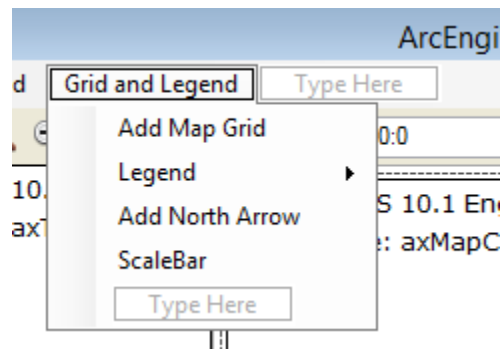


## Chapter 8 Map Grid and Legend (Extension)

1. In the menu of MainForm, add following contents:



2. New a Base Tool class - AddNortharrow:

- Add class member:

```
private INewEnvelopeFeedback m_Feedback;  
private IPoint m_Point;  
private bool m_InUse;  
[DllImport("User32", CharSet = CharSet.Auto)]  
private static extern int SetCapture(int hWnd);  
[DllImport("User32", CharSet = CharSet.Auto)]  
private static extern int GetCapture();  
[DllImport("User32", CharSet = CharSet.Auto)]  
private static extern int ReleaseCapture();
```

- OnMouseDown Method:

```
public override void OnMouseDown(int Button, int Shift, int X, int Y)  
{  
    // TODO: Add AddNortharrow.OnMouseDown implementation  
    m_Point = m_hookHelper.ActiveView.ScreenDisplay.DisplayTransformation.ToMapPoint(X, Y);  
    SetCapture(m_hookHelper.ActiveView.ScreenDisplay.hWnd);  
    m_InUse = true;  
}
```

- OnMouseMove Method:

```
public override void OnMouseMove(int Button, int Shift, int X, int Y)  
{  
    // TODO: Add AddNortharrow.OnMouseMove implementation  
    if (m_InUse == false) return;  
    if (m_Feedback == null)  
    {  
        m_Feedback = new NewEnvelopeFeedbackClass();  
        m_Feedback.Display = m_hookHelper.ActiveView.ScreenDisplay;  
        m_Feedback.Start(m_Point);  
    }  
    m_Feedback.MoveTo(m_hookHelper.ActiveView.ScreenDisplay.DisplayTransformation.ToMapPoint(X, Y));  
}
```

- OnMouseUp Method:

```

public override void OnMouseUp(int Button, int Shift, int X, int Y)
{
    // TODO: Add AddNortharrow.OnMouseUp implementation
    if (m_InUse == false) return;
    if (GetCapture() == m_hookHelper.ActiveView.ScreenDisplay.hWnd)
        ReleaseCapture();
    if (m_Feedback == null)
    {
        m_Feedback = null;
        m_InUse = false;
        return;
    }
    IEnvelope envelope = m_Feedback.Stop();
    if ((envelope.IsEmpty) || (envelope.Width == 0) || (envelope.Height == 0))
    {
        m_Feedback = null;
        m_InUse = false;
        return;
    }
    GetSymbol symbolForm = new GetSymbol(esriSymbologyStyleClass.
        esriStyleClassNorthArrows);
    symbolForm.Text = "Choose North Arrow";
    IStyleGalleryItem styleGalleryItem = symbolForm.GetItem(esriSymbologyStyleClass.
        esriStyleClassNorthArrows);
    symbolForm.Dispose();

    if (styleGalleryItem == null) return;
    IMapFrame mapFrame = (IMapFrame)m_hookHelper.ActiveView.GraphicsContainer.
        FindFrame(m_hookHelper.ActiveView.FocusMap);
    IMapSurroundFrame mapSurroundFrame = new MapSurroundFrameClass();
    mapSurroundFrame.MapFrame = mapFrame;
    mapSurroundFrame.MapSurround = (IMapSurround)styleGalleryItem.Item;
    IElement element = (IElement)mapSurroundFrame;
    element.Geometry = envelope;
    m_hookHelper.ActiveView.GraphicsContainer.AddElement
        ((IElement)mapSurroundFrame, 0);
    m_hookHelper.ActiveView.PartialRefresh(esriViewDrawPhase.esriViewGraphics,
        mapSurroundFrame, null);
    m_Feedback = null;
    m_InUse = false;
}

```

### 3. New a Base Tool class - AddNortharrow:

- Add Class Member:

```

private IHookHelper m_hookHelper = null;
IPageLayoutControl3 pPageLayoutControl;

```

- Add code in the OnCreate method:

```

pPageLayoutControl = m_hookHelper.Hook as IPageLayoutControl3;
IPageLayout pPageLayout = pPageLayoutControl.PageLayout;

```

- OnMouseDown Method:

```
public override void OnMouseDown(int Button, int Shift, int X, int Y)
{
    // TODO: Add AddScaleBar.OnMouseDown implementation
    if (Button == 1)
    {
        IEnvelope pEnv;
        pEnv = pPageLayoutControl.TrackRectangle();
        GetSymbol symbolForm = new GetSymbol(esriSymbologyStyleClass.
            esriStyleClassScaleBars);
        symbolForm.Text = "Choose Scale Bar";
        IStyleGalleryItem styleGalleryItem = symbolForm.GetItem
            (esriSymbologyStyleClass.esriStyleClassNorthArrows);
        symbolForm.Dispose();
        if (styleGalleryItem == null) return;
        IMapFrame mapFrame = (IMapFrame)m_hookHelper.ActiveView.GraphicsContainer.
            FindFrame(m_hookHelper.ActiveView.FocusMap);
        IMapSurroundFrame mapSurroundFrame = new MapSurroundFrameClass();
        mapSurroundFrame.MapFrame = mapFrame;
        mapSurroundFrame.MapSurround = (IMapSurround)styleGalleryItem.Item;
        IElement element = (IElement)mapSurroundFrame;
        element.Geometry = pEnv;
        m_hookHelper.ActiveView.GraphicsContainer.AddElement
            ((IElement)mapSurroundFrame, 0);
        m_hookHelper.ActiveView.PartialRefresh(esriViewDrawPhase.esriViewGraphics,
            mapSurroundFrame, null);
    }
}
```

#### 4. In the MainForm

- Add click event for “Add North Arrow”:

```
private void addNorthArrowToolStripMenuItem_Click(object sender, EventArgs e)
{
    ICommand addNorthArrow = new AddNortharrow();
    addNorthArrow.OnCreate(axPageLayoutControl1.Object);
    axPageLayoutControl1.CurrentTool = addNorthArrow as ITool;
}
```

- Add click event for “ScaleBar”:

```
private void scaleBarToolStripMenuItem_Click(object sender, EventArgs e)
{
    ICommand addScaleBar = new AddScaleBar();
    addScaleBar.OnCreate(axPageLayoutControl1.Object);
    axPageLayoutControl1.CurrentTool = addScaleBar as ITool;
}
```