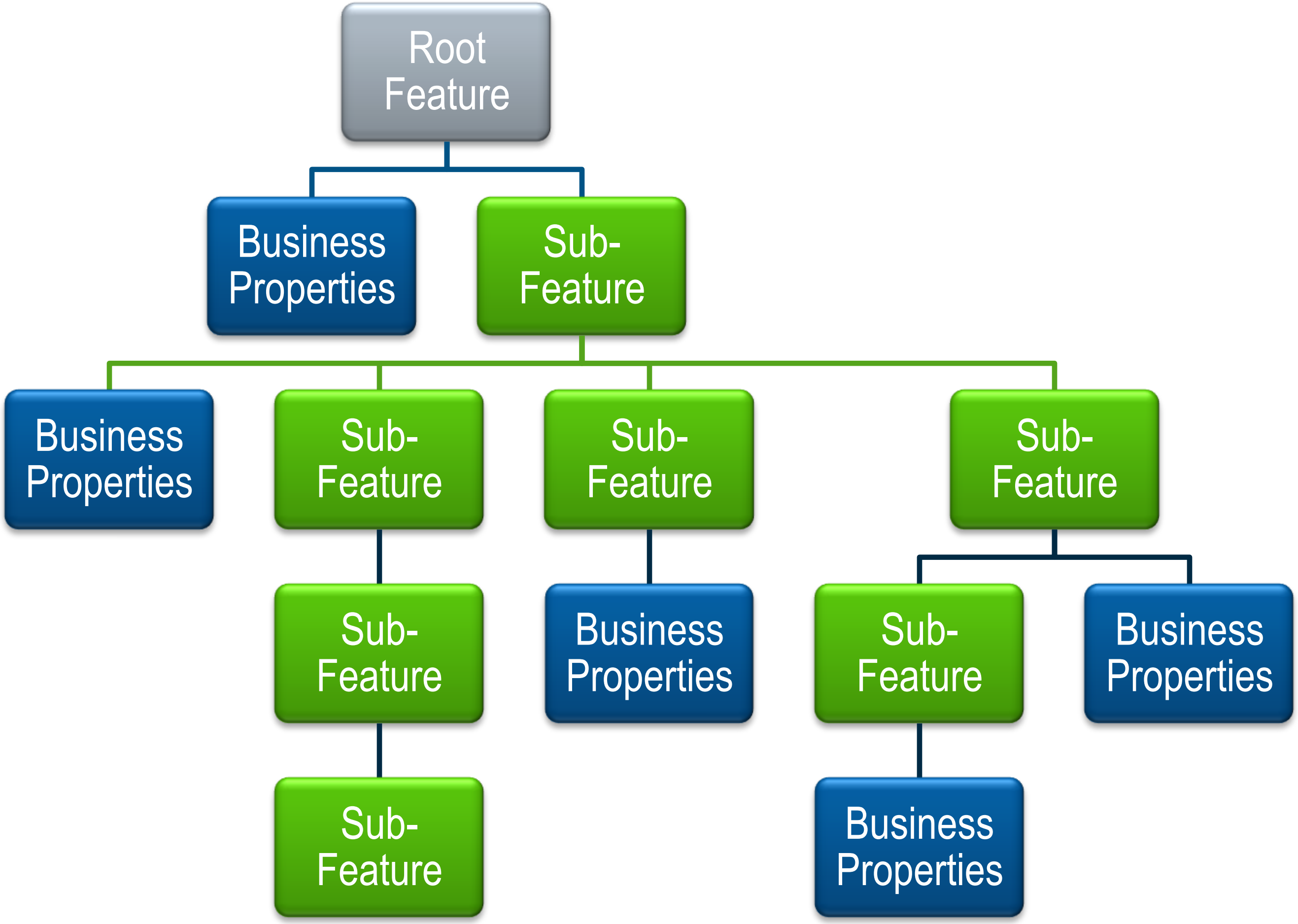
Bentley Map XFM Feature Instance



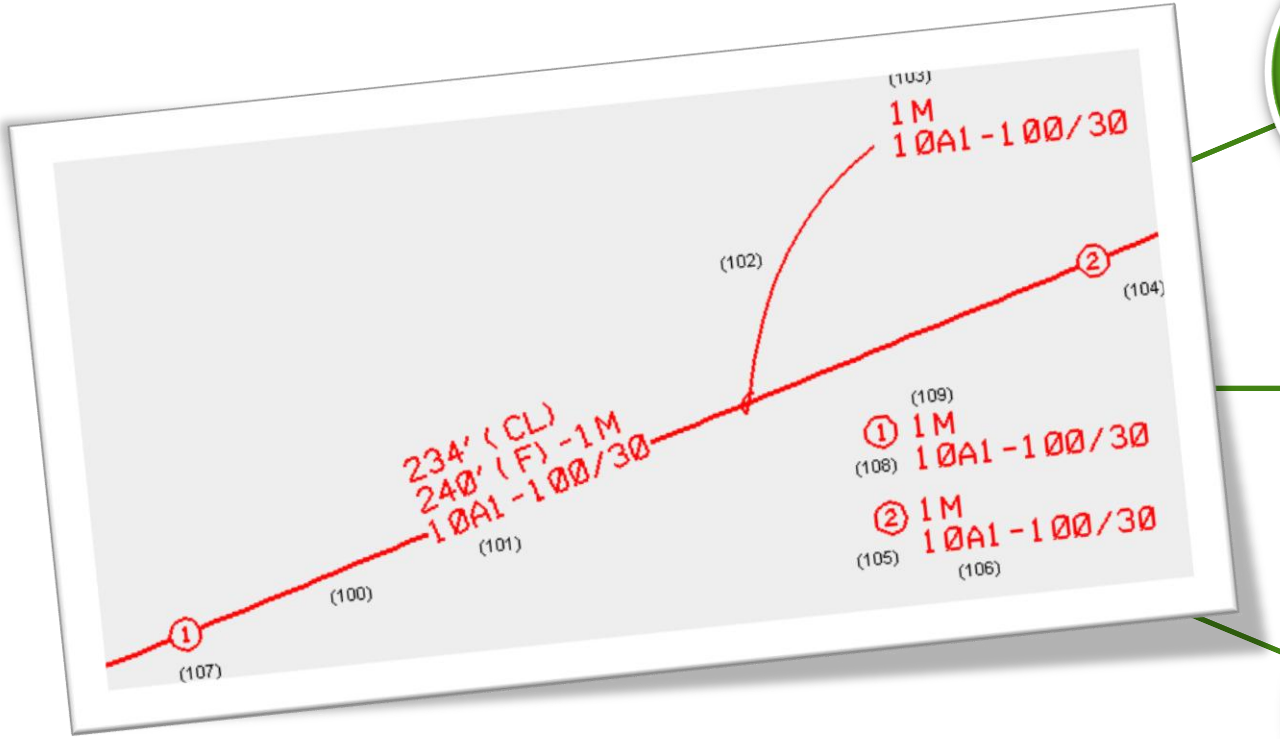
Bentley Map XFM Feature Instance



Bentley Map XFM Feature Instance



XFM Feature Instances



One or more graphic or non-graphic elements.

One or more XML fragment elements.

One or more RDBMS linkages.

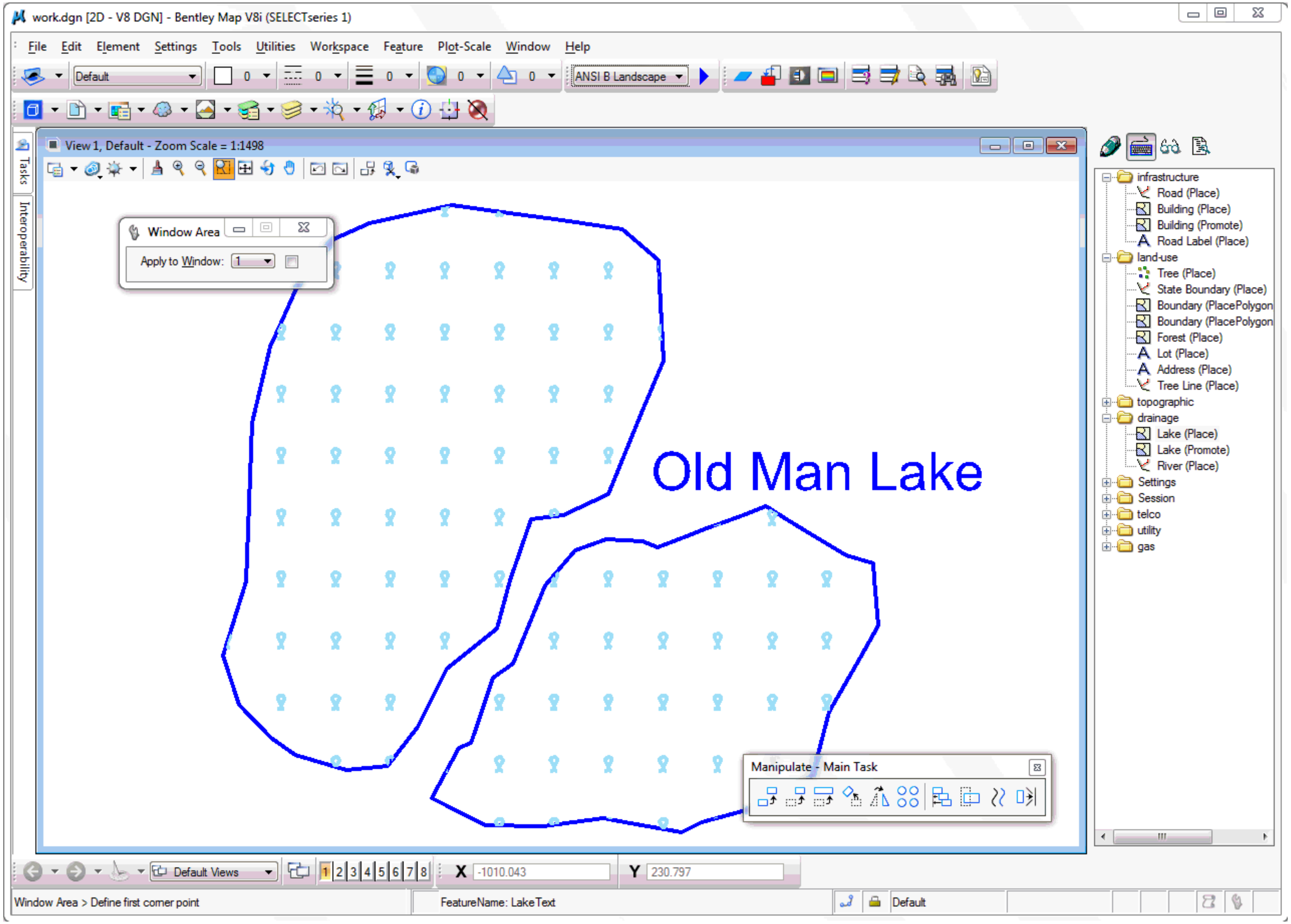
XFM Feature Types

- **Root** – Provides a top level container object which may contain one or more sub-feature occurrences.
- **Sub-Feature** – Provides a child container which has but one parent but may itself have one or more sub-feature occurrences.
- **Graphical** – A feature may be graphical and contain a geometry (e.g. MicroStation element) reference.
- **Non-Graphical** – A feature may be non-graphical and contain only data.
- **Collections** – A collection provides a container in which one or more geometries are used to represent a single feature instance (e.g. chain of islands).

Feature Collections

- Since a feature instance can be comprised of one or more homogeneous geometries, XFM provides feature collections to model the relationships.
- For example, a “**polygon collection**” feature class may be used to model “**disjointed**” parcels of land which have a common owner and ID, but are physically separated by a void.
- The business properties are related to the “root” feature which contains no geometry.
- The geometries are modeled and maintained as sub-features.

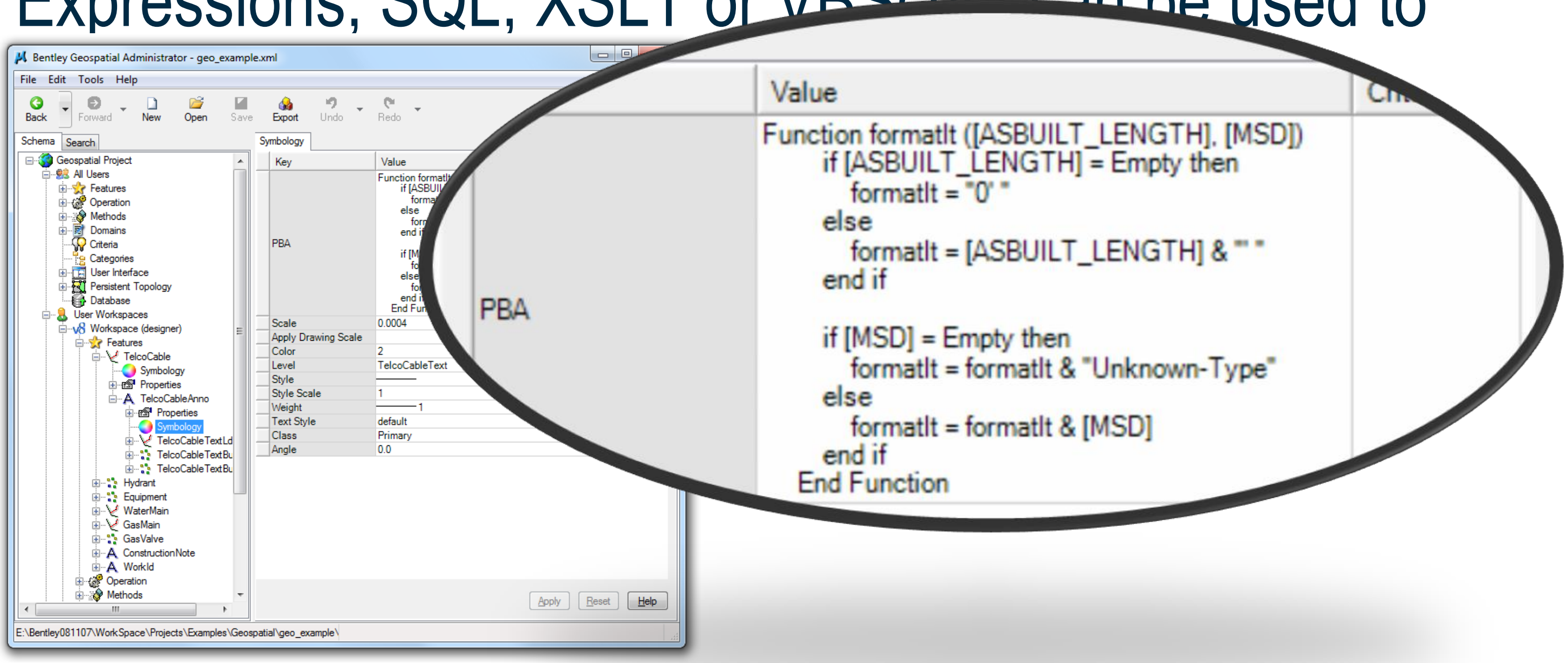
Feature Collections



Bentley Sustaining Infrastructure

Property Based Annotation

- Allows a feature instance to have the contents of its annotation text determined by one or more business property values.
- Expressions, SQL, XSLT or VBScript can be used to



Key	Value
PBA	Function formatIt ([ASBUILT_LENGTH], [MSD]) … End Function
Scale	0.0004
Apply Drawing Scale	
Color	2
Level	TelcoCableText
Style	
Style Scale	1
Weight	1
Text Style	default
Class	Primary
Angle	0.0

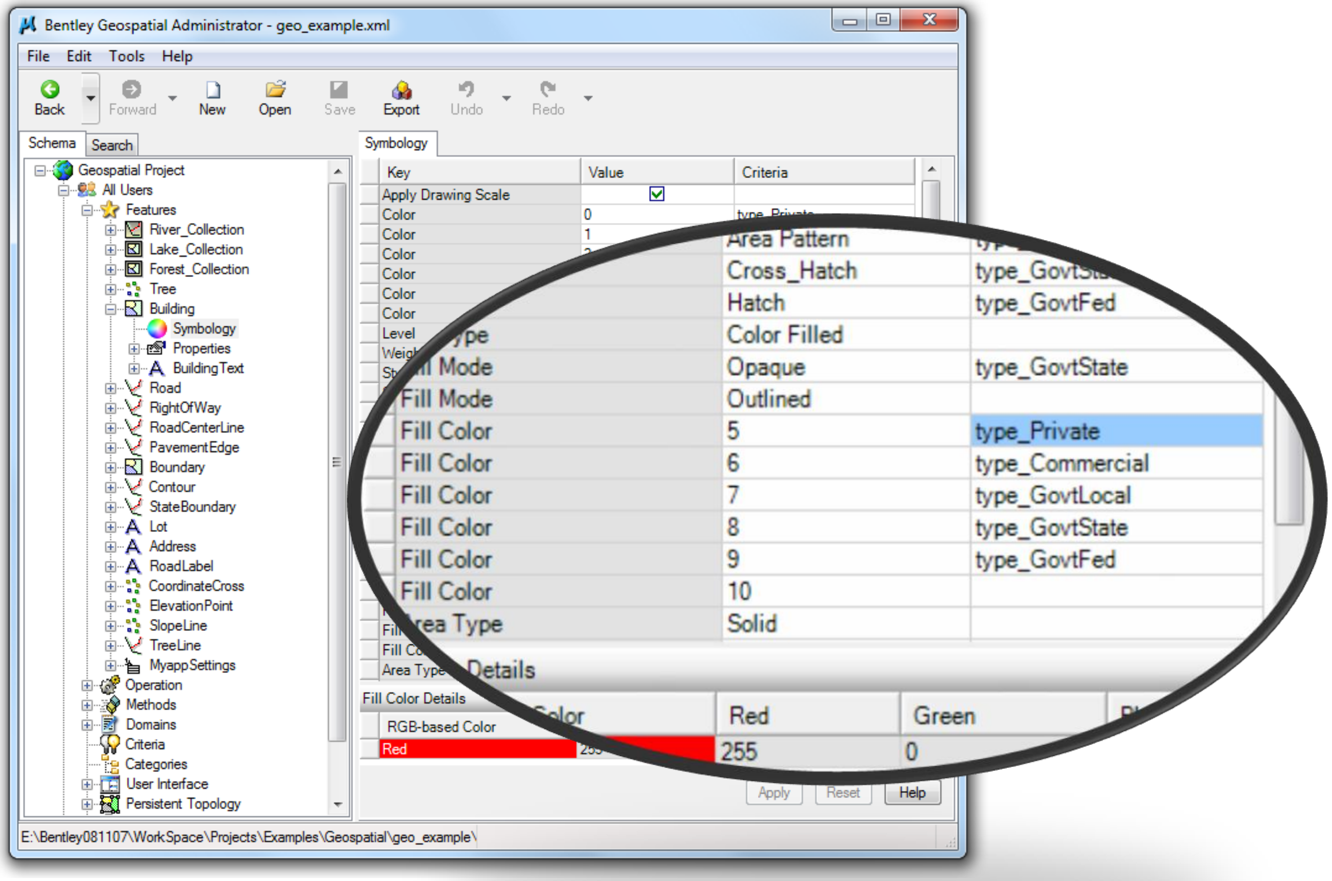
```
Function formatIt ([ASBUILT_LENGTH], [MSD])
      if [ASBUILT_LENGTH] = Empty then
         formatIt = "0' "
      else
         formatIt = [ASBUILT_LENGTH] & "' "
      end if

      if [MSD] = Empty then
         formatIt = formatIt & "Unknown-Type"
      else
         formatIt = formatIt & [MSD]
      end if
   End Function
```

E:\Bentley081107\WorkSpace\Projects\Examples\Geospatial\geo_example\

Property Based Symbology

- Allows a feature instance to have its symbology determined by one or more business property values.



Key	Value	Criteria
Apply Drawing Scale	☑	
Color	0	type_Private
Color	1	
Color		
Color		
Color		
Color		
Level		
Weig		
St		
Fil		
Fill Co		
Area Type		

	Area Pattern	typ
	Cross_Hatch	type_GovtSt
	Hatch	type_GovtFed
ype	Color Filled	
ll Mode	Opaque	type_GovtState
Fill Mode	Outlined	
Fill Color	5	type_Private
Fill Color	6	type_Commercial
Fill Color	7	type_GovtLocal
Fill Color	8	type_GovtState
Fill Color	9	type_GovtFed
Fill Color	10	
rea Type	Solid	

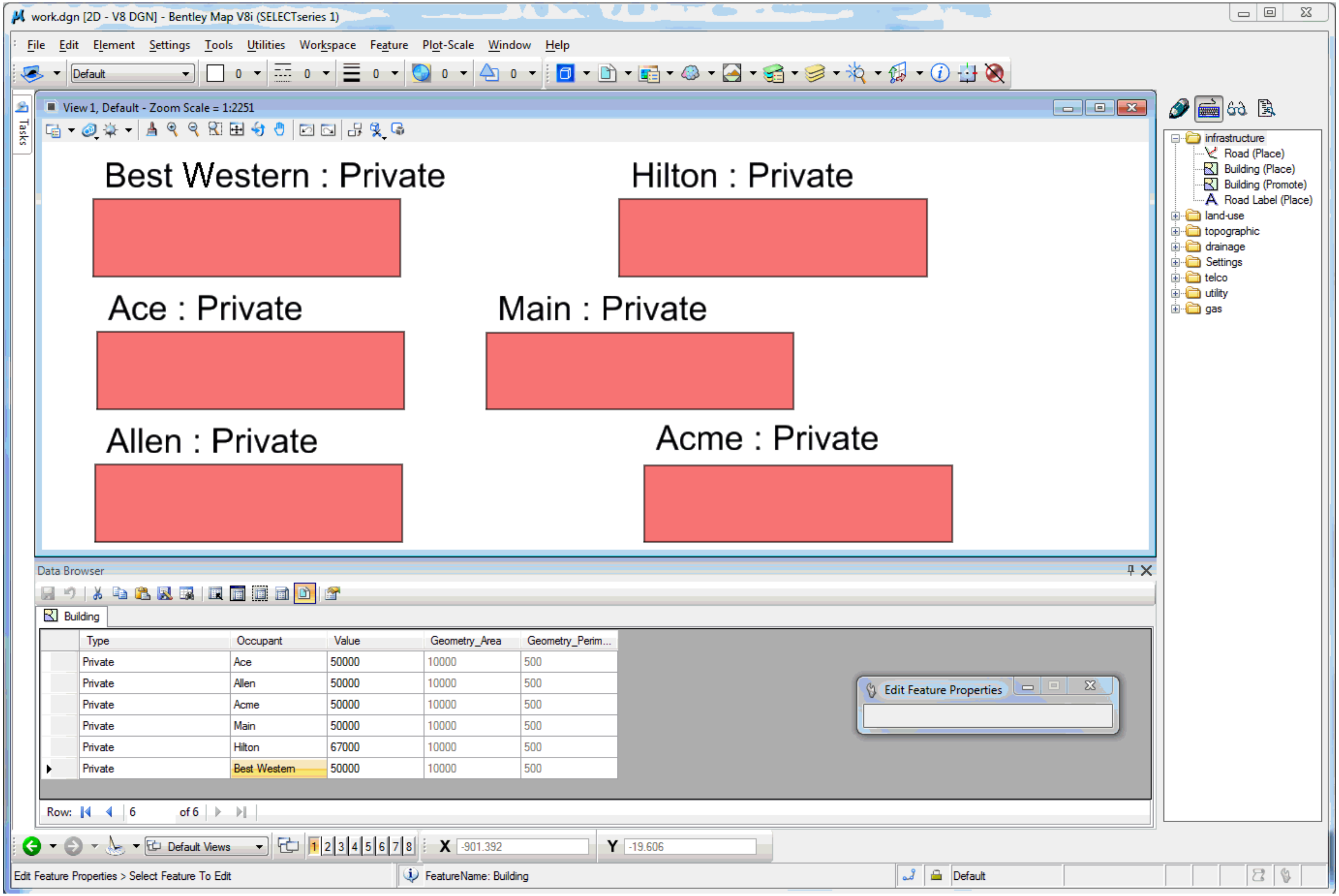
Details

Fill Color Details

RGB-based Color	Red	Green	Bl
Red	255	0	

E:\Bentley081107\WorkSpace\Projects\Examples\Geospatial\geo_example\

Property Based Annotation / Symbology



Type	Occupant	Value	Geometry_Area	Geometry_Perim...
Private	Ace	50000	10000	500
Private	Allen	50000	10000	500
Private	Acme	50000	10000	500
Private	Main	50000	10000	500
Private	Hilton	67000	10000	500
Private	Best Western	50000	10000	500

Row: 6 of 6

X -901.392 Y -19.606

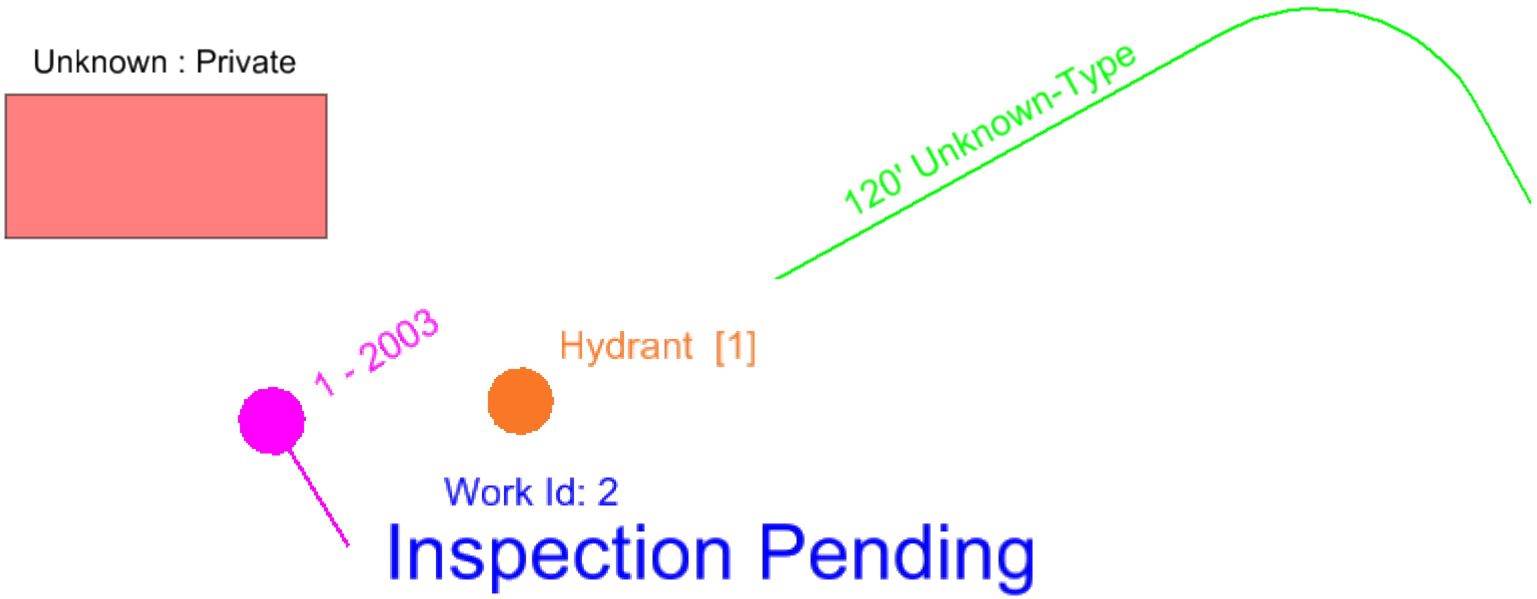
Edit Feature Properties > Select Feature To Edit

FeatureName: Building

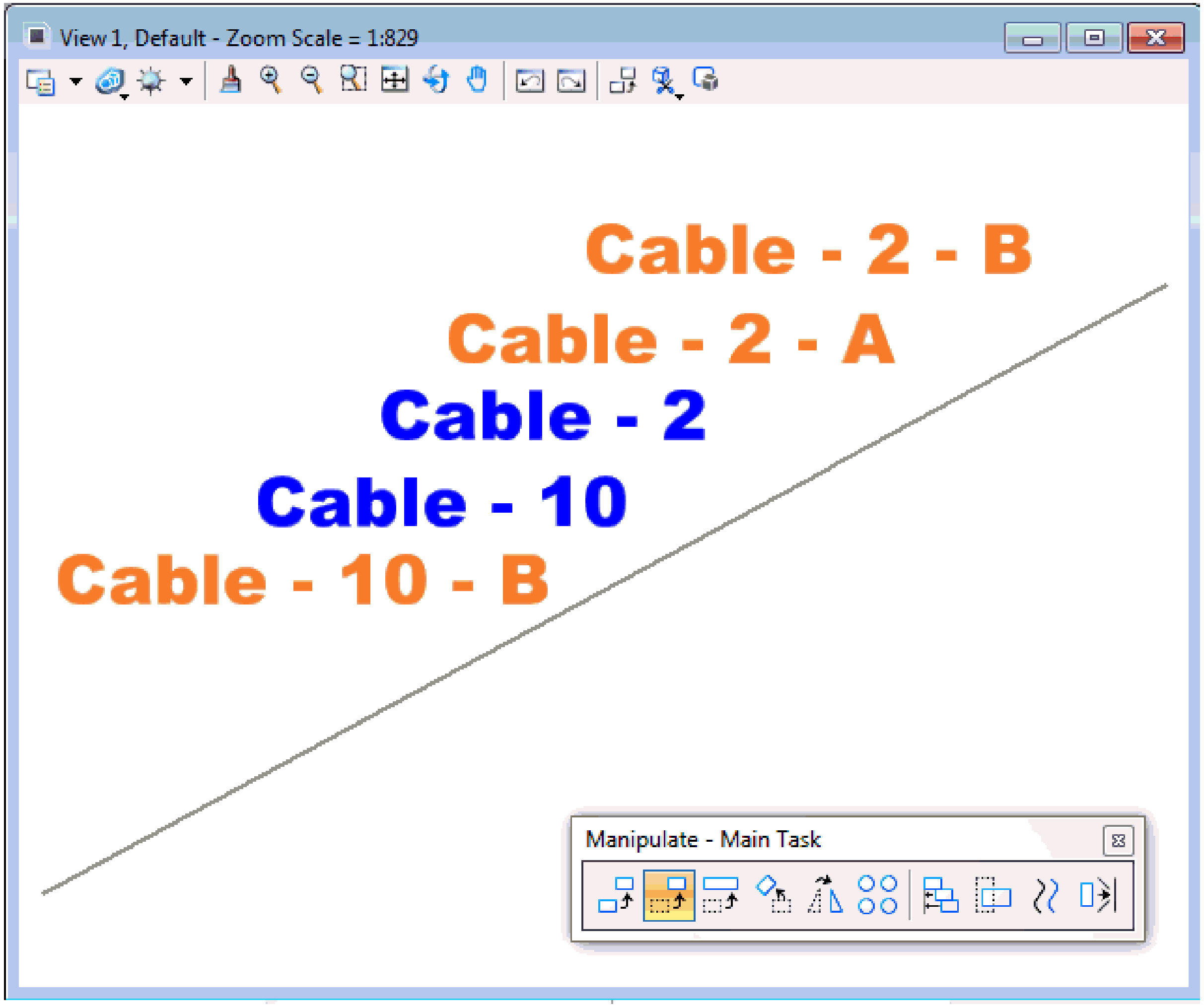
Default

Propagation Rules

- Since a feature instance can be comprised of one or more component features and/or sub-features, XFM uses propagation rules **to control the behavior of all “pieces” during element manipulation**.



Propagation Rules



View 1, Default - Zoom Scale = 1:829

Cable - 2 - B

Cable - 2 - A

Cable - 2

Cable - 10

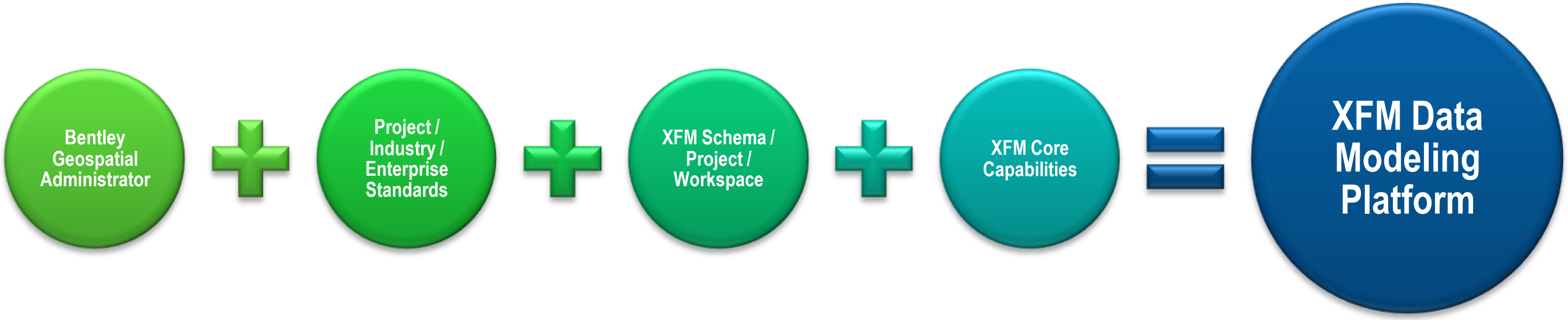
Cable - 10 - B

Propagation Rules

- The following table lists the currently supported propagation types and the events where these rules are applied.

Mode	Description
to parent	Propagate change to parent feature. Monitored during Move, Scale and Copy events.
from parent	Propagate change from parent feature. Monitored during Move, Scale and Copy events.
from root	Propagate change from root feature. Monitored during Move, Scale and Copy events.
copy to parent	Propagate copy to parent feature. Monitored during Copy, Fence Copy from Element manipulation toolbox and Clipboard Copy events.
copy from parent	Propagate copy from parent feature. Monitored during Copy, Fence Copy from Element manipulation toolbox and Clipboard Copy events.
delete to parent	Propagate sub-feature delete to parent. When a parent feature is delete all of it's sub-features are automatically deleted. Monitored during Delete, Fence Delete and Clipboard Cut events.

XFM Data Modeling Platform


Bentley Geospatial Administrator
Project / Industry / Enterprise Standards
XFM Schema / Project / Workspace
XFM Core Capabilities
XFM Data Modeling Platform

Bentley Map

Bentley Geospatial Administrator

Frequently Asked Questions

- **Question** – Is use of a Bentley Geospatial Administrator generated schema required?
- **Answer** – No. Use of a Bentley Geospatial Administrator generated schema is not required. However there are some additional Bentley Map capabilities which are available whenever the Bentley Geospatial Administrator is used to pre-define a schema, feature classes and their behaviors.

Bentley Geospatial Administrator

- The Bentley Geospatial Administrator is a standalone application that runs outside of MicroStation to configure both the metadata and the workspaces used to place and maintain XFM feature instances.
- The Bentley Geospatial Administrator stores the XFM Project configuration in a single Geospatial Schema XML file that when exported produces the project files to be used by MicroStation and Bentley Map.

Bentley Geospatial Administrator

- **Features** – Used to model real world business objects and their properties.
- **Methods** – Command entry points (e.g. Place, Edit and Annotate).
- **Operations** – Used with methods to define behavior of features, sequences methods.
- **Domains** – A list of valid domain values.
- **Criteria** – Used to test property values and take an appropriate action.

Bentley Geospatial Administrator

- **Propagation Rules** – Used to control how all the “pieces” of a feature instance are handled during element manipulations.
- **User Interface** – Used to dynamically create menus, tool palettes, icons, dialogs etc…
- **Workspace Files** – Used to copy project related files such as cell libraries, symbol font resources, seed files etc…

Bentley Geospatial Administrator

Functionality Matrix

Bentley Geospatial Administrator / API

Area	Functionality	Administrator	API
Workspace	Define Workspace	X	
Workspace	Export Workspace Files	X	
Workspace	Define Plot Scales	X	
User Interface	Create Dialog Definitions	X	X
User Interface	Define Command Manager Entries	X	
User Interface	Define Command Message and Prompt Lists	X	
User Interface	Define Dynamic User Interface	X	
Map Management	Create Map Model Definition		X
Map Management	Create Spatial Map Index	X	
Map Management	Define Scale Dependent Visibility Thresholds	X	X
Interoperability	Define Oracle Spatial Connection	X	X
Interoperability	Register Oracle Spatial Features	X	

Bentley Geospatial Administrator / API

Area	Functionality	Administrator	API
Feature Model	Create Feature Class Definitions	X	X
Feature Model	Create Named Criteria	X	
Feature Model	Create Domain Lists	X	
Feature Model	Define Propagation Rules	X	
Feature Model	Define Feature Class Geometry Type	X	X
Feature Model	Define Business Properties	X	X
Feature Model	Define Placement Methods	X	
Feature Model	Define RDBMS Database Connection	X	X
Feature Model	Define RDBMS DML Statements	X	
Feature Model	Define Property Based Symbology	X	
Feature Model	Define Property Based Annotation	X	
Feature Model	Define Persistent Topology Layers	X	

Bentley Geospatial Administrator / API

Area	Functionality	Administrator	API
Data Capture	Query Change Tracker Log		X
Data Capture	Create Placement Methods		X
Data Capture	Start Placement Operations		X
Data Capture	Query Feature Class Definitions		X
Data Capture	Traverse Feature Instance Hierarchy		X
Data Capture	Create, Read, Write or Delete Feature Instances		X
Data Capture	Create or Query Peer Relationships		X
Data Capture	Query Session Feature List		X
Data Capture	Event Callbacks		X
Data Capture	Create Persistent Topology Layers		X
Analysis	Traverse Persistent Topology Graphs		X

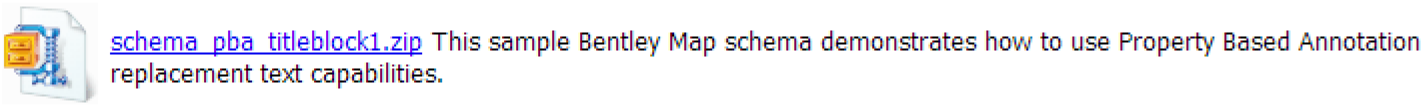
Bentley Geospatial Administrator / API

Area	Functionality	Administrator	API
Data Analysis	Create Spatial Overlays		X
Data Analysis	Create Buffers		X
Data Analysis	Perform Thematic Map Resymbolization		X
Data Analysis	Traverse Persistent Topology Graphs		X
Data Analysis	Perform Linear Network Traces		X
Data Analysis	Generate Dynamic Feature Labels		X

Bentley Geospatial Administrator

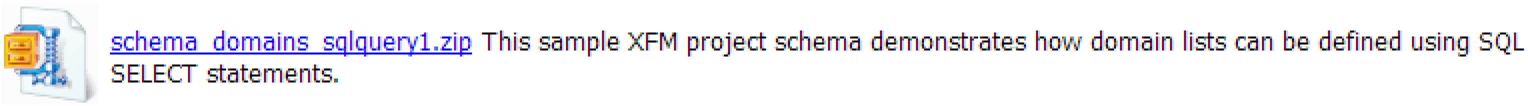
Example Schemas

Property Based Annotation - Title Block



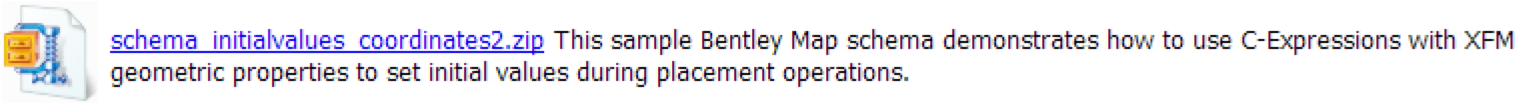
schema_pba_titleblock1.zip This sample Bentley Map schema demonstrates how to use Property Based Annotation replacement text capabilities.

SQL Domain Lists

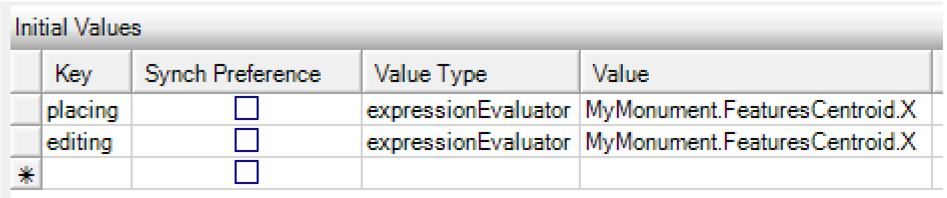


schema_domains_sqlquery1.zip This sample XFM project schema demonstrates how domain lists can be defined using SQL SELECT statements.

Initial Values - Coordinates



schema_initialvalues_coordinates2.zip This sample Bentley Map schema demonstrates how to use C-Expressions with XFM geometric properties to set initial values during placement operations.

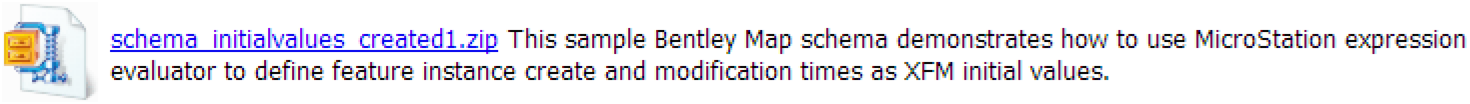


Initial Values

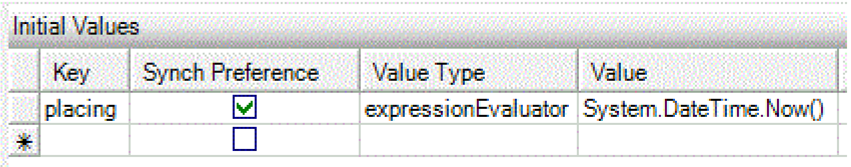
	Key	Synch Preference	Value Type	Value
	placing	□	expressionEvaluator	MyMonument.FeaturesCentroid.X
	editing	□	expressionEvaluator	MyMonument.FeaturesCentroid.X
*		□		

When combined with a small bit of MDL code, the initial value definitions provide behavior that you would normally see when using “dynamic labeling” in the Map Manager application.

Initial Values – Time Stamps



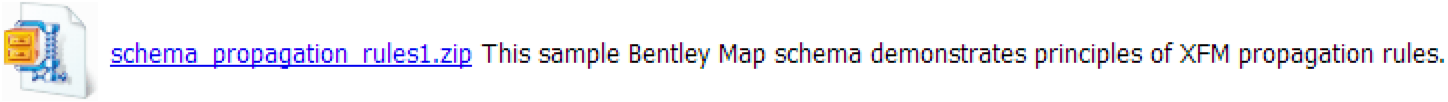
schema_initialvalues_created1.zip This sample Bentley Map schema demonstrates how to use MicroStation expression evaluator to define feature instance create and modification times as XFM initial values.



Initial Values

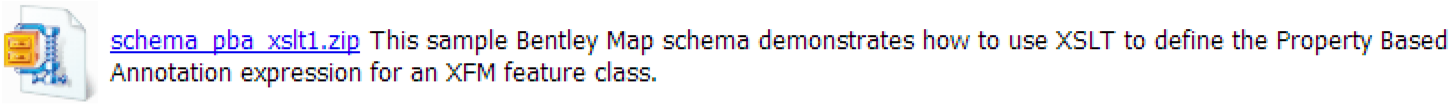
	Key	Synch Preference	Value Type	Value
	placing	☑	expressionEvaluator	System.DateTime.Now()
*		□		

Propagation Rules

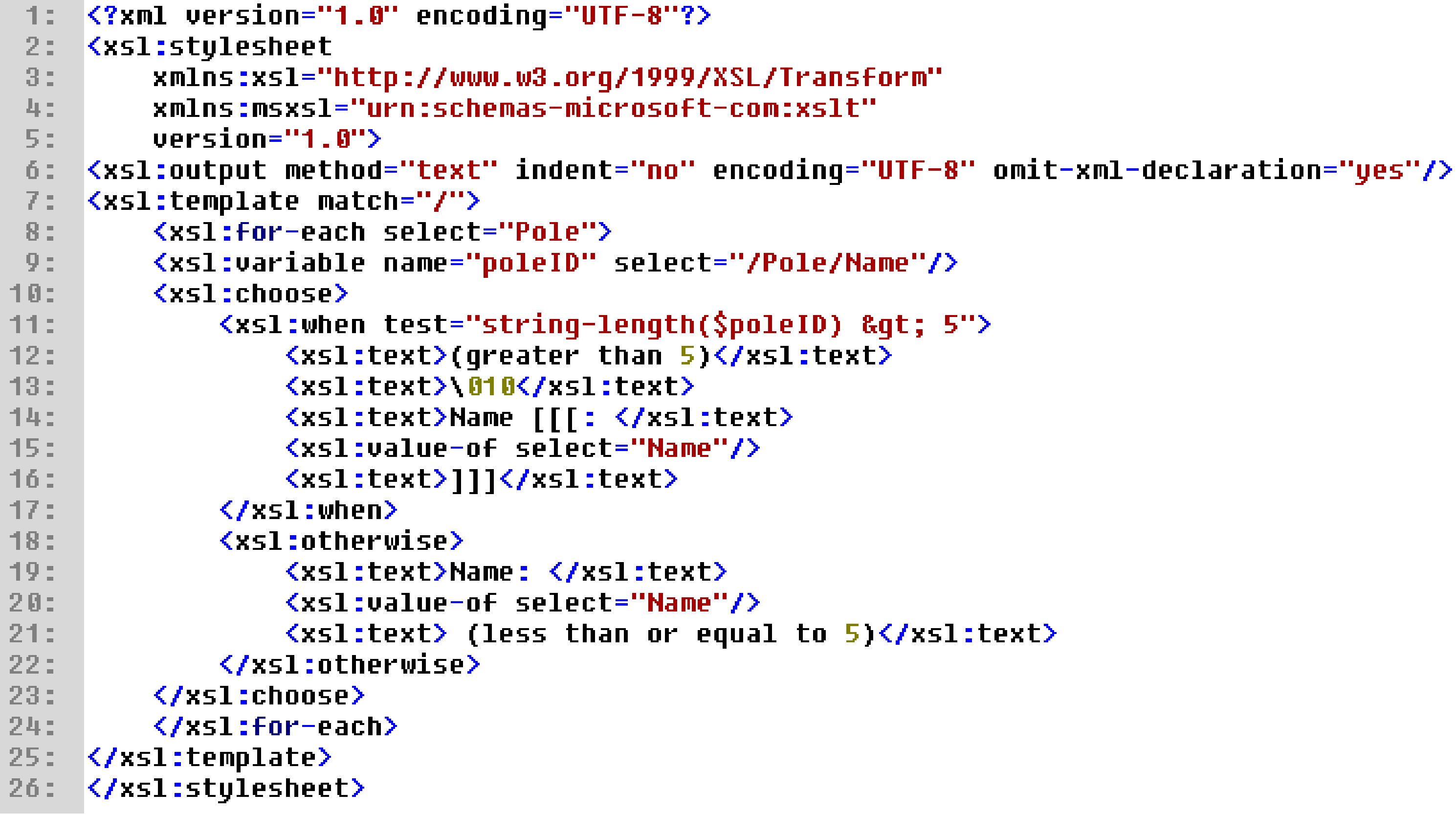


schema_propagation_rules1.zip This sample Bentley Map schema demonstrates principles of XFM propagation rules.

Property Based Annotation - XSLT

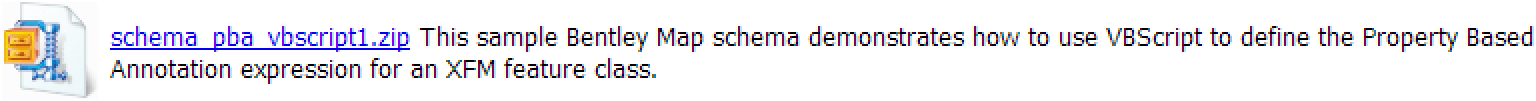


schema_pba_xslt1.zip This sample Bentley Map schema demonstrates how to use XSLT to define the Property Based Annotation expression for an XFM feature class.

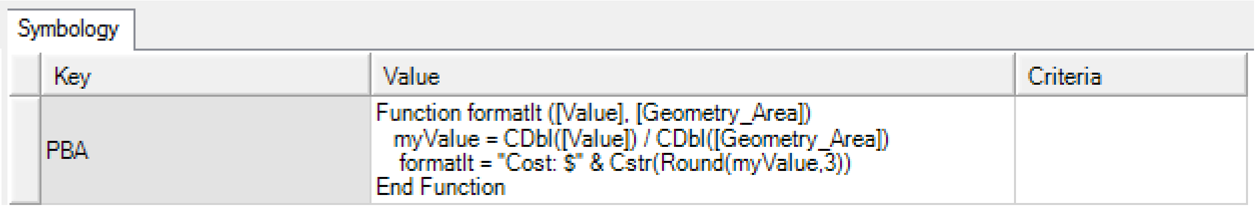


```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:msxsl="urn:schemas-microsoft-com:xslt"
    version="1.0">
<xsl:output method="text" indent="no" encoding="UTF-8" omit-xml-declaration="yes"/>
<xsl:template match="/">
    <xsl:for-each select="Pole">
    <xsl:variable name="poleID" select="/Pole/Name"/>
    <xsl:choose>
        <xsl:when test="string-length($poleID) &gt; 5">
            <xsl:text>(greater than 5)</xsl:text>
            <xsl:text>\010</xsl:text>
            <xsl:text>Name [[[: </xsl:text>
            <xsl:value-of select="Name"/>
            <xsl:text>]]]</xsl:text>
        </xsl:when>
        <xsl:otherwise>
            <xsl:text>Name: </xsl:text>
            <xsl:value-of select="Name"/>
            <xsl:text> (less than or equal to 5)</xsl:text>
        </xsl:otherwise>
    </xsl:choose>
    </xsl:for-each>
</xsl:template>
</xsl:stylesheet>
```

Property Based Annotation - VBScript



schema_pba_vbscript1.zip This sample Bentley Map schema demonstrates how to use VBScript to define the Property Based Annotation expression for an XFM feature class.



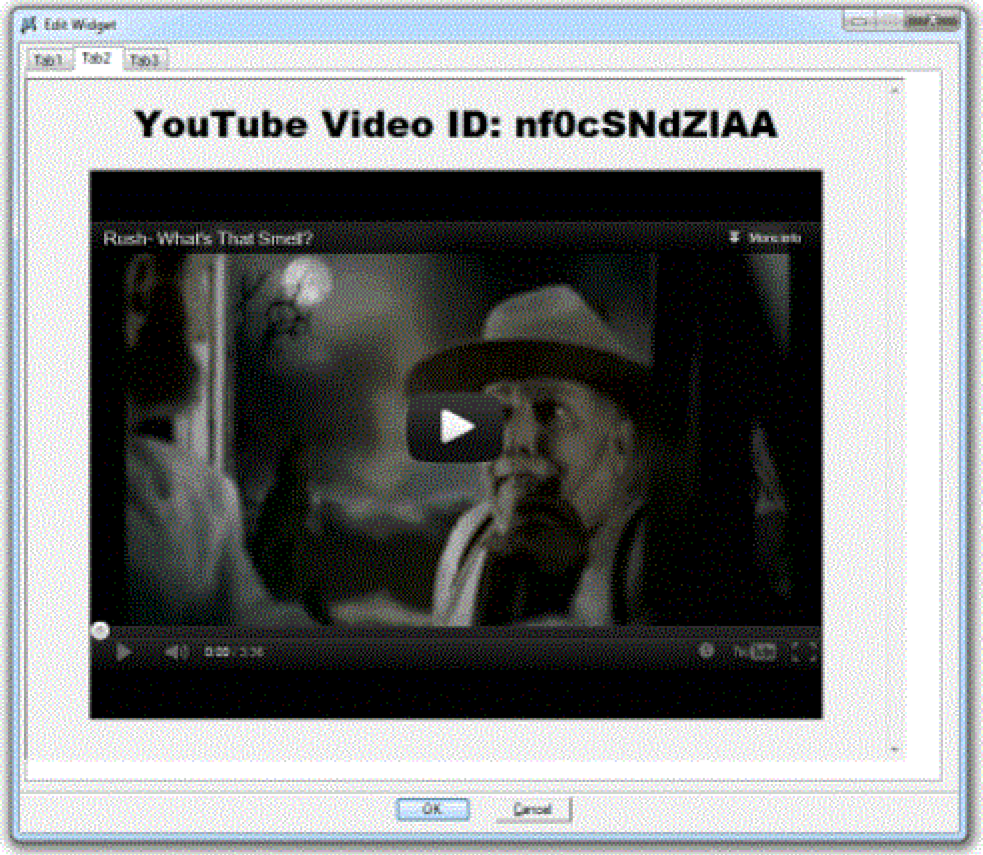
Symbology

Key	Value	Criteria

PBA	Function formatIt ([Value], [Geometry_Area])
	  myValue = CDbl([Value]) / CDbl([Geometry_Area])
	   formatIt = "Cost: $" & Cstr(Round(myValue,3))
	End Function	

Embed Multimedia

schema_gui_tabs1.zip This sample XFM project schema demonstrates different ways to use XSLT stylesheet transforms to embed different types of media such as YouTube and Flash videos into XFM dynamically defined feature instance editing forms.



Bentley Map Customization

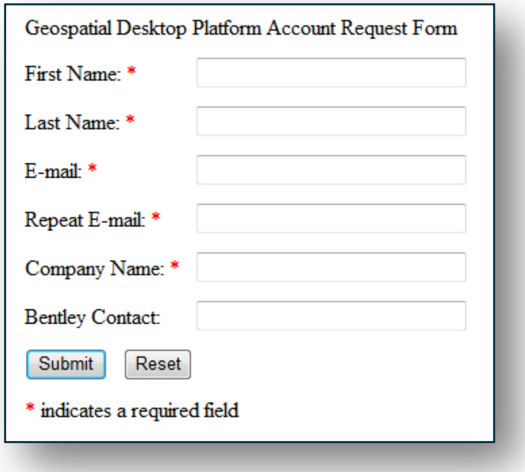
Additional Resources

Geospatial Desktop Platform Extranet

Bentley Geospatial Desktop Platform Extranet

RATE THIS ☆☆☆☆☆

The “Bentley Geospatial Desktop Platform” extranet site hosts the "**Bentley Map - Development and Product Customization Guide**" and "**Bentley Map - Product Development Notebooks**" which are frequently updated online resources for anyone interested in learning more about customizing or developing applications for the Bentley Map product line.



Geospatial Desktop Platform Account Request Form

First Name: *

Last Name: *

E-mail: *

Repeat E-mail: *

Company Name: *

Bentley Contact:

Submit Reset

* indicates a required field

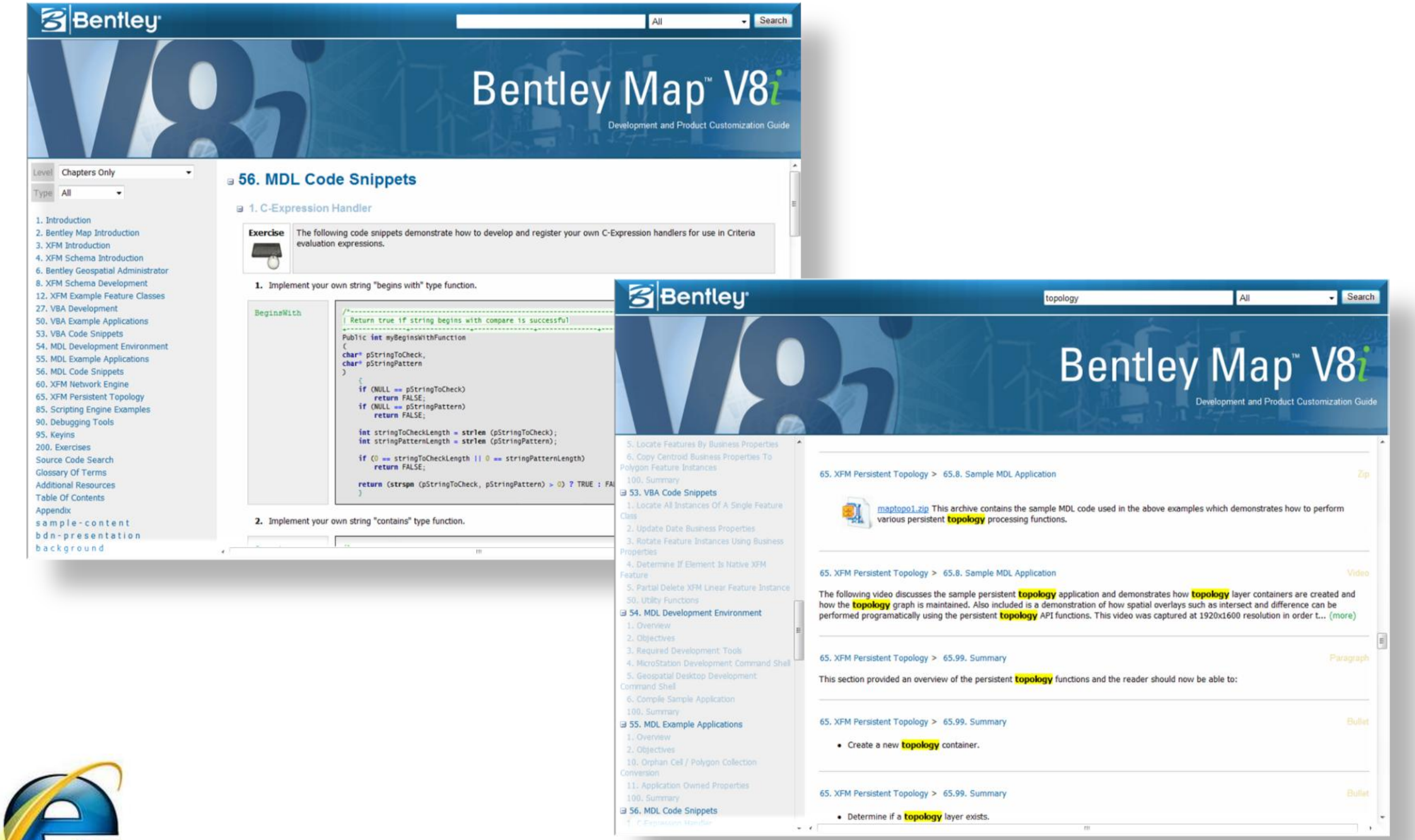
If your organization is a current Bentley SELECT subscriber or Bentley Development Network (BDN) member you may request access to these online resources using the **Geospatial Desktop Platform Account Request Form** listing your Account Manager (preferred) or Jeff Bielefeld as the Bentley contact.

Please note that access requests may take few a days to be processed. Once approved you will receive a confirmation mail message with additional information. Access requests submitted with incomplete information or those not including a valid and verifiable Bentley contact cannot be approved.

If you have any questions regarding the above, please contact Jeff Bielefeld at Bentley for more information.

☆ Favorite this page | Bentley Map, Development, Programming, XFM, XFT Edit tags

Online Development Guide



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56. MDL Code Snippets

1. C-Expression Handler

Exercise

The following code snippets demonstrate how to develop and register your own C-Expression handlers for use in Criteria evaluation expressions.

1. Implement your own string "begins with" type function.

BeginsWith

```
/*-----------------------------------------------------------------
| Return true if string begins with compare is successful
+---------------+---------------+---------------+---------------+---
Public int myBeginsWithFunction
(
char* pStringToCheck,
char* pStringPattern
)
    {
    if (NULL == pStringToCheck)
        return FALSE;
    if (NULL == pStringPattern)
        return FALSE;

    int stringToCheckLength = strlen (pStringToCheck);
    int stringPatternLength = strlen (pStringPattern);

    if (0 == stringToCheckLength || 0 == stringPatternLength)
        return FALSE;

    return (strspn (pStringToCheck, pStringPattern) > 0) ? TRUE : FA
    }
```

2. Implement your own string "contains" type function.

5. Locate Features By Business Properties
6. Copy Centroid Business Properties To Polygon Feature Instances
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1. Locate All Instances Of A Single Feature Class
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5. Partial Delete XFM Linear Feature Instance
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2. Objectives
10. Orphan Cell / Polygon Collection Conversion
11. Application Owned Properties
100. Summary
56. MDL Code Snippets
1. C-Expression Handler

65. XFM Persistent Topology > 65.8. Sample MDL Application Zip

maptopo1.zip This archive contains the sample MDL code used in the above examples which demonstrates how to perform various persistent topology processing functions.

65. XFM Persistent Topology > 65.8. Sample MDL Application Video

The following video discusses the sample persistent topology application and demonstrates how topology layer containers are created and how the topology graph is maintained. Also included is a demonstration of how spatial overlays such as intersect and difference can be performed programatically using the persistent topology API functions. This video was captured at 1920x1600 resolution in order t... (more)

65. XFM Persistent Topology > 65.99. Summary Paragraph

This section provided an overview of the persistent topology functions and the reader should now be able to:

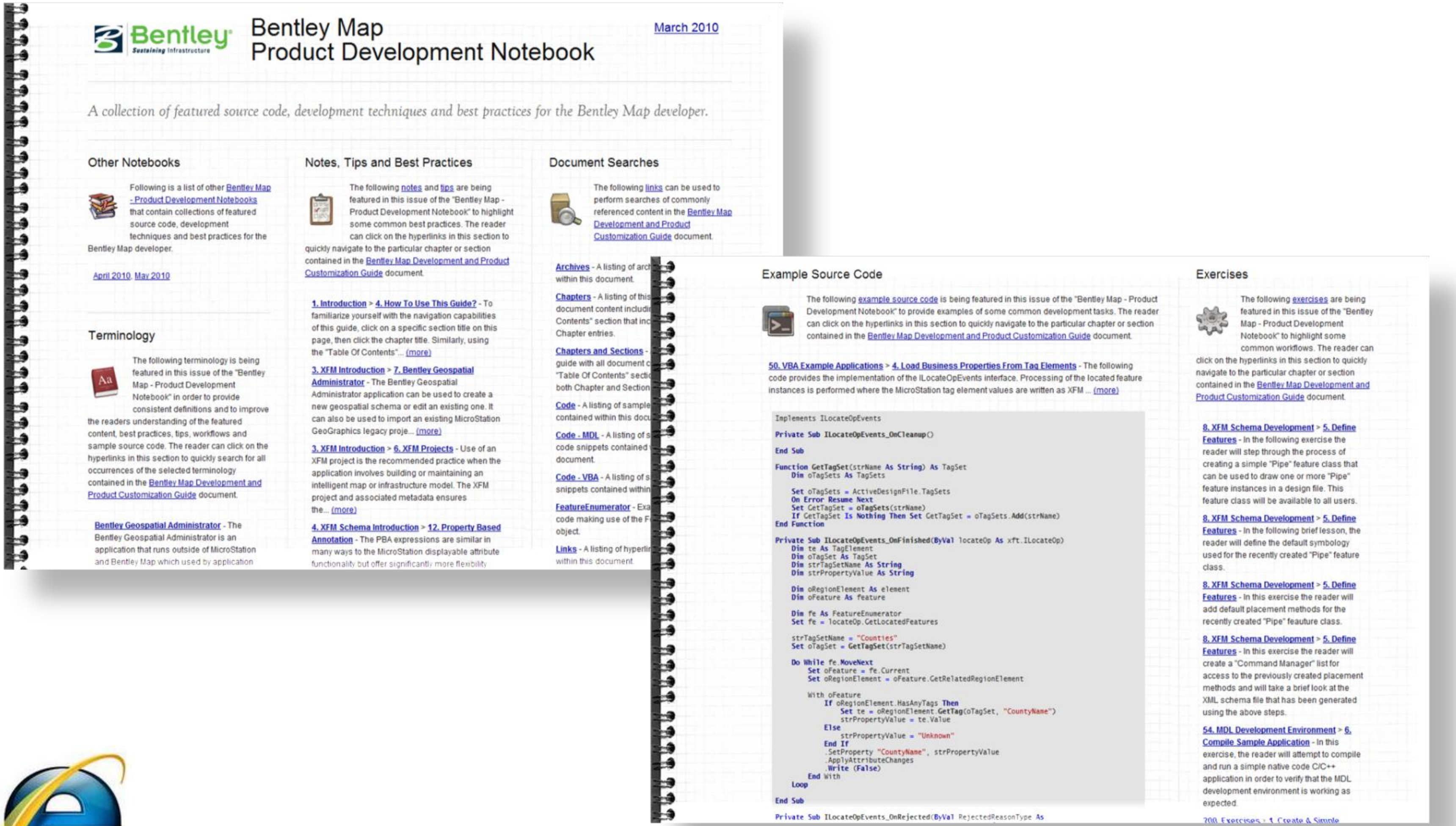
65. XFM Persistent Topology > 65.99. Summary Bullet

- Create a new topology container.

65. XFM Persistent Topology > 65.99. Summary Bullet

- Determine if a topology layer exists.

Online Developer Notebooks



Bentley Map
Product Development Notebook

March 2010

A collection of featured source code, development techniques and best practices for the Bentley Map developer.

Other Notebooks

Following is a list of other Bentley Map - Product Development Notebooks that contain collections of featured source code, development techniques and best practices for the Bentley Map developer.

April 2010, May 2010

Terminology

The following terminology is being featured in this issue of the "Bentley Map - Product Development Notebook" in order to provide consistent definitions and to improve the readers understanding of the featured content, best practices, tips, workflows and sample source code. The reader can click on the hyperlinks in this section to quickly search for all occurrences of the selected terminology contained in the Bentley Map Development and Product Customization Guide document.

Bentley Geospatial Administrator - The Bentley Geospatial Administrator is an application that runs outside of MicroStation and Bentley Map which used by application

Notes, Tips and Best Practices

The following notes and tips are being featured in this issue of the "Bentley Map - Product Development Notebook" to highlight some common best practices. The reader can click on the hyperlinks in this section to quickly navigate to the particular chapter or section contained in the Bentley Map Development and Product Customization Guide document.

1. Introduction > 4. How To Use This Guide? - To familiarize yourself with the navigation capabilities of this guide, click on a specific section title on this page, then click the chapter title. Similarly, using the "Table Of Contents"... (more)

3. XFM Introduction > 7. Bentley Geospatial Administrator - The Bentley Geospatial Administrator application can be used to create a new geospatial schema or edit an existing one. It can also be used to import an existing MicroStation GeoGraphics legacy proje... (more)

3. XFM Introduction > 6. XFM Projects - Use of an XFM project is the recommended practice when the application involves building or maintaining an intelligent map or infrastructure model. The XFM project and associated metadata ensures the... (more)

4. XFM Schema Introduction > 12. Property Based Annotation - The PBA expressions are similar in many ways to the MicroStation displayable attribute functionality but offer significantly more flexibility

Document Searches

The following links can be used to perform searches of commonly referenced content in the Bentley Map Development and Product Customization Guide document.

Archives - A listing of arc
within this document.

Chapters - A listing of this
document content includi
Contents" section that inc
Chapter entries.

Chapters and Sections -
guide with all document c
"Table Of Contents" secti
both Chapter and Section

Code - A listing of sample
contained within this docu

Code - MDL - A listing of s
code snippets contained
document.

Code - VBA - A listing of s
snippets contained within

FeatureEnumerator - Exa
code making use of the F
object.

Links - A listing of hyperli
within this document.

Example Source Code

The following example source code is being featured in this issue of the "Bentley Map - Product Development Notebook" to provide examples of some common development tasks. The reader can click on the hyperlinks in this section to quickly navigate to the particular chapter or section contained in the Bentley Map Development and Product Customization Guide document.

50. VBA Example Applications > 4. Load Business Properties From Tag Elements - The following code provides the implementation of the ILocateOpEvents interface. Processing of the located feature instances is performed where the MicroStation tag element values are written as XFM ... (more)

```
Implements ILocateOpEvents

Private Sub ILocateOpEvents_OnCleanup()

End Sub

Function GetTagSet(strName As String) As TagSet
    Dim oTagSets As TagSets

    Set oTagSets = ActiveDesignFile.TagSets
    On Error Resume Next
    Set GetTagSet = oTagSets(strName)
    If GetTagSet Is Nothing Then Set GetTagSet = oTagSets.Add(strName)
End Function

Private Sub ILocateOpEvents_OnFinished(ByVal locateOp As xft.ILocateOp)
    Dim te As TagElement
    Dim oTagSet As TagSet
    Dim strTagSetName As String
    Dim strPropertyValue As String

    Dim oRegionElement As element
    Dim oFeature As feature

    Dim fe As FeatureEnumerator
    Set fe = locateOp.GetLocatedFeatures

    strTagSetName = "Counties"
    Set oTagSet = GetTagSet(strTagSetName)

    Do While fe.MoveNext
        Set oFeature = fe.Current
        Set oRegionElement = oFeature.GetRelatedRegionElement

        With oFeature
            If oRegionElement.HasAnyTags Then
                Set te = oRegionElement.GetTag(oTagSet, "CountyName")
                strPropertyValue = te.Value
            Else
                strPropertyValue = "Unknown"
            End If
            .SetProperty "CountyName", strPropertyValue
            .ApplyAttributeChanges
            .Write (False)
        End With
    Loop

End Sub

Private Sub ILocateOpEvents_OnRejected(ByVal RejectedReasonType As
```

Exercises

The following exercises are being featured in this issue of the "Bentley Map - Product Development Notebook" to highlight some common workflows. The reader can click on the hyperlinks in this section to quickly navigate to the particular chapter or section contained in the Bentley Map Development and Product Customization Guide document.

8. XFM Schema Development > 5. Define Features - In the following exercise the reader will step through the process of creating a simple "Pipe" feature class that can be used to draw one or more "Pipe" feature instances in a design file. This feature class will be available to all users.

8. XFM Schema Development > 5. Define Features - In the following brief lesson, the reader will define the default symbology used for the recently created "Pipe" feature class.

8. XFM Schema Development > 5. Define Features - In this exercise the reader will add default placement methods for the recently created "Pipe" feauture class.

8. XFM Schema Development > 5. Define Features - In this exercise the reader will create a "Command Manager" list for access to the previously created placement methods and will take a brief look at the XML schema file that has been generated using the above steps.

54. MDL Development Environment > 6. Compile Sample Application - In this exercise, the reader will attempt to compile and run a simple native code C/C++ application in order to verify that the MDL development environment is working as expected.

200. Exercises > 1. Create A Simple

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MyOracleExtensions.cs
Start Page
My.Oracle.Extensions.OracleSpatialExtensions

```
        // Method used to perfor
        public bool connectSchem
        {
            bool opened = false;

            this.numChangesNew =
            this.numChangesModifi
            this.numChangesDeletec

            // Enable the option w
            XFMSTORAGE.ECObjectToX

            if (GDI.GeoDataIntercha
                return true;

            // This code opens the
            if (GDI.GDIExplorerAddIn
            {
                if (GDI.GDIExplorerA
                {
                    BGE.ExplorerTree
                    if (form == null)
                        return false;
                }

                if (GDI.GDIExplorerAdd
                    opened = (GDI.GDIE
            }
            return opened;
        }

        #endregion
```

9. Using the "**Build > Rebuild Solution**" command, results in the "**Output**" window, searching for any p
10. Press "**F5**" key to start a Bentley Map session with a workspace.
11. Select and open the existing **work.dgn** design file.
12. Select the "**Utilities > Macro > Project Manager**" **Manager**" dialog.
13. Select the "**Load Project**" icon on the button bar and and select and open the "**oracle1.mvba**" file.
14. In the "**VBA Project Manager**" dialog, select the "**ora** "**Microsoft Visual Basic Editor**" icon in the button ba **Editor**" integrated development environment.

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GE3WK1 – Bentley Map Development

Jeff Bielefeld, Bentley

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e: Developing Native C/C++ Applications for Custom r Functionalities

TIVE:

student will compile and review in the Visual Studio 2005 debugger some native C code the Map Manager API functionality of Bentley Map. The provided sample application to use the Map Manager API functions to create new map models, create map layers, ology, generate buffers and perform spatial overlay operations.

TING A NEW MAP MODEL (5 MINUTES)

will guide the student through the process of creating a new map model using the API.

w "**Microsoft Visual Studio 2005**" session and open the **_mapmaker1.sln**" solution file located in the "**c:\source\devenv**" folder.

to begin a new debugger session.

Station Manager, create and then open a new "**map1.dgn**" design file.

wly created "**map1.dgn**" design file has been opened, press the "**Schema** nd "**Query With Criteria**" buttons to query some Oracle Spatial feature instances the remaining exercises of this section, resulting in data similar to that shown in image.

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Additional Resources

- Be Communities
  - Geospatial Desktop Forum
    - http://communities.bentley.com/products/geospatial/desktop/f/5924.aspx
  - Bentley Developer Network Group
    - http://communities.bentley.com/programs/bentley_developer_network/default.aspx

- Direct E-Mail
  - bdn@bentley.com
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Thank You