Week 9, Oct 22 2009 Parametric Modeling with BIM

What is Revit API?

API - Application Programming Interface.

What Can I Do With the Autodesk Revit API?

- Creating add-ins to automate repetitive tasks in the Autodesk Revit user interface
- Enforcing project design standards by checking for errors automatically
- Extracting project data for analysis and to generate reports
- Importing external data to create new elements or parameter values
- Integrating other applications, including analysis applications, into Revit products
- Creating Autodesk Revit project documentation automatically

Programming Tools

The Revit .NET API allows you to program with any .NET compliant language including **VB.NET**, <u>C#</u>, and managed C++.The Software Development ToolKit (SDK) provides extensive .NET code samples and documentation to help you get started developing with the Revit API for Autodesk Revit Architecture/MEP/Structure.

Autodesk Revit SDK:

http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=2484975

Deployment Options:

The Autodesk Revit API supports in-process **DLL**s only. This means that your API application will be compiled as a DLL loaded into the Autodesk Revit process.

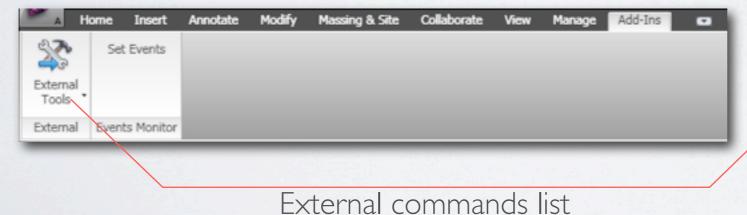
DLL - Dynamic-Link Library- is Microsoft's implementation of the shared library.

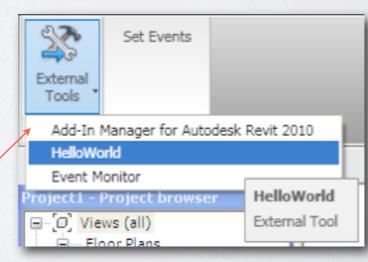
Two types of **DLL**s that you can create with the Autodesk Revit API:

- I. External Commands
- 2. External Applications

External Commands

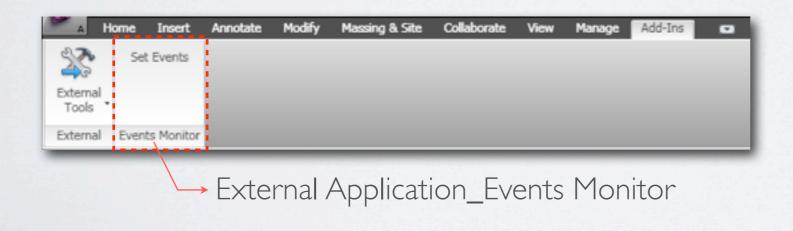
The Autodesk Revit API enables you to add new commands to the user interface of Autodesk Revit. These commands will appear in the Add-ins tab under the 'External Tools' pulldown, as seen in Figure 1. Through the API, external tool commands have access to the Autodesk Revit database, as well as the currently selected elements.





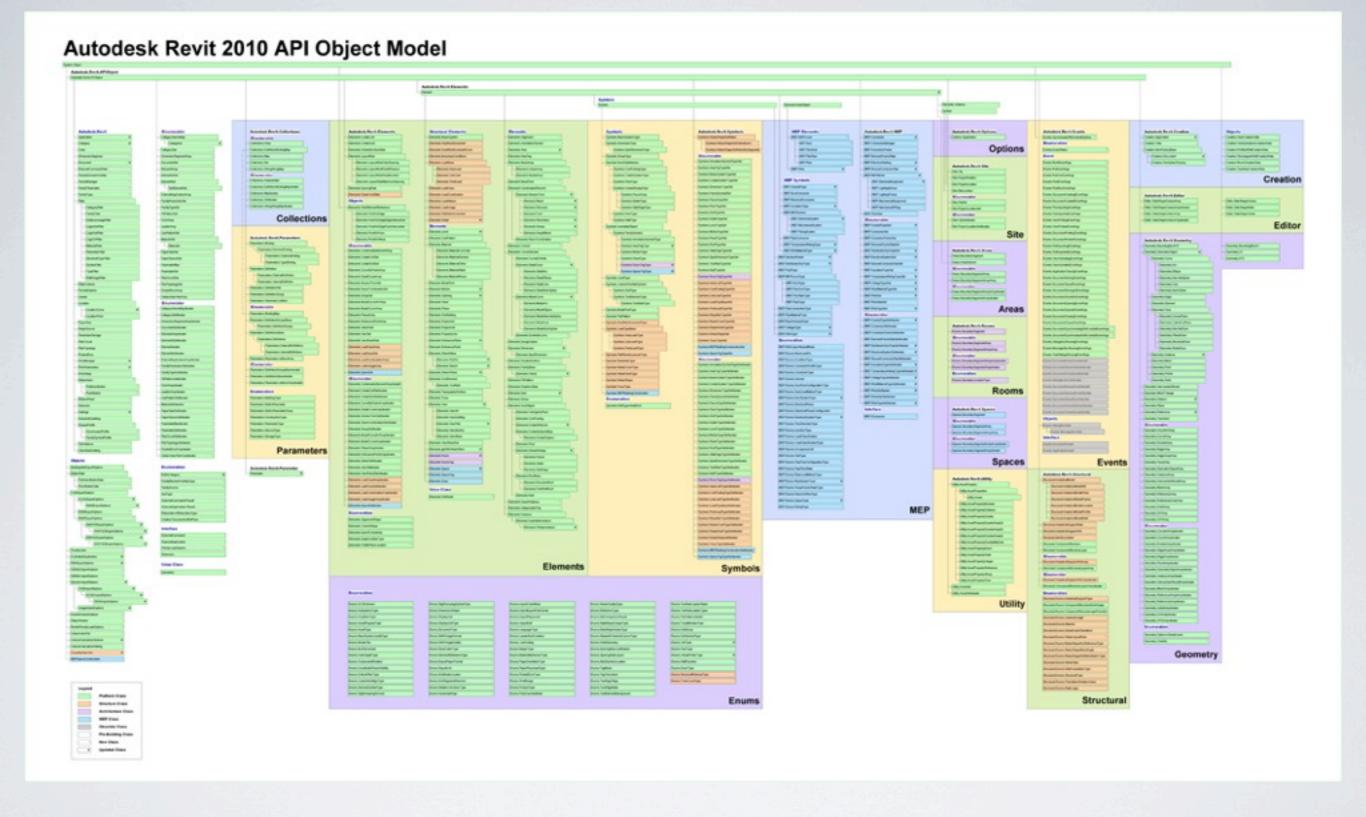
External Applications

The Autodesk Revit API enables you to also add external applications. These applications are invoked during Autodesk Revit startup and shutdown. They can create new panels in the Addins tab, as seen in Figure below. They can also register handlers that can react to events occurring in the Autodesk Revit user interface.



The Revit Unit System

Base Unit	Unit in Revit	Unit System
Length	Feet(ft)	Imperial
Angle	Radian	Metric
Mass	Kilogram(kg)	Metric
Time	Seconds(s)	Metric
Electric Current	Ampere(A)	Metric
Temperature	Kelvin	Metric
Luminous Intensity	Candela(cd)	Metric



AUTODESK REVIT 2010 API OBJECT DIAGRAM

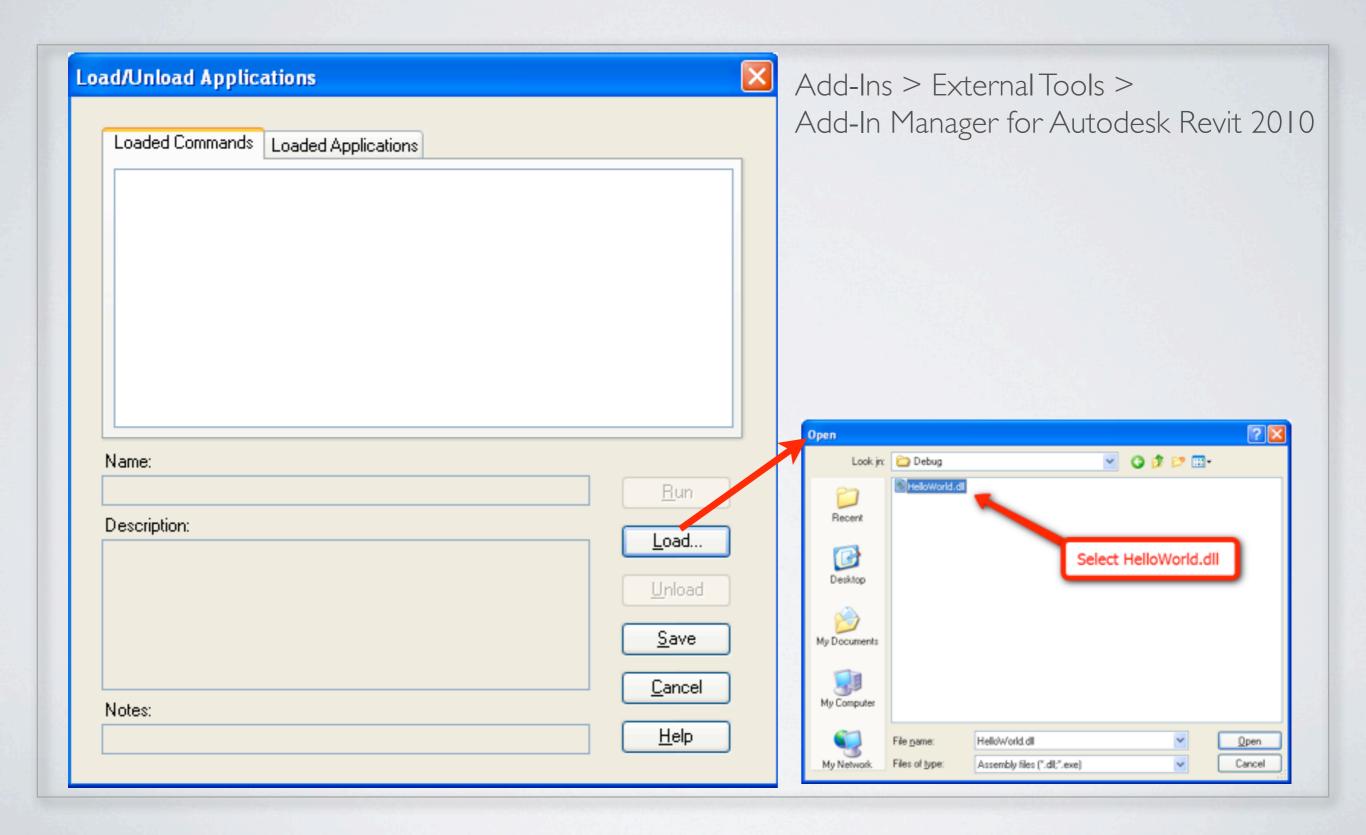
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AUTODESK REVIT 2010 API OBJECT DIAGRAM

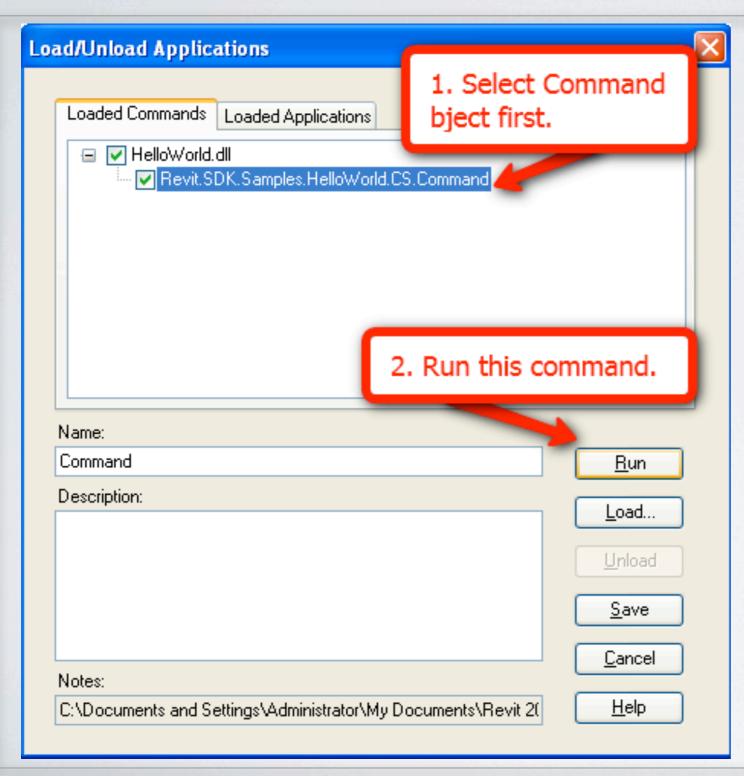
Hello World!

```
using System;
using System.Collections.Generic;
using System. Text;
using Autodesk.Revit;
using System. Windows. Forms;
namespace Revit.SDK.Samples.HelloWorld.CS
   /// <summary>
   /// Main class just pop up a message box show "Hello World".
   /// </summary>
   public class Command: IExternalCommand
       #region | External Command Members
       public IExternalCommand.Result Execute(ExternalCommandData commandData, ref string message, ElementSet elements)
               MessageBox.Show("Hello World");
               return | External Command. Result. Succeeded;
       #endregion
```

ADD-IN MANAGER



ADD-IN MANAGER



Add-Ins > External Tools >
Add-In Manager for Autodesk Revit 2010



Result: Pop up window