Autodesk Civil 3D, Dynamo or the API. Why and When?

Phuc Le (Ken)
Technical Specialist, Autodesk

LinkedIn: Phuc Le Hieu Hong
About the speaker

Phuc Le Hieu Hong (Ken)

Phuc Le is a Digital Consultant, BIM Advisor, BIM Application Expert & Forge Developer. He currently serves as Technical Specialist at Autodesk Asean, supporting organizations in Architecture, Engineering and Construction sector to successfully implement Building Information Modelling, Cloud Collaboration, Computational Design and Generative Design.
Class Description

Are there some tasks you want to automate for more precision and speed while working in AutoCad Civil 3D software? When should you flex Dynamo’s abilities or develop a custom Add-in with .NET API?

If you have ever wondered when or why you should use one solution over the other, then this session will help clarify your choices. Some typical scenarios will be discussed, examining two options, and assessing their pros and cons.

In this session, you will be inspired and equipped to bring automation to your AutoCAD Civil 3D models.
Agenda

1. CIVIL 3D AUTOMATION
2. DYNAMO FOR CIVIL 3D
3. THE CIVIL 3D API
4. CONCLUSION

.NET API
Civil 3D & Automation
Civil 3D is a civil infrastructure design and documentation software supports BIM (Building Information Modeling) with integrated features to accelerate design efficiencies, automate construction documentation, and improve project delivery.

- Streamlines work
- Redefines construction documentation
- Facilitates data exchange
- Supports BIM to integrate processes
What’s new: Civil 3D 2021.1

• Project Explorer
• Pressure Network Enhancements
• Rail Profile View Bands
• Connector for ArcGIS Enhancements
• BIM 360 Collaboration for Civil 3D Enhancements
• Feature Line Editing Tools
• Generic Object Layer Support
• API Additions
Why Automation?

The new normal

• More

• Better

• Less
Automation in Civil 3D
Automation in Civil 3D

Each option - Dynamo and the .NET API:

- Power
- Skill Required
- Time to Build
- Flexibility
- Robustness
- Deployment
Dynamo for Civil 3D
What is Dynamo

Visual Programming
Dynamo for AutoCad & Civil 3D
Use Cases

- Road Design
- Site Design
- Rail Design
- Integration
- Civil 3D Toolkit
Dynamo for Civil 3D – Rail Design

Dynamo for Civil 3D

Design Automation
Dynamo for Civil 3D – Parametric Array
<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>C</th>
<th>C</th>
<th>C</th>
<th>C</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill Required</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Time to Build</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Flexibility</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Robustness</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Deployment</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>
Civil 3D .NET API
Civil 3D .NET API
Civil 3D .NET API
Use Case
.NET API – Multiple profileviews for Alignment

CREATE MULTIPLE PROFILEVIEWS
AND
AUTOMATIC CREATE DESIGN BY LAYOUT
CREATE MULTIPLE PROFILEVIEWS FOR PRESSURE NETWORKS
V3TOOLS
.NET API

Power

Skill Required

Time to Build

Flexibility

Robustness

Deployment
Conclusion
<table>
<thead>
<tr>
<th>Feature</th>
<th>Summary</th>
<th>.NET API</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Skill Required</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Time to Build</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Flexibility</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Robustness</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Deployment</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>
The goals and complexity of your task, along with many of the factors discussed will help you decide which option (Dynamo or .NET API) is most suitable for your company and situation.

BEGIN WITH THE END IN MIND.

And KEEP LEARNING!
# Learning Objectives

<table>
<thead>
<tr>
<th></th>
<th>AUTOMATION</th>
<th>DYNAMO</th>
<th>.NET API</th>
<th>SUITABLE SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Learn how automation can help us achieve more, better with less in Civil 3D</td>
<td>Learn how to use Dynamo for Civil 3D to automate repetitive tasks</td>
<td>Learn how to develop an Autodesk Civil 3D add-in with the .NET API</td>
<td>Understand which solution is more suitable to do tasks in some typical cases</td>
</tr>
</tbody>
</table>