AUTODESK. UNIVERSITY

Drawing Automation with API and New iLogic Snippets in Inventor 2021

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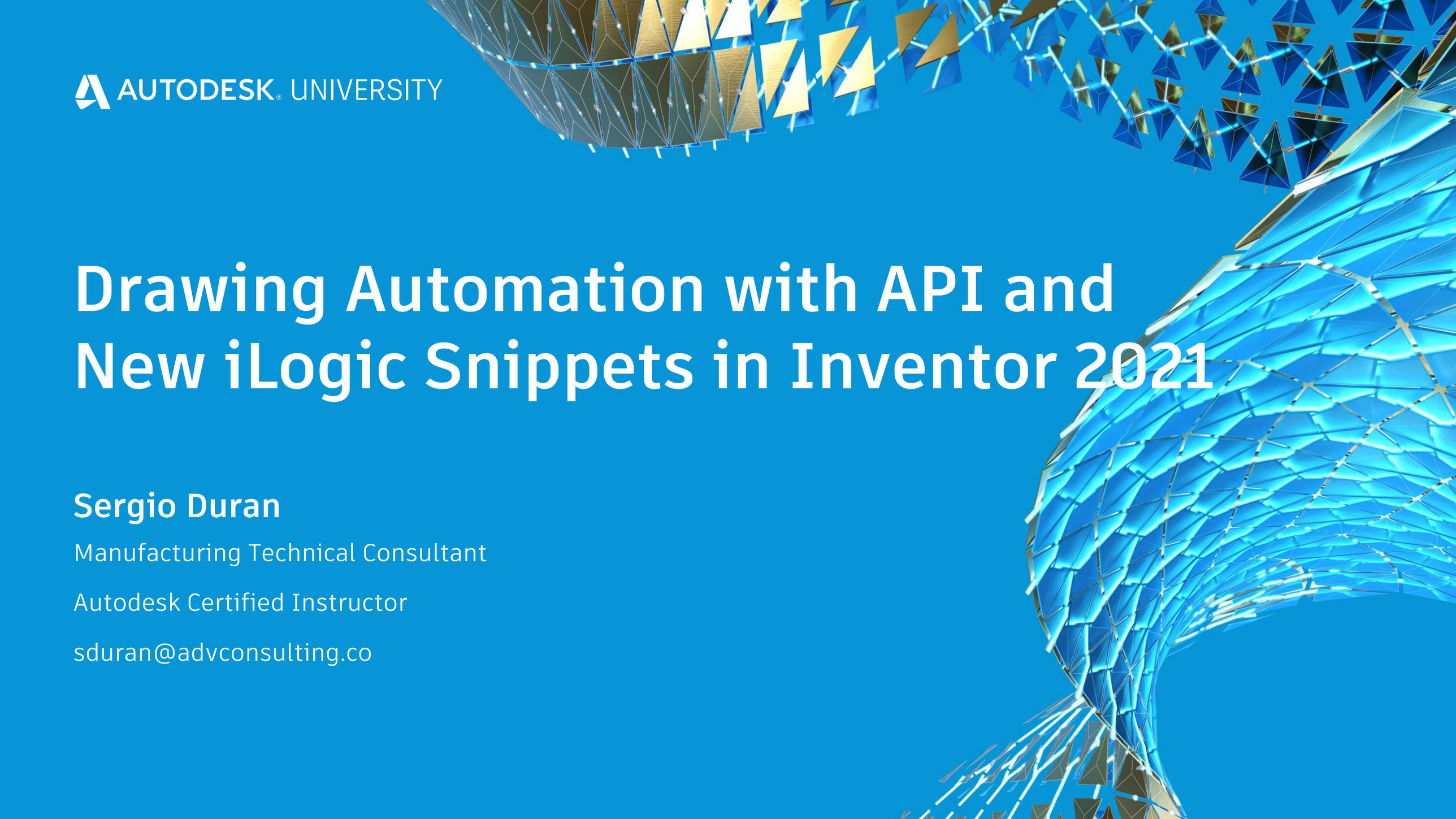

About the speaker

Sergio Duran

Mechanical engineer and an Autodesk Certified Instructor with more than 13 years of experience working with Autodesk Manufacturing Solutions. Speaker at Autodesk University events (Las Vegas, Mexico City and the online version). Previously, I worked for two Autodesk authorized resellers and training centers as an applications specialist.

Sergio currently works as an independent consultant providing professional consulting, implementation, training, and support services. He assesses business issues and assists clients in design solutions, optimization and efficient workflows. Additionally, he teaches Autodesk Inventor and AutoCAD courses at Sheridan College.

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Class Summary

Autodesk added more iLogic snippets in the latest version of Inventor software to make drawing automation easier. This class will teach you how to prepare 3D models to easily automate the creation of drawings. Learn how to use the new iLogic snippets to automate different annotations such as dimensions, leaders, balloons, and more. In addition, you will discover when you should go beyond drawing automation capabilities with iLogic and start using the Inventor API in this process. Finally, you will identify the right approach to automate your Inventor drawings.

Learning Objectives

- Learn how to prepare a 3D model before automating a 2D drawing.
- Discover the new iLogic snippets to automate 2D drawings in Inventor 2021.
- Discover the differences between iLogic and Inventor API when automating 2D drawings.
- Learn how to determine the best approach to automate your drawings.

Content

This class covers

- New iLogic snippets to automate annotations
- Inventor API and iLogic for drawing automation

This class DOES NOT cover

- Definition of iLogic
- iLogic Fundamentals
- Definition of API

Drawing Automation

Why?

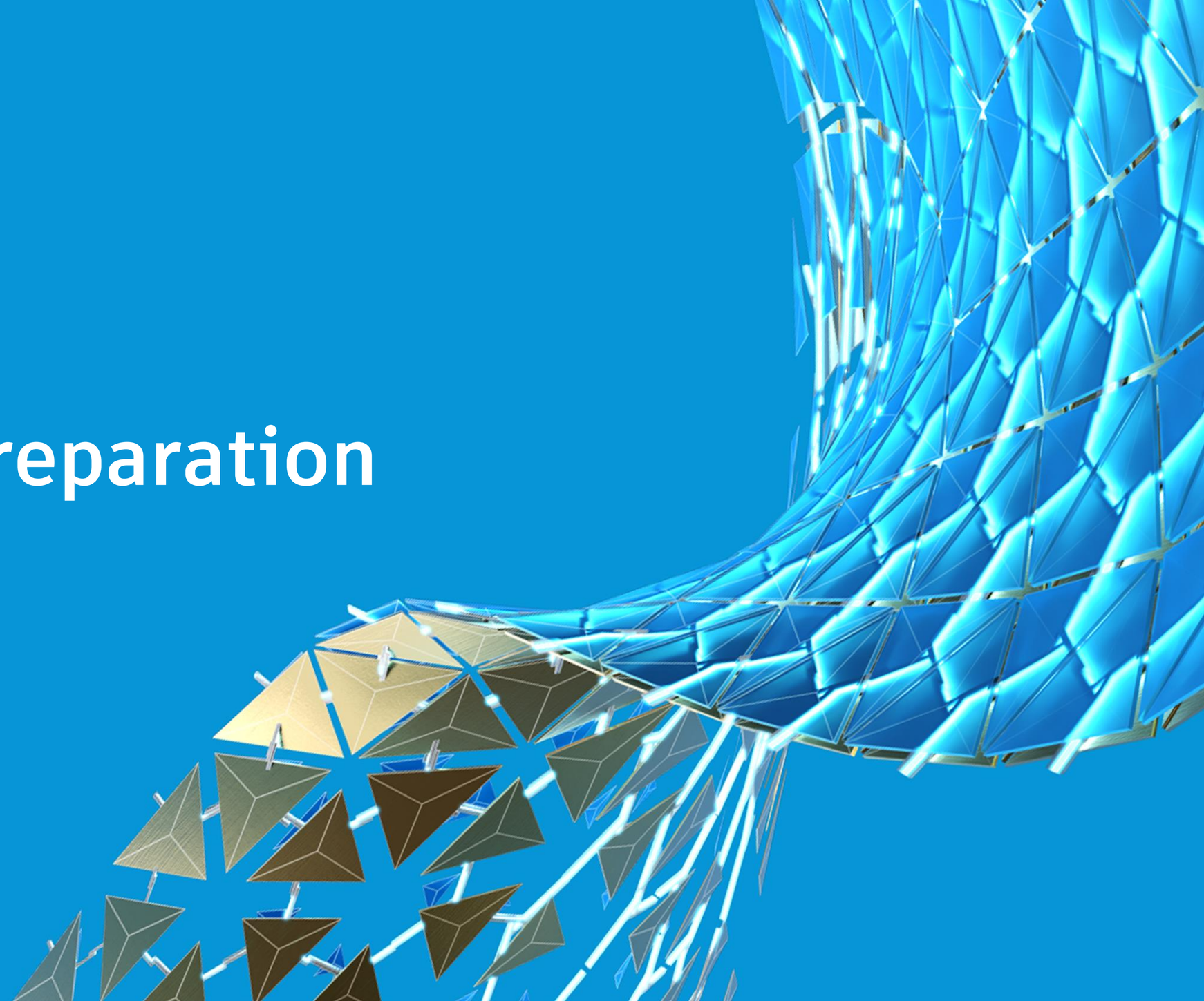
- **Save time when creating drawings**
- **Repetitive tasks**
  - Standard drawing views
  - Standard output
- **Configurators and catalog-based models**
- **Integration with other applications and systems – CRM and ERP**

And more…

Drawing Workflow

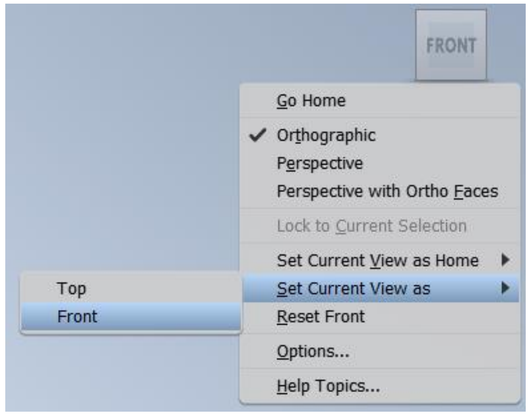
1. Drawing Standards And Styles
2. Drawing Resources (Definitions)
3. Drawing Setup
4. Referenced Models
5. Drawing Views
6. Annotations
7. Output

3D Model Preparation

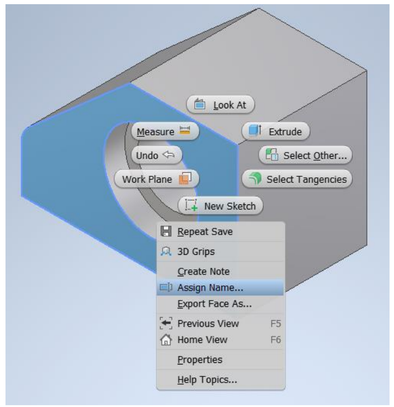


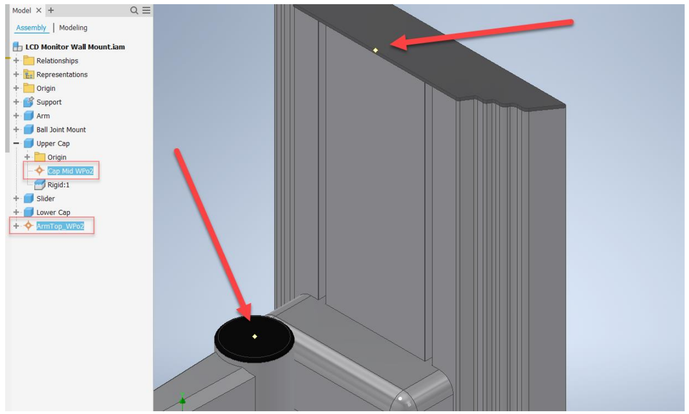
3D Model Preparation

- **Prepare the model to automate drawing views**
  - Use the ViewCube



- **Prepare the model to automate annotations**
  - Assign names to faces and edges
  - Create workfeatures

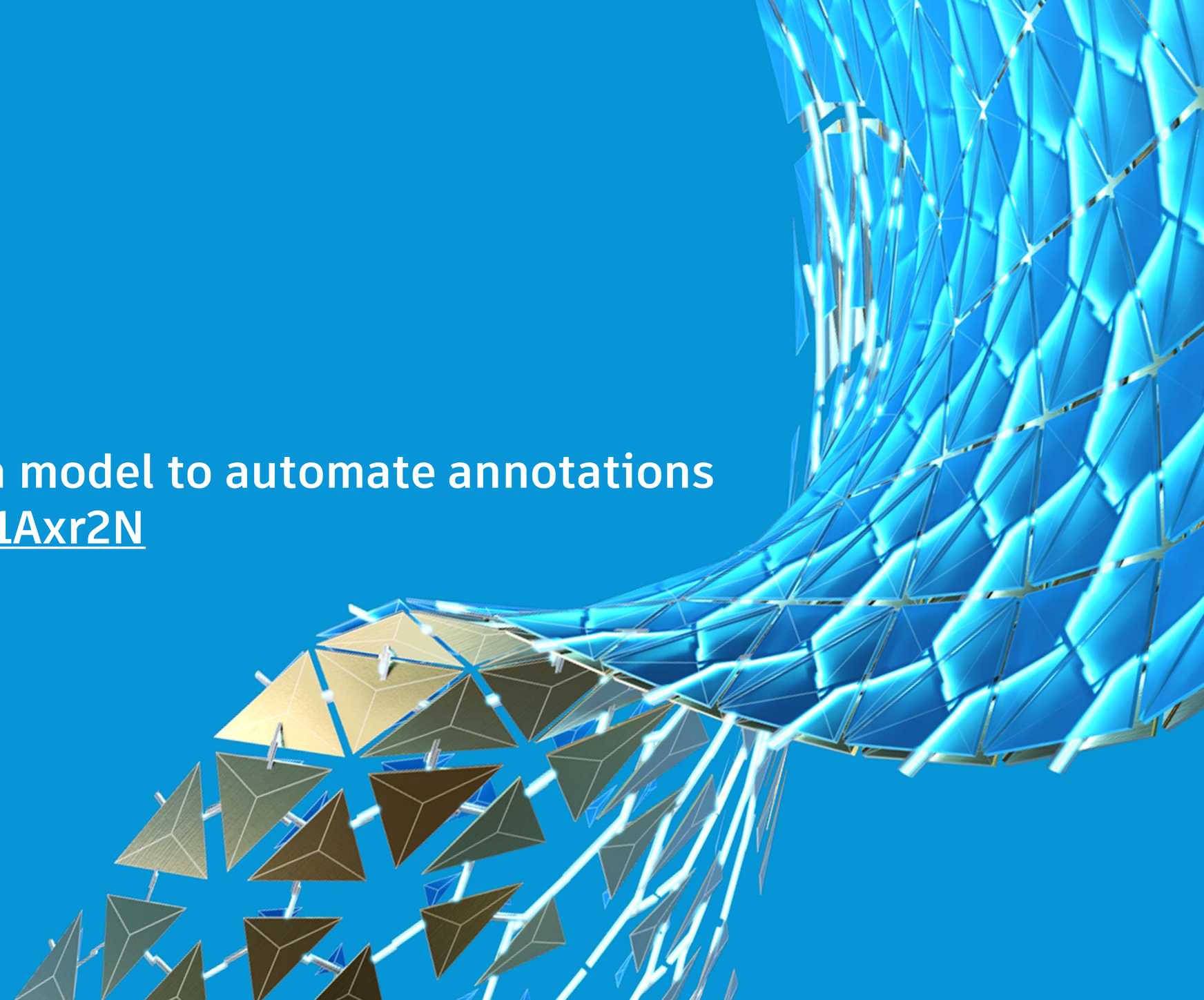




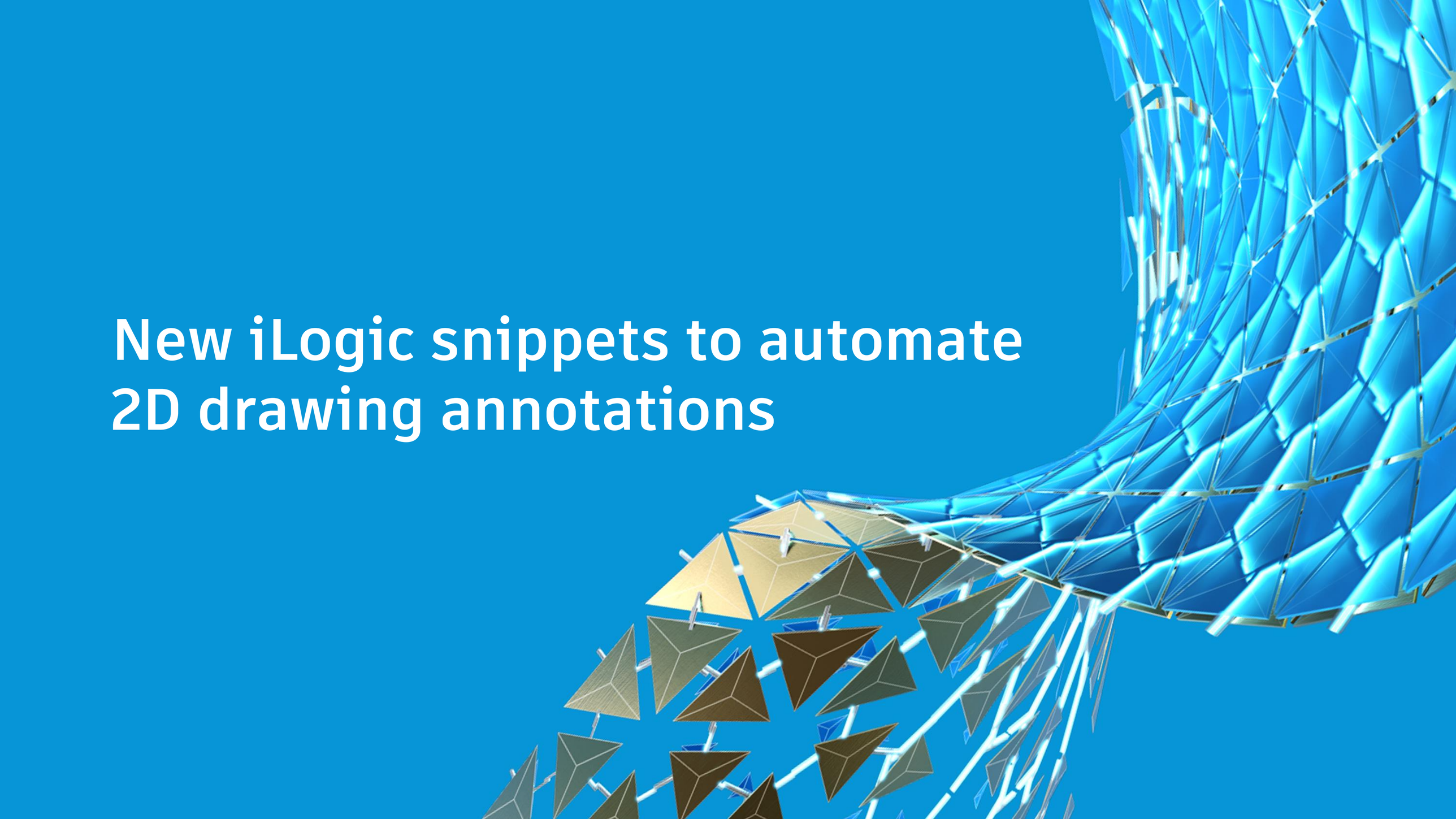
DEMO

AU Demo1 Prepare a model to automate annotations

https://autode.sk/31Axr2N

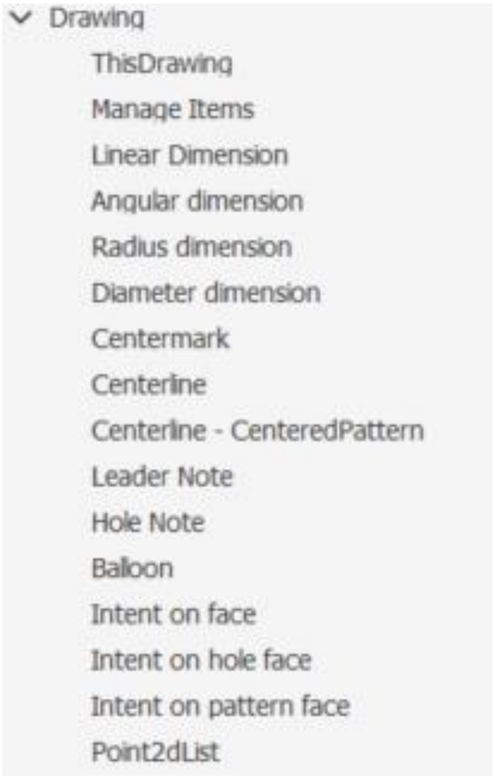


New iLogic snippets to automate 2D drawing annotations



New iLogic snippets to automate 2D drawing annotations

- **Automate the main annotations using iLogic snippets**
  - Dimensions: linear, angular, radius and diameter
  - Hole Notes
  - Centermarks, centerlines and centered pattern
  - Leader notes
  - Balloons




```
Dim Sheet_1 = ThisDrawing.Sheets.ItemByName("Sheet:1")
Dim VIEW1 = Sheet_1.DrawingViews.ItemByName("VIEW1")
Dim namedGeometry1 = VIEW1.GetIntent("NamedGeometry1")
Dim genDims = Sheet_1.DrawingDimensions.GeneralDimensions
Dim linDim1 = genDims.AddLinear("Dimension 1", VIEW1.SheetPoint(0.5, -0.1), namedGeometry1)
```

New iLogic snippets to automate 2D drawing annotations

- **Geometry Intents**
  - Faces, edges and vertices

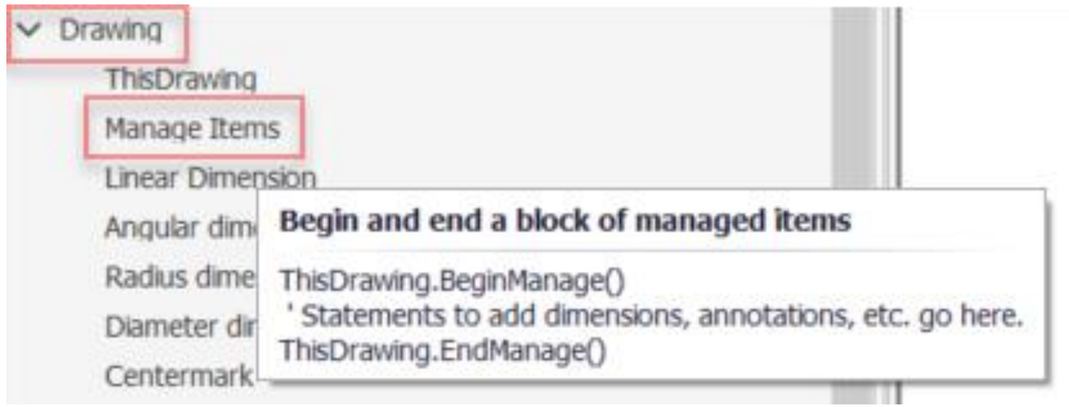
```
Dim RightFaceGI_TV = TopView. GetIntent("RightFace")
Dim RightFaceGI_FV = FrontView. GetIntent("RightFace")
```

  - Workfeatures

```
Dim WPo3_FV = FrontView.GetIntent("TopRight_FrontWPo3")
Dim WPo3_SV = SideView. GetIntent("TopRight_FrontWPo3")
```

New iLogic snippets to automate 2D drawing annotations

- **Manage Items**
  - Add lines to automate annotations between these two lines *Begin and End Manage*
  - Annotations inside this block are automatically deleted when not required
  - Only use snippets to add annotations




```
ThisDrawing.BeginManage()
' Statements to add dimensions, annotations, etc. go here.
ThisDrawing.EndManage()
```

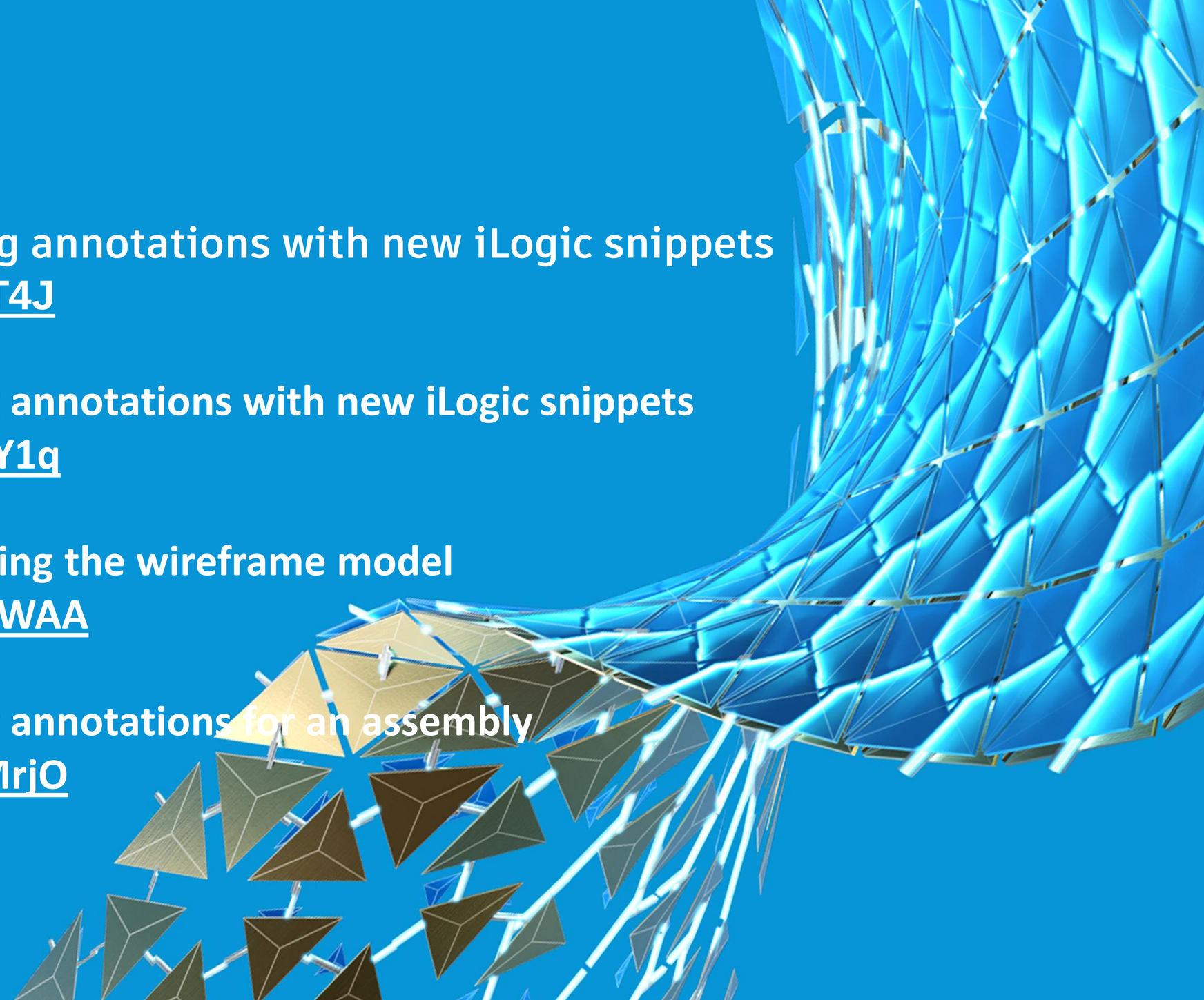
DEMOS

AU Demo2: Automating annotations with new iLogic snippets
https://autode.sk/3jjHT4J

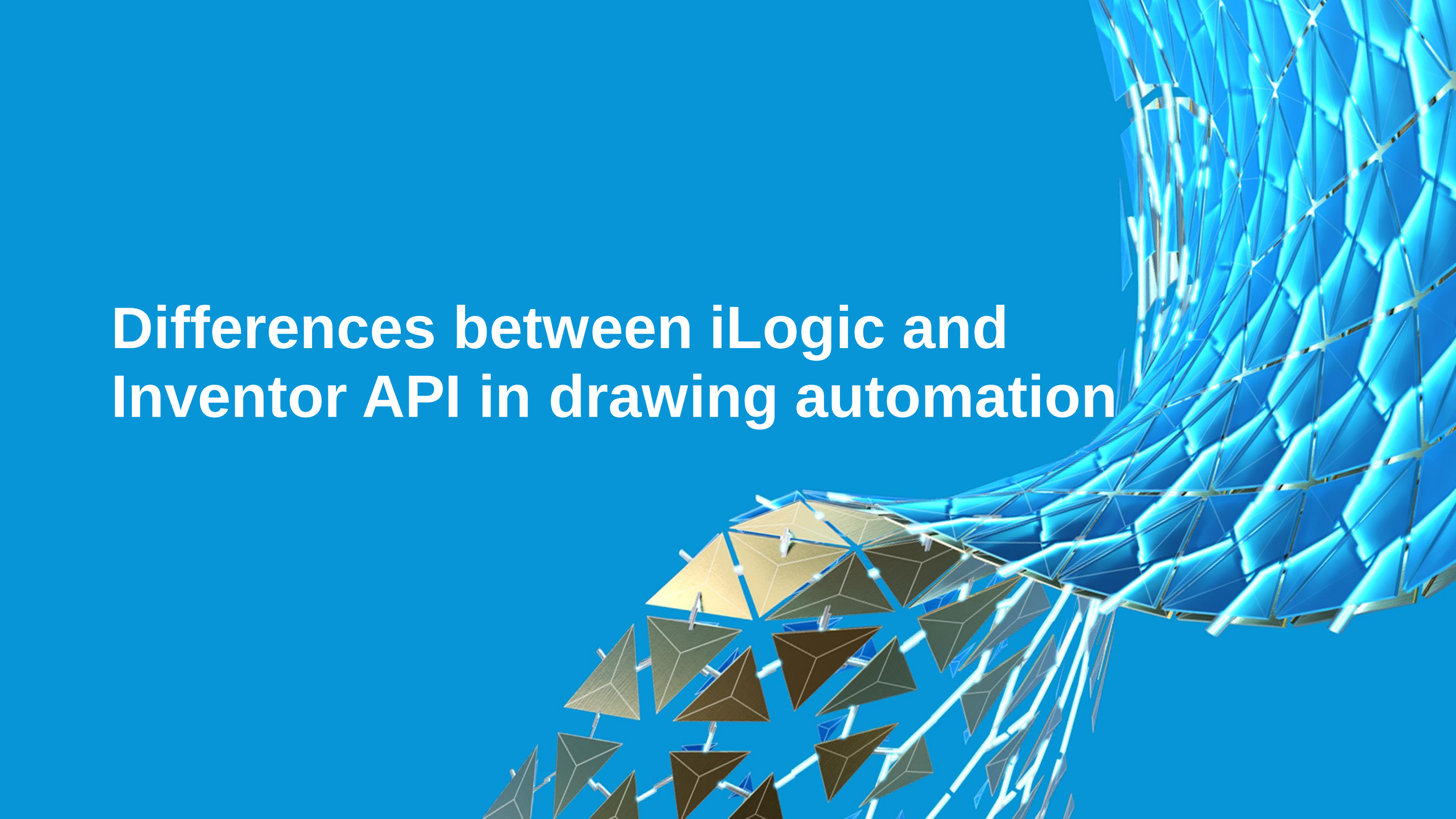
AU Demo3: Automating annotations with new iLogic snippets
https://autode.sk/3krVY1q

AU Demo4: Understanding the wireframe model
https://autode.sk/37yRWAA

AU Demo5: Automating annotations for an assembly
https://autode.sk/2FXMrjO



Differences between iLogic and Inventor API in drawing automation



Drawing Automation
Differences between iLogic and Inventor API

ILOGIC AND API CAN

Open a drawing

Drawing Setup

- Activate a sheet
- Rename sheets
- Get and change sheet size
- Get sheet dimensions (width and height)
- Change title blocks and borders

Referenced Models

- Get referenced model

API CAN BUT ILOGIC CANNOT

Create a drawing

Drawing Setup

- Create sheets
- Delete sheets

Referenced Models

- Define the referenced model when placing a base view
- Replaced referenced models

Drawing Automation
Differences between iLogic and Inventor API

ILOGIC AND API CAN

Drawing Views

- Position and resize
- Suppress and unsuppress

Annotations (New in 2021!)

- Add general dimensions: linear, angular, radius and diameter
- Add centermarks , centerlines and centered pattern
- Others: holes notes, leader notes and balloons
- Annotations only use attributes and workfeatures

API CAN BUT ILOGIC CANNOT

Drawing Views

- Add
- Delete

Annotations

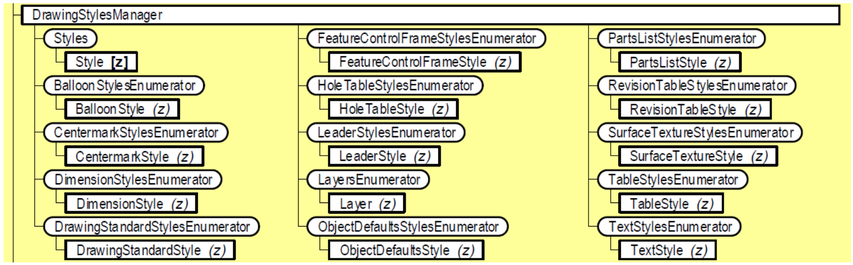
- Use the dimensioning methods: baseline, ordinate and chain
- Add automated centerlines
- Use more methods to add annotations such as retrieve and using points
- Edit annotations (e.g. override a dimension text)

Drawing Automation
Differences between iLogic and Inventor API

API CAN ALSO

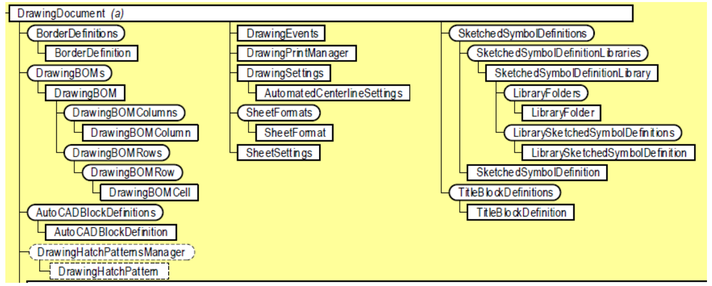
Drawing Standards and Styles

- Create, edit and delete



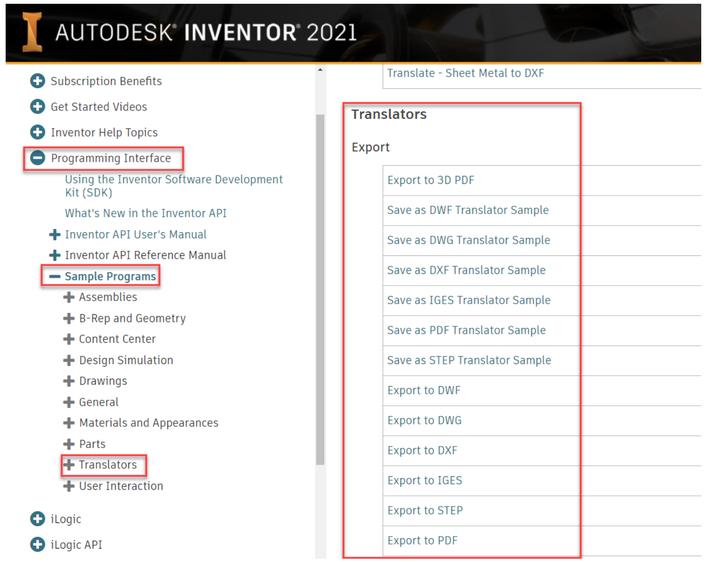
Drawing Resources

- Create, edit and delete



Output

- Print, export and save as PDF, DWG, DXF, etc.



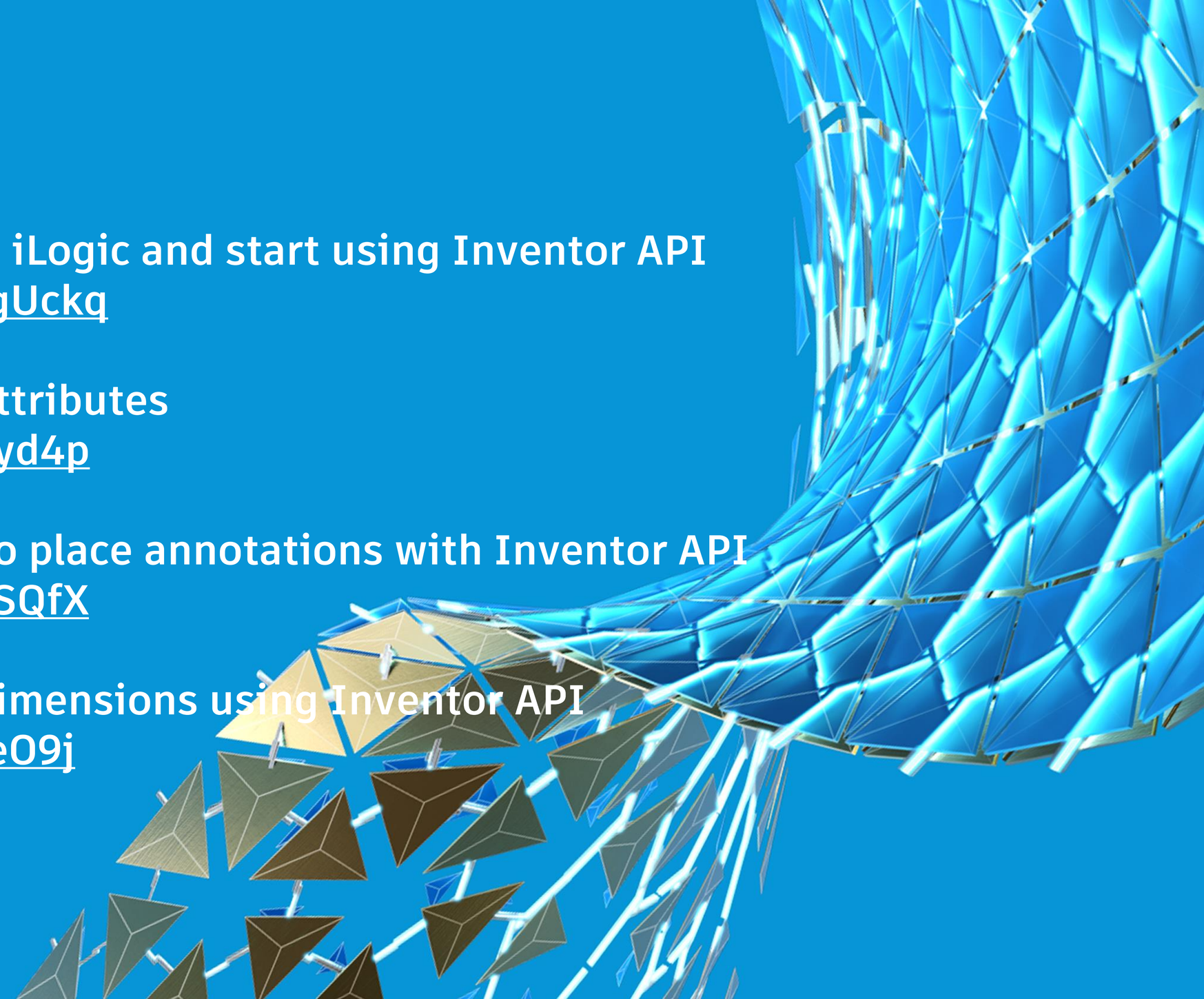
DEMOS

AU Demo6: Go beyond iLogic and start using Inventor API
https://autode.sk/3mgUckq

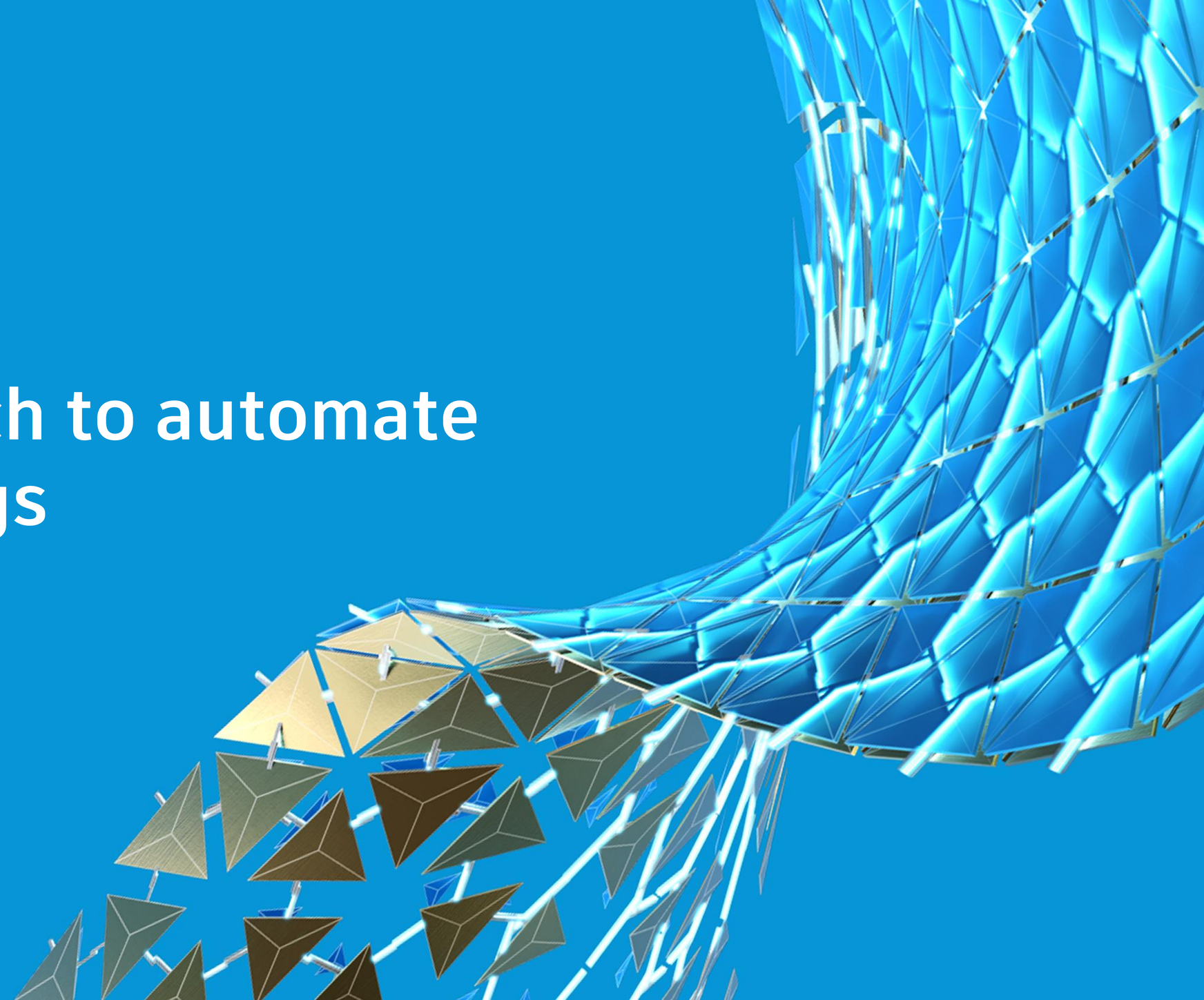
AU Demo7: Creating Attributes
https://autode.sk/37xyd4p

AU Demo8: Methods to place annotations with Inventor API
https://autode.sk/2IXSQfX

AU Demo9: Retrieve dimensions using Inventor API
https://autode.sk/3jkeO9j



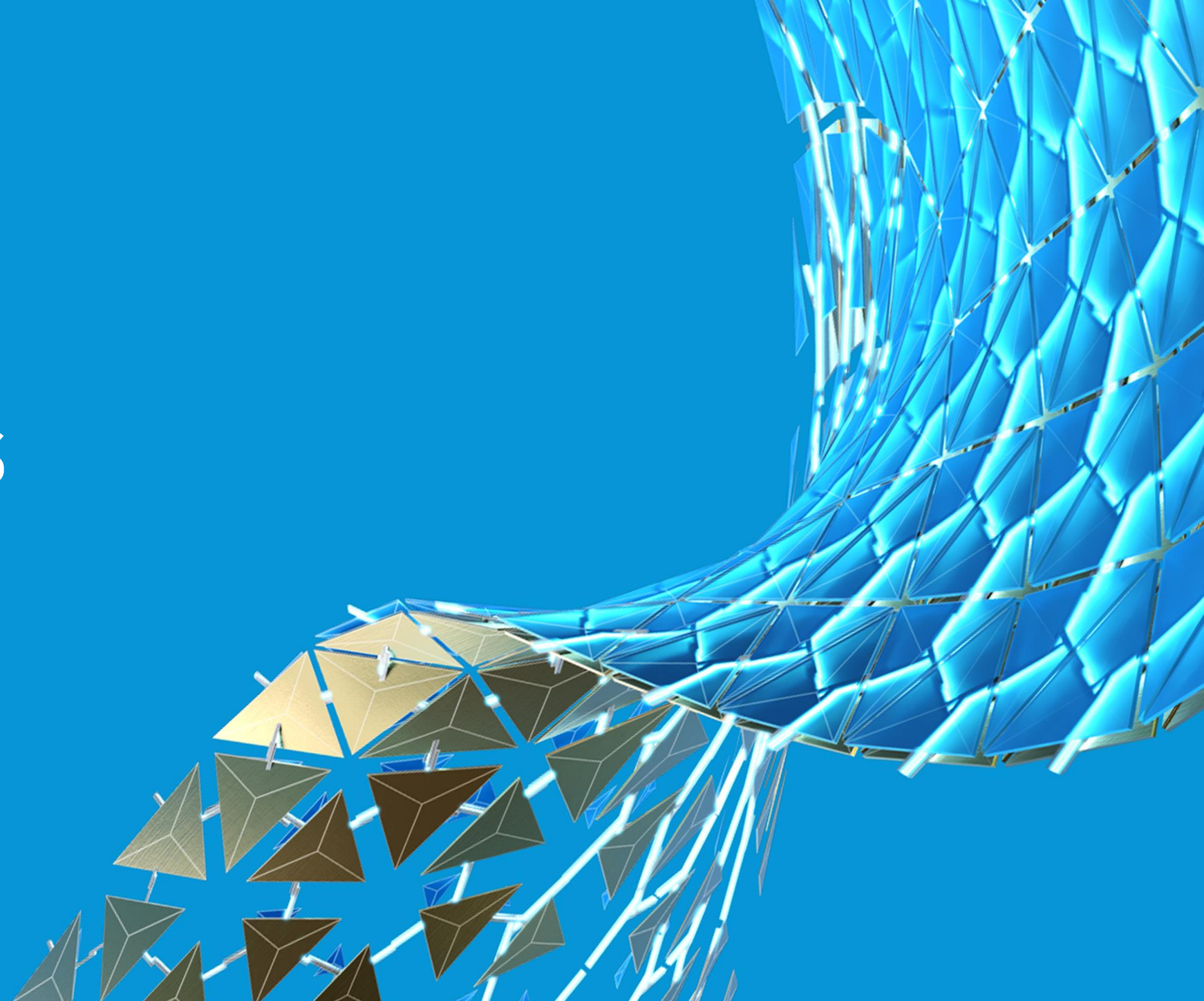
Best approach to automate your drawings



Best approach to automate your drawings

- **Known Designs**
  - Product Catalog and Standard Designs (Configurators)
    - Approval Drawings (Quotes)
    - Manufacturing Drawings
- **Unknown Designs**
  - Customer-Based Designs
  - Design process to create a new product

REAL CASES



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