



Forge Data Days

Tokyo – 29 July 2022

Takehiro Kato, Developer Advocate



Fusion Data API

Takehiro Kato
Developer Advocate

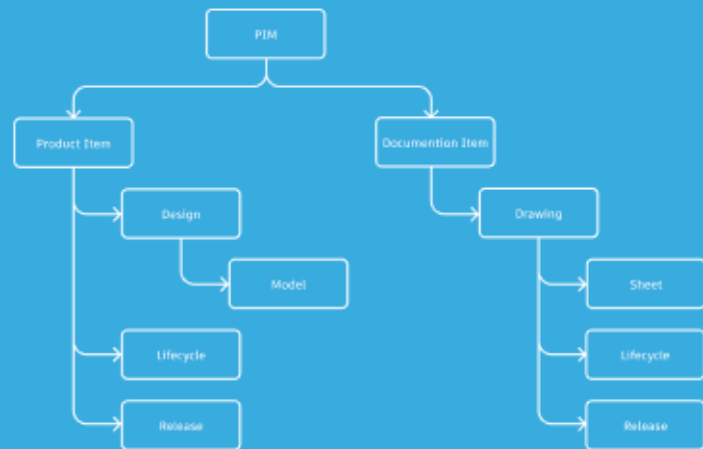
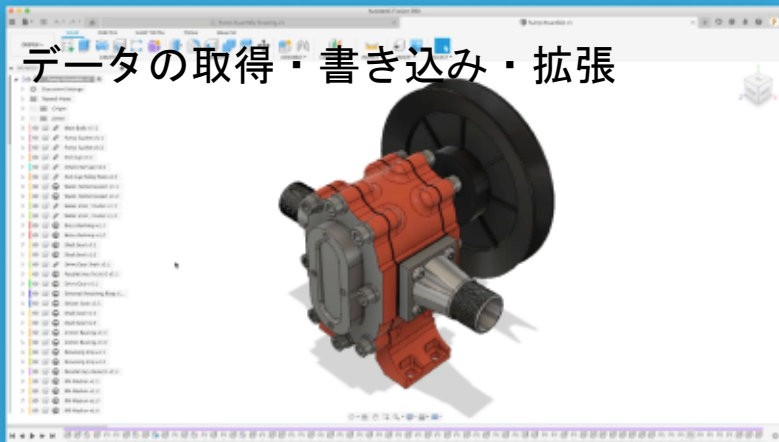
Fusion Data API

概要

クラウド上の製造設計データ

- 粒状化データ
- 容易なアクセス

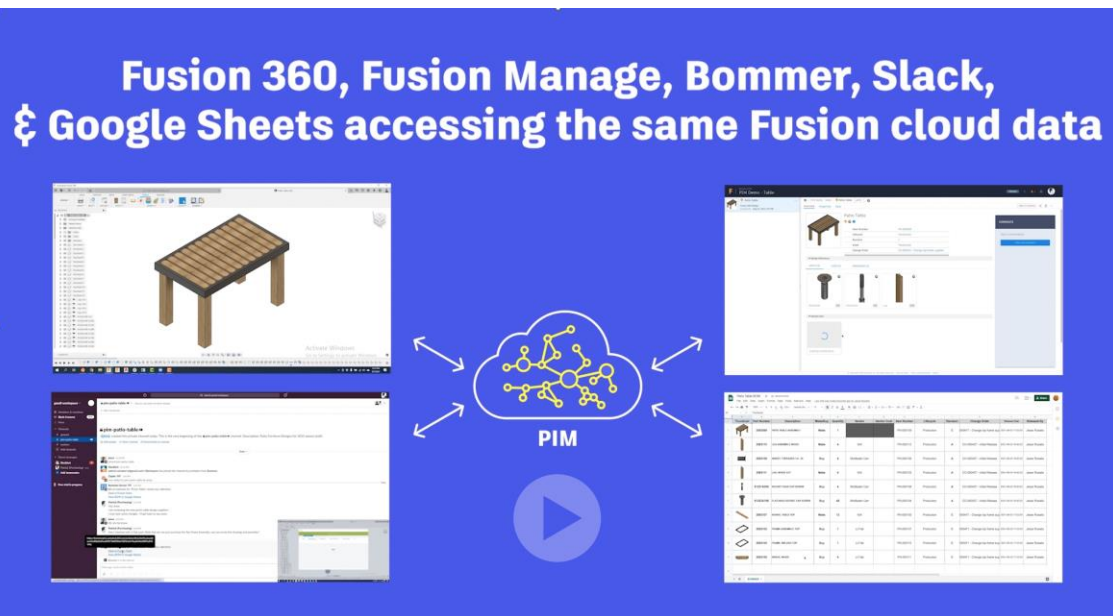
- データの取得・書き込み・拡張



Fusion Data API



概要

クラウド上の製造設計データ信頼できる情報源



Fusion Data API

機能

- Data Management API access (hubs/projects/folders/files/versions) 
- モデルプロパティ
- モデルの階層
- ライフサイクルプロパティ 
- サムネイル画像 (内部コンポーネントを含む)
- イベント (webhooksのような)

PROPERTIES

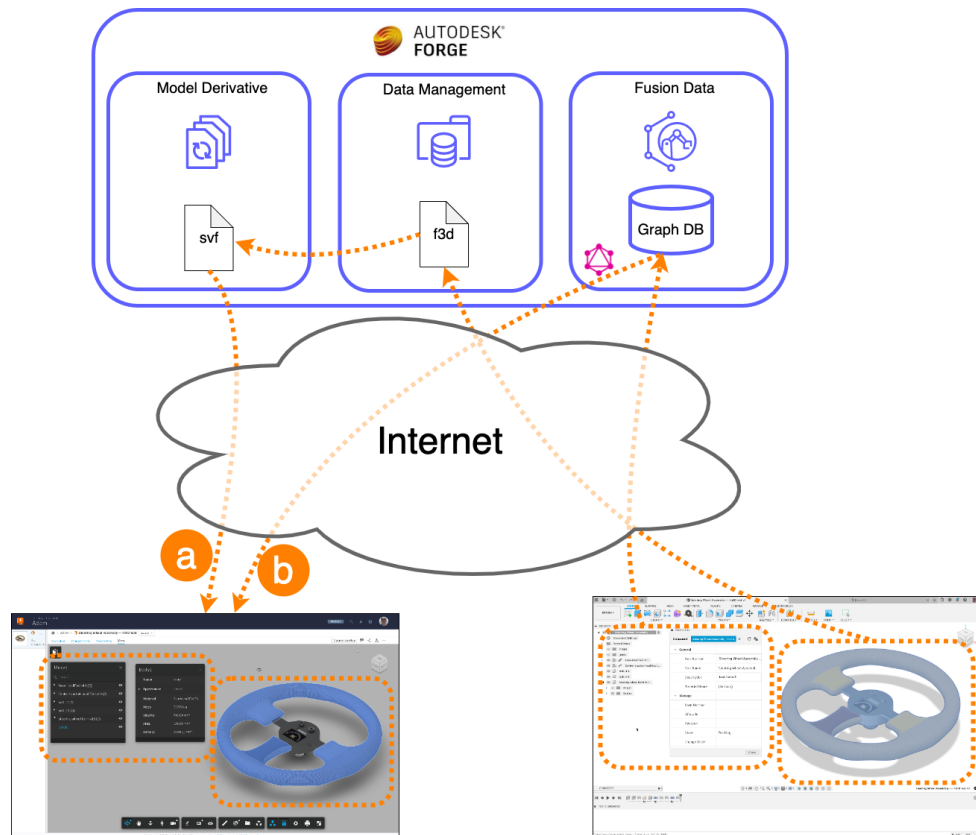
Component: Steering Wheel Assembly -- FoFD | x ↺ 🖨

▼ General	
Part Number	Steering Wheel Assembly ...
Part Name	Steering Wheel Assembl...
Description	New description
Material Name	(Various)
▼ Manage	
Item Number	PN-000083
Lifecycle	Unreleased
Revision	
State	Working
Change Order	

Close

Fusion Data API

ワークフロー



Fusion Data API

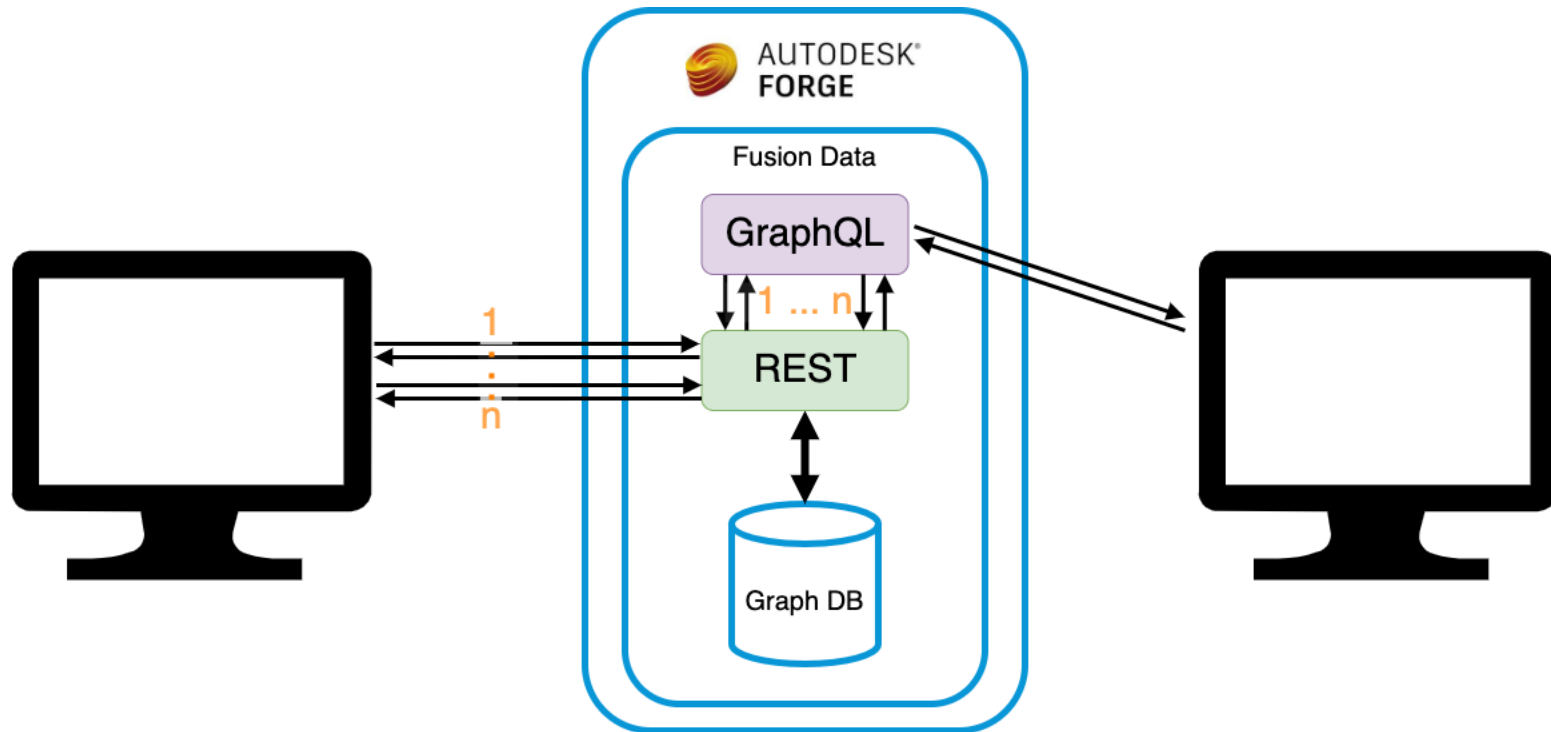
ワークフロー

The screenshot displays the Autodesk Fusion 360 Data API GraphQL Demo web application. The interface is divided into several sections:

- Header:** Features the Autodesk logo, the title "FUSION 360 DATA API GRAPHQL DEMO", and a user profile for "ADAM".
- Left Sidebar (ADAM NAGY'S HUBS):** A tree view showing a hierarchy of hubs and projects. The "Adam" hub is selected, showing sub-items like "Box | Box", "Steering Wheel Assembly -- FoFD test | Steering Wheel Assembly", "Center-bracket-modified | Center-bracket-modified", "Steering wheel form v1 | Steering wheel form", "both-1 | both-1", and "both-2 | both-2".
- Query Editor:** The central area for writing and executing GraphQL queries. It includes tabs for "History", "Query", "Merge", "Copy", and "History". A "Docs" link is also present.
- Query History:** A list of recent queries, each with a timestamp and a brief description of the query's content.
- Query Variables:** A section for defining variables used in the query, such as "projectId" and "componentId".
- Query Results:** The output of the executed query, displayed as a JSON object. The results show a list of components, including "Steering Wheel Assembly -- FoFD test" and "Center-bracket-modified", with their respective IDs, names, and descriptions.

Fusion Data API

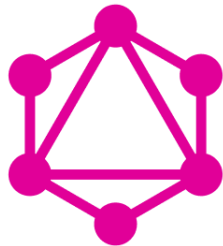
GraphQL API



Fusion Data API

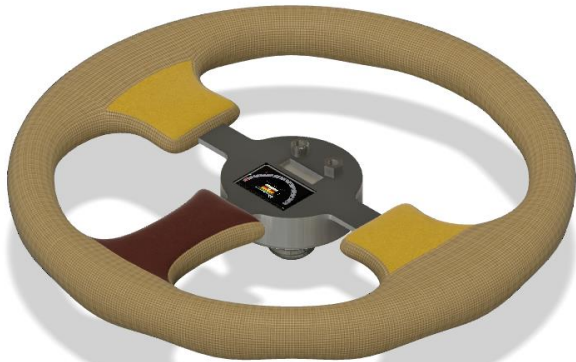
REST vs GraphQL

- 少ないAPI呼び出し
- 複数のクエリを、1回のAPIの呼び出しに集約
- 必要なデータのみを取得



GraphQL

GraphQL API



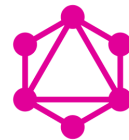
Fusion Data API

REST vs GraphQL - 少ないAPI呼び出し



1 x /project/v1/hubs

n x /project/v1/hubs/:hub_id/projects

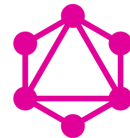


GraphQL

```
{
  hubs {
    results {
      id
      name
      projects {
        results {
          name
        }
      }
    }
  }
}
```

Fusion Data API

REST vs GraphQL -複数のクエリーを、1回のAPIの呼び出しに集約



GraphQL

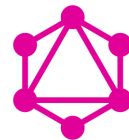


n x /project/v1/hubs/:hub_id/projects

```
query {  
  _1: hubs (filter: {name: "Fusion Data"}) {  
    results {  
      projects {  
        results {  
          name  
        }  
      }  
    }  
  },  
  _2: hubs (filter: {name: "My Hub"}) {  
    results {  
      projects {  
        results {  
          name  
        }  
      }  
    }  
  }  
}
```

Fusion Data API

REST vs GraphQL - 必要なデータのみを取得



GraphQL

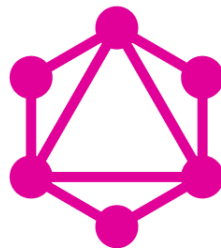


```
{
  "type": "hubs",
  "id": "a.cGVyc29uYWw6dWUyOWM4YjZi",
  "attributes": {
    "name": "Adam Nagy"
  },
  "extension": {
    "type": "hubs:autodesk.a360:PersonalHub",
    "version": "1.0",
    "schema": {
      "href": "https://developer.api.autodesk.com/schema/v1/versions/hubs:autodesk.a360:PersonalHub-1.0"
    },
    "data": {}
  },
  "region": "US"
},
"links": {
  "self": {
    "href": "https://developer.api.autodesk.com/project/v1/hubs/a.cGVyc29uYWw6dWUyOWM4YjZi"
  }
},
"relationships": {
  "projects": {
    "links": {
      "related": {
        "href": "https://developer.api.autodesk.com/project/v1/hubs/a.cGVyc29uYWw6dWUyOWM4YjZi/projects"
      }
    }
  }
}
},
},
}
```

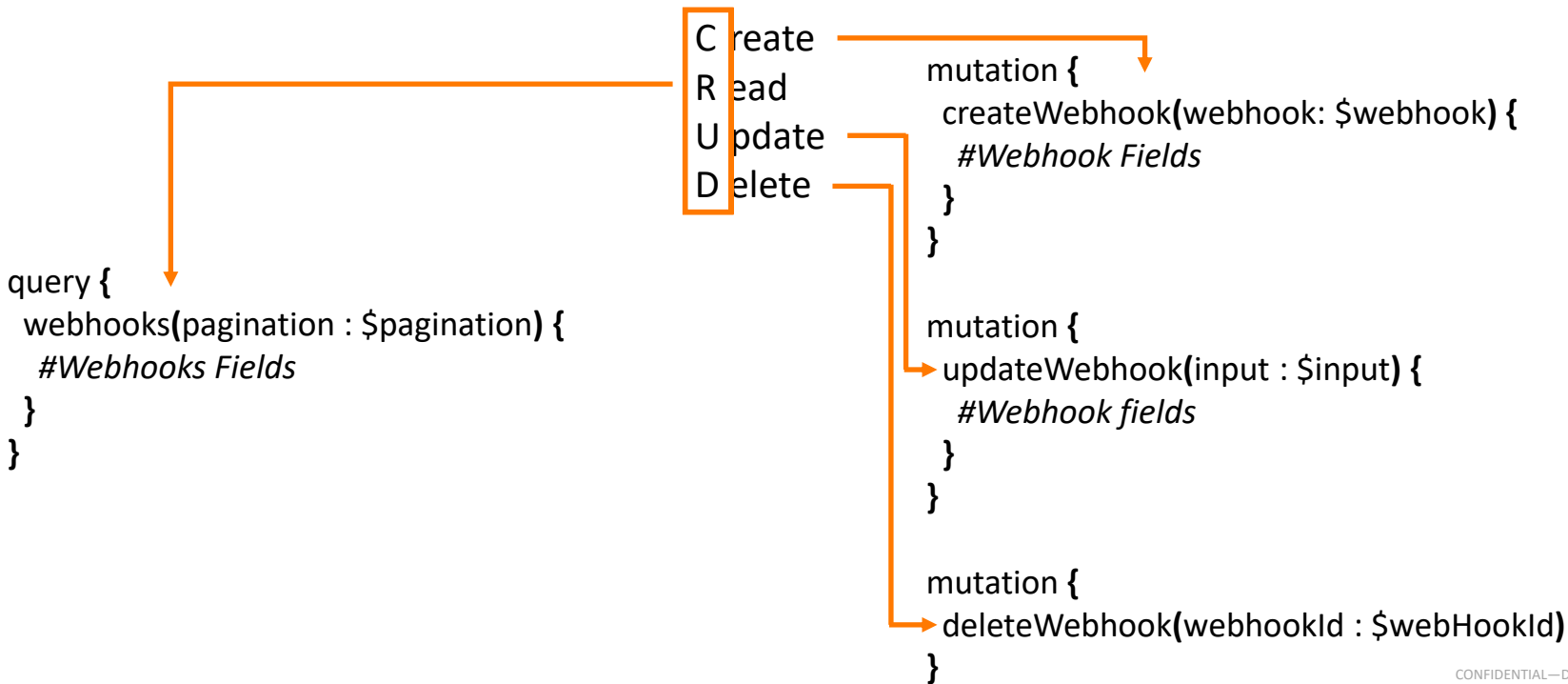
```
{
  "data": {
    "hubs": {
      "results": [
        {
          "name": "Adam Nagy"
        },
        {
          "name": "WW AC Repository"
        },
        {
          "name": "Test Hub"
        },
        // etc
      ]
    }
  }
}
```

Fusion Data API

CRUD



GraphQL



Fusion Data API

ドキュメント

https://forge.autodesk.com/en/docs/fusiondata/v1/developers_guide/

<https://graphql.org/>



Describe your data

```
type Project {  
  name: String  
  tagline: String  
  contributors: [User]  
}
```

Ask for what you want

```
{  
  project(name: "GraphQL") {  
    tagline  
  }  
}
```

Get predictable results

```
{  
  "project": {  
    "tagline": "A query language for APIs"  
  }  
}
```

Fusion Data API

サンプル

https://github.com/Autodesk-Forge/FusionData_Workflows

The screenshot shows the GitHub repository page for `FusionData_Workflows` by `Autodesk-Forge`. The repository is a `README.md` file. The main content of the README is titled "Fusion Data Workflows" and includes a list of workflows. The right sidebar shows repository statistics: 0 packages published, 2 contributors (adamenagy and towhidf), and a language distribution of 94.3% JavaScript and 5.7% HTML.

README.md

Fusion Data Workflows

platform windows | osx | linux license mit

Forge API: oAuth2 v2 Fusion Data v1 Forge Data Events v1

This repository contains several samples illustrating use of Fusion Data API in context of various workflows:

1. Read the Complete Model Hierarchy of a Design
 - based on the **path to a model** (hub name, project name and file name) you can get the full model hierarchy - similar to what is shown inside **Fusion 360**.
2. Know when a Milestone is Available
 - subscribe to the `milestone.created` event of a specific model in order to be notified when a milestone is created for a given version of it.
3. Find the Thumbnail of a specific Part
 - based on the **path to a model** (hub name, project name and file name) you

Packages

No packages published
[Publish your first package](#)

Contributors 2

- adamenagy Adam E Nagy
- towhidf

Languages

JavaScript 94.3% HTML 5.7%

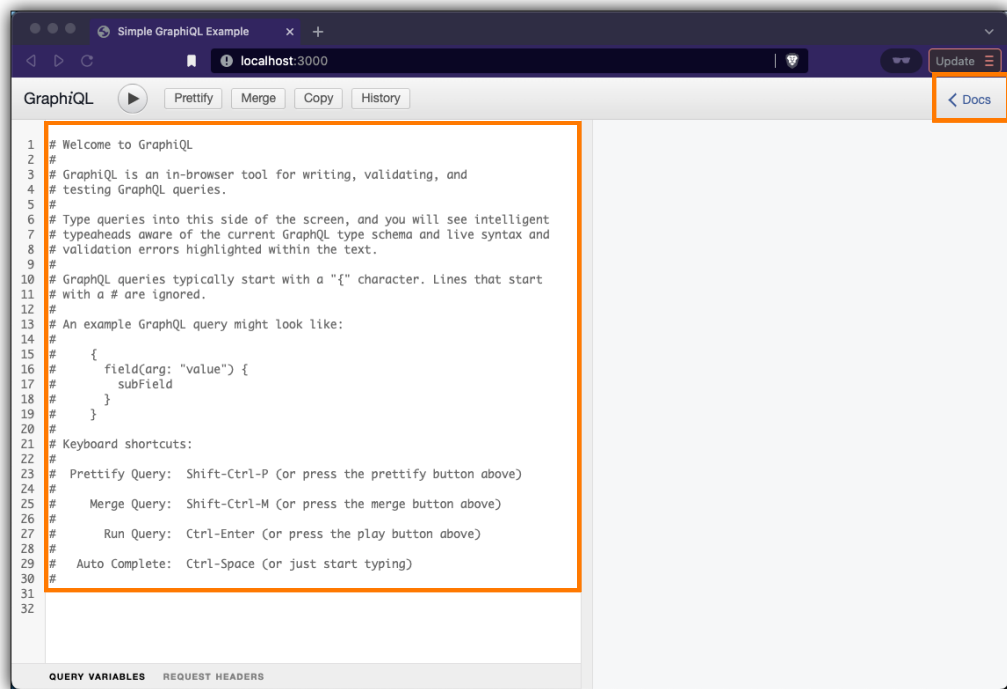
Fusion Data API

サンプル-サムネイル画像の取得

Fusion Data API

サンプル - Fusion Data Explorer

https://github.com/Autodesk-Forge/FusionData_Workflows/tree/main/Fusion%20Data%20Explorer



Fusion Data API

ユーティリティ

<https://pim-graph-client.herokuapp.com/>

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- Left Sidebar (ADAM NAGY'S HUBS):** A tree view of the user's hubs. The "Test project" hub is selected and highlighted in blue. Other hubs include Adam Nagy, Beca, Bommer PIM, Adam, Assets, Bommer Demos, Bommer Tests, Default Project, PIM Demo - Table, L2-Forge-Data-Team, Leon Martin, Manufacturing 360 Events, Neville Johnson, and SES.
- Main Content Area:** Contains a "History" table on the left, a "GraphQL" editor in the center, and a "Documentation Expl..." panel on the right.
 - History Table:** Lists various entities like Hubs, Project, ComponentVersion, and Test project.
 - GraphQL Editor:** Shows a query for "Hubs" with variables for "id" and "name". The query is:

```
query Hubs {
  hubs {
    results {
      id
      name
    }
  }
}
```

 Below the query editor is a section for "QUERY VARIABLES" and "REQUEST HEADERS".
 - Documentation Panel:** Provides information about the GraphQL schema, including root types and query/mutation examples.

Fusion Data API

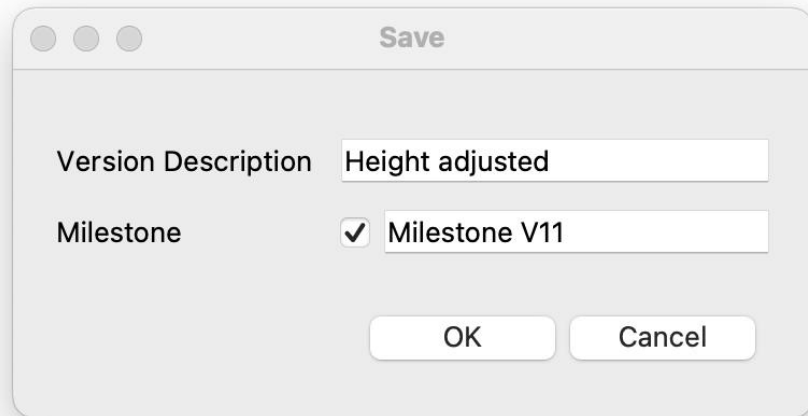
Utilities

Fusion Data API

イベント

MILESTONE_CREATED

```
mutation {  
  createWebhook(webhook: {  
    componentId: $componentId,  
    eventType: 'MILESTONE_CREATED',  
    callbackURL: $callbackURL,  
    expiresOn: "2022-10-12T07:20:50.52Z",  
    secretToken: "12345678901234567890123456789012"  
  }) {  
    id  
  }  
}
```




Save

Version Description Height adjusted

Milestone ☒ Milestone V11

OK Cancel



 **Webhooks**

Subscribe to and receive notifications of the occurrence of events within the Forge eco system.

[API Reference](#)

