

The Secret to Landscape Modeling with InfraWorks

Raquel Bascones Recio

Designated Support Specialist | Architect | Landscape Architect

@raquel_bascones





About the speaker

Raquel Bascones Recio

Architect and Landscape Architect with a passion for Generative Design and BIM.

Originally from Madrid, she has spent the last few years in London and Barcelona where she moved to join Autodesk in 2017.

As a Designated Support Specialist, Raquel helps our Premium Customers in their BIM workflows.

Introduction





rain Themes

e Watersheds

face Layers

ight Drainage

ainage Network

t Performance

all Content

What is InfraWorks?

InfraWorks

- Cloud and Desktop Product
- Visual 3D Design and Communication tool
- Supports BIM (Building Information Modelling) processes
- Combines aspects of...
 - Geographic Information Systems (GIS)
 - 3D Visualization
 - Civil Engineering Design





Core Tools



Design Tools

File Types

INFRAWORKS “FILE TYPE”

- Resources folder
- Sqlite file

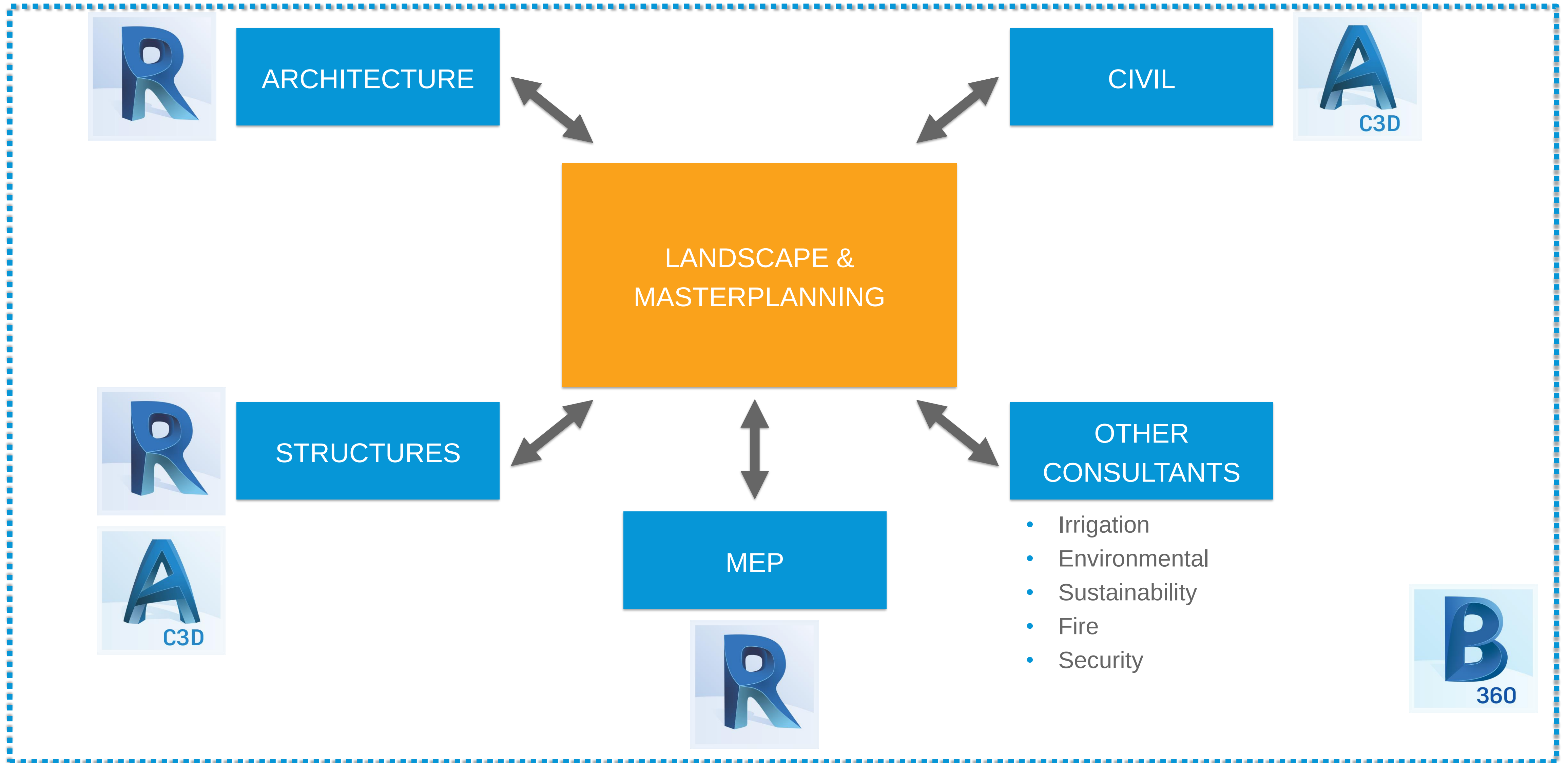
SUPPORTED FILE TYPE FOR IMPORT

- 3D Model (.3DS, .DAE, .DXF, .FBX, .OBJ)
- Civil 3D (.DWG)
- AutoCAD DWG 3D and 2D objects (.DWG,.DXF)
- Autodesk IMX (.IMX)
- Autodesk Revit (.RVT,.RFA)
- CityGML Files (.CITYGML, .GML, .XML)
- DGN 3D Model (.DGN)
- IFC Files (.IFC)
- LandXML Files (.XML, .LANDXML)
- Point Cloud (.RCS, .RCP)
- Raster Files (Various)
- Spatial Data Format (.SDF)
- Shape Definition Files (.SHP)
- SketchUp Files (.SKP)
- SQLite Files (.SDX, .SQLITE, .DB)

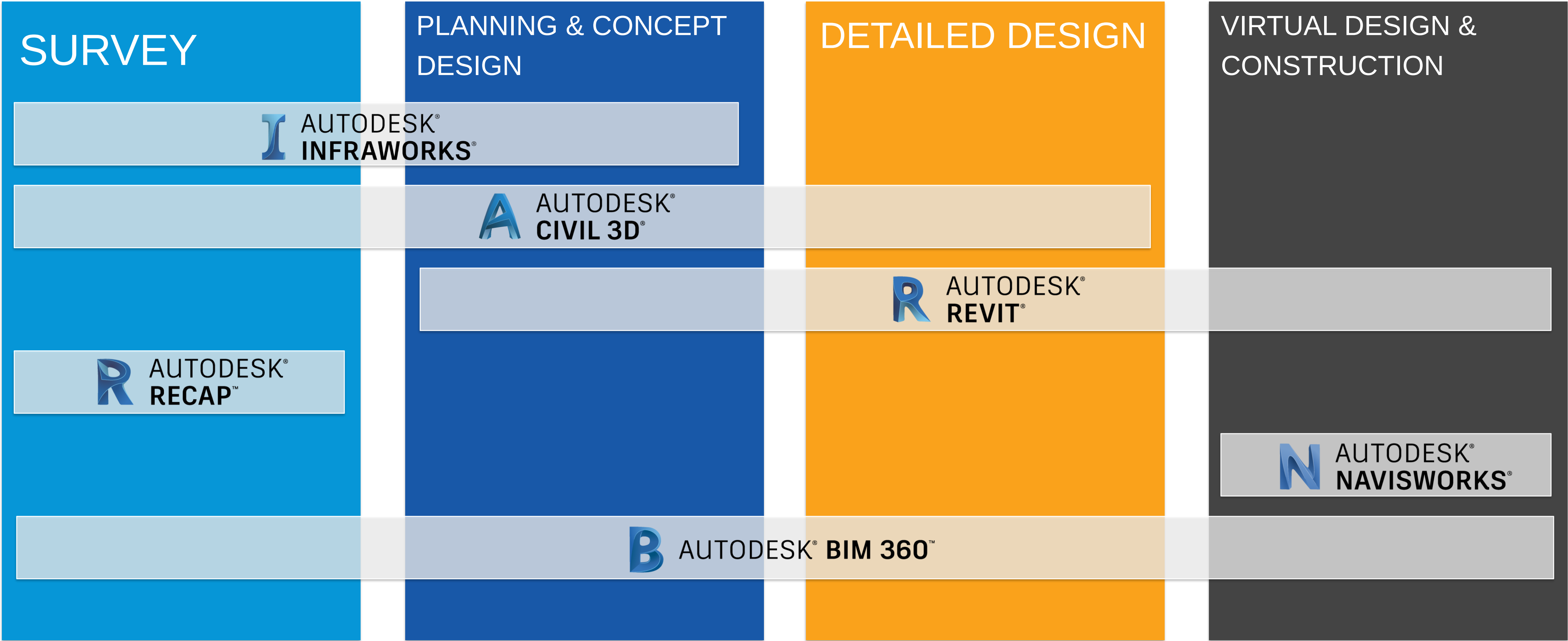


Why InfraWorks for Landscape and Masterplanning?

Landscape & Masterplanning Workflow



Stages & Toolset



Best tool for the job



InfraWorks

- Preliminary design
- Visual
- Full-time 3D
- Context
- Easy to learn

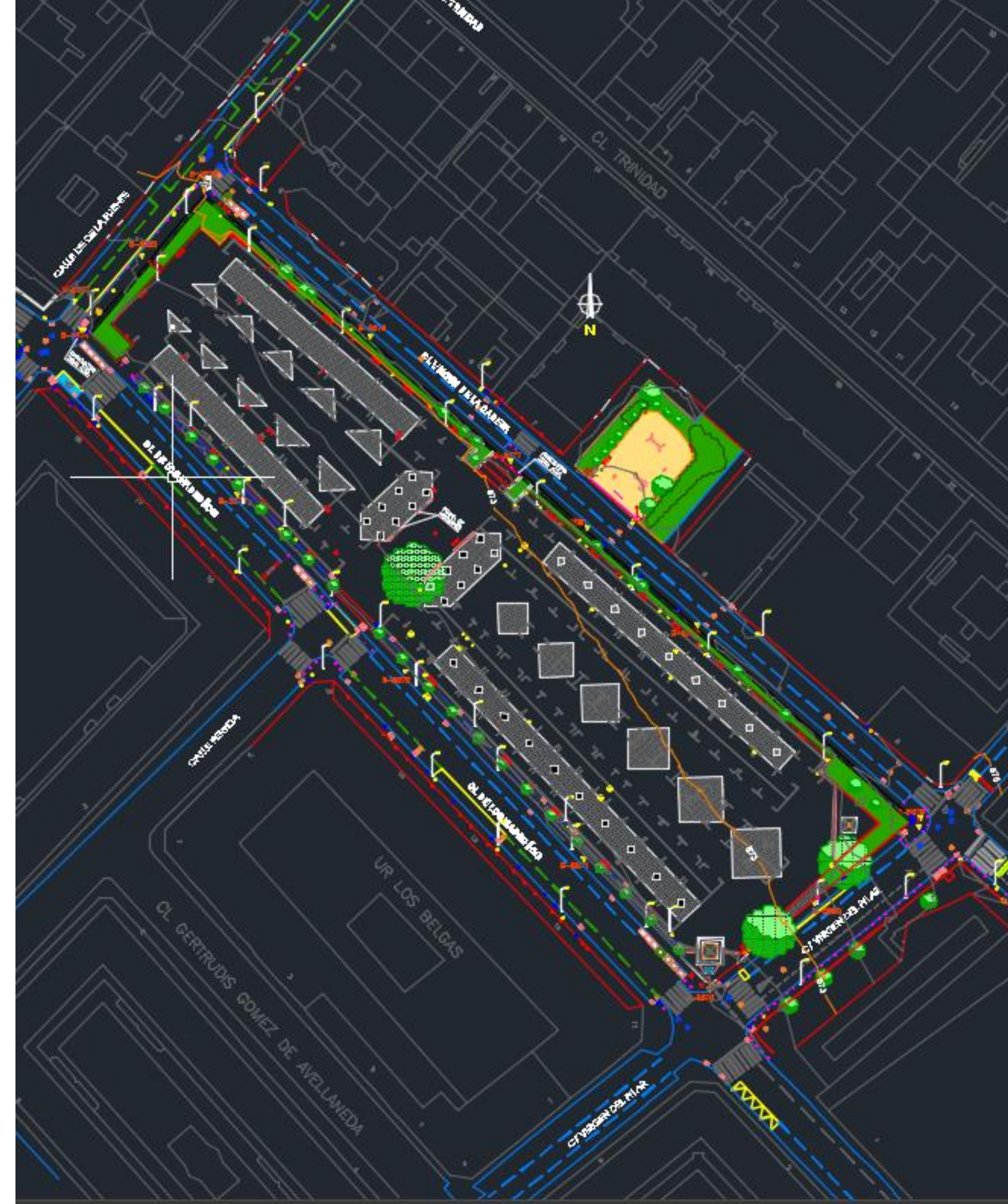


Civil 3D / Revit

- Completion of detailed design
- Full user control
- Plan production
- 3D & 2D
- Adherence to graphical standards

Dataset

- Urban Square competition
- Collado Villalba, Madrid
- Documentation: DWG with existing conditions



Starting a Model



Model Builder

Data sources

1. PREPARE

2. IMPORT

- Cloud import
- Local import (Navisworks required)

3. CONFIGURE

- Data Type
- Geolocation
- Style
- Tooltip

Data Sources

Point Cloud Information

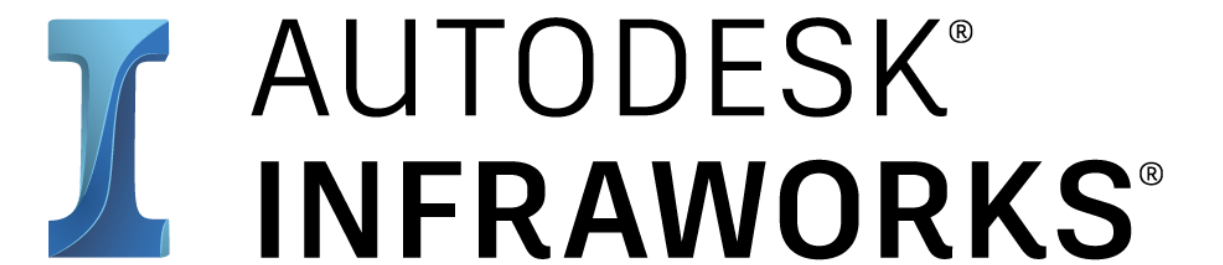
1. CAPTURE



2. COMPUTE



3. EXTRACT



Model Authoring

HARD LANDSCAPE





Component Roads for Hardscape

Hardscape elements with Components Roads

PARAMETRIC DESIGN

Component roads allow editing parameters to customize design

LINEAR FEATURES

Ideal for landscape linear elements like footpaths, cycle lanes or street design

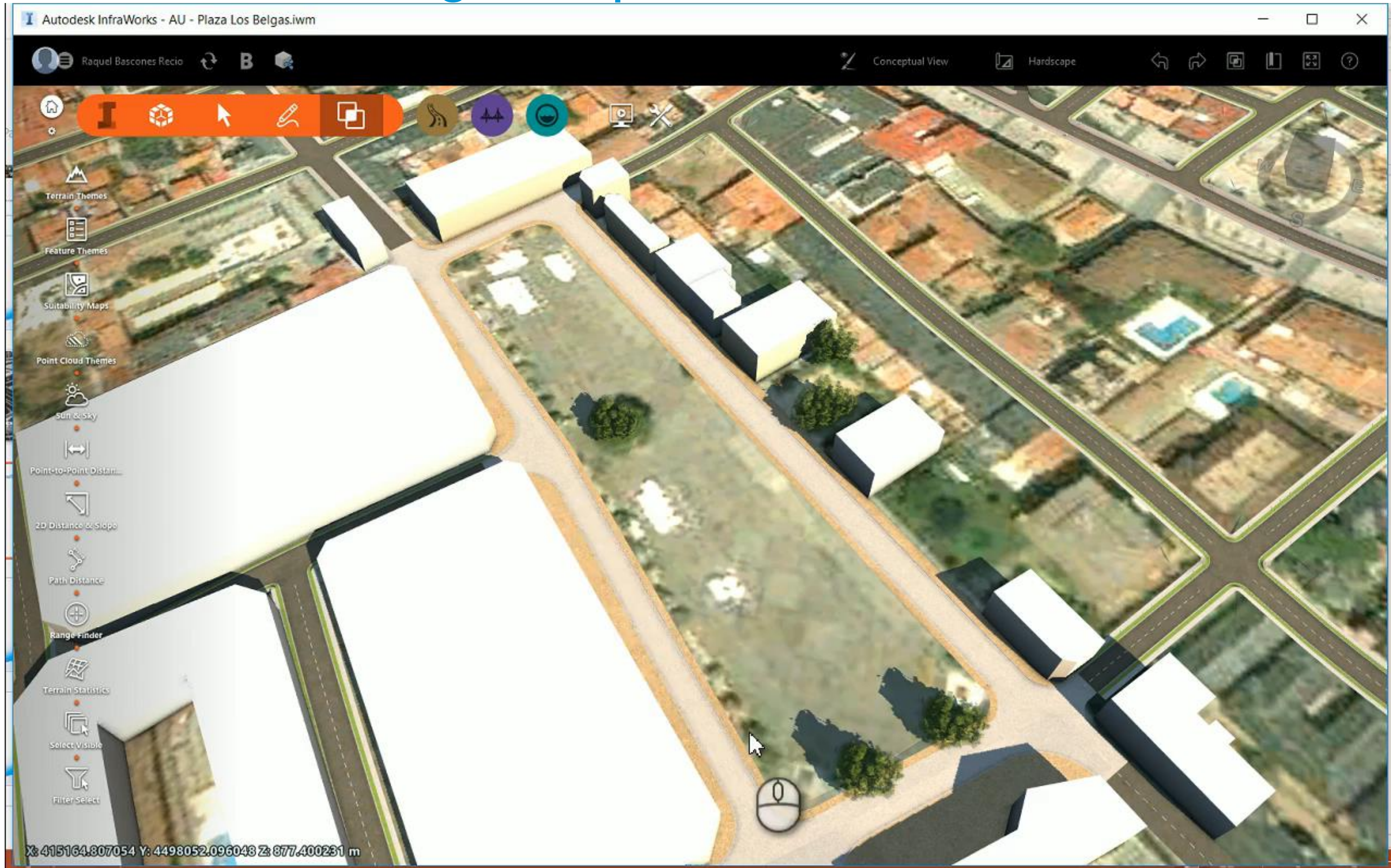
FLEXIBILITY

Each component is individually editable. Change material, size and shape.

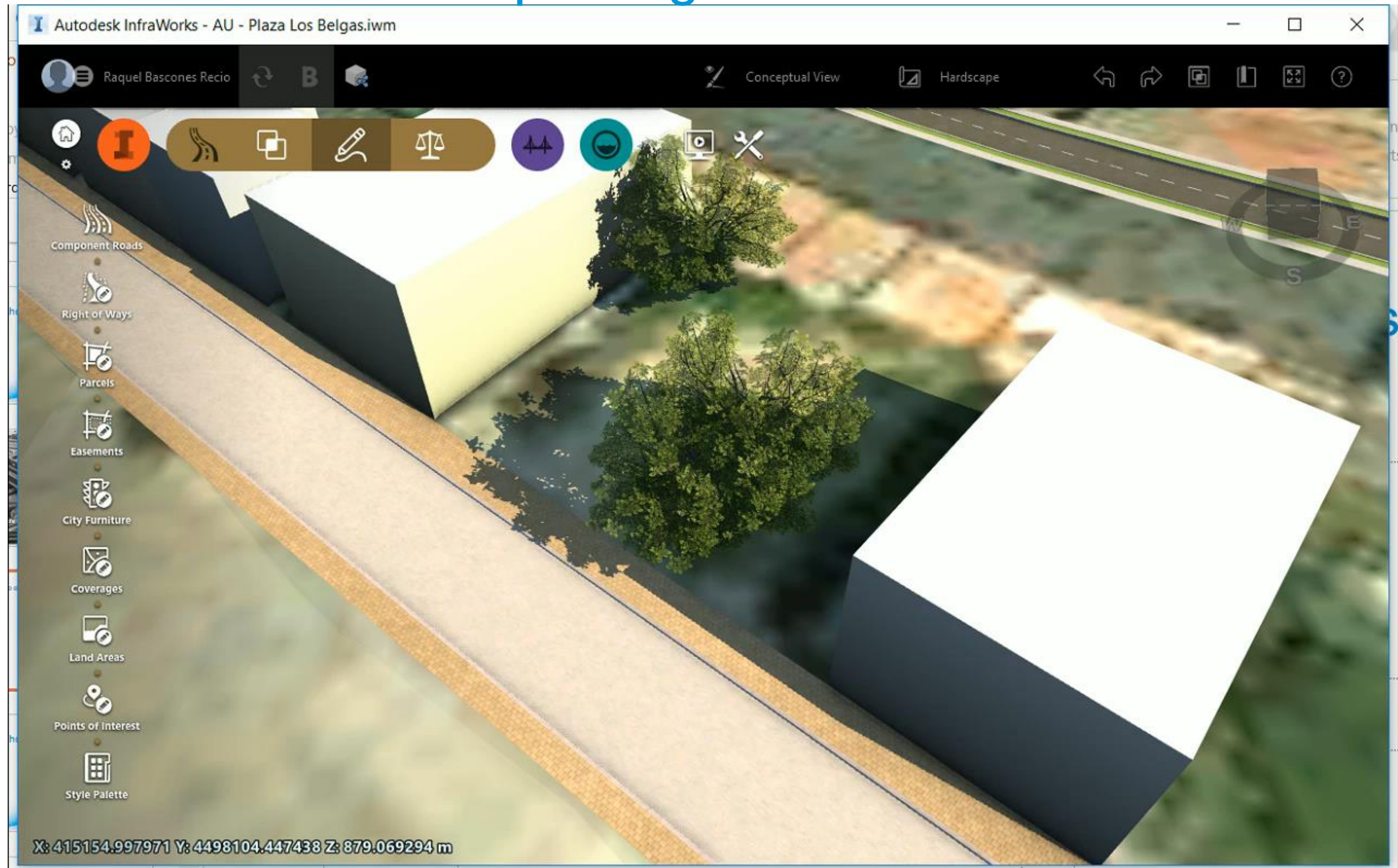
CUSTOMIZABLE

Use the library materials or import your own. Add in or remove components to adjust your design

Adding Components to a Road



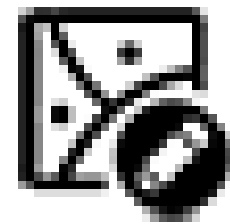
Replacing Materials



Hardscape with Core Tools

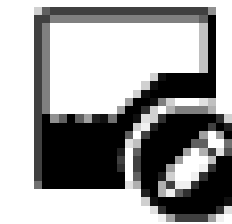
COVERAGE

- Drapes on terrain
- Grips on perimeter to adjust extent and elevation
- Edits on grips will shape terrain
- Can flatten terrain at certain elevation

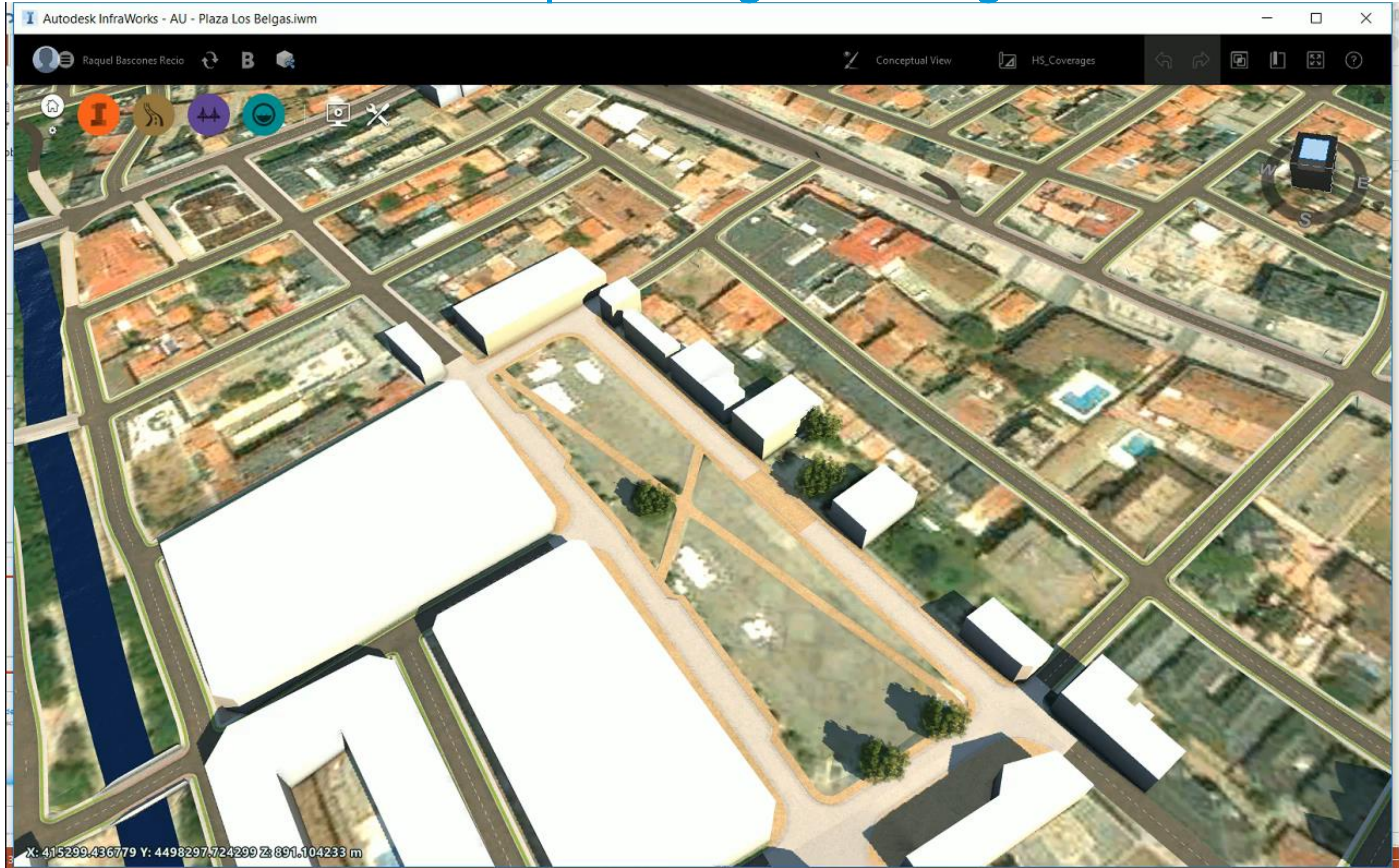


LAND AREAS

- Flattens the area
- Grading styles can be adjusted



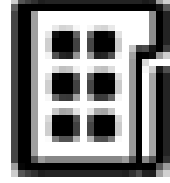
Hardscape using Coverages

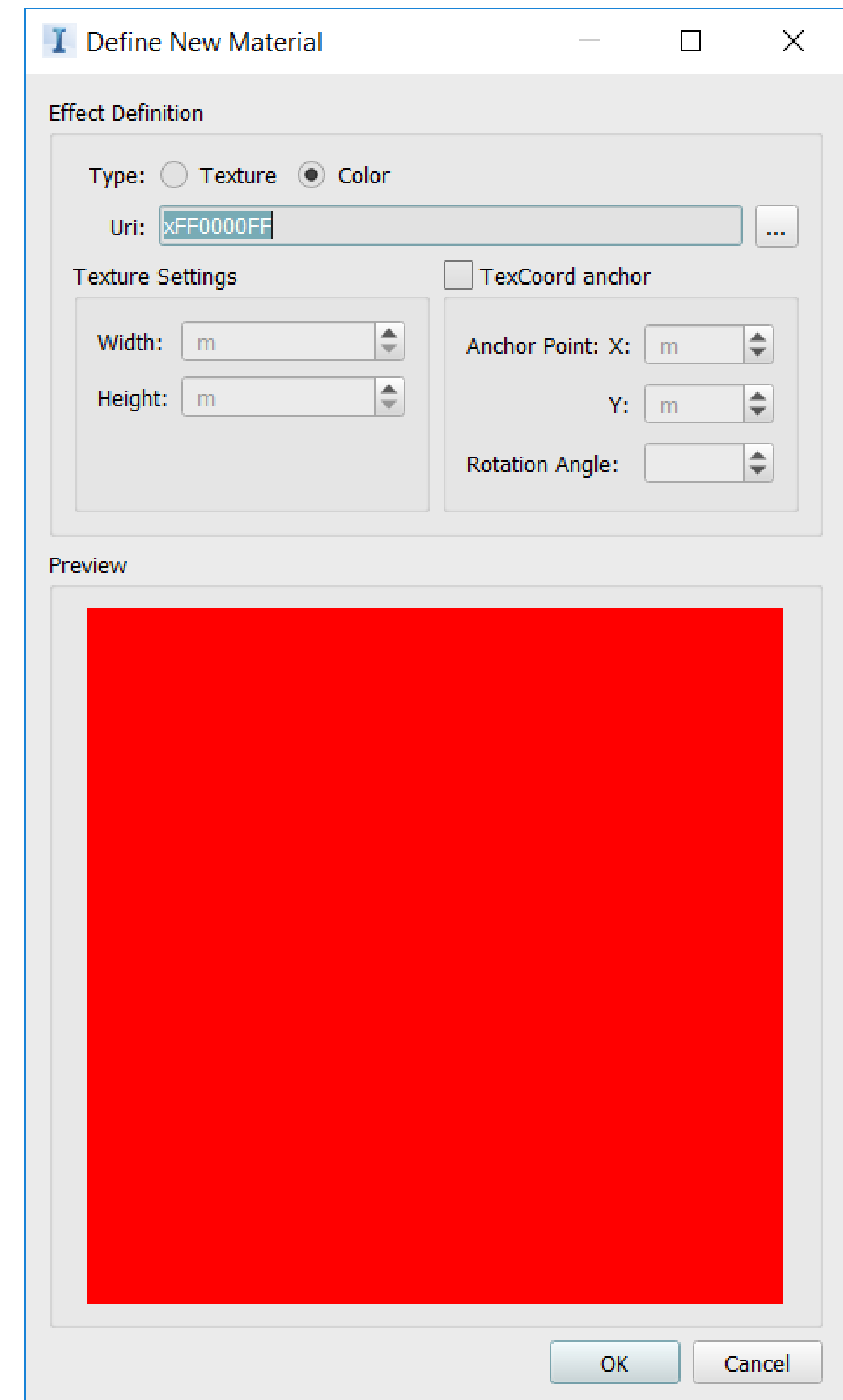


Hardscape from file

Hardscape

Add a Material Style

1. Create New in Style Palette 
2. Select between Texture (JPG or PNG) or Color
3. Configure settings
 - Width and Height
 - Anchor Point



Model Authoring

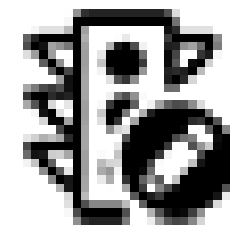
SOFT LANDSCAPE



Tree & Understory Modeling

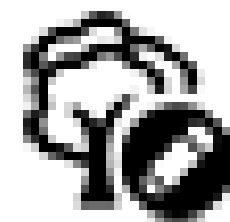
UNIQUE ELEMENT

- Place a unique tree on click
- Parametric and editable
- Any style from palette



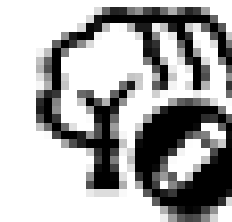
STAND

- Place trees inside sketched area
- Random placement and heights
- Control density and scale
- Individually editable



ROWS

- Place trees along a sketched line
- Control density and scale
- Individually editable



COMPONENT ROAD DECORATION

- Place along a seam in the road
- Parametric or 3D Model
- Control spacing, scale, offsets, rotation and tilting
- No individual edits

Adaptive or LOD Trees

SCALE 1



SCALE 2



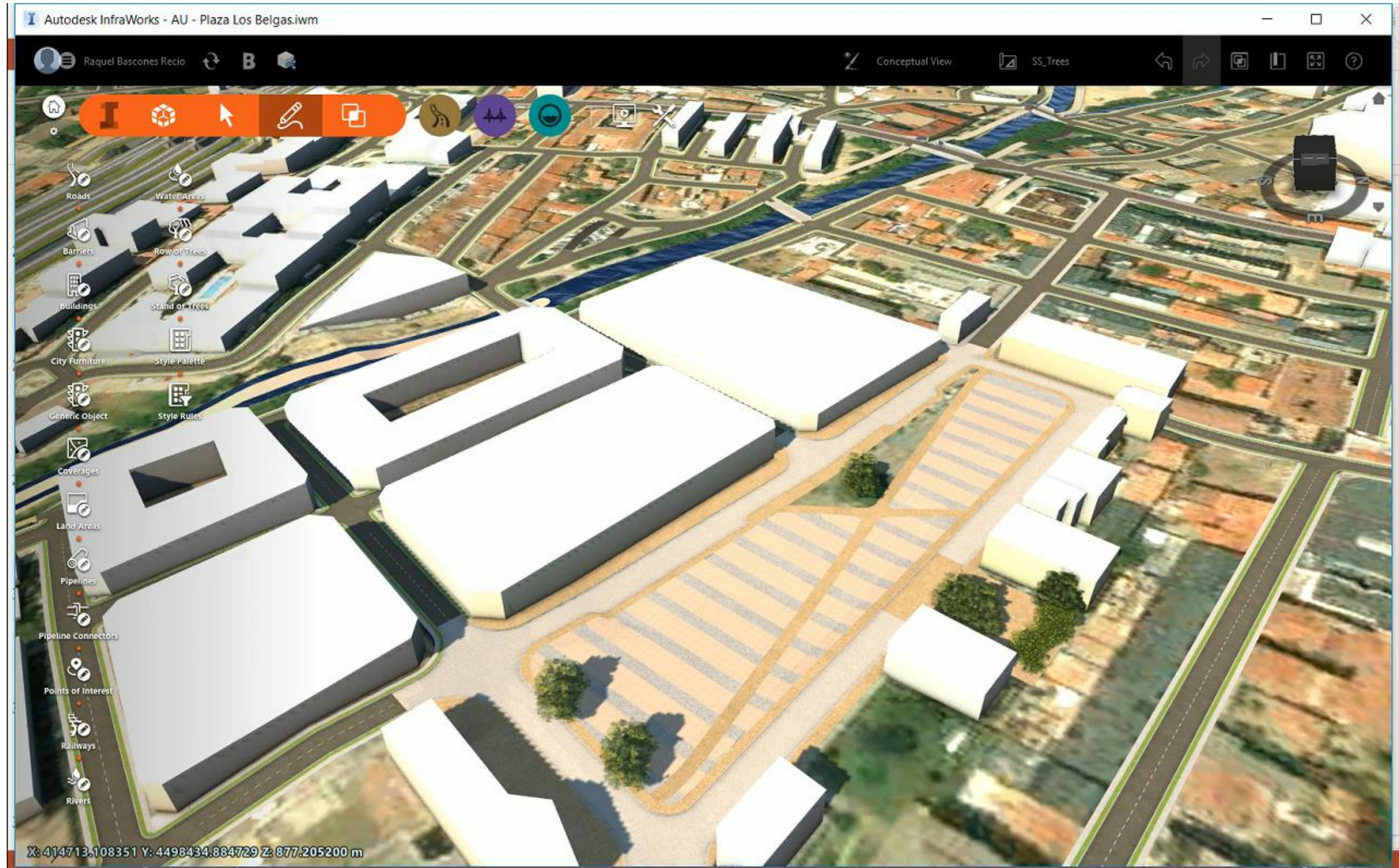
SCALE 3



Row of Trees



Stand of Trees



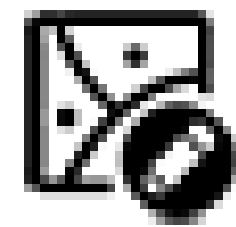
Trees as Road Decoration



Groundcover Modeling

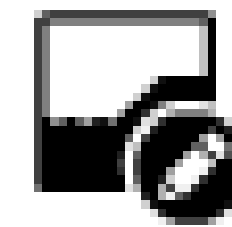
COVERAGE

- Drapes on terrain
- Grips on perimeter to adjust extent and elevation
- Edits on grips will shape terrain
- Can flatten terrain at certain elevation

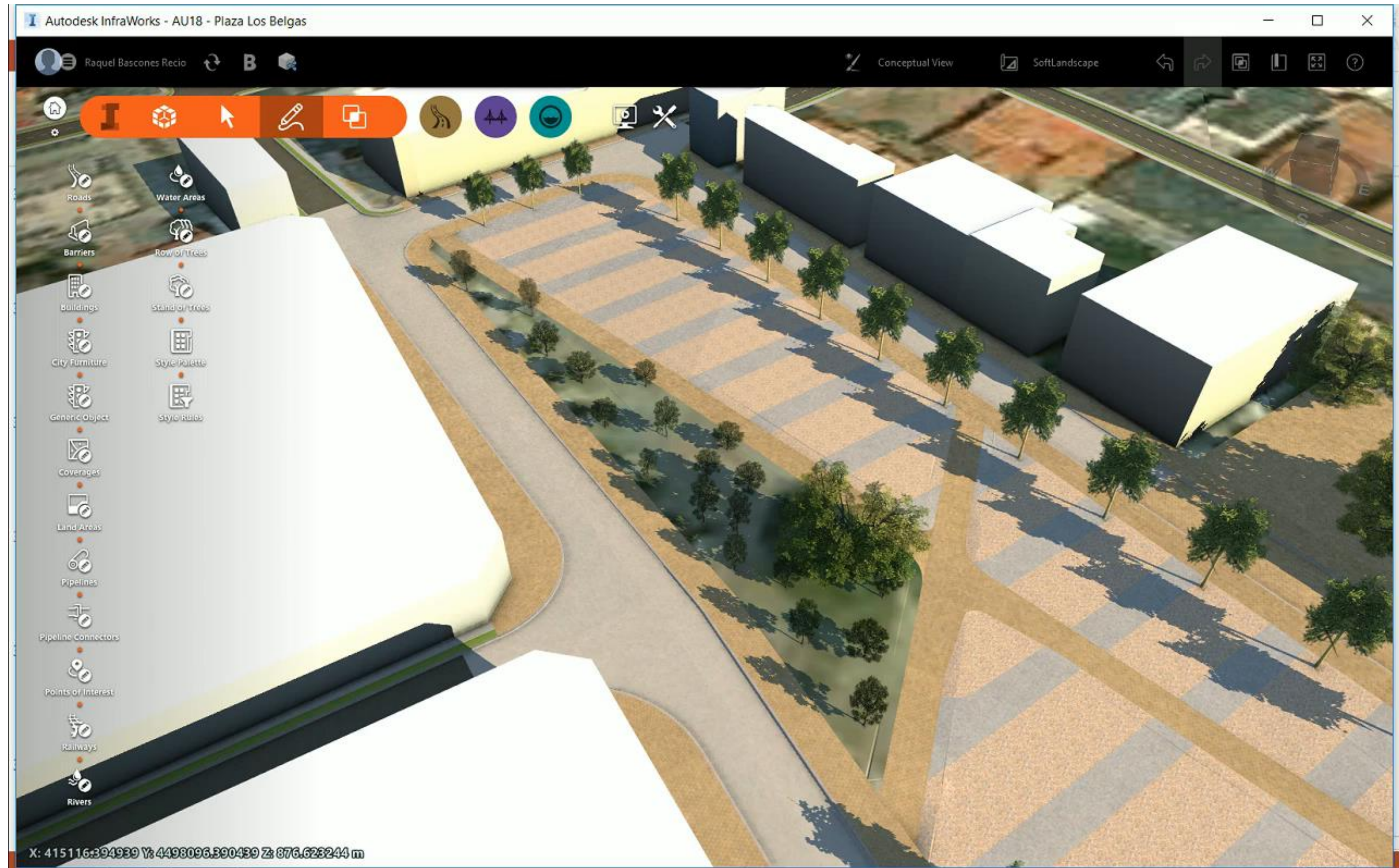


LAND AREAS

- Flattens the area
- Grading styles can be adjusted



Groundcover



Model Authoring

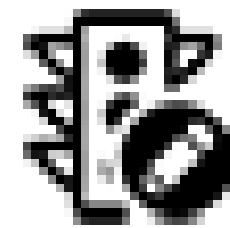
FURNITURE & OTHERS



3D Elements Modeling

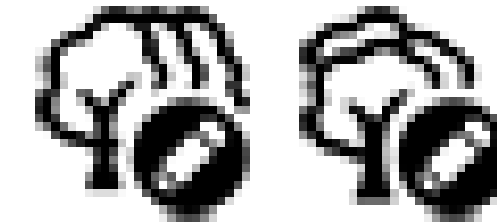
UNIQUE ELEMENT

- Place a unique element on click
- Parametric and editable
- Any style from palette



ROWS/STAND

- Place elements along a sketched line
- Control density and scale
- Individually editable



COMPONENT ROAD DECORATION

- Place along a seam in the road
- Parametric or 3D Model
- Control spacing, scale, offsets, rotation and tilting
- No individual edits

FROM FILE

- Configure data source to City Furniture
- Select desire style
- Individually editable

Add New 3D Model

- Style Palette
- 3DS, DAE, DXF, FBX, OBJ, SFF, SVF
- Render options
- Edit in import
- Preview of the model

Define New 3D Model

Model URI: <empty>

Anchor point: Local Origin

Render Detail

Simplify Model100.0%

Model HandlingAuto-adjust

Repair Model

☐ Invert Orientation☐ Invert Transparency☐ Invert Up Axis☐ Flip Y and Z

	X	Y	Z
Translation	0.00000000 m	0.00000000 m	0.00000000 m
Rotation	0.000 °	0.000 °	0.000 °
Scaling	1.00000	1.00000	1.00000

Preview:

Reset Preview

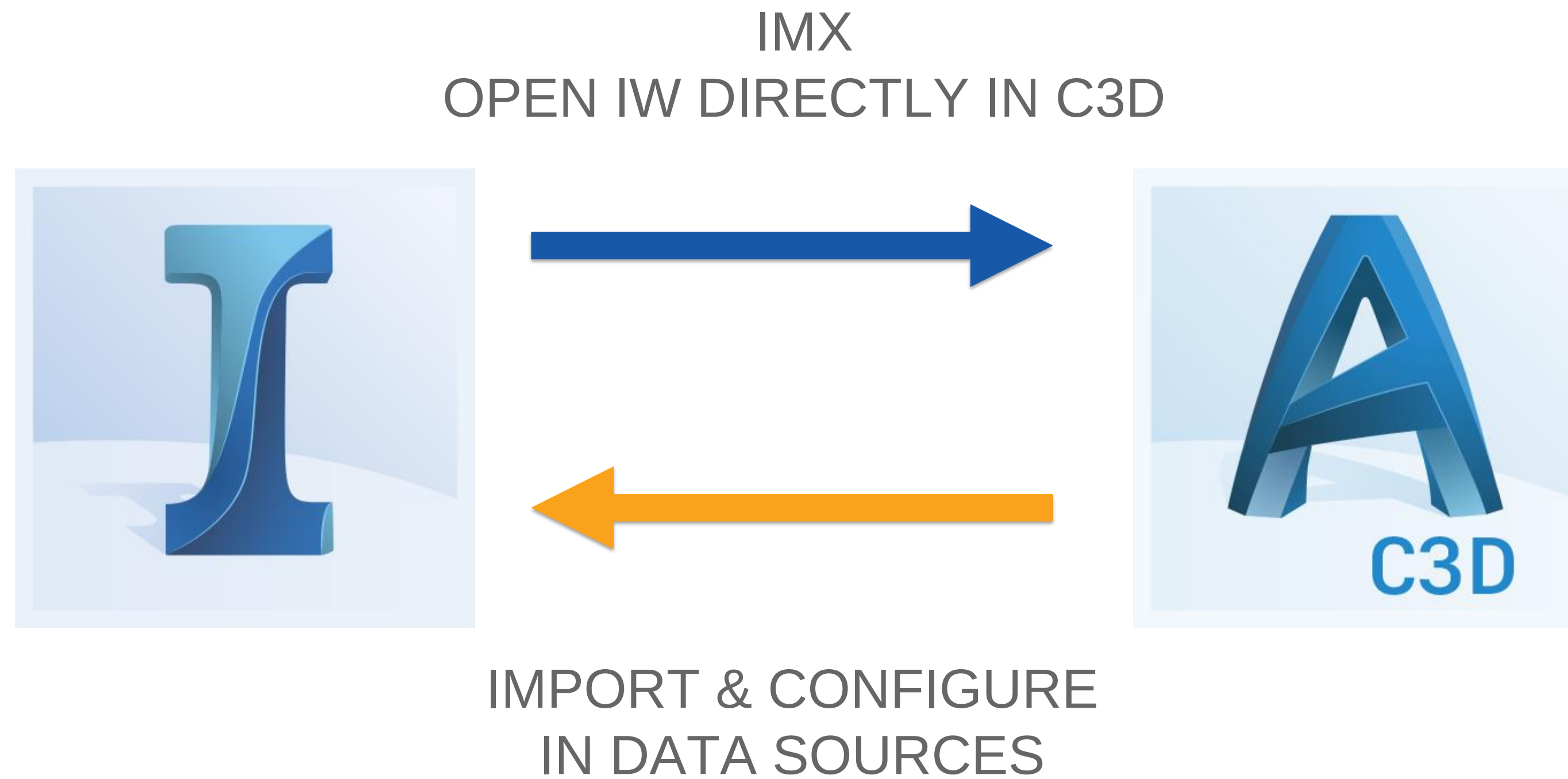
☐ Show Bounding Box☐ Show X-Y-Grid1.00

OKCancel

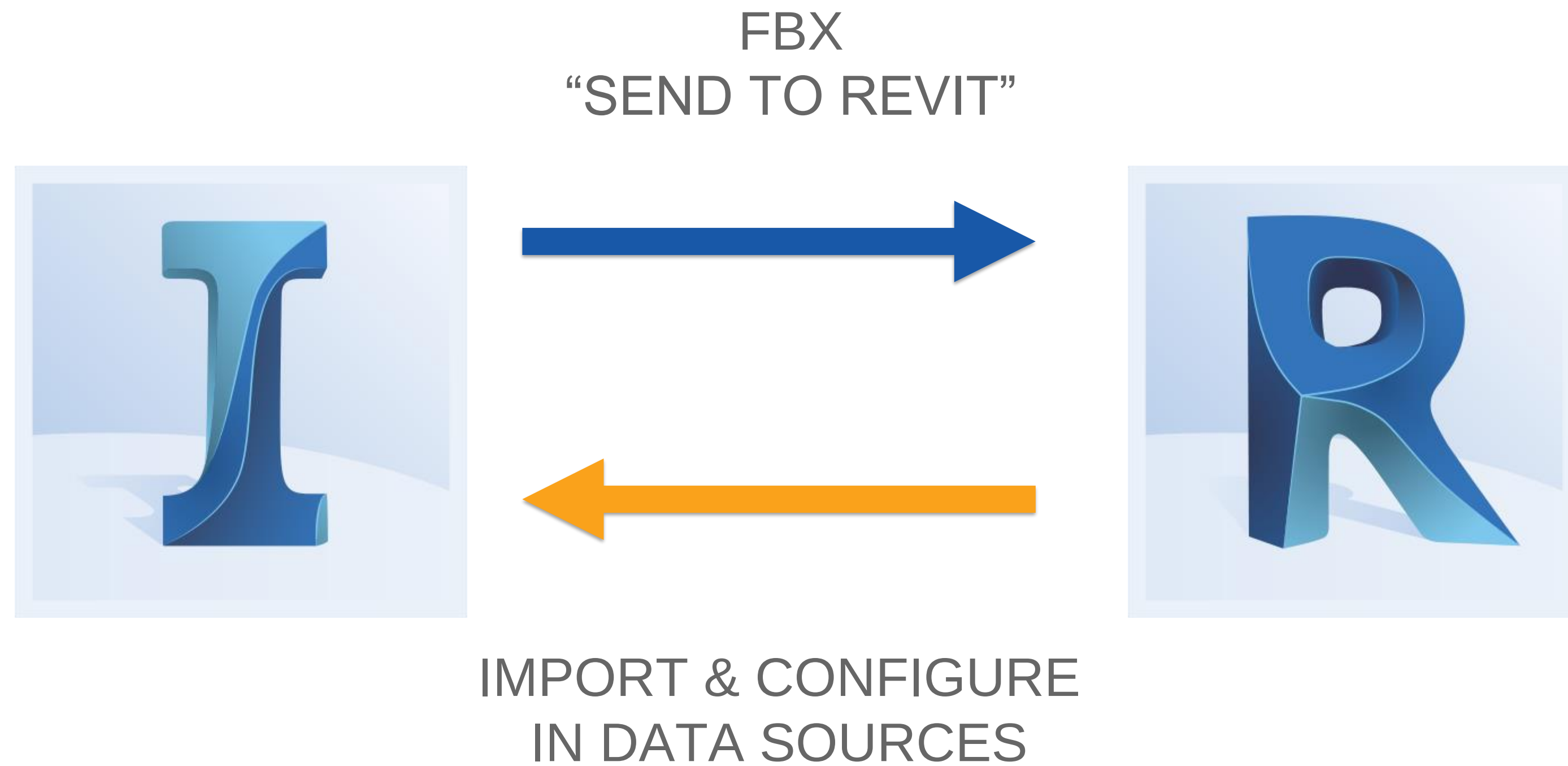
Collaboration



Civil 3D Interoperability



Revit Interoperability



Revit Import Configuration

- Set Coordinate System as XY-IFT
- Select the target CS in Position
- Type the Project Base Point coordinates into the Offset

The screenshot shows the 'Data Source Configuration' dialog box in Revit. The 'Name' field is 'House_Example', 'Source' is '3D Model', 'Description' is '<Empty>', and 'Type' is 'Buildings'. The 'Geo Location' tab is selected, showing a 'Coordinate System' dropdown set to 'XY-IFT'. Below this, the 'Position' section has a 'Coordinate System' dropdown set to 'SPAIN-TM30-I' and a 'Local Origin' dropdown. The 'X', 'Y', and 'Z' coordinates are all set to '0'. The 'Offset' section has 'X' set to '434946.0452', 'Y' set to '4468837.6351', and 'Z' set to '687'. The 'Scale' section has 'X', 'Y', and 'Z' all set to '1'. The 'Rotation' section has 'X' and 'Y' set to '0', and 'Z' set to '0'. An 'Interactive Placing...' button is at the bottom. At the very bottom of the dialog are 'Close & Refresh', 'OK', and 'Cancel' buttons.

Field	Value
Name	House_Example
Source	3D Model
Description	<Empty>
Type	Buildings
Coordinate System (Main)	XY-IFT
Position Coordinate System	SPAIN-TM30-I
Position Local Origin	(Dropdown)
Position X	0
Position Y	0
Position Z	0
Offset X	434946.0452
Offset Y	4468837.6351
Offset Z	687
Scale X	1
Scale Y	1
Scale Z	1
Rotation X	0
Rotation Y	0
Rotation Z	0

BIM360

COLLABORATE IN THE CLOUD

- Several users working on a model
- InfraWorks & BIM360 entitlement needed

CONTROL RIGHTS

- Viewer, uploader & editor roles
- Assign by role or folder

BROWSER VIEWER

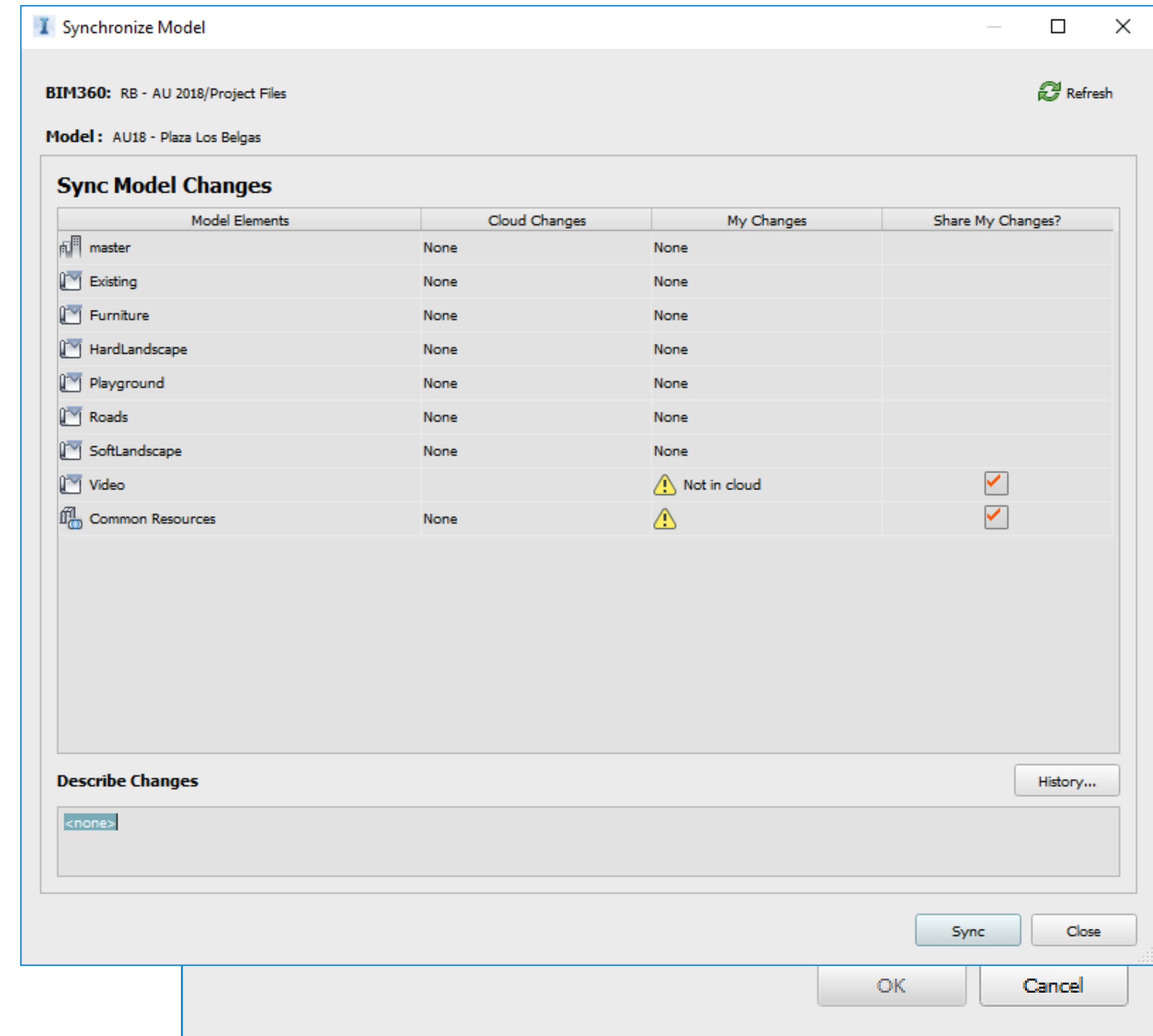
- Allow review of the model without InfraWorks desktop

MANAGE MARK UPS & COMMENTS

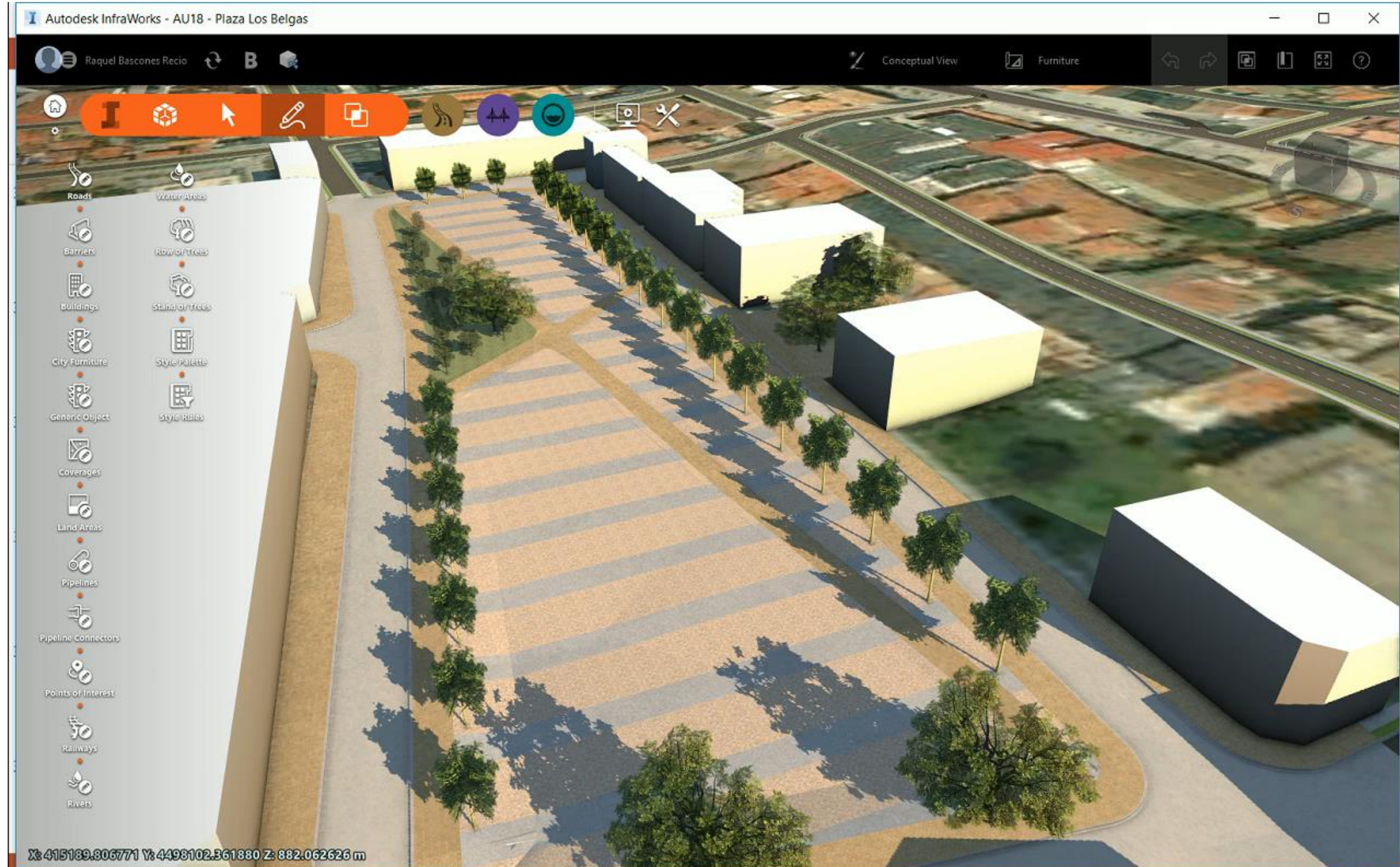
- Viewers can mark up and comment the model in a browser
- Add attachments to comments
- Check as solved

BIM360 Workflow

1. Select Cloud when creating new model or upload existing local model
2. Synchronise regularly to get cloud changes and apply your changes
3. Use the browser to view model, manage comments and mark ups



BIM360 Viewer



Shared Views

COLLABORATE ONLINE

- No editable, just visual representation
- No InfraWorks or BIM360 entitlement needed
- Current proposal only

AUTODESK VIEWER

- Allow review of the model without InfraWorks desktop

MANAGED FROM INFRAWORKS

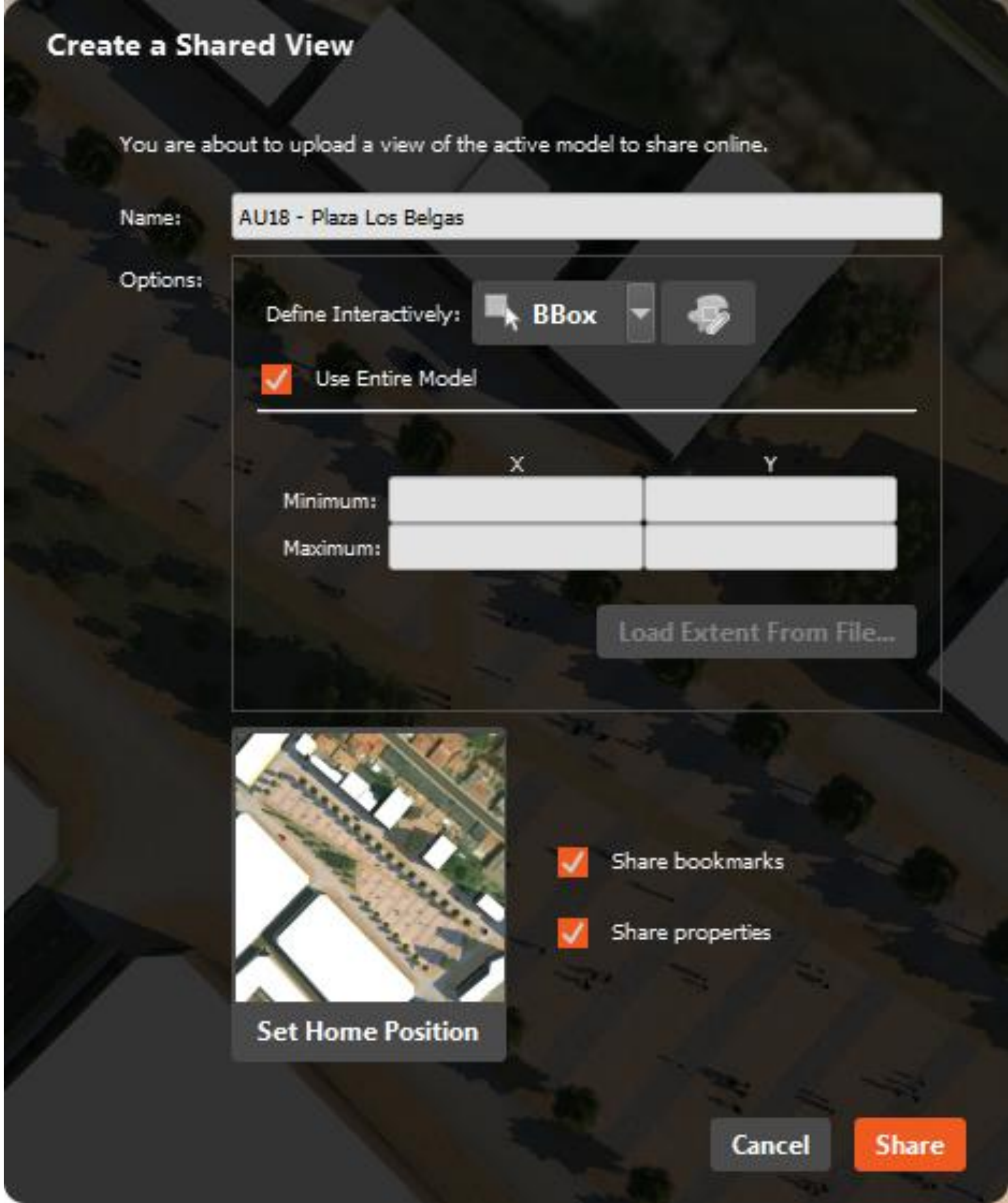
- Generate links
- Delete shared views
- Extend expiration date (default 30 days)

MANAGE COMMENTS

- Viewers can mark up and comment the model in a browser

Shared View Creation

1. Go to Shared Views Dialog
2. Define area
3. Select whether bookmarks and properties are shared



Create a Shared View

You are about to upload a view of the active model to share online.

Name: AU18 - Plaza Los Belgas

Options:

Define Interactively:  BBox 

☒ Use Entire Model

	X	Y
Minimum:		
Maximum:		

[Load Extent From File...](#)



☒ Share bookmarks

☒ Share properties

[Set Home Position](#)

[Cancel](#) [Share](#)

Communication



Communication Tools

STORYBOARD

- Create videos from the model
- Edition tools
- Add titles and captions

WATERMARKS

- Include logos and images

SNAPSHOTS

- Render views from the model

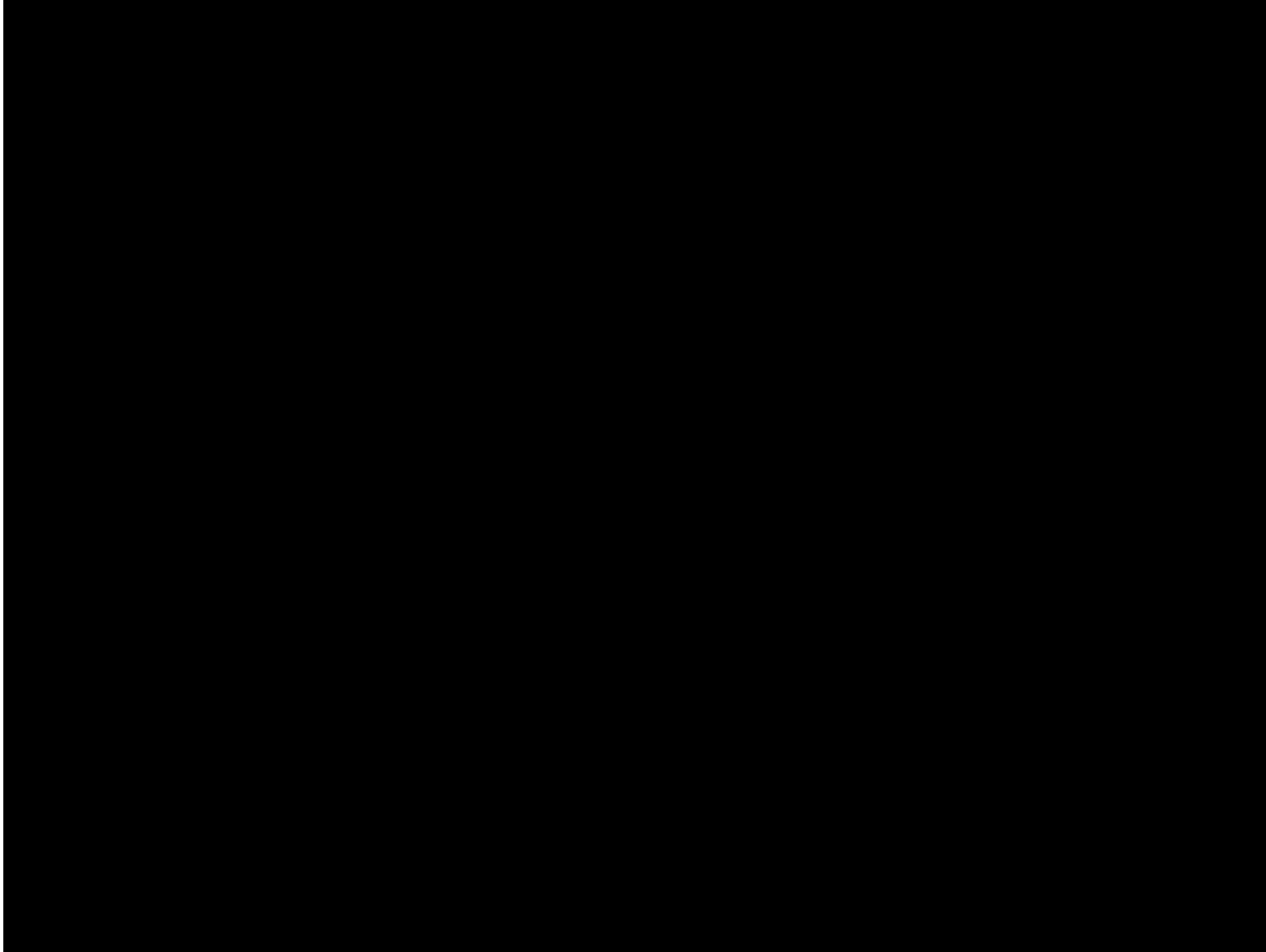
SUN & SKY

- Control the date, time and weather conditions for your model

Illustrative Plan



Storyboard



Advanced Workflows



Advanced Workflows

CUSTOM SCHEMA

Customize the Schema JSON file to create custom categories, attributes and display

SCRIPTING

InfraWorks supports Java scripting to automate processes

STYLE RULES

Use expressions to specify criteria that determine which styles will be applied to individual features

ANALYSIS TOOLS

- Traffic and pedestrian simulation
- Corridor optimization
- Flood analysis (RiverFlow2D)

Q&A





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