

THIS SESSION WILL  
BE **RECORDED** AND  
AVAILABLE  
**ON DEMAND**

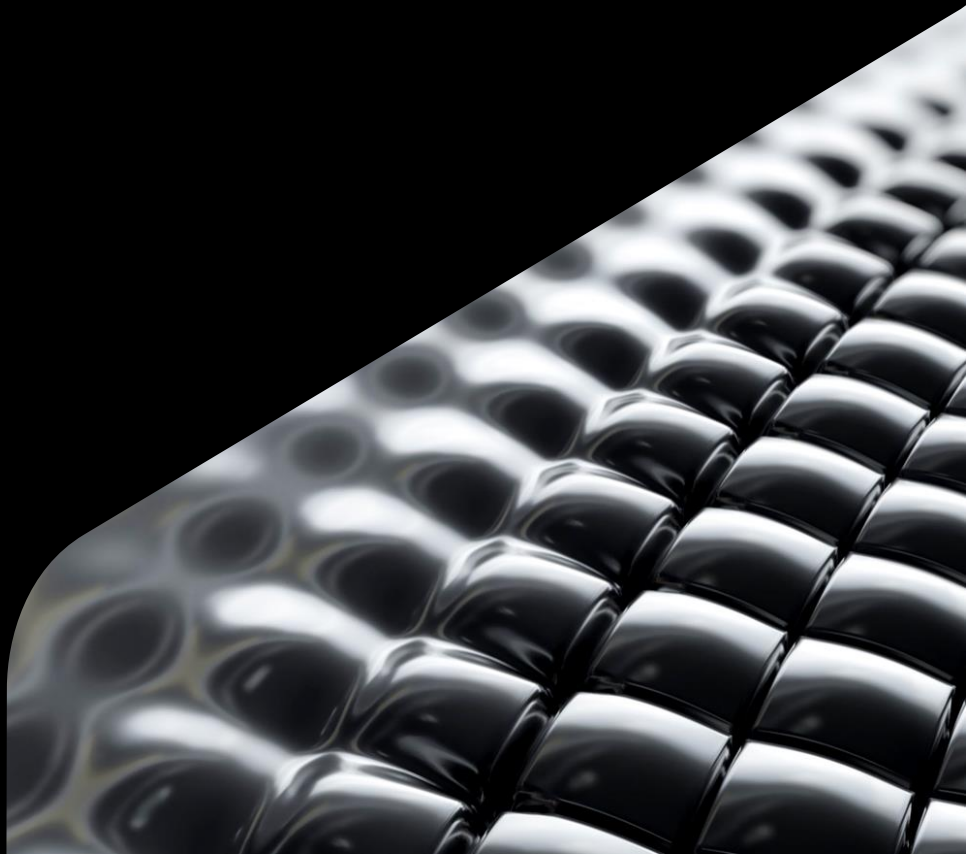


# APS Online Training

Data Models

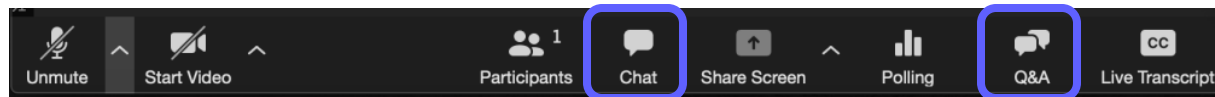
Adam Nagy

Developer Advocate | @AdamTheNagy



# Event format

- 2 days
  - Each day dedicated to a specific Autodesk Data Model
  - Webinars for EMEA and AMER time zones
- During the webinar
  - We code
  - You follow our steps
  - You ask questions
  - We help



**Note: you will find all the recordings here (after the webinars)**

[events.autodesk.com/flow/autodesk/73603/mainevent/page/sessioncatalog](https://events.autodesk.com/flow/autodesk/73603/mainevent/page/sessioncatalog)

# Schedule for the week

Tuesday July 16	Wednesday July 17
MFG Data Model	AEC Data Model



Recording in progress

# Day 1

MFG Data Model

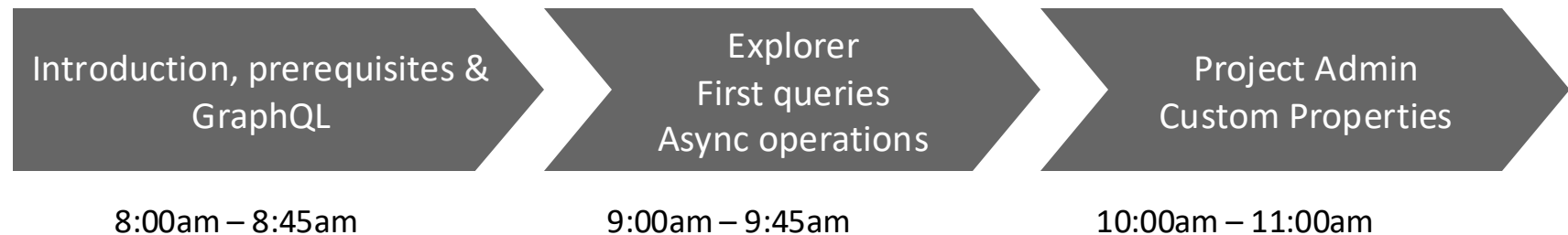
```
1 # Task 1 - Pick Hub
2 query GetHubs {
3   nav {
4     hubs {
5       pagination {
6         cursor
7       }
8       results {
9         name
10        id
11      }
12    }
13  }
14 }
```



Variables Headers

1

# Agenda for today



- Times are in GMT/PST
- Times are approximate; *you* decide how fast we go

# Prerequisites



# Prerequisites

Make sure you have access to ...

- a Fusion Team Hub (Personal Hub is not enough)
- sample Fusion models you can use

# Introduction & GraphQL

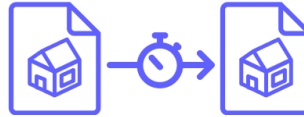
# A Fileless Future

# From Files...



## Big

Files are big, course, and require transformation



## Slow

Sharing and synchronizing files is slow, wasteful, and resource intensive



## Messy

Many versions and derivatives of files is messy to manage

## ...to Granular Data



### Granular

Access just the parts of the data you need, without needing all the data at once



### Interoperable

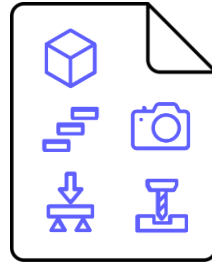
Common formats and data types allow data to be easily consumed



### Accessible

APIs allow users to access up-to-date data without needing the authoring application

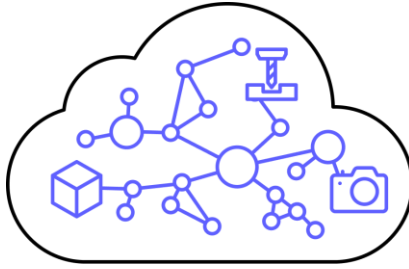
What we mean by “Granular” is...



breaking up files into **valuable bits of data...**

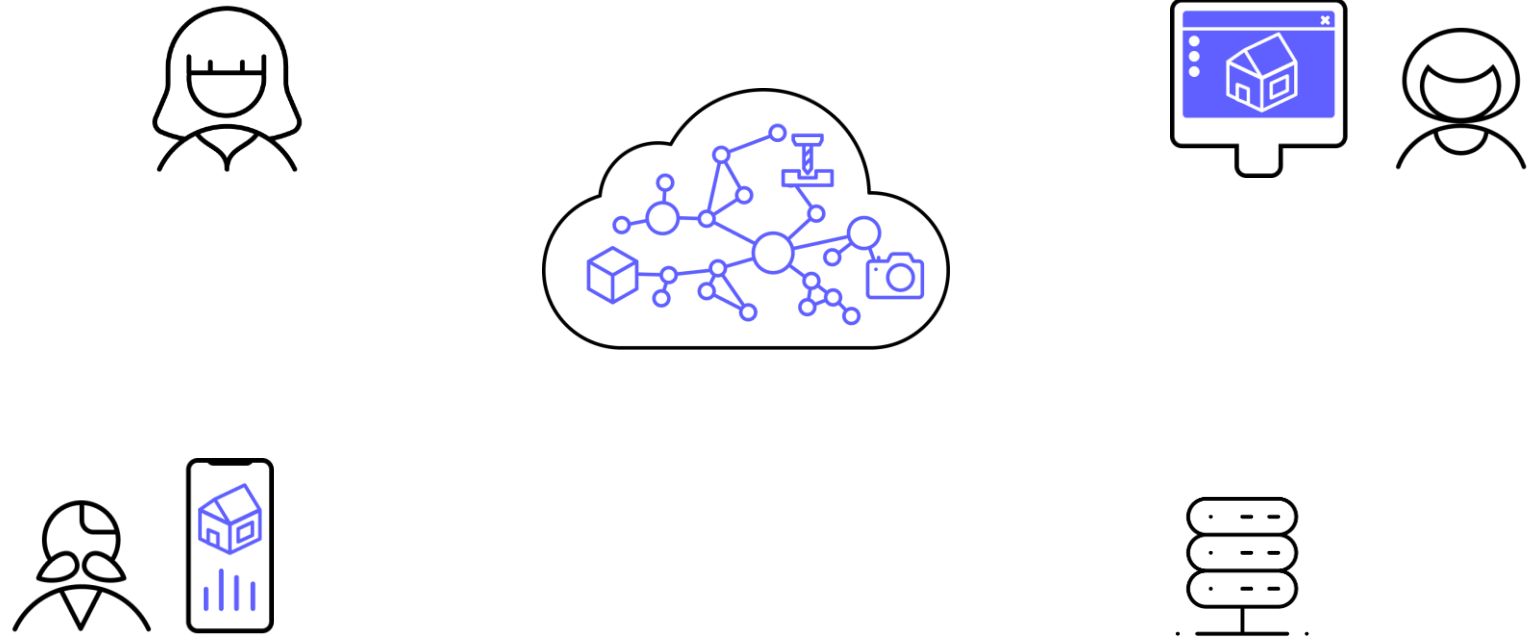


...and storing and managing it **in the cloud**

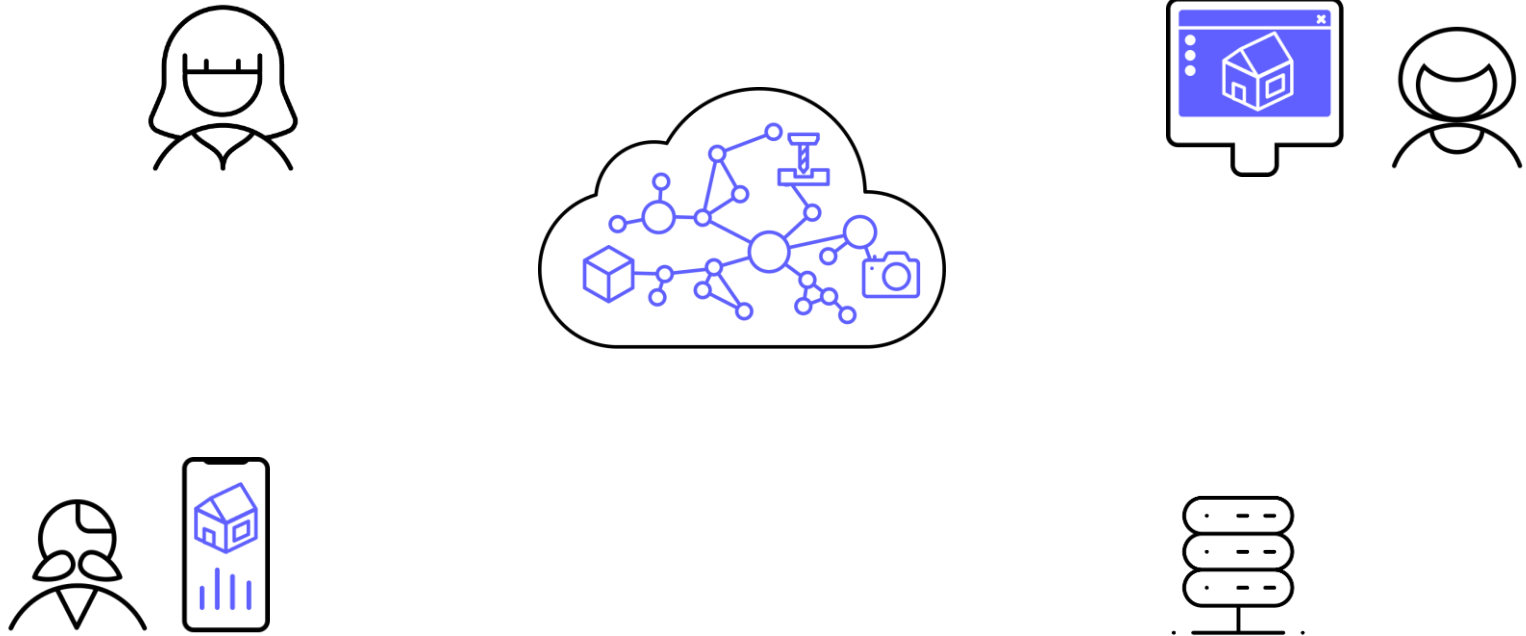




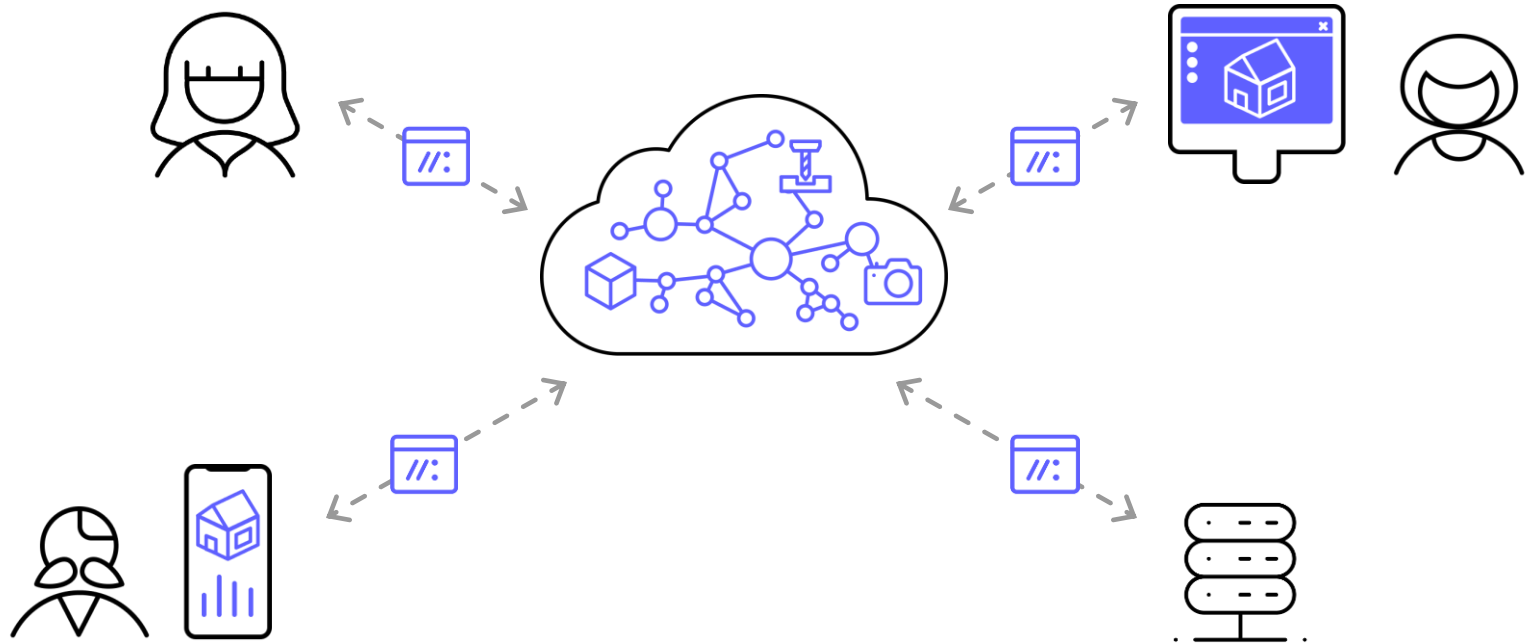
# Allowing people & machines to collaborate efficiently...



...by giving them access to **just the data they need**

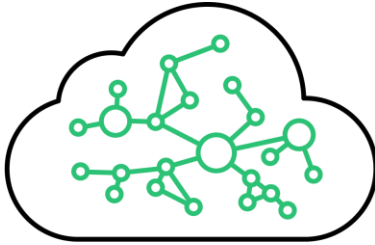


...through simple to use, **granular APIs**.



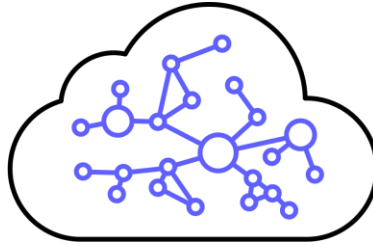
# The Autodesk Data Models

Fusion



Design & Manufacturing

Forma



Architecture, Engineering  
& Construction

Flow

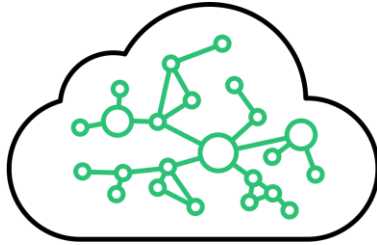


Media & Entertainment

 **AUTODESK** Platform Services

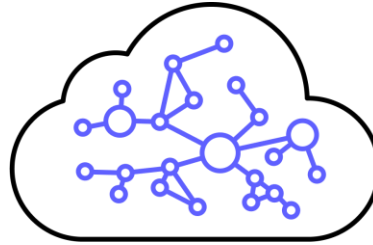
# The Autodesk Data Models

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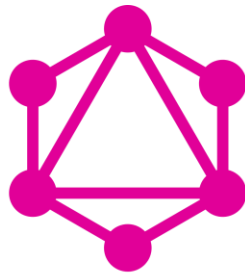


Media & Entertainment

 **AUTODESK** Platform Services

# What is GraphQL?

- A query language for the API
- Provides a complete and understandable description of the data in your API
- Gives you the power to ask for exactly what you need and nothing more
- Much easier to use than REST, but need to have better understanding of the data structures
- Open source project from Meta/Facebook



GraphQL

 **AUTODESK**  
Platform Services

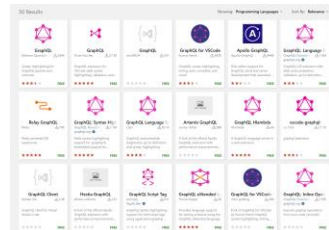
```
{
  hero {
    name
  }
}
```

```
{
  "hero": {
    "name": "Luke Skywalker",
    "height": 1.72,
    "mass": 77
  }
}
```

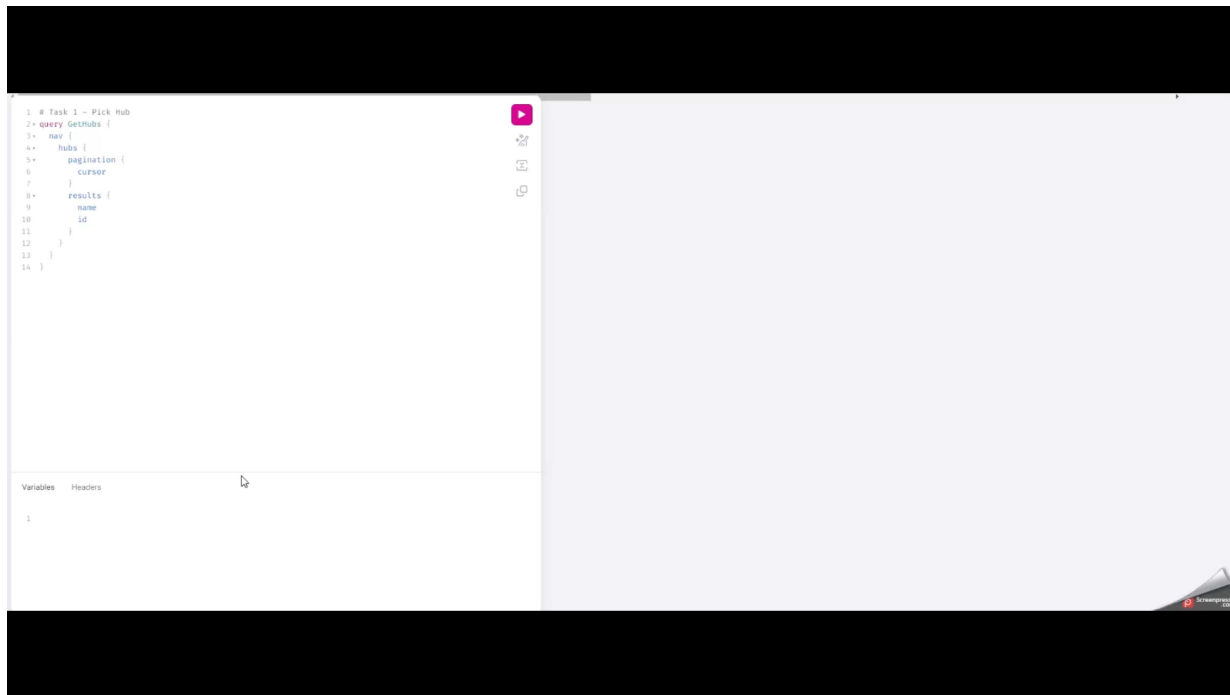
# Developer Tools

- **Query Explorer (GraphQL) :** Try the APIs in an interactive sandbox/playground

## Other GraphQL tools



- **Voyager:** Explore the Data Model's Schema visually using Voyager



<https://mfgdatamodel-explorer.autodesk.io/>

<https://mfgdatamodel-explorer.autodesk.io/voyager>

# Explorer & first queries




# Explorer & first queries



1. Introduction to the explorer
2. Understanding the MFG Data Model Schema
3. Check GraphQL Voyager
4. Run first queries

# Manufacturing Data Model API


## Developer Tools: Explorer

 **AUTODESK**  
Platform Services

MFG Data Model Explorer

 < Docs  K

Query



The entry-point for Autodesk CIM queries. This acts as the top-level API from which all queries must start.

Fields

**mfg: MFGQueries!**

Queries related to Product design & Manufacturing data

**elementGroupAtTip**(elementGroupId: ID!):  
**ElementGroup**

Retrieves latest elementGroup data based on given ID.  
@param {ID} elementGroupId - The ID of the elementGroup.

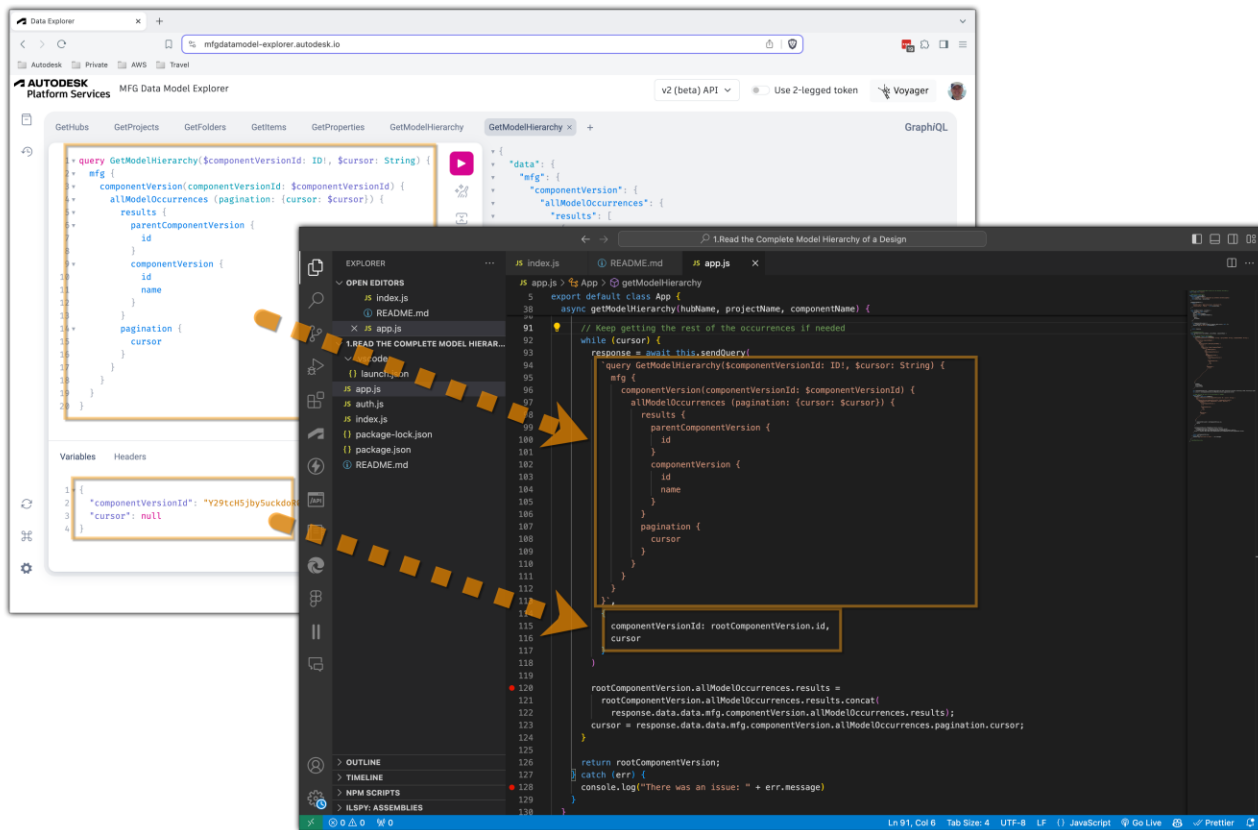
**elementGroupByVersionNumber**(  
elementGroupId: ID!  
versionNumber: Int!  
): **ElementGroup**

```
1 query GetModelHierarchy($componentVersionId: ID!,  
2 mfg {  
3   componentVersion(componentVersionId: $compone  
4     allModelOccurrences (pagination: {cursor: $  
5     results {  
6       parentComponentVersion {  
7         id  
8         name  
9       }  
10      componentVersion {  
11        manage  
12      }  
13      thumbnail  
14    }  
15    pagination {  
16      cursor  
17      partNumber  
18    }  
19    __typename  
20  }  
21 }
```

```
componentVersion {  
  The version of the component of which this is an  
  occurrence of.  
  pagination {  
    cursor  
  }  
}
```

# Manufacturing Data Model API

## Developer Tools: Explorer



# Async operations

# Async operations

1. Thumbnail
2. Export Geometry
3. Physical Properties

# Project administration

# Project administration

1. Add users to hub
2. Create projects
3. Add users to projects

# Custom properties



# Custom properties

1. Author custom property definitions and collections
2. Link collections to hubs
3. Use custom properties

# Almost Done!

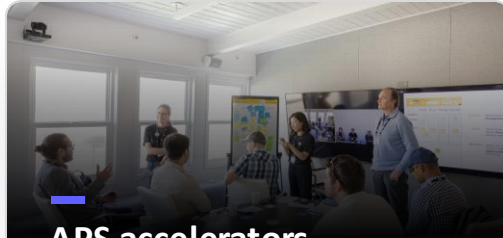
# Need more help?

- Stack Overflow
  - [autodesk-platform-services](#)
  - [autodesk-viewer](#)
  - [autodesk-data-management](#)
  - [autodesk-model-derivative](#)
  - [autodesk-designautomation](#)
- APS developer portal
  - [Support > Get Help](#)



**Take your APS skills to  
the next level**

# Find us here



## APS accelerators

A free **technical support event for software developers** working with Autodesk Platform Services.

- Online – **next week!**
- Barcelona – September 23-27
- Atlanta – December 9-13 (*to go live soon*)

[aps.autodesk.com/accelerator-program](https://aps.autodesk.com/accelerator-program)



## AU 2024

**The Design & Make Conference**

San Diego, October 15-17

- APS Keynotes
- 50+ APS sessions
- Community meetups
- APS booth at the Expo

[autodesk.com/autodesk-university](https://autodesk.com/autodesk-university)



## Support calls

**1-1 online meetings** with APS experts through Calendly

[calendly.com/autodesk-platform-services](https://calendly.com/autodesk-platform-services)

## Follow APS News



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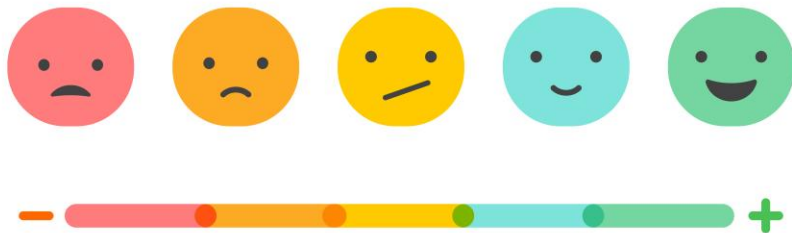
Newsletter

[aps.autodesk.com/#newsletter](https://aps.autodesk.com/#newsletter)

# After the event

- Expect an email with
  - Links to session recordings on YouTube
  - Links to slides used during sessions
- Want to take your newly acquired skills to the next level?
  - Accelerators: <https://aps.autodesk.com/accelerator-program>
  - Lightning Talks: <https://aps.autodesk.com/lightning-talks>
  - Blog: <https://aps.autodesk.com/blog>

# Please participate in our feedback poll





A close-up photograph of a car's exterior, focusing on the chrome trim and body panel. The chrome trim is highly reflective and polished, showing clear reflections of the surrounding environment. The body panel is a light color, possibly silver or white, and has a smooth, curved surface. The background is a plain, light color.

**Thank you!**

