Work smarter with Civil 3D - Dynamo

About

We want to take steps in 3D modelling, but we have always limited ourselves to 2D models.

Let's focus on the roads, especially when we start a project. A landscape architect makes a 2D design, usually we get a pdf, sometimes a drawing, then we start, translate, adjust and calculate costs.

Looking back to what I did when I was a project engineer, I made my model as good and as quickly as possible for the first delivery and directly prepared the model for the next steps.

In those days I did not have the luxury of having a set of tools that we now have with the AEC collection.

Contents

Tool Box: Civil 3D 2022, InfraWorks 2022, Dynamo

Flowchart: Structure is created here.

Preview: Graphical representation of the object being created.

Properties: Polyline(s) by layer

Settings: Installed Dynamo packages

- Civil3D Toolkit
- Data-Shapes

1. Introduction

My challenge for today is to generate lines in alignments. One, four or even 10 lines is not that much work, but still, it is time.

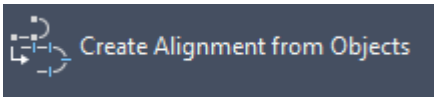
Looking at our tools, we have 3 solutions:

2. Solutions overview

Solution 1, "Create Alignment from objects"

1 to max 10 polylines

Use Civil 3D to translate a polyline into an alignment.



- Create Alignment from objects.
  - Process, select a line to make 1 alignment, need to repeat to do more elements.
  - Outcome, 1-1 translation of that object.

Solution 2, "Transfer between Civil 3D – InfraWorks"

With this option, we work with a .SHP file. We add this file to InfraWorks. InfraWorks translates this into road components. We can make adjustments to these roads, or we can export these roads directly to an .IMX, which we will import into Civil 3D.

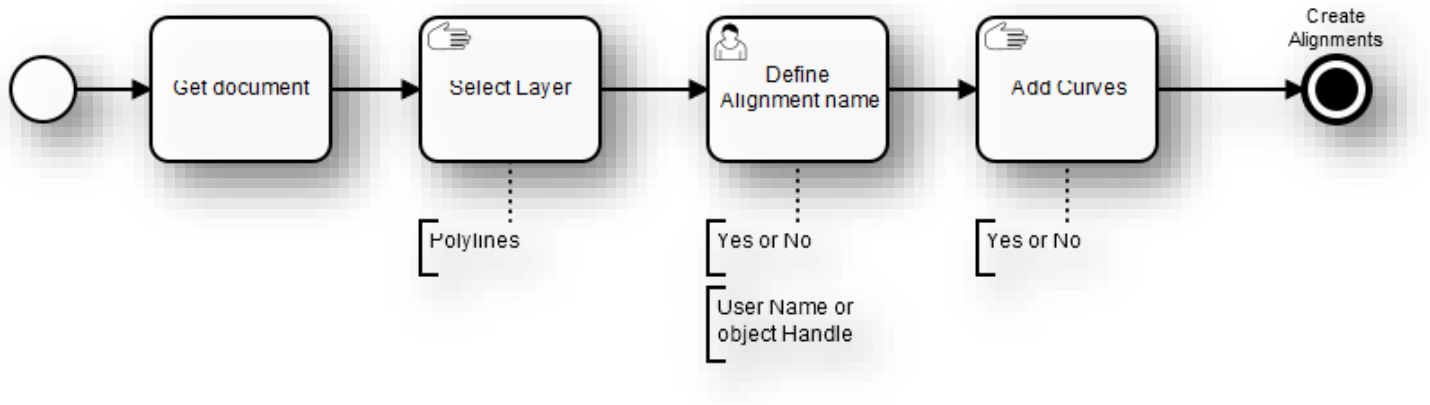
Workflow: (see video 1 - https://cadline.wistia.com/medias/6jln4m3nng)

- MapExport, create a .SHP file from all your polylines.
- Import the .shp file into Infraworks, set the following properties:
    - Type, "Road"
    - Style, "user input"
    - Source, "Drape"
  - Road elements will be created
- Export model to a .IMX
- Import .IMX Civil 3D
  - Delete surface
  - Outcome: All straits are correct, problem with the curves. The curves will be transformed to short lines.

Solution 3, "Civil 3D – Dynamo"

Within Civil 3D we have the tool Dynamo. Dynamo gives us to opportunity to enhance / automate our process.

The dynamo script will use the following path:



The tool works as follows: (see video 2 - https://cadline.wistia.com/medias/nl9lqba6dg)

- Add curves between straight lines, Yes or No.
- Set layer where alignments will be created on.
- Define "Name" for new created alignments.
- Delimiter between name and follow-up number.
- Use an input Name or use handle from line.

Run tool