

The background of the slide is a high-angle aerial photograph of a coastal area. The upper portion shows a range of mountains with snow-capped peaks under a clear blue sky. Below the mountains, the terrain transitions into a green, hilly landscape. The bottom half of the image is dominated by a deep blue body of water, with white foam visible where waves break against a rocky shoreline.

AutoCAD® Map 3D 2013 Platform API Training

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Maps and Layers

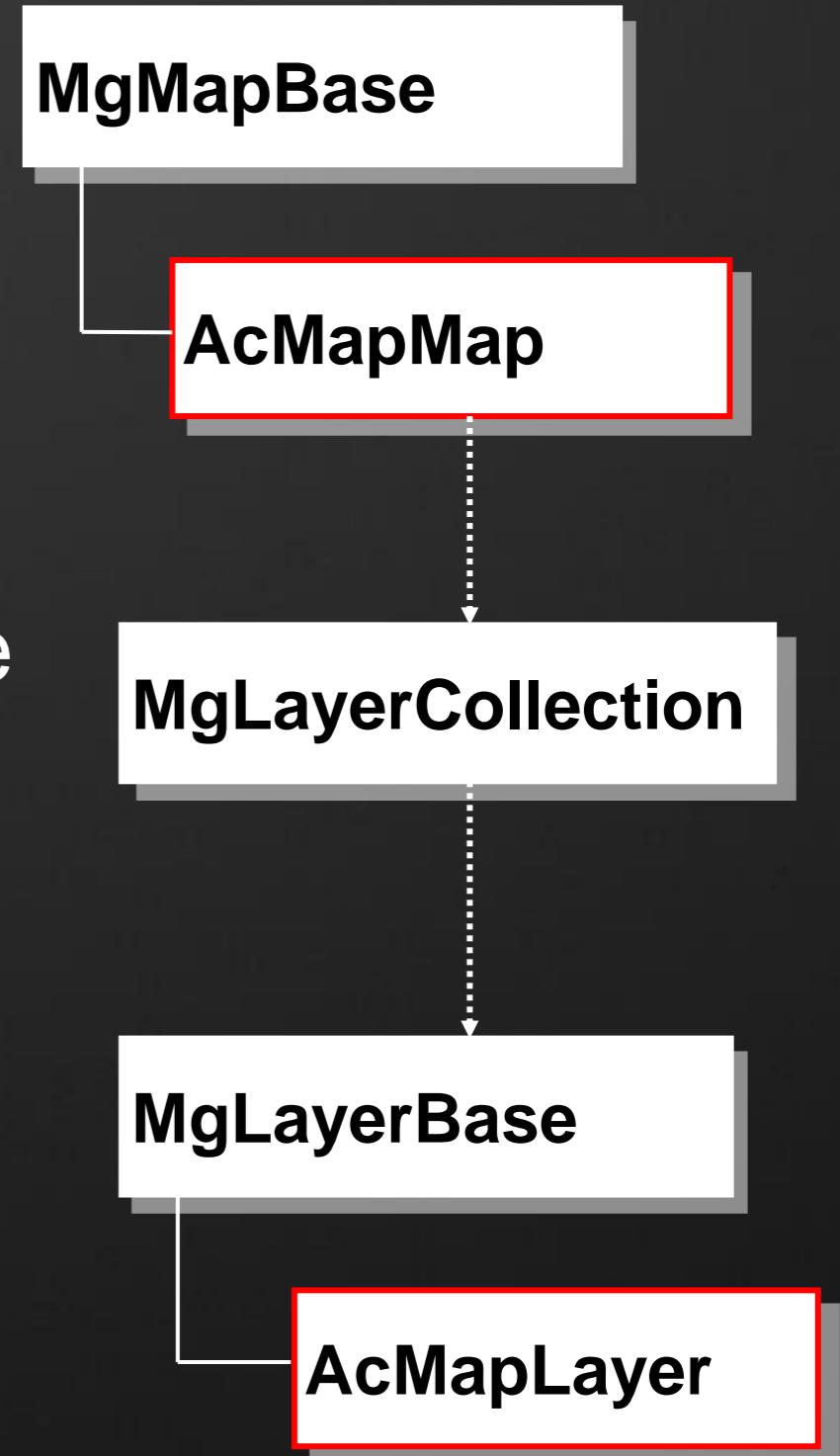
Contents

- Map and Layers Overview
- Working with Selection Sets

Maps and Layers

Map

- A map (AcMapMap) corresponds to the drawing that serves as a repository for resources
- AcMapMap object is composed of one or more AcMapLayer objects
- Get the current map using `AcMapMap::GetCurrentMap()`



Maps and Layers

Some important AcMapMap methods

- GetMapSRS()
- SaveLayer()
- LoadLayer()
- GetLayers()
- ZoomToExtent()
- GetViewScale() /SetViewScale()

Maps and Layers

AcMapLayer

- Create AcMapLayer using AcMapLayer.Create method

```
//Adding layer definition to repository
AcMapResourceService rs =
(AcMapResourceService)AcMapServiceFactory.GetService(MgServiceType.ResourceService
MgByteSource layer_byteSource //Assume byte source contains layer definition data
MgResourceIdentifier layerResId = new
MgResourceIdentifier("Library://Data/SDF/Newlayer.LayerDefinition");
Rs.SetResource(layerResId, layer_byteSource.GetReader(), null);

//Creating a new layer
AcMapLayer layer = AcMapLayer.Create(layerResId,rs); //NEW!
LayerSetName("Roads");

//Adddding new layer to map layer collection
MgLayerCollection layers = (AcMapLayer) AcMapMap.GetCurrentMap().GetLayers();
Layers.Add(layer);
```

- ZoomToLayer() - zooms to layer extent
- ZoomToExtent() - zooms to a specified bounding box

Maps and Layers

Layers

- Get a layer object (AcMapLayer) as an item in a map's layer collection using index or layer name
- Getting associated resource identifiers
 - Layer definition resource identifier (MgResourceIdentifier)
AcMapLayer::GetLayerDefinition()
 - Feature source resource identifier string
AcMapLayer::GetFeatureSourceId()

```
//Getting the map object
AcMapMap map = AcMapMap.GetCurrentMap()

//Getting a layer in the map
//MgLayerCollection::GetItem() returns MgLayerBase
AcMapLayer layer = (AcMapLayer) map.GetLayers().GetItem(0);

//Getting the layer definition content
MgResourceIdentifier layerResId = layer.GetLayerDefinition();
AcMapResourceService rs =
(AcMapResourceService)AcMapServiceFactory.GetService(MgServiceType.ResourceService);
MgByteReader byteRdr = rs.GetResourceContent(layerResId);
```

Maps and Layers

Getting all the features on a Layer

- Create a query options (MgFeatureQueryOptions) object
- Pass the query options object to
AcMapLayer::SelectFeatures() to select all features on the layer

```
//Get the map object
AcMapMap map = AcMapMap.GetCurrentMap();

//Get a layer in the map
//MgLayerCollection::GetItem() returns MgLayerBase
AcMapLayer layer = (AcMapLayer) map.GetLayers().GetItem(0);

//Get the features on the layer
MgFeatureReader featureReader = layer.SelectFeatures(queryOpts);
//Process feature reader object to get feature property values
```

Map and Layers

Adding layers to a map

- Option 1: Add .LAYER file using AcMapMap::LoadLayer()
- Option 2: Create layer from layer definition
 - Add layer definition to repository
 - Create new layer using resource ID of layer definition
 - Add new layer to map layer collection

```
//Adding layer definition to repository
AcMapResourceService rs =
(AcMapResourceService)AcMapServiceFactory.GetService(MgServiceType.ResourceService
MgByteSource layer_byteSource //Assume byte source contains layer definition data
MgResourceIdentifier layerResId = new
MgResourceIdentifier("Library://Data/SDF/Newlayer.LayerDefinition");
Rs.SetResource(layerResId, layer_byteSource.GetReader(), null);

//Creating a new layer
AcMapLayer layer = AcMapLayer.Create(layerResId,rs); //NEW!
Layer.SetName("Roads");

//Adding new layer to map layer collection
MgLayerCollection layers = (AcMapLayer) AcMapMap.GetCurrentMap().GetLayers();
Layers.Add(layer);
```

Feature Selection Sets

- Use AutoCAD GetSelection() to select features into an AutoCAD selection set
- Use AcMapFeatureEntityService::GetSelection() to convert AutoCAD election set to Map selection set (MgSelectionBase)

```
using Autodesk.Gis.Map.Platform.Interop;
Autodesk.AutoCAD.EditorInput.SelectionSet acadSel = null
Editor ed = Application.DocumentManager.MdiActiveDocument.Editor;
//Select features in the map
selRes = ed.GetSelection();
if (selRes.Status != Autodesk.AutoCAD.EditorInput.PromptStatus.OK) {
    ed.WriteMessage("\nNo features selected");
    return
}
//Get the AutoCAD selection set
acadSel = selRes.Value;
//Convert AutoCAD selection set to Map (Platform) selection set
MgSelectionBase selectionSet = AcMapFeatureEntityService GetSelection(acadSel);
```

Feature Selection Sets

Selecting features programmatically

- Add features Map selection set (MgSelectionBase)
- Use AcMapFeatureEntityService::HighlightFeatures() to select on screen

```
AcMapMap map = AcMapMap.GetCurrentMap();
MgLayerCollection layers = map.GetLayers();
AcMapLayer rdLayer = (AcMapLayer)layers.GetItem("Roads");

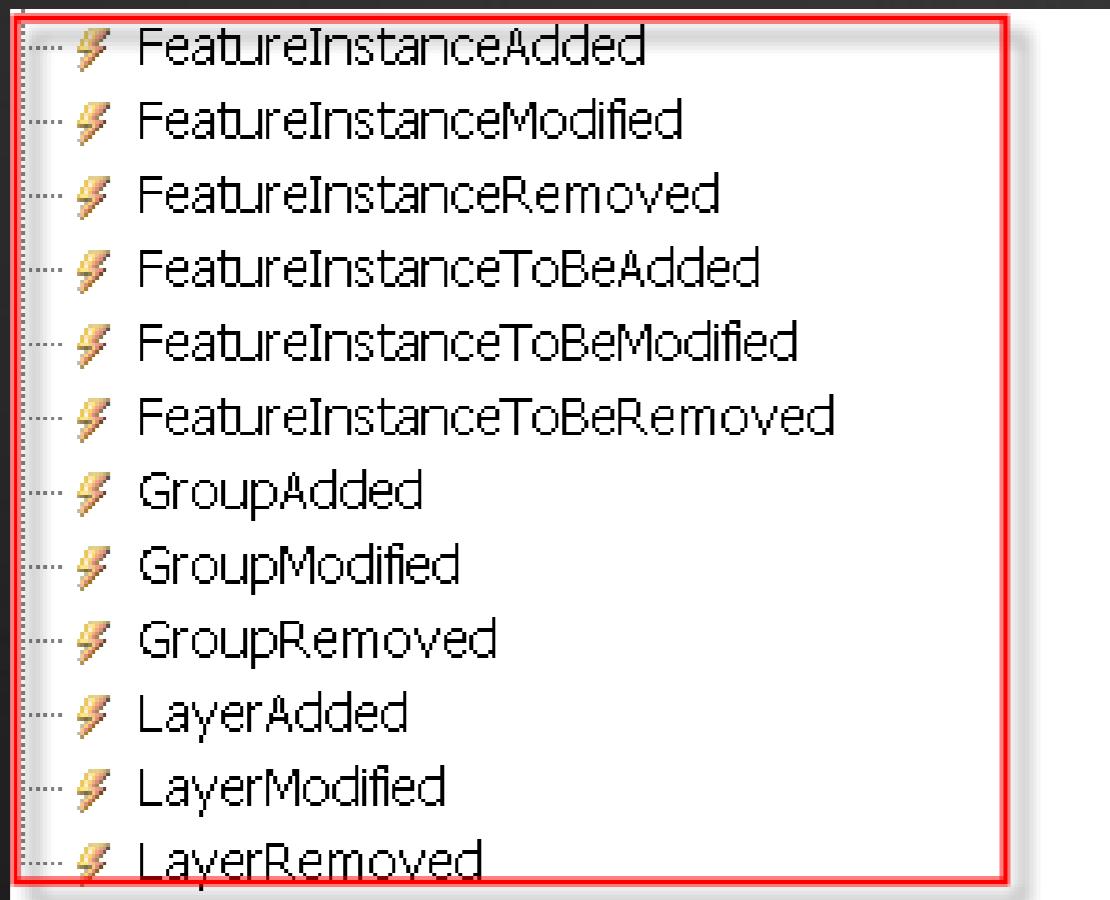
//Create a selection set
MgSelectionBase ss = new MgSelectionBase(map);

//Add 2 features (ID = 4736,4709) to selection set
ss.AddFeatureIdInt32(rdLayer, rdLayer.FeatureClassName, 4736);
ss.AddFeatureIdInt32(rdLayer, rdLayer.FeatureClassName, 4709);

//Highlight features
AcMapFeatureEntityService.HighlightFeatures(ss);
```

Map Events

- Triggered when layers or features are added to or removed from the map



- Event functions are members of AcMapMap

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