API 4: Room Boundaries

Python in Dynamo

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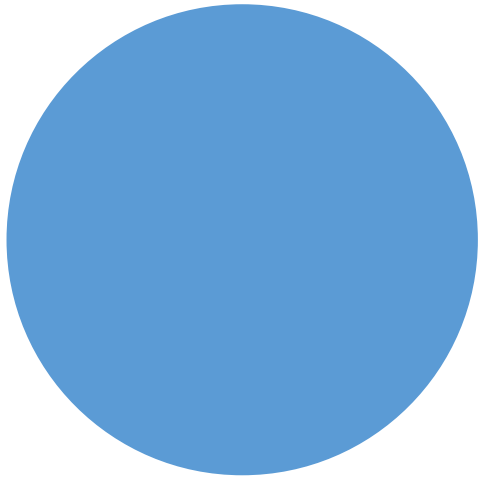
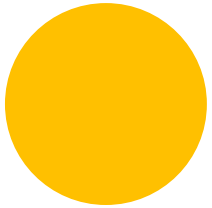



Dynamo and Python
Room Boundaries(API 4)

This video

- Navigate Revit API Docs
- Unwrap Rooms
- Obtaining area calc settings
- Obtaining bounding curves, and returning as a prototype

Python Script

```python
# Made by Gavin Crump
# Free for use
# BIM Guru, www.bimguru.com.au

#Reference for script name: https://github.com/Amoursol/dynamoPython/blob/master/dynamoAPI/dynamoAPICurrentGraphName.py
#Thanks to John Pierson for sharing the code for Dynamo file data

#Add CLR and Dynamo services for its API
import clr
clr.AddReference('DynamoRevitDS')
import Dynamo
from System import Environment

#Add document manager from Revit services
clr.AddReference('RevitServices')
import RevitServices
from RevitServices.Persistence import DocumentManager

# access to the current Dynamo instance and workspace
DynamoCurrent = Dynamo.Applications.DynamoRevit()
ActiveScript  = DynamoCurrent.RevitDynamoModel.CurrentWorkspace
DynamoVersion = DynamoCurrent.RevitDynamoModel.Version

# ensure version 2.X, get name
if DynamoVersion.StartsWith("2."):
    ScriptName = ActiveScript.Name + ".dyn"
else:
    ScriptName = "Version not supported"

# get system user name
UserName = Environment.UserName

# get active document name and path
```

Let's get into the example!

Rooms to Areas

3 part API based workflow

1. **Room boundaries**
2. Area lines from bounds
3. Areas from rooms

Room Boundaries

We need to obtain the *BoundarySegments* *of our rooms (which are spatial elements)*

GetBoundarySegments Method

SpatialElement Class | See Also

Returns the boundary segments.

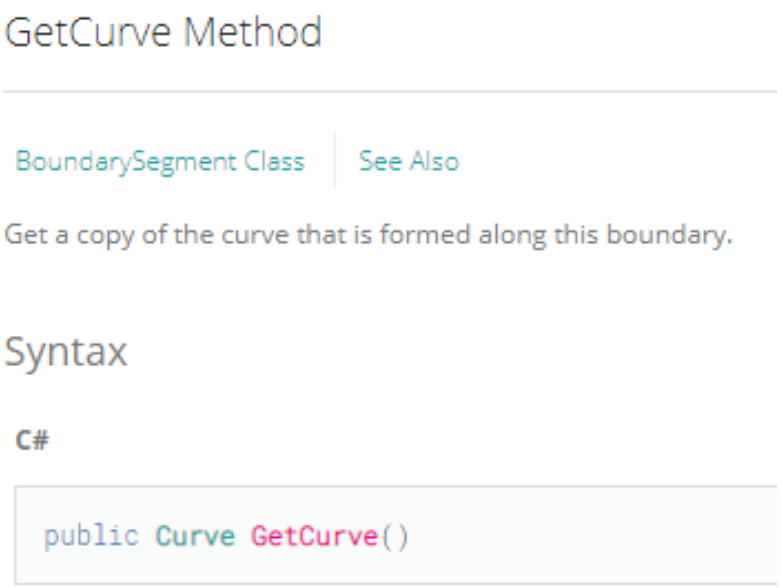
Syntax

C#

```
public IList<IList<BoundarySegment>> GetBoundarySegments(
        SpatialElementBoundaryOptions options
)
```

Boundary Curves

We will need to obtain the boundary curves using *BoundarySegment class and GetCurve method*



GetCurve Method

BoundarySegment Class | See Also

Get a copy of the curve that is formed along this boundary.

Syntax

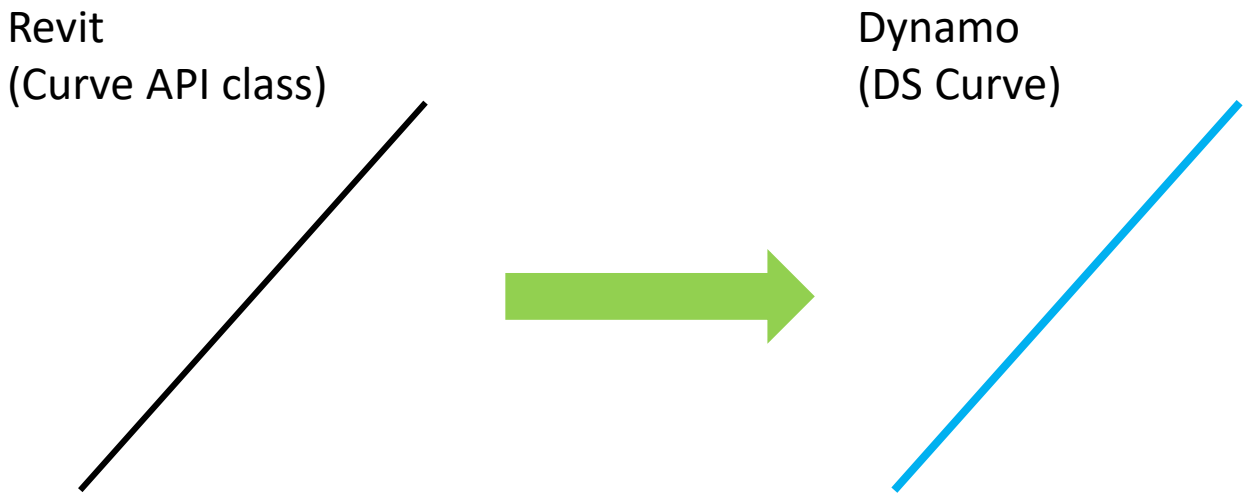
C#

```
public Curve GetCurve()
```

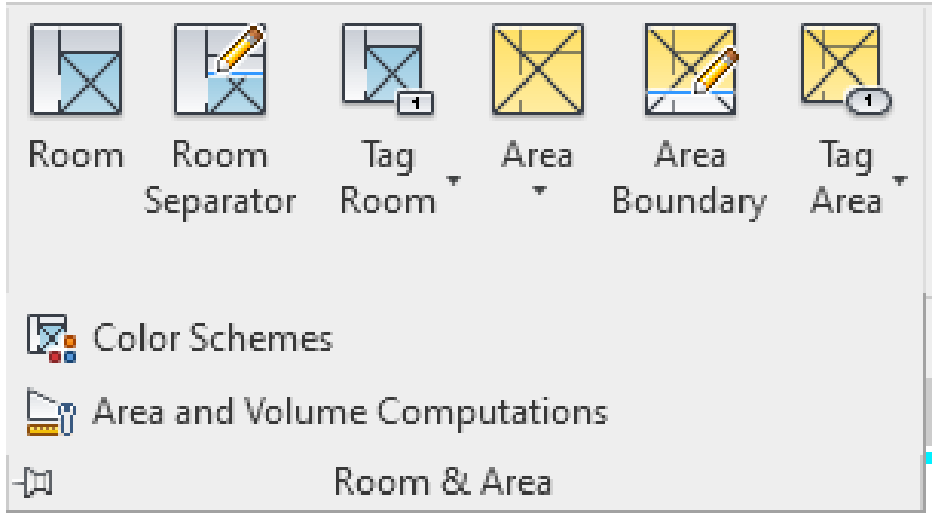
Curves to Prototypes

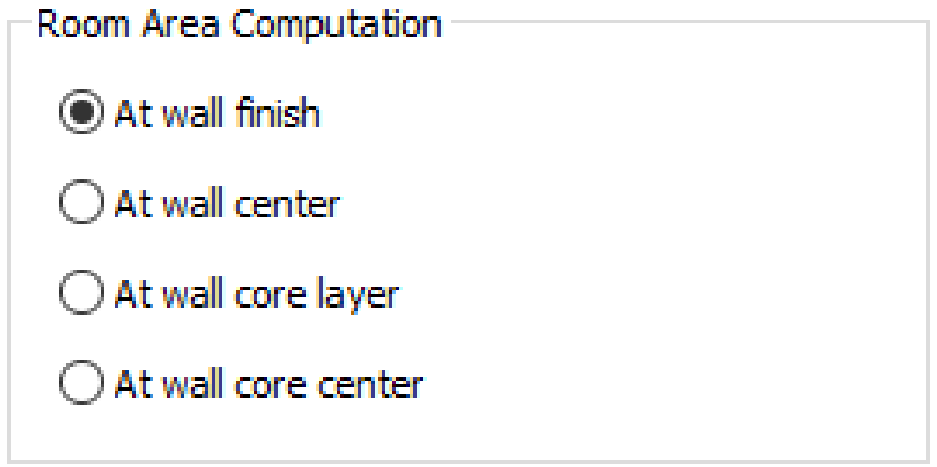
We will need to convert our Revit curves back to Dynamo

Using the ToPrototype() method



Area Settings





Area Settings

We need to inspect the *AreaVolumeSettings class*

GetAreaVolumeSettings Method

AreaVolumeSettings Class | See Also

Get the area and volume settings of the project.

Syntax

C#

```
public static AreaVolumeSettings GetAreaVolumeSettings(
        Document aDoc
)
```

Area Settings

We need to obtain the *SpatialElementBoundaryOption* *setting (enumerated)*

SpatialElementBoundaryLocation Property

SpatialElementBoundaryOptions Class | See Also

The boundary of spatial element for geometry calculation.

Syntax

C#

```
public SpatialElementBoundaryLocation SpatialElementBoundaryLocation { get; set; }
```

Area Settings

We need to obtain the *SpatialElementBoundaryLocation* *enumerated property value*

Syntax

C#

```
public enum SpatialElementBoundaryLocation
```

Member name	Description
Finish	Spatial element finish face.
Center	Spatial element centerline.
CoreBoundary	Spatial element core boundary.
CoreCenter	Spatial element core center.

Future Videos

Basic samples

Revit API

Advanced samples

And more!

Crumple is on github

https://github.com/aussieBIMguru

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