The Secret to Landscape Modeling with InfraWorks

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Designated Support Specialist | Architect | Landscape Architect

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AUTODESK. UNIVERSITY

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


odesk InfraWorks - Caldes.iwm
Raquel Bascones Recio
Conceptual View
master
rain Themes
e Watersheds
rface Layers
ight Drainage
ainage Network
t Performance
fall 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”

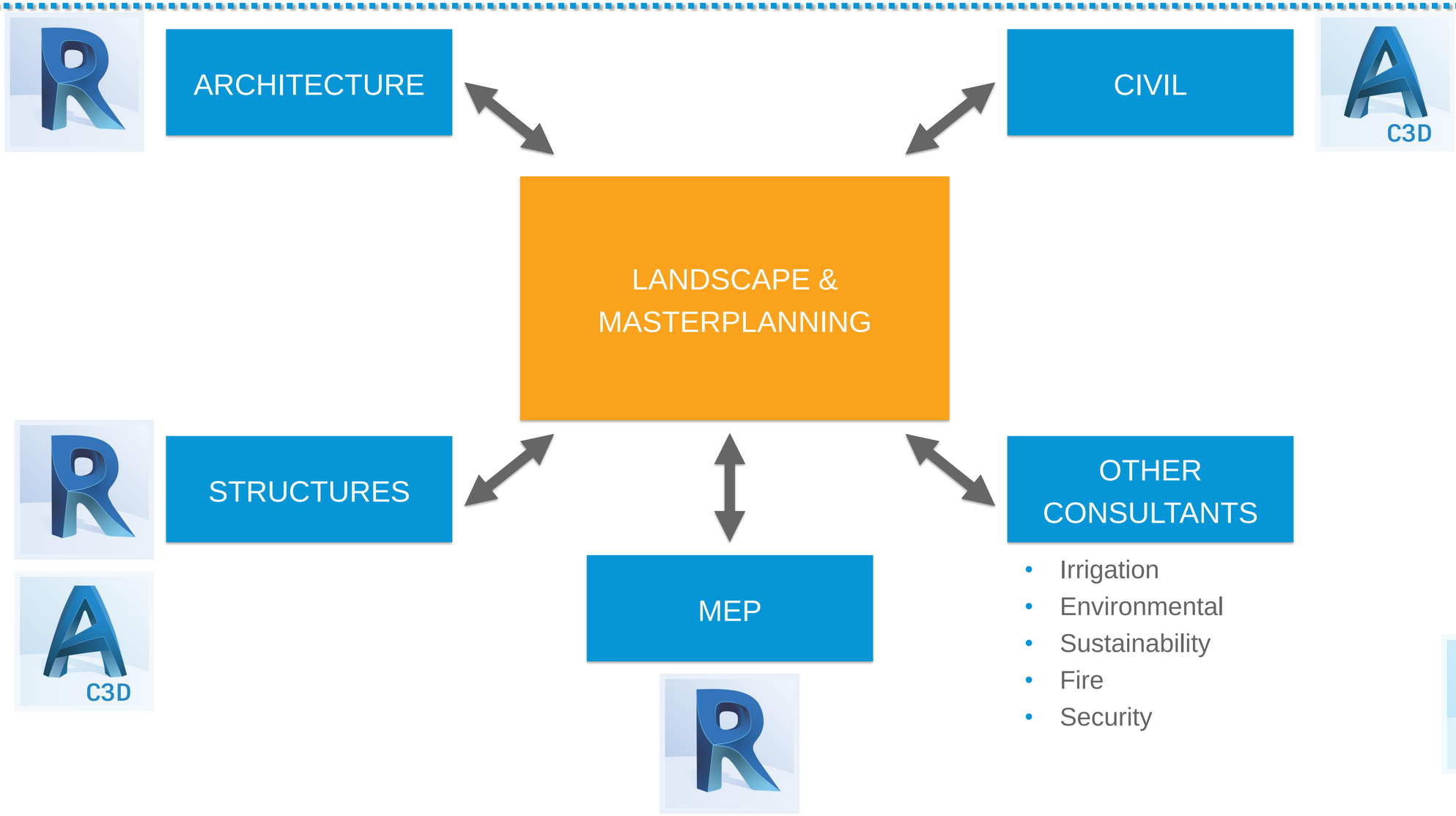
- Resources folder
- Sqlite file

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)

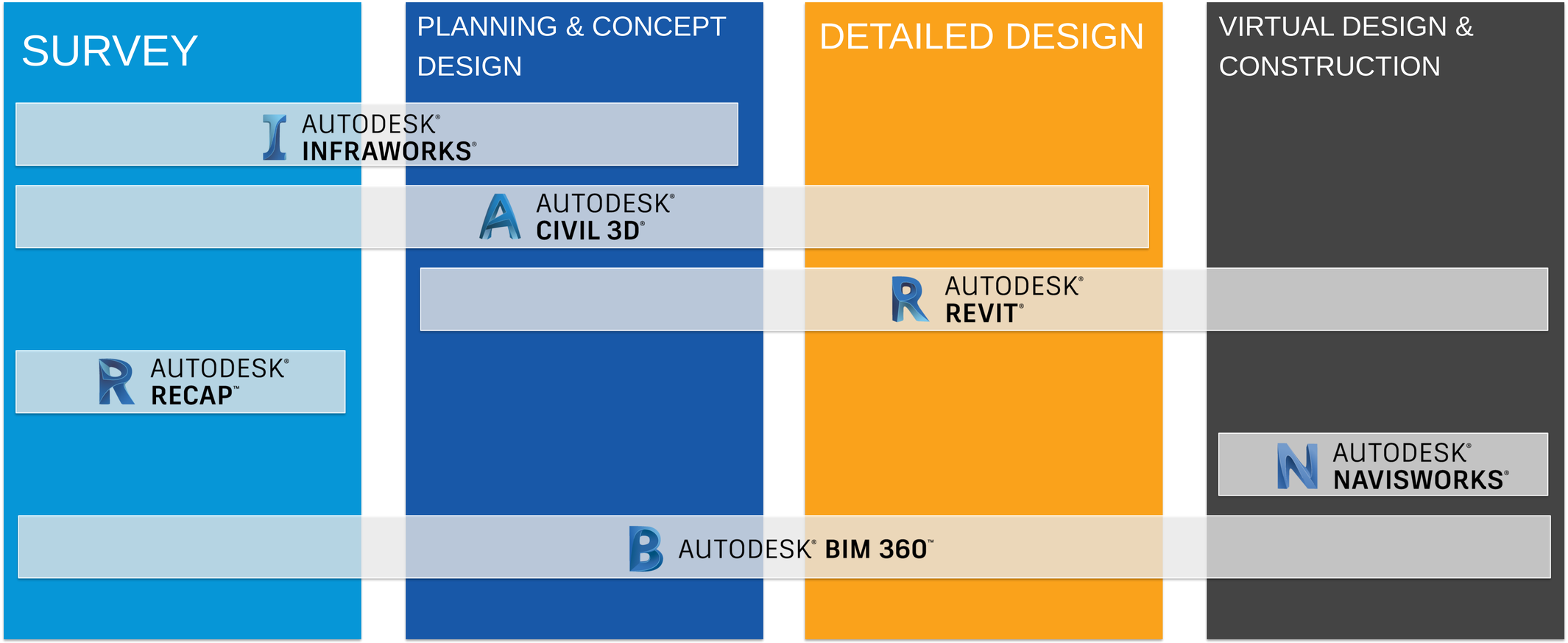
Why InfraWorks for Landscape and Masterplanning?

Landscape & Masterplanning Workflow



- Irrigation
- Environmental
- Sustainability
- Fire
- Security

Stages & Toolset



Best tool for the job

InfraWorks

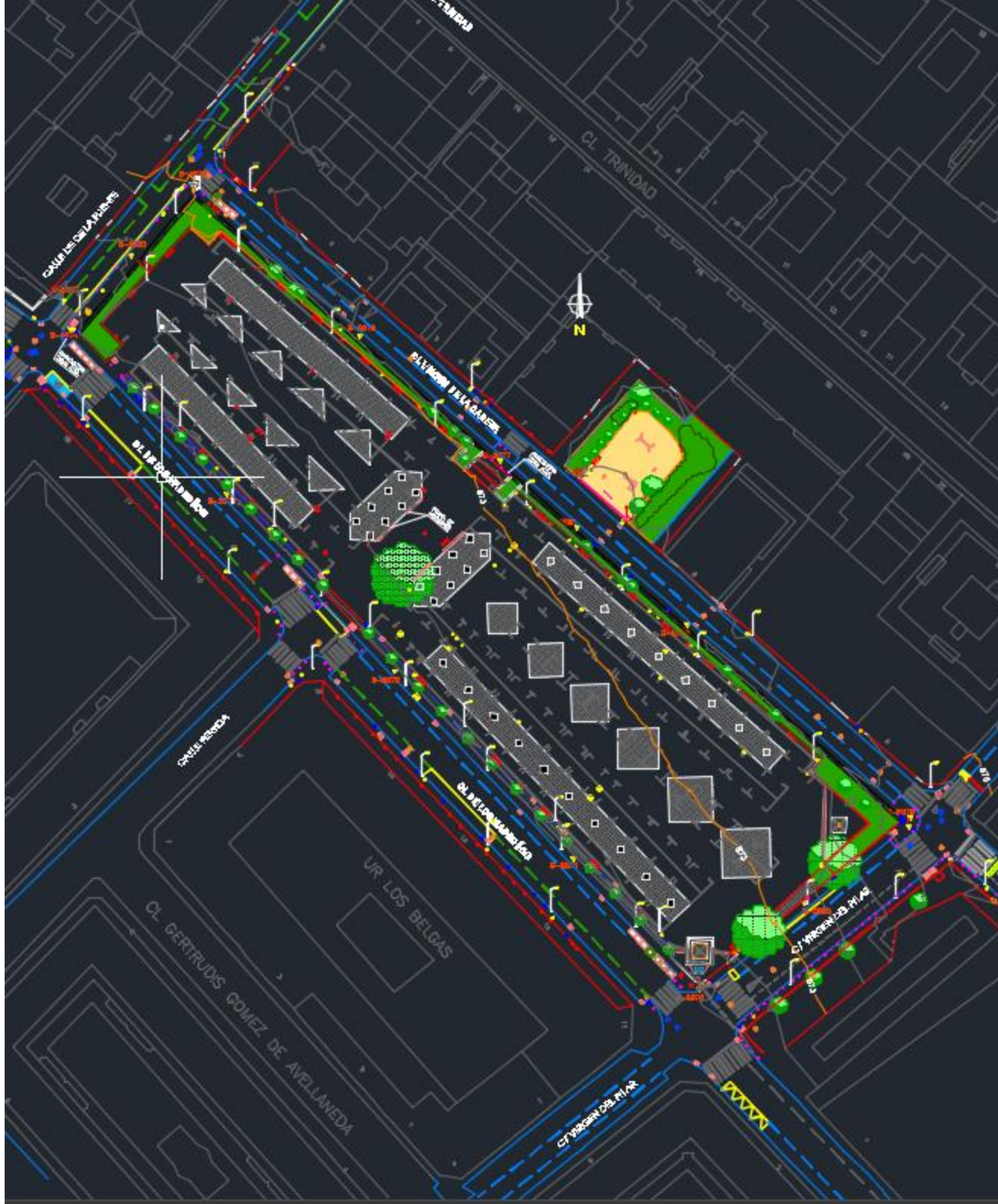
- Preliminary design
- Visual
- Full-time 3D
- Context
- Easy to learn

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

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AUTODESK® INFRAWORKS®

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

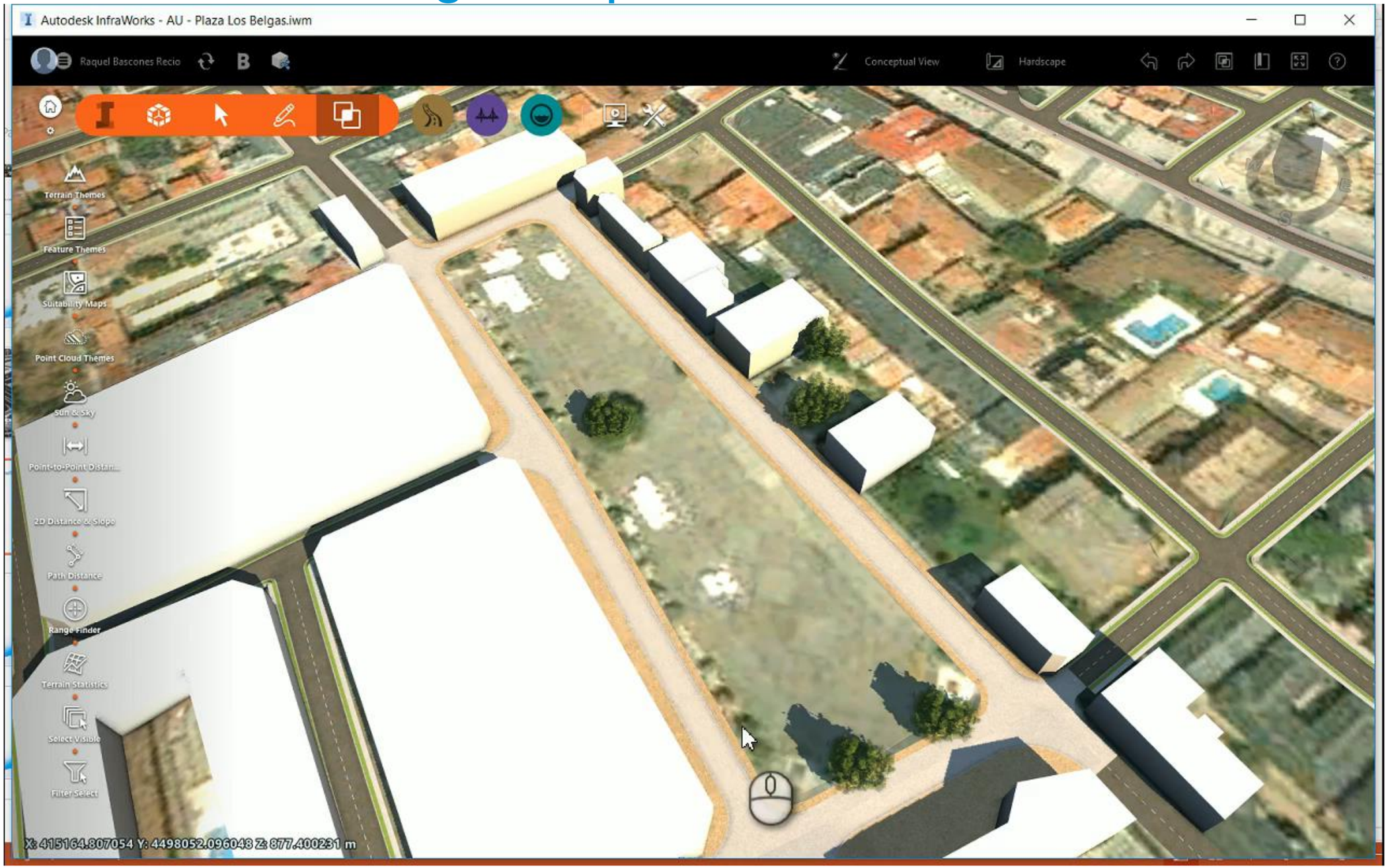
FLEXIBILITY

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

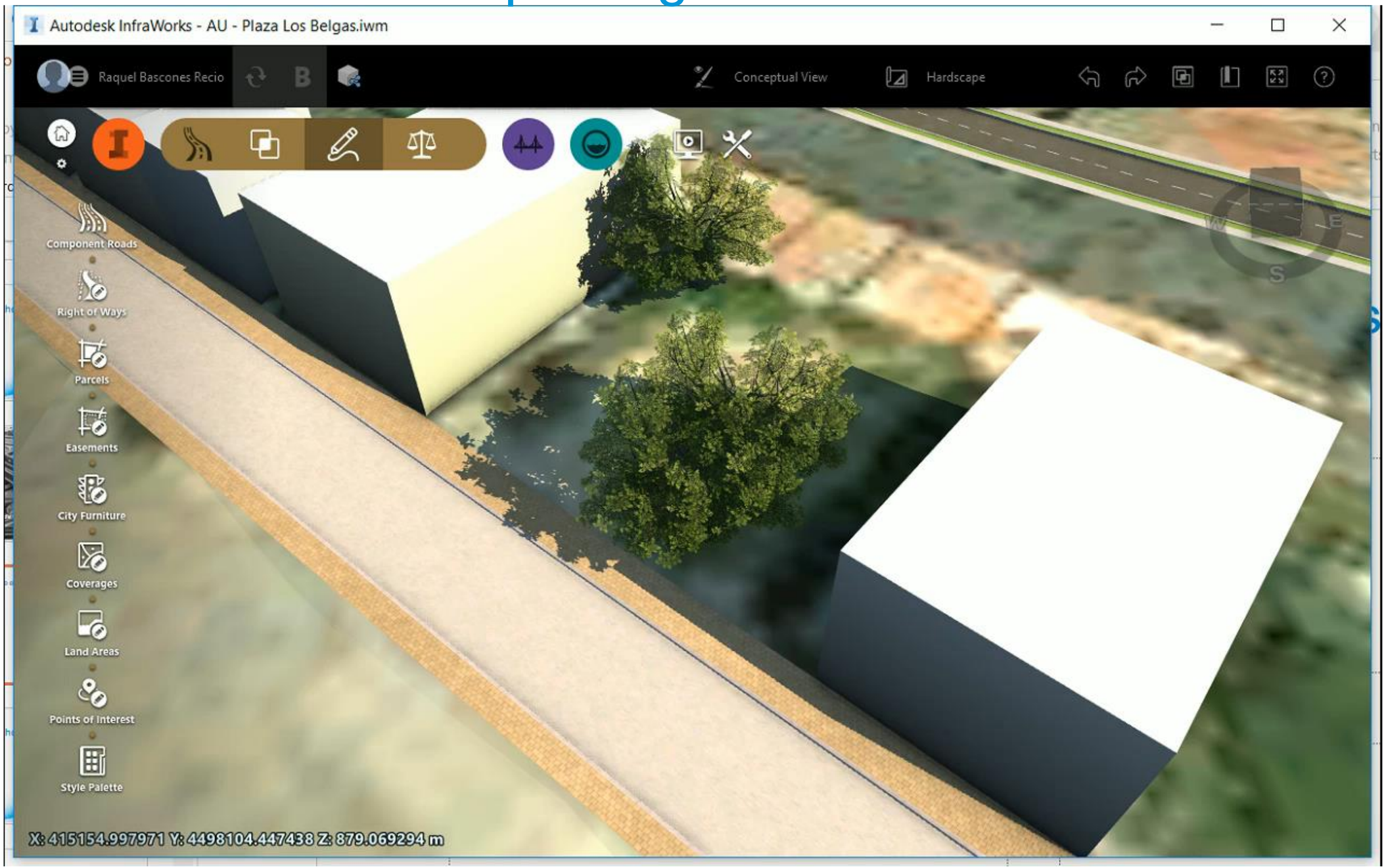
CUSTOMIZABLE

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

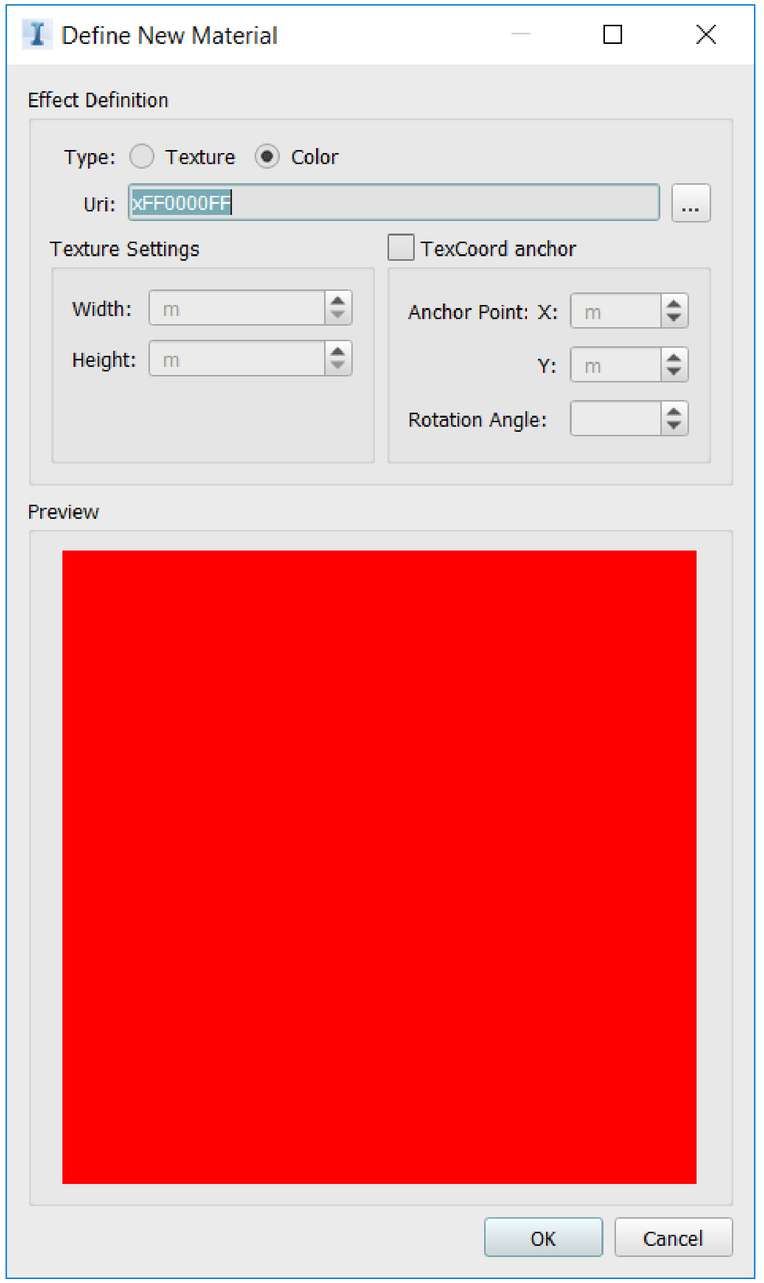
- Flattens the area
- Grading styles can be adjusted

Hardscape using Coverages

Hardscape from file

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

ROWS

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

STAND

- Place trees inside sketched area
- Random placement and heights
- 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

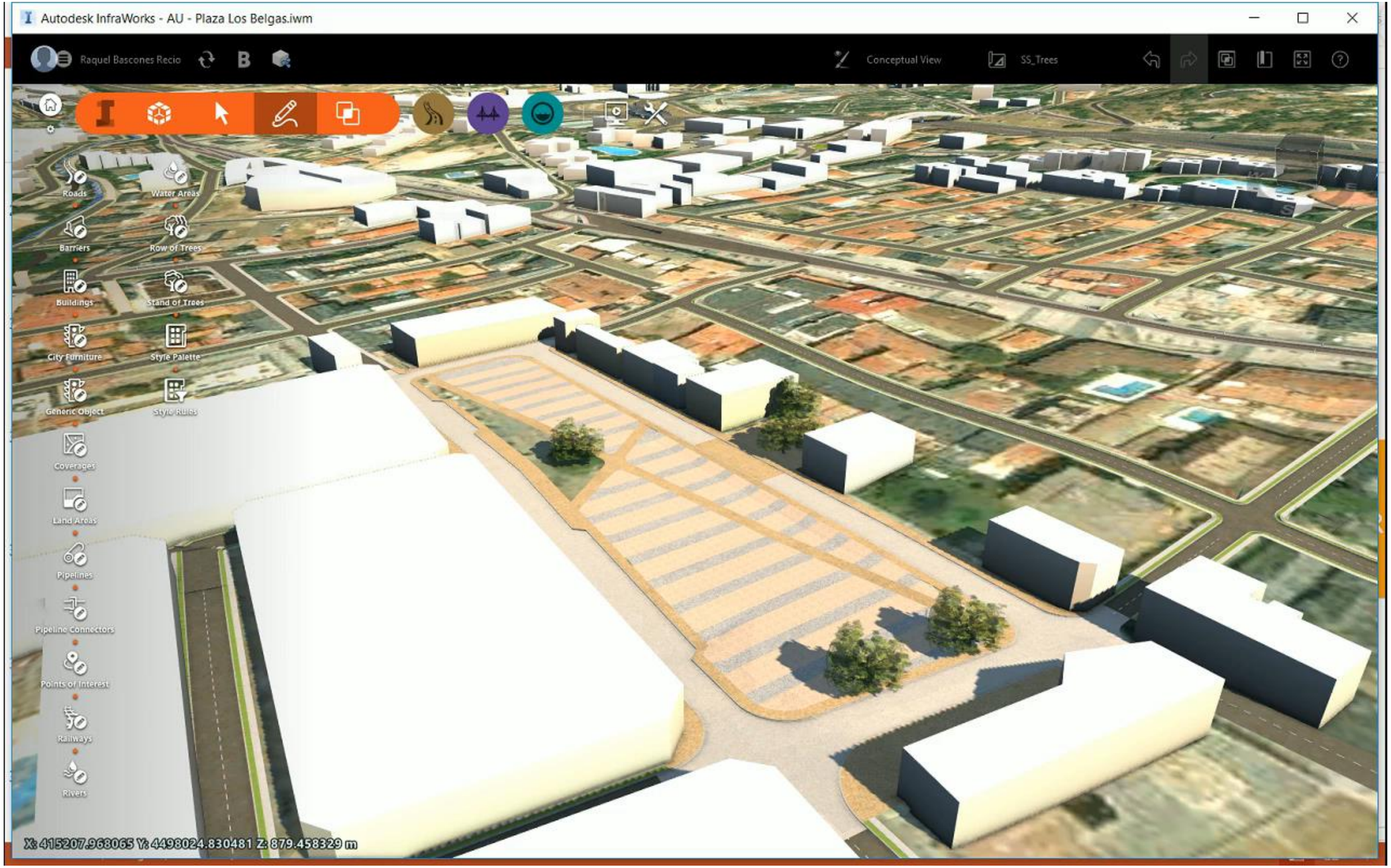
Adaptive or LOD Trees

SCALE 1

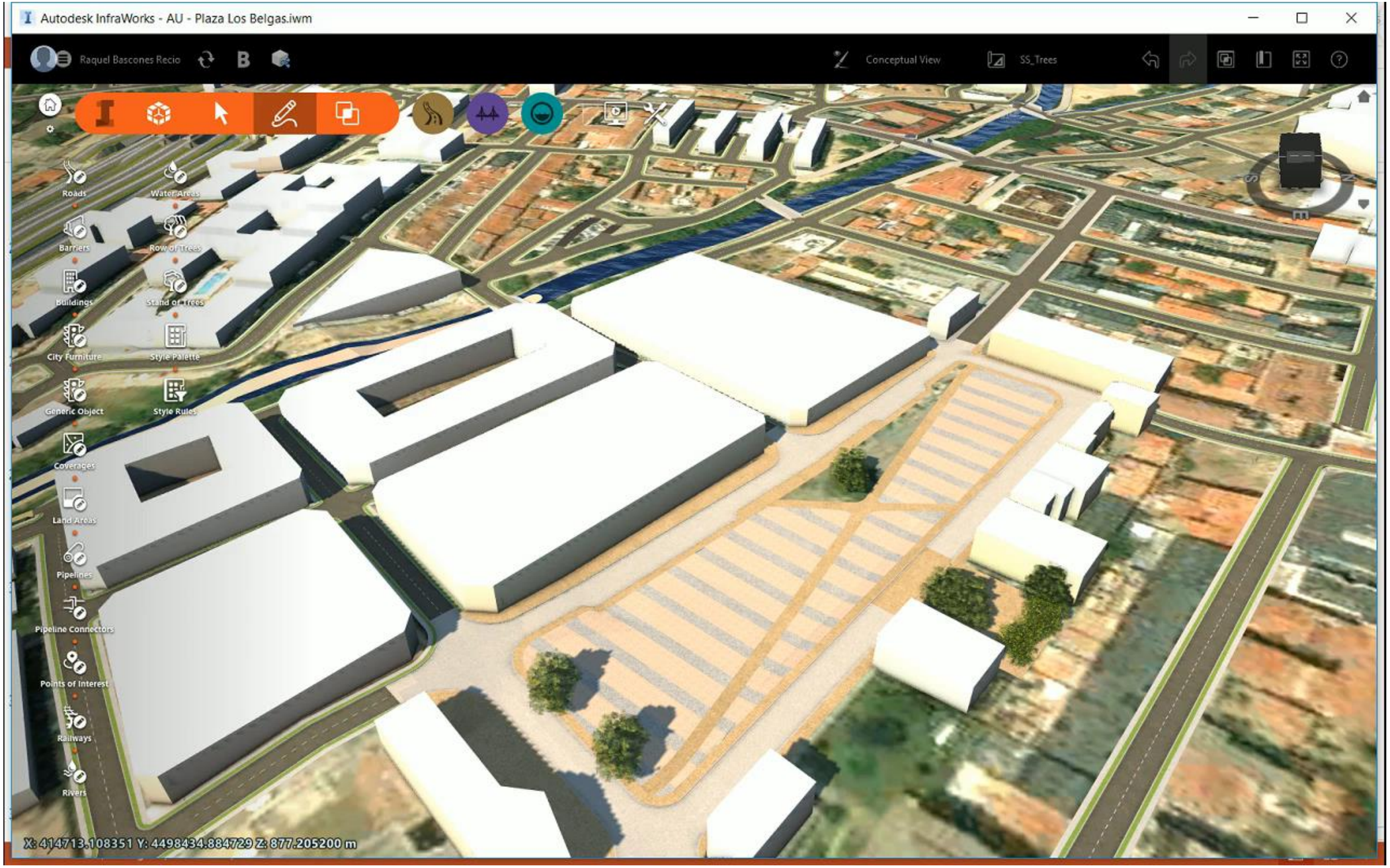
SCALE 2

SCALE 3

Row of Trees


Autodesk InfraWorks - AU - Plaza Los Belgas.iwm
Raquel Bascones Recio
Conceptual View
SS_Trees
Roads
Water Areas
Barriers
Row of Trees
Buildings
Stand of Trees
City Furniture
Style Palette
Generic Object
Style Rules
Coverages
Land Areas
Pipelines
Pipeline Connectors
Points of Interest
Railways
Rivers
X: 415207.968065 Y: 4498024.830481 Z: 879.458329 m

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

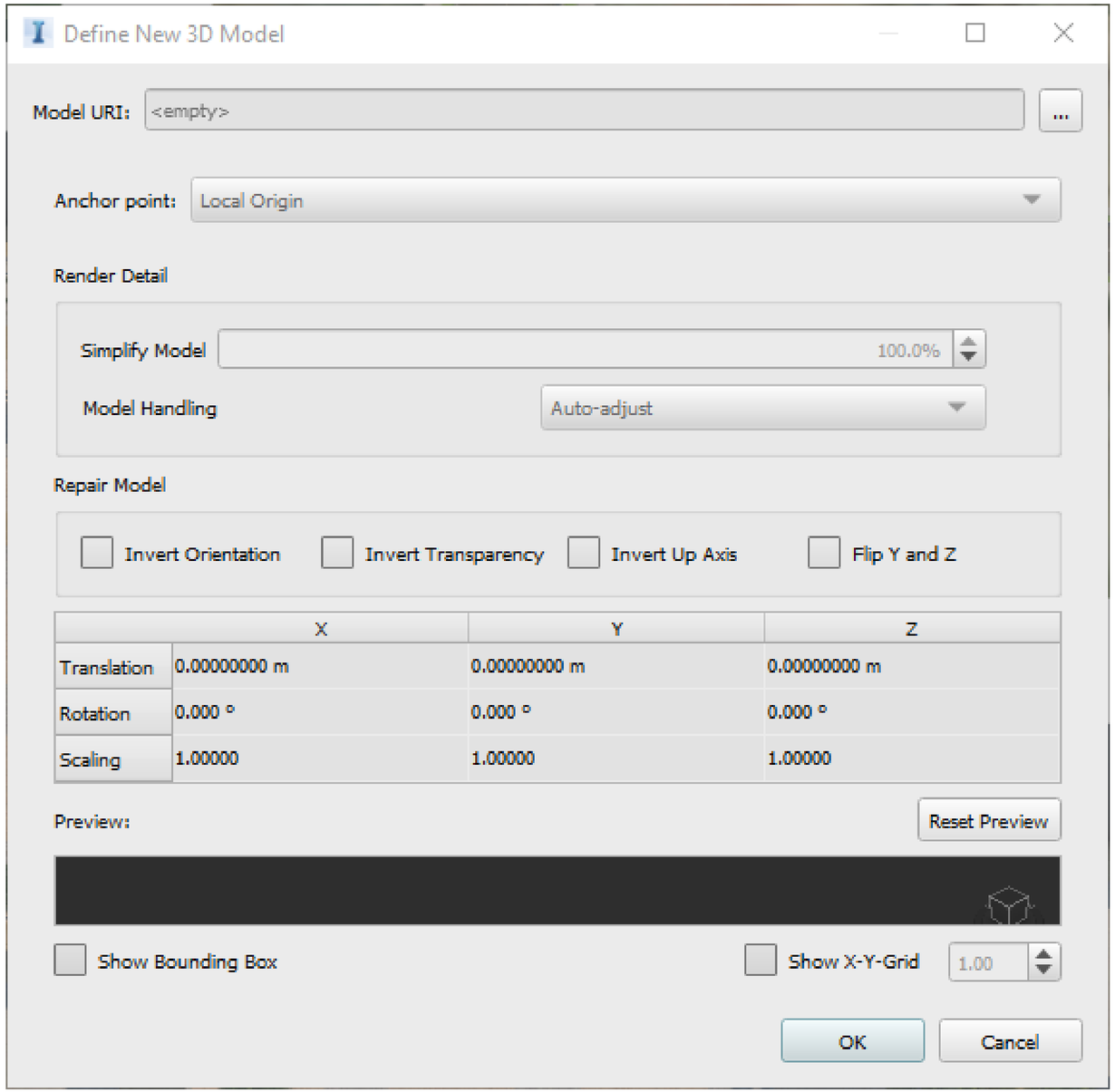
- Place along a seam in the road
- Parametric or 3D Model
- Control spacing, scale, offsets, rotation and tilting
- No individual edits

FROM FILE

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

Add New 3D Model

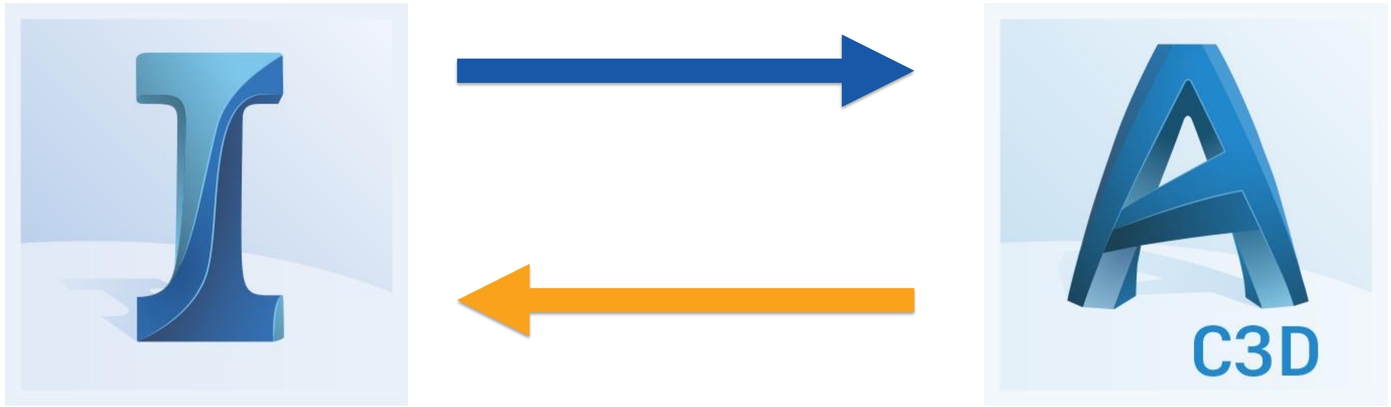
- Style Palette
- 3DS, DAE, DXF, FBX, OBJ, SFF, SVF
- Render options
- Edit in import
- Preview of the model



Collaboration

Civil 3D Interoperability

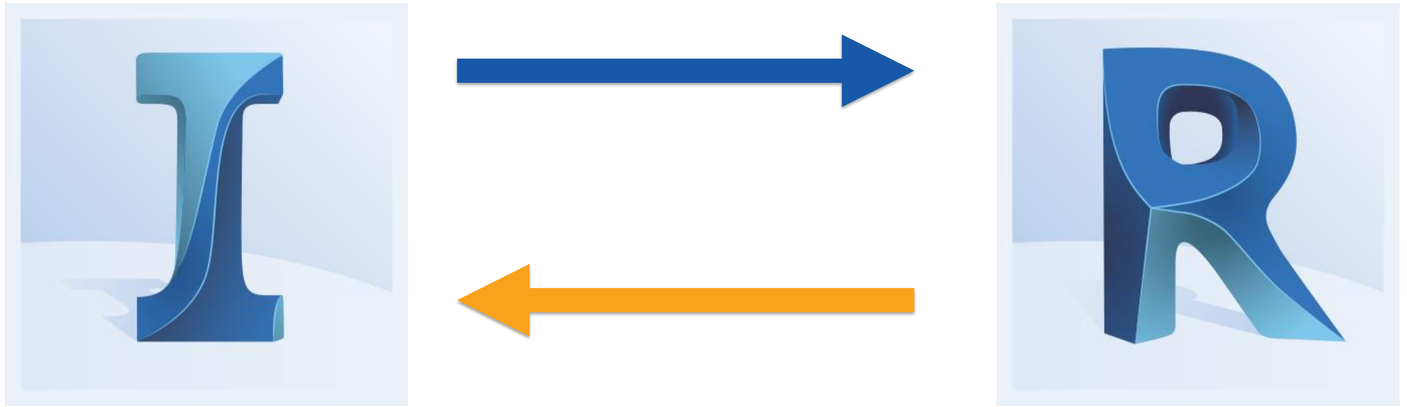
IMX
OPEN IW DIRECTLY IN C3D



IMPORT & CONFIGURE
IN DATA SOURCES

Revit Interoperability

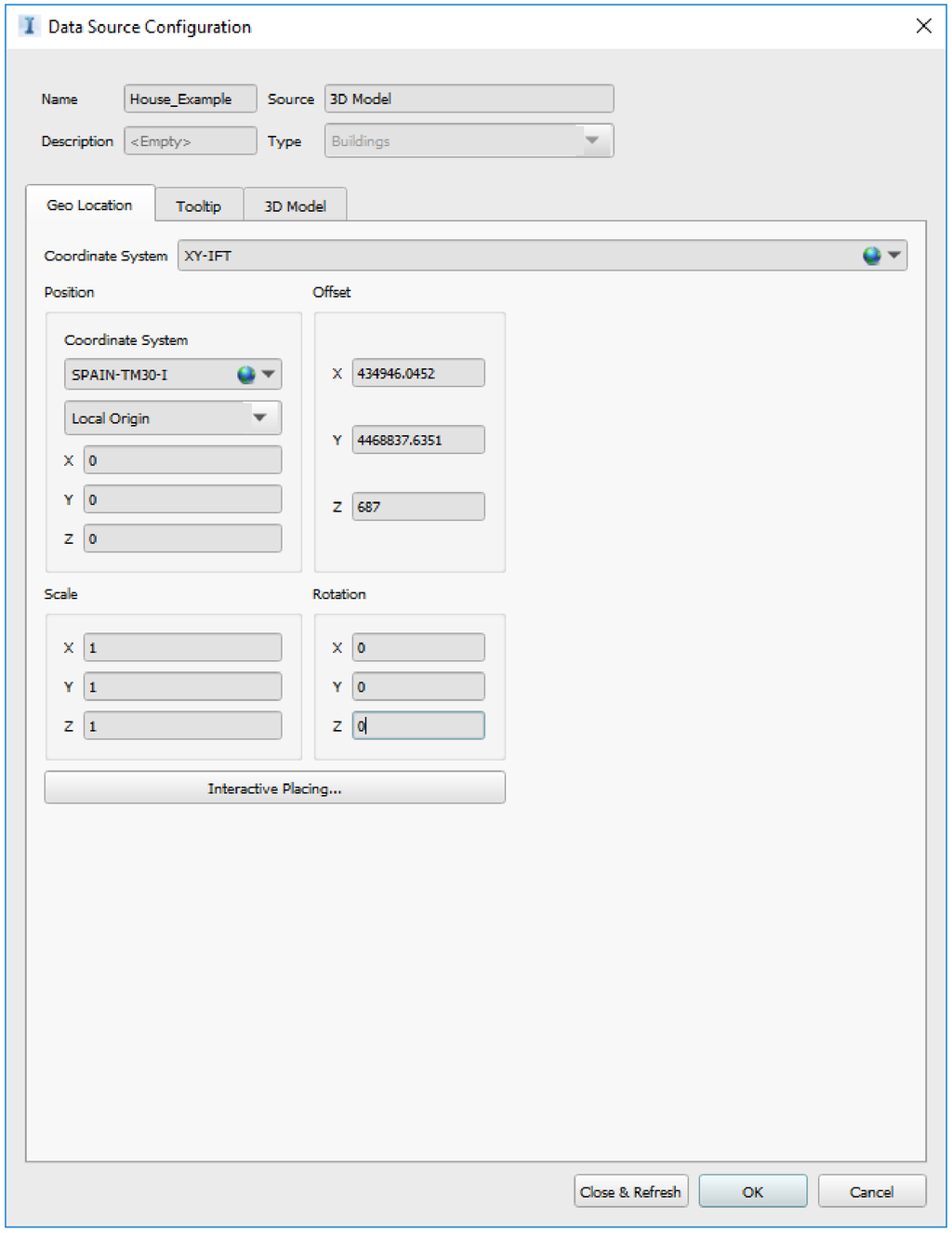
FBX
“SEND TO REVIT”



IMPORT & CONFIGURE
IN DATA SOURCES

Revit Import Configuration

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



BIM360

COLLABORATE IN THE CLOUD

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

BROWSER VIEWER

- Allow review of the model without InfraWorks desktop

CONTROL RIGHTS

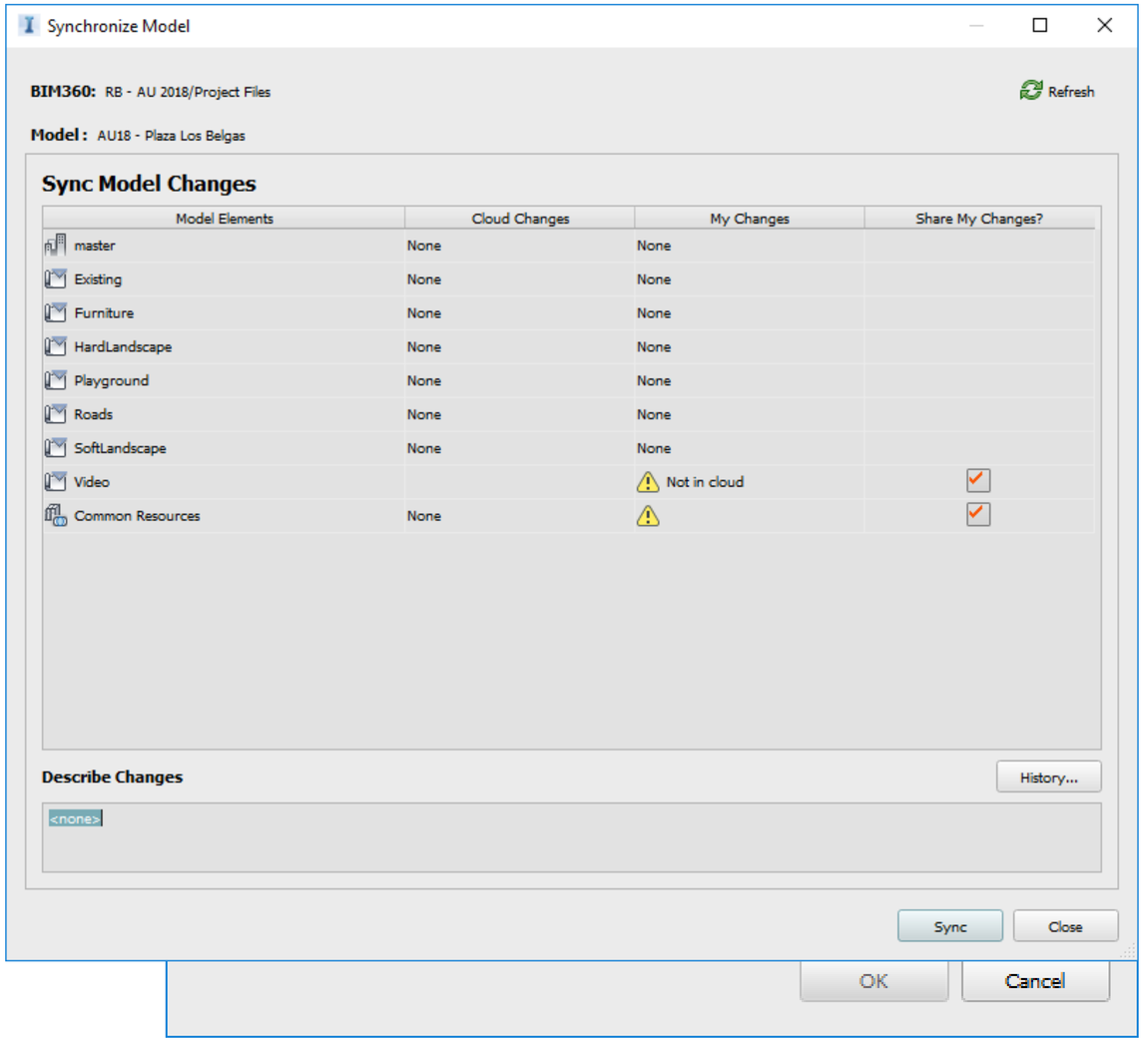
- Viewer, uploader & editor roles
- Assign by role or folder

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

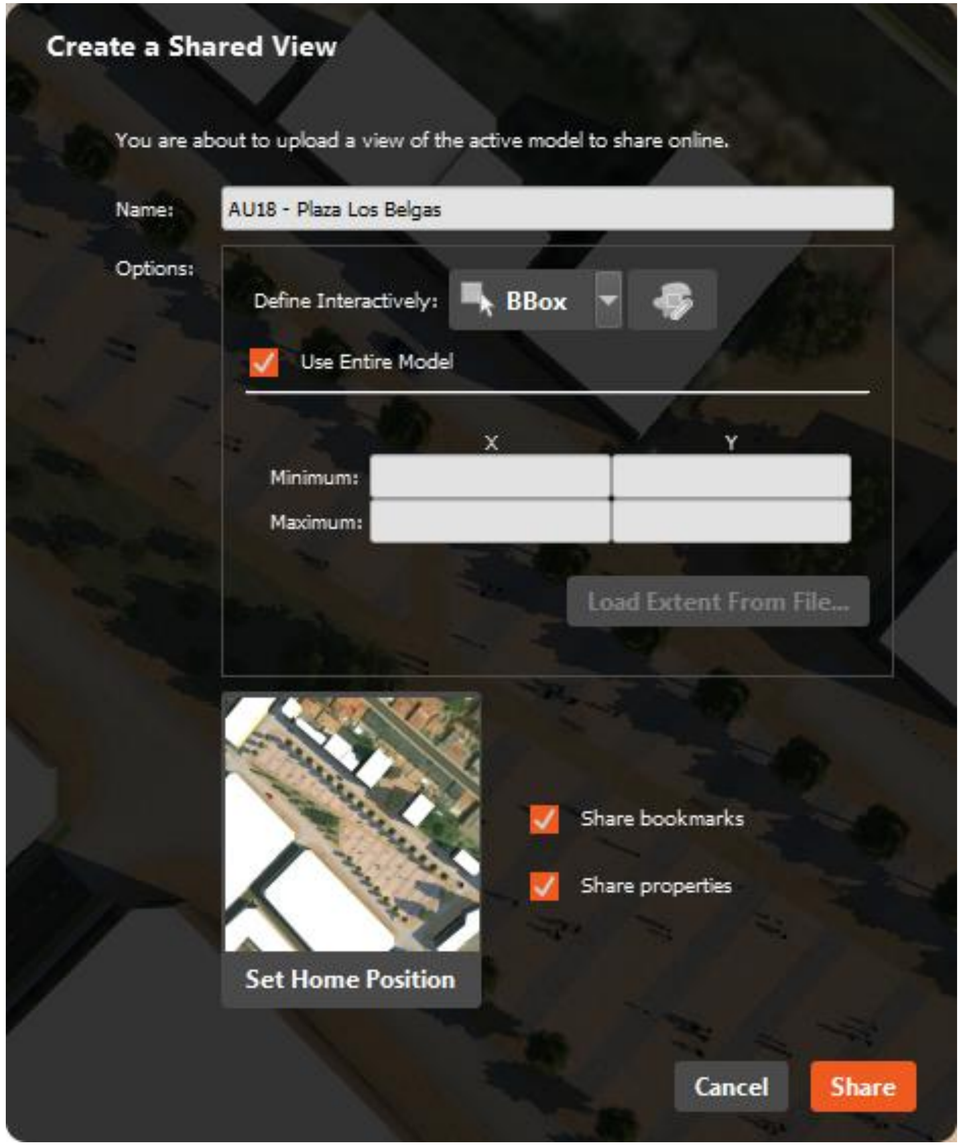
- Generate links
- Delete shared views
- Extend expiration date (default 30 days)

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



Communication

Communication Tools

STORYBOARD

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

SNAPSHOTS

- Render views from the model

WATERMARKS

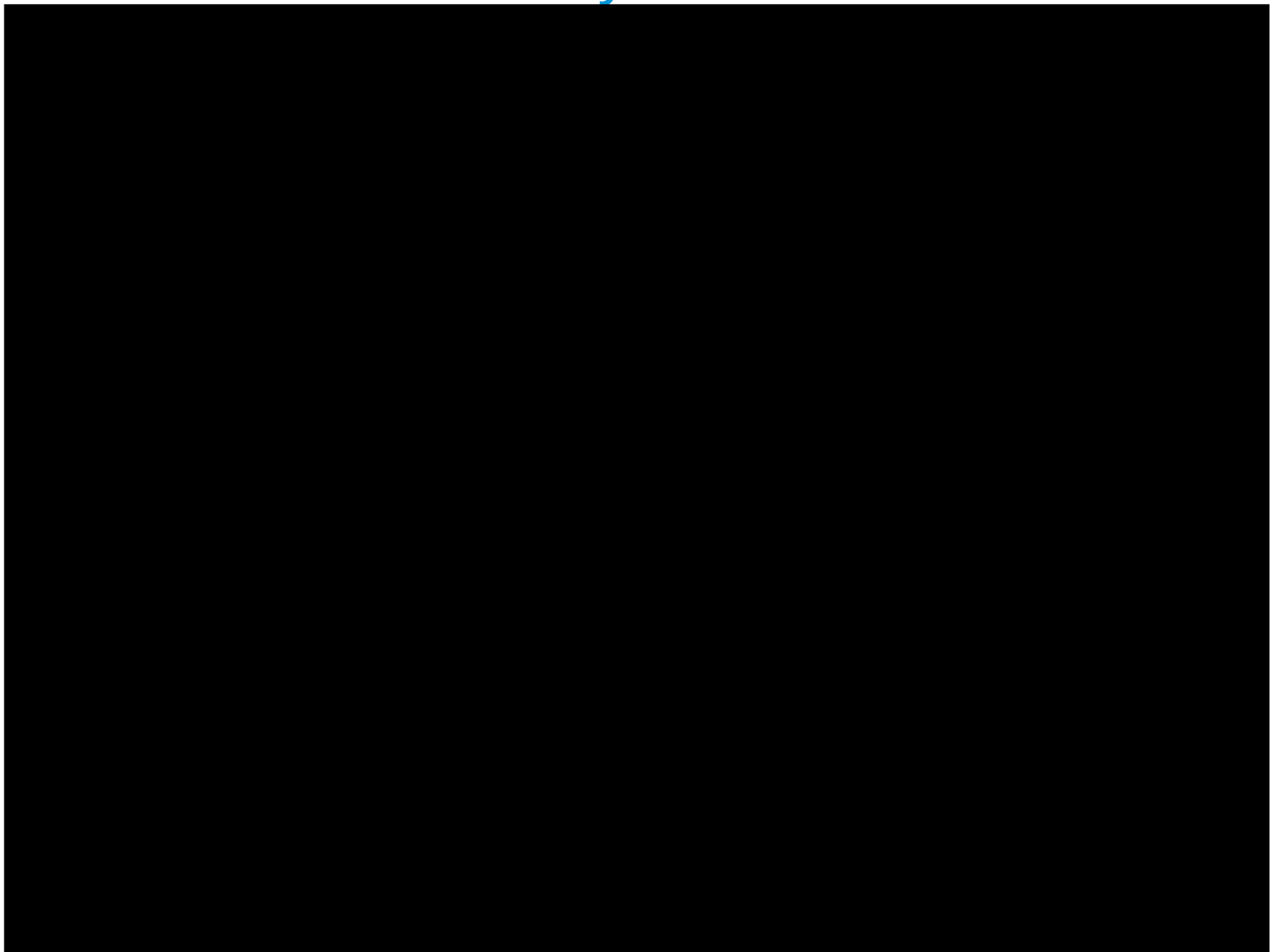
- Include logos and images

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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