



モデルプロパティAPI

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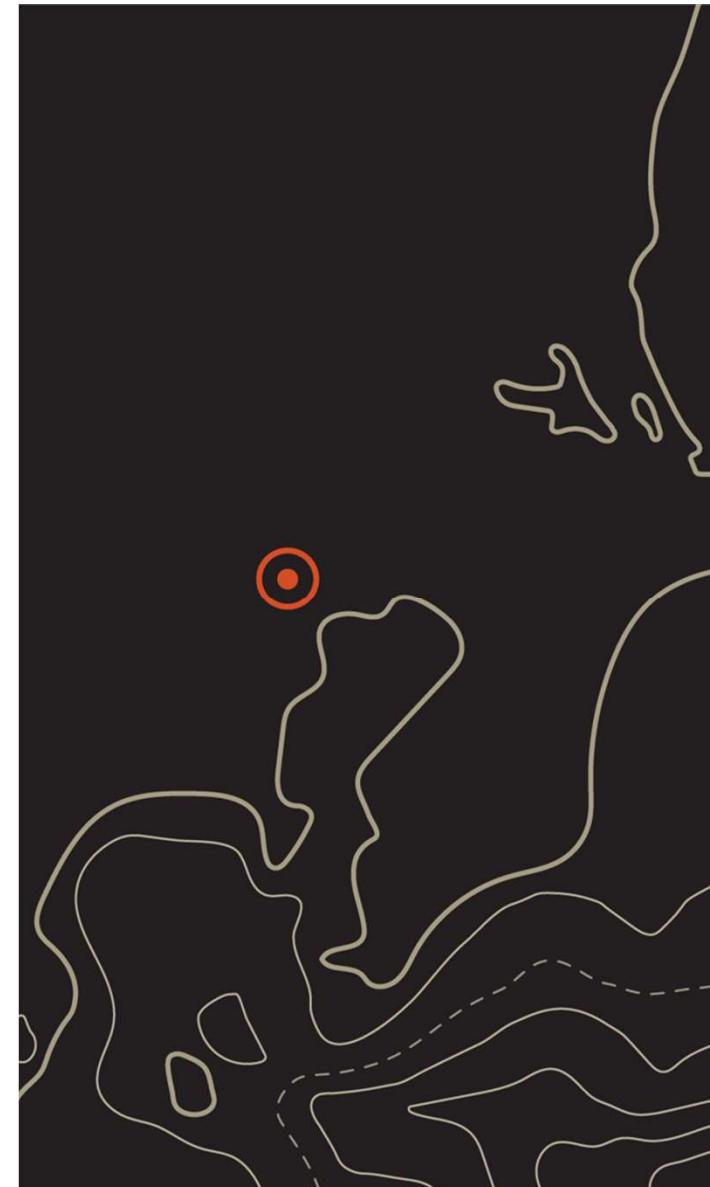
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注意：すべてのオートデスクのコンテンツは所有権で保護されています。許可なくコピー、投稿、配布しないでください。

Agenda

- 1 モデルプロパティAPI
- 2 サンプル アプリケーション
- 3 モデルプロパティAPIの仕組みは?
- 4 デベロッパリソース
- 5 次のステップ:
モデルアグリゲーション（集約）API





モデルプロパティ API



Design Data File/デザインデータファイル

ライフサイクル

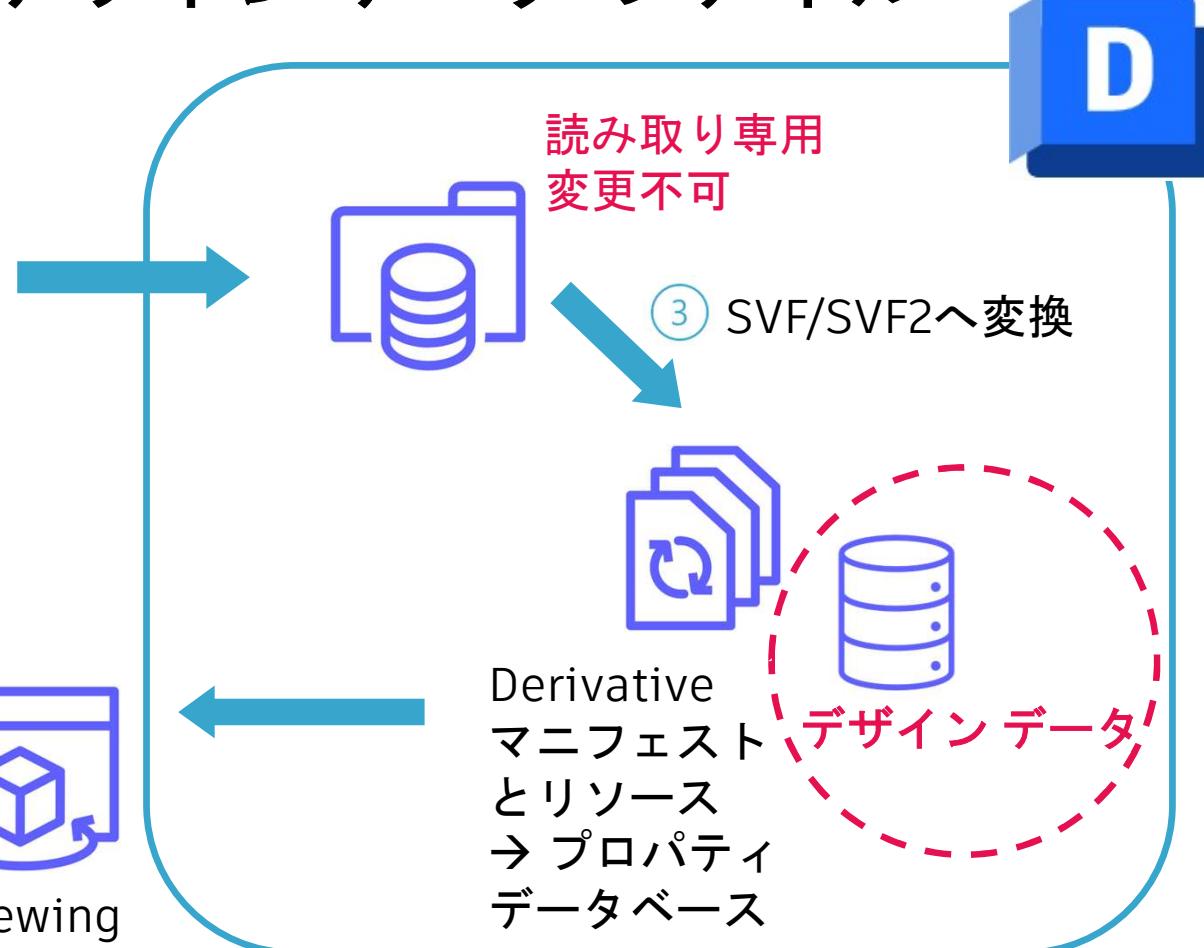
- ① デザインの作成
- ② Web UI、デスクトップコネクタ、または API 経由でアップロード



- ⑤ デザインの変更
→ 新しいファイルバージョン

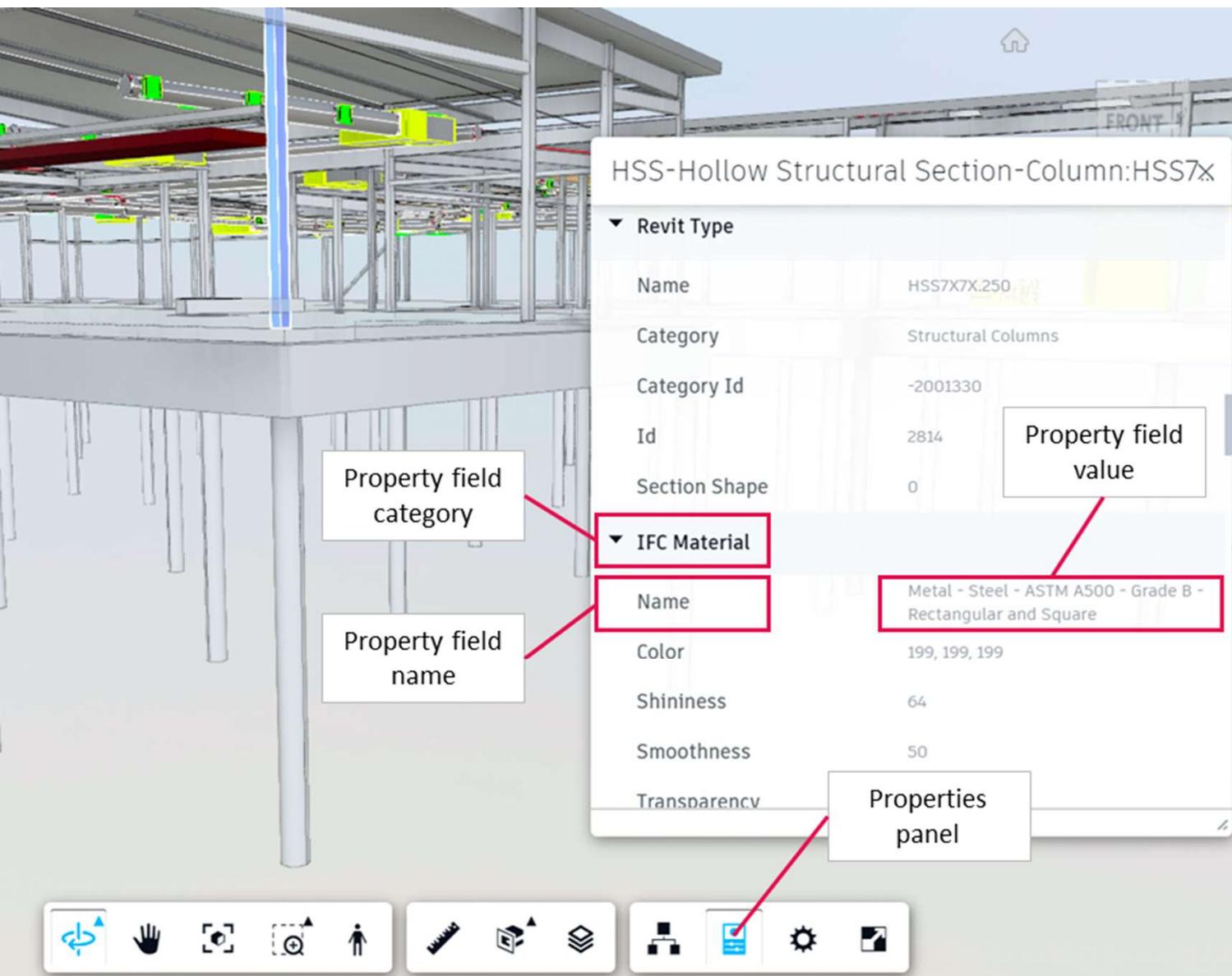


- ④ Viewing



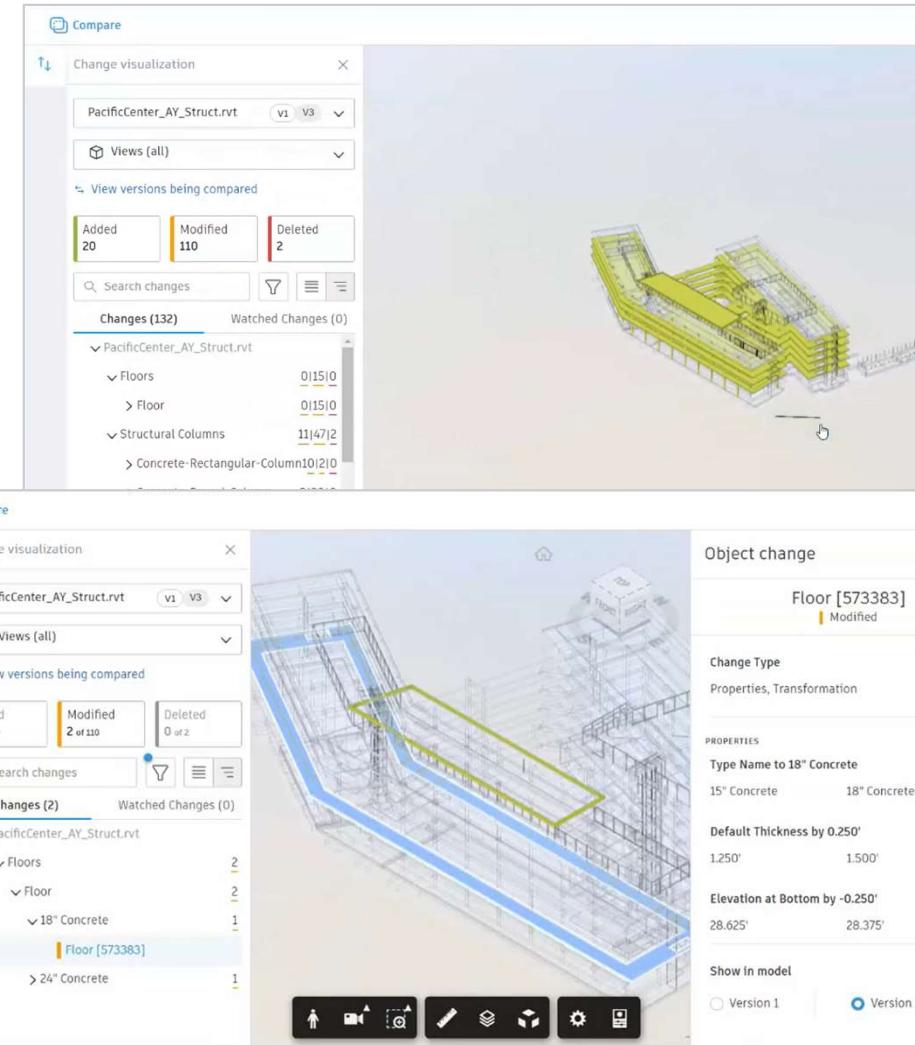
(BIM) SVF2 モデル プロパティ の分類

- カテゴリー
- 名前
- タイプ (例, string, double)
- (オプショナル)
測定単位/Unit of Measure



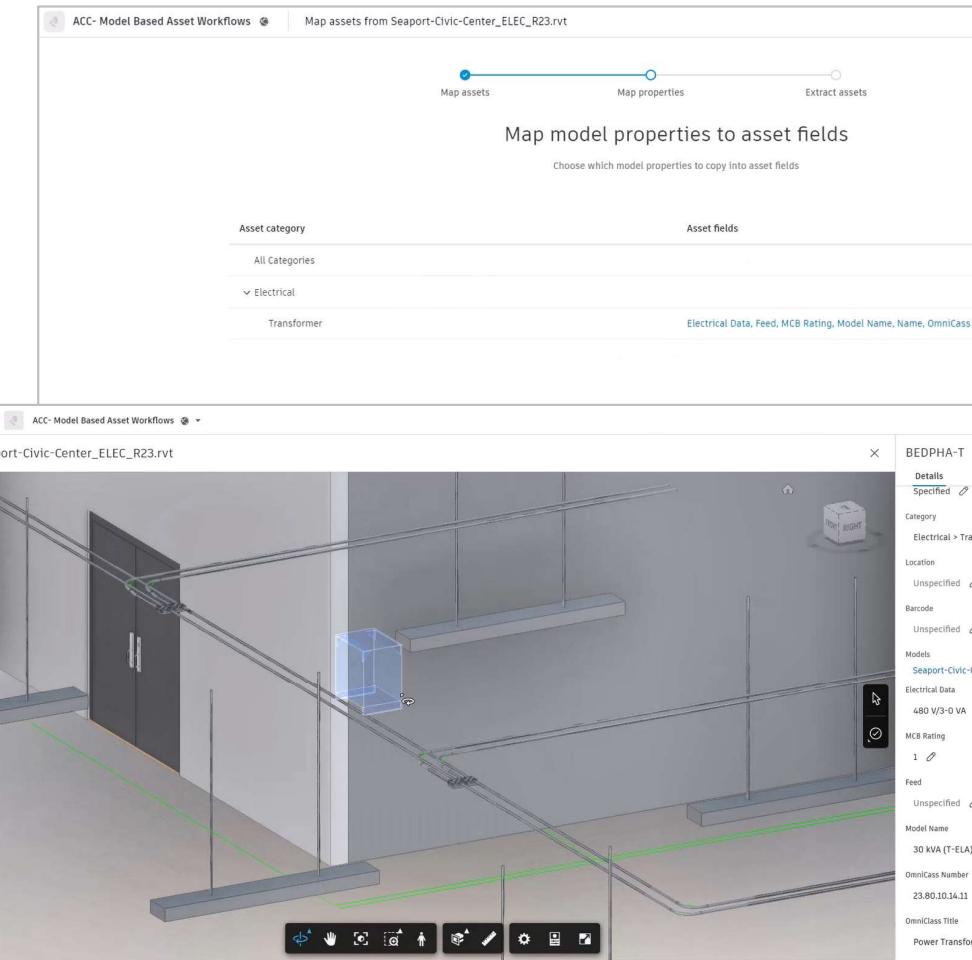
モデルプロパティ API

- リリース 2022年2月
- Autodesk/BIM 360 Docs ベースの製品。US と EMEA
- Derivative サービスの PropertyDb に基づいて構築 (SVF トランスレーション)
 - Index** (ベース) - クエリ、svf2 オブジェクトプロパティのフィルター + その他 (ビューアブルの bbox)
 - Diff** - Index + 2つのバージョンを比較
- 製品で使用
 - Design Collaboration - 変更の表示分析/change analysis
 - Model Coordination
 - モデル プロパティの内訳/breakdown
 - ビューをDocsにパブリッシュ
 - Assets - モデルベースのワークフロー



モデルプロパティ API

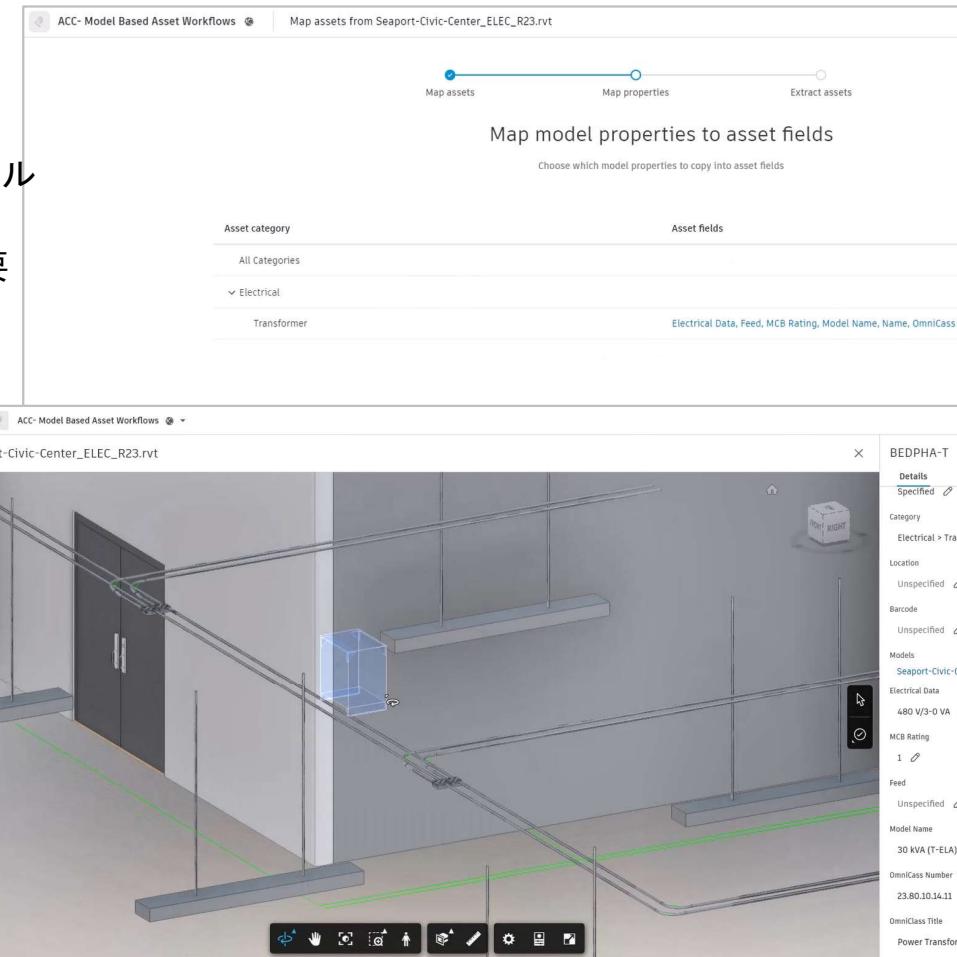
- リリース 2022年2月
- Autodesk/BIM 360 Docs ベースの製品。US と EMEA
- Derivative サービス の PropertyDb に基づいて構築 (SVF トランスレーション)
 - Index (ベース) - クエリ、svf2 オブジェクトプロパティのフィルター + その他 (ビューアブルの bbox)
 - Diff - Index + 2つのバージョンを比較
- 製品で使用
 - Design Collaboration - 変更の表示分析/change analysis
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 - ビューをDocsにパブリッシュ
 - Assets - モデルベースのワークフロー



モデルプロパティ API

サポートされているファイル

- **Index** – Derivative サービス /SVF2でサポートされているファイル
- **Diff** - (uniquely identifiable) エレメント ID が安定している必要あり (識別可能なIDを持つ)
 - RVT
 - DWG
 - NWC - 以下からエキスポートされたもの:
 - Revit
 - AutoCAD バーティカル
 - IFC - 以下からエキスポートされたもの:
 - AutoCAD Architecture, MEP, Civil 3D 2018+
 - ARCHCAD
 - Revit
 - MigiCAD for Revit
 - Tekla Structures





サンプル アプリケーション

モデルプロパティ API



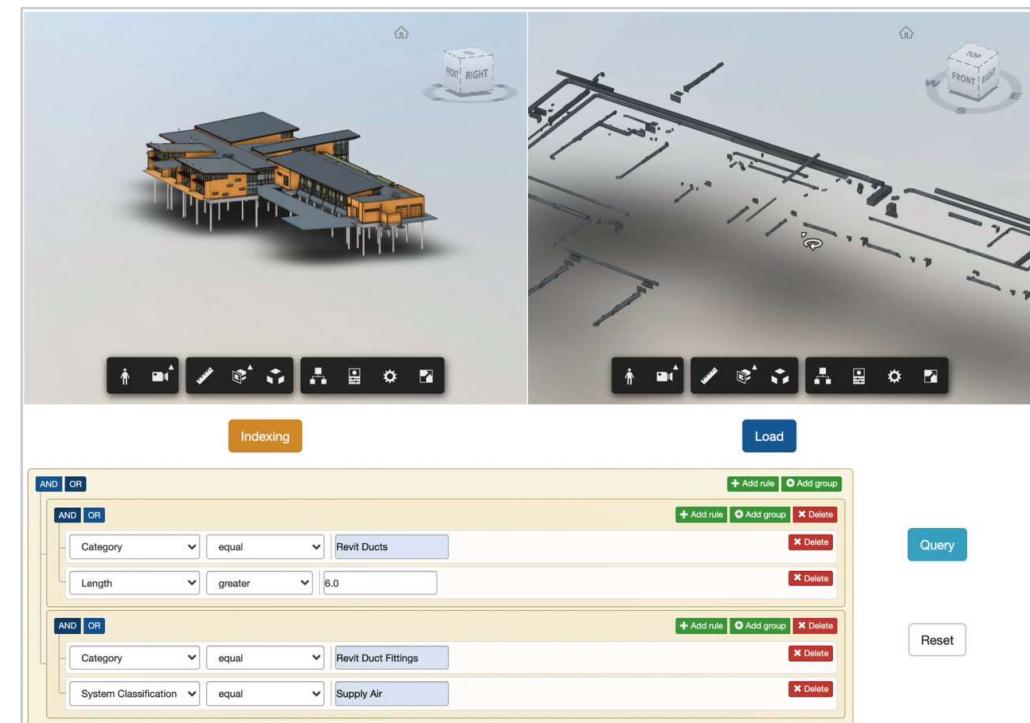
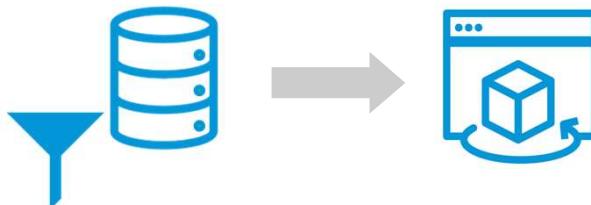
エレメントのフィルター＆モデルの部分ロード

Index

機能: 要素を長さや高さといったプロパティプロパティでフィルターします。フィルタの条件はバイナリー形式で定義され、AND/ORで組み合わせることができます。結果は APS ビューアで視覚化されます。

コード: GitHub サンプル

作者: Xiaodong Liang, Autodesk



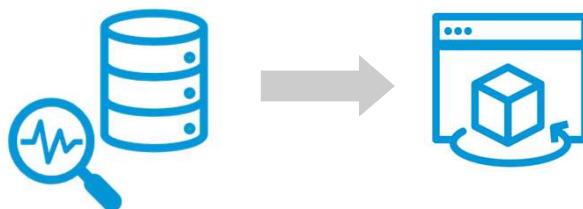
2つのバージョンを比較

Diff

機能: モデルの 2つのバージョンを比較し、違いを APS Viewer で視覚化します。違いはジオメトリとプロパティの場合があります。要素は追加、変更、あるいは削除されます。

コード: GitHub サンプル

作者: Xiaodong Liang, Autodesk



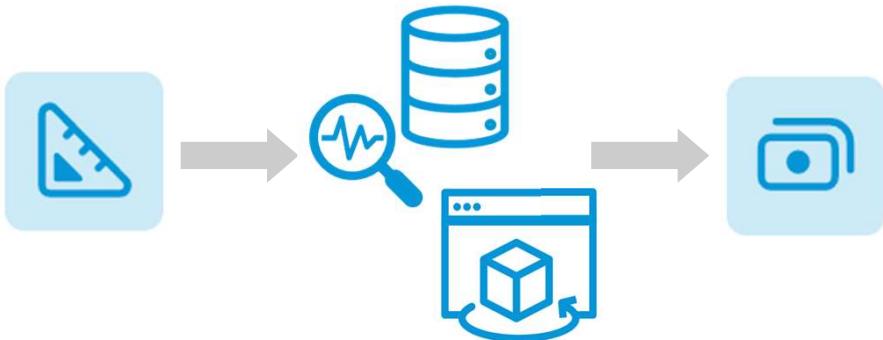
Takeoff と Cost の変更分析

見積りでのDiff機能の応用例

機能: Takeoffの変更項目を特定し、モデルの現バージョンと旧バージョンを比較し、APS Viewer で差異を視覚化します。コストモジュールの予算データを更新します。

コード: GitHub サンプル

作者: Zhong Wu, Autodesk



The screenshot displays the Autodesk Construction Cloud interface. At the top, the 'Sheets & Models' section lists several sheets and models, including 'Revit Basic House' and 'Elevations/Sections'. A warning message indicates 'There are takeoff items on a previous version of the model.' Below this is the 'Cost' module, specifically the 'Income' tab, showing a table of budget items like Glass, Window, Door, and Floor with their respective quantities, unit costs, and amounts. To the right of the cost table is the 'APS Viewer' window, which shows a 3D architectural model of a house with certain elements highlighted in blue, indicating changes between different project versions. The bottom part of the interface shows the 'Developer Advocacy Support' section and a 'Price Book (USD)' table listing various construction materials with their unit prices and descriptions.

Type	Unit Price(\$)	Unit
Door	836	nr
Floor	136	m2
Glass	230	nr
Wall	467	m2
Window	563	nr

Element	Quantity	Unit	Unit Price(\$)	Amount(\$)
Door	5,00	nr	836	\$4,180.00
Floor	88,07	m2	136	\$11,377.18
Glass	0,00	nr	230	\$0.00
Wall	343,14	m2	467	\$160,244.25
Window	8,00	nr	563	\$4,424.00

Name	Current Quantity	Latest Quantity	Quantity	Cost(\$)	Sv2Id
Basic Wall [H4002]	45,78	49,83	4,056(n)	1891,35	276
Basic Wall [C2874]	0,00	46,33	46,33(n)	21266,11	442
Single Window [759463]	1	0	-1(n)	-563,00	597
M_Window Tag [841201]	5329	Paling [952840]	426		
Single Window [1103178]	6547	Basic Wall [G40032]	276		
		Single Window [628745]	442		
				22990,46	



How does it work?

モデル プロパティAPIの仕組みは?



How does it work?

基本的なワークフロー

Model Derivative



DM/Docs

UI、Desktop
Connector、API で
Docs にファイルが
アップロードされる

Model Derivative

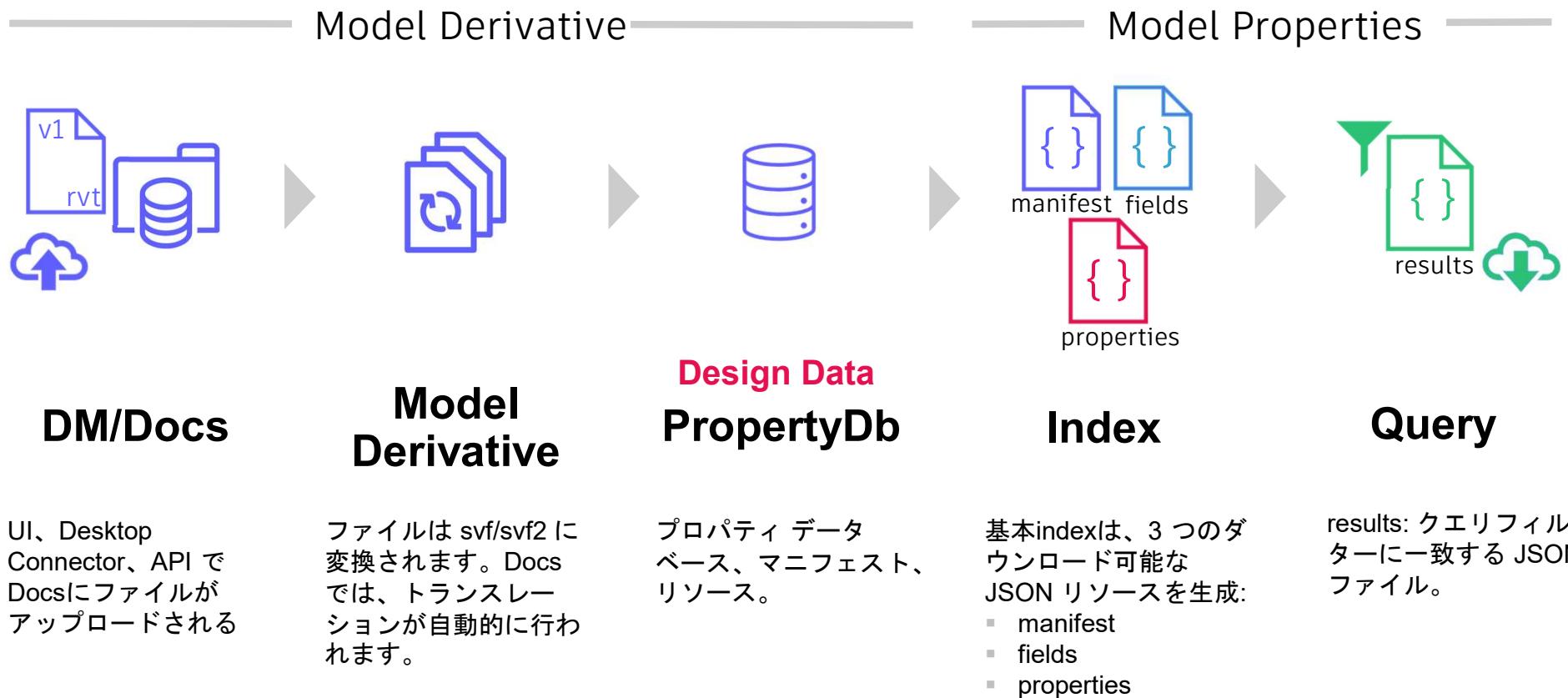
ファイルは svf/svf2 に
変換されます。Docs
では、トランスレー
ションが自動的に行わ
れます。

Design Data PropertyDb

プロパティ データ
ベース、マニフェスト、
リソース。

How does it work?

基本的なワークフロー



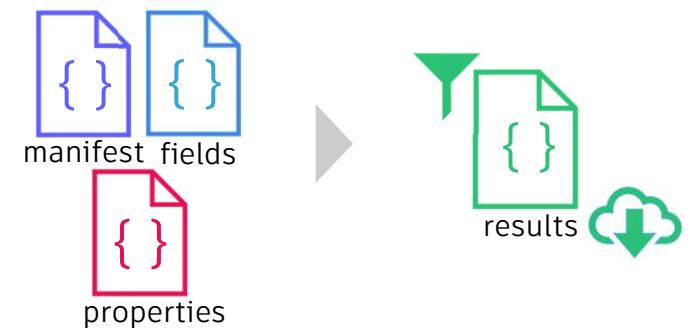
How does it work?

生成されるリソース

リソース	タイプ	説明
manifest	JSON	IndexまたはQueryの、マニフェストは、Index rowsの生成に使用されたシードファイル、svf2 propertyDbの詳細を示します。
fields	NDJSON	IndexまたはQuery用に抽出されたフィールド(プロパティタイプ)を含みます。
properties	NDJSON	Index用の加工していないオブジェクトのプロパティ値。
results	NDJSON	実行されたクエリの結果として得られたオブジェクトのプロパティ。

NDJSON = new-line delimited JSON

—— モデルプロパティ ——



Index

基本indexは、3つのダウンロード可能なJSONリソースを生成:

- manifest
- fields
- properties

Query

results: クエリフィルターに一致するJSONファイル。

How does it work?

Index エンドポイント

		エンドポイント
Index	POST	indexes:batch-status
	GET	indexes/:indexId
	GET	indexes/:indexId/ manifest
	GET	indexes/:indexId/ fields
	GET	indexes/:indexId/ properties
Query	POST	indexes/:indexId/ queries
	GET	indexes/:indexId/queries/: queryId
	GET	indexes/:indexId/queries/:queryId/ properties

- 8 エンドポイント

How does it work?

Index エンドポイント - Index 作成

エンドポイント		
Index	POST	indexes:batch-status
	GET	indexes/:indexId
	GET	indexes/:indexId/manifest
Query	GET	indexes/:indexId/fields
	GET	indexes/:indexId/properties
	POST	indexes/:indexId/queries
Query	GET	indexes/:indexId/queries/:queryId
	GET	indexes/:indexId/queries/:queryId/properties

- 基本Indexの作成 – “lazy”
 - 初回 – インデックス作成ジョブを開始し、結果をキャッシュします
 - 実行後 – キャッシュを使用
 - 最後に使用してから 30 日間キャッシュ
- Poll で、進捗状況をチェック
state: PROCESSING, FINISHED, FAILED
- レスポンス JSON は同じ
- stats: objects (オブジェクトの数)
- Create 3 つのダウンロード可能な json.gz リソースを作成
 - Manifest, fields, properties

例. 基本的なindexの作成 – POST indexes:batch-status

```
curl --request POST 'https://developer.api.autodesk.com/construction/index/v2/projects/f83c... /indexes:batch-status' \
--header 'Authorization: Bearer ****' \
--header 'Content-Type: application/json' \
--data-raw '{
    "versions": [
        {
            "versionUrn": "urn:adsk.wipprod:fs.file:vf.DyTwutcvTcOLUNUARxcTzQ?version=4"
        }
    ],
    [
        {
            "projectId": "f83cef12-deef-4771-9feb-4f85643e3c46",
            "indexId": "qTmPiKJZ7siqxkTNpWGAnw",
            "type": "INDEX",
            "state": "PROCESSING",
            "selfUrl": "https://developer.api.autodesk.com/construction/index/v2/projects/f83cef12-deef-4771-9feb-4f85643e3c46",
            "versionUrns": [
                "urn:adsk.wipprod:fs.file:vf.DyTwutcvTcOLUNUARxcTzQ?version=4"
            ],
            "updatedAt": "2021-08-19T08:21:13.8771187+00:00",
            "retryAt": "2021-08-27T14:28:28.8382067+00:00",
            "stats": null,
            "manifestUrl": null,
            "fieldsUrl": null,
            "propertiesUrl": null
        }
    ]
}'
```

リクエスト

レスポンス

Ex. Polling で進行状況を確認 - GET indexes/:indexId

```
curl --request GET 'https://developer.api.autodesk.com/construction/index/v2/projects/.../indexes/qTmPiKJZ7siqxkTNpWGAnw'  
--header 'Authorization: Bearer ****'
```

リクエスト

レスポンス

```
{  
    "projectId": "f83cef12-deef-4771-9feb-4f85643e3c46",  
    "indexId": "qTmPiKJZ7siqxkTNpWGAnw",  
    "type": "INDEX",  
    "state": "FINISHED",  
    "selfUrl": "https://developer.api.autodesk.com/construction/index/v2/proje.../indexes/qTmPiKJZ7siqxkTNpWGAnw",  
    "versionUrns": [  
        "urn:adsk.wipprod:fs.file:vf.DyTwutcvTcOLUNUARxcTzQ?version=4"  
    ],  
    "updatedAt": "2021-08-19T08:21:13.8771187+00:00",  
    "retryAt": "2021-08-27T14:31:55.1444684+00:00",  
    "stats": {  
        "objects": 33097  
    },  
    "manifestUrl": "https://developer.api.autodesk.com/construction/index/v2/pro...46/indexes/qTmPiKJZ7siqxkTNpWGAnw/manifest",  
    "fieldsUrl": "https://developer.api.autodesk.com/construction/index/v2/proje.../indexes/qTmPiKJZ7siqxkTNpWGAnw/fields",  
    "propertiesUrl": "https://developer.api.autodesk.com/construction/index/v2/p...3c46/indexes/qTmPiKJZ7siqxkTNpWGAnw/properties"  
}
```

How does it work?

Index エンドポイント - ダウンロード

エンドポイント		
Index	POST	indexes:batch-status
	GET	indexes/:indexId
	GET	indexes/:indexId/ manifest 
	GET	indexes/:indexId/ fields 
	GET	indexes/:indexId/ properties 
Query	POST	indexes/:indexId/ queries
	GET	indexes/:indexId/queries/: queryId
	GET	indexes/:indexId/queries/:queryId/ properties 

- (オプション) ダウンロード
 - manifest
 - fields
 - properties

```
{
  "schema": "2.0.0",
  "projectId": "f83cef12-deef-4771-9feb-4f85643e3c46",
  "status": "Succeeded",
  "createdAt": "2021-07-23T08:56:07.0868303+00:00",
  "seedFiles": [
    {
      "lineageId": "a19f7db",
      "lineageUrn": "urn:adsk.wipprod:dm.lineage:DyTwutcvTcOLUNUARxcTzQ",
      "versionUrn": "urn:adsk.wipprod:fs.file:vf.DyTwutcvTcOLUNUARxcTzQ?version=4",
      "databases": [
        {
          "id": "3747dccf",
          "offsets": "urn:adsk.viewing:fs.file:dXJuOmFkc2sud2l...yc21vbj04/output/Resource/objects_offs.json.gz",
          "attributes": "urn:adsk.viewing:fs.file:dXJuOmFkc2sud2l...dmVyc21vbj04/output/Resource/objects_attrs.json.gz",
          "values": "urn:adsk.viewing:fs.file:dXJuOmFkc2sud2l...c21vbj04/output/Resource/objects_vals.json.gz",
          "mapping": "urn:adsk.viewing:fs.file:dXJuOmFkc2sud2l...yc21vbj04/output/Resource/objects_avs.json.gz",
          "ids": "urn:adsk.viewing:fs.file:dXJuOmFkc2sud2lwchJ...vbj04/output/Resource/objects_ids.json.gz"
        }
      ],
      "views": [
        {
          "id": "e7fda9d5",
          "urn": "urn:adsk.wipprod:fs.file:vf.DyTwutcvTcOLUNUARxcTzQ?version=4",
          "is3d": true,
          "viewableName": "{3D}",
          "viewableId": "0935d8b2-149b-4a0d-b816-863f0d595a20-000bcd64",
          "viewableGuid": "00cd2da3-fbfa-44a9-7a33-cad0bc4720cb"
        },
        {
          "id": "12fcb372",
          "urn": "urn:adsk.wipprod:fs.file:vf.DyTwutcvTcOLUNUARxcTzQ?version=4",
          "is3d": true,
          "viewableName": "New Construction",
          "viewableId": "c884ae1b-61e7-4f9d-0001-719e20b22d0b-00120bb2",
          "viewableGuid": "4a966c2a-ead6-65c3-4f98-273dd7543047"
        }
      ]
    },
    "errors": [],
    "stats": {
      "objects": 33097,
      "contentlength": 1881318
    }
  }
}
```

Lineage & バージョン

Manifest (.json)

SVF2 Prop DB リソース URNs

Viewables

Index オブジェクト の数とバイトサイズ

Index フィールド (json.gz)

```
{"key": "p153cb174", "category": "__name__", "type": "String", "name": "name", "uom": null}
{"key": "p74a9a490", "category": "__document__", "type": "String", "name": "schema_name", "uom": null}
{"key": "p137c14f2", "category": "__document__", "type": "String", "name": "schema_version", "uom": null}
{"key": "p1490bcea", "category": "__document__", "type": "Boolean", "name": "is_doc_property", "uom": null}
{"key": "p5eddc473", "category": "__category__", "type": "String", "name": "Category", "uom": null}
{"key": "p00723fa6", "category": "Identity Data", "type": "String", "name": "Design Option", "uom": null}
{"key": "pe8094f29", "category": "Other", "type": "String", "name": "Project Issue Date", "uom": null}
{"key": "p50756a0d", "category": "Other", "type": "String", "name": "Client Name", "uom": null}
{"key": "p32791eb0", "category": "Other", "type": "String", "name": "Project Address", "uom": null}
{"key": "pbf75ced9", "category": "Other", "type": "String", "name": "Project Name", "uom": null}
{"key": "p8213f1ad", "category": "Other", "type": "String", "name": "Project Number", "uom": null}
{"key": "pa7275c45", "category": "__categoryId__", "type": "Integer", "name": "CategoryId", "uom": null}
{"key": "p93e93af5", "category": "parent", "type": "DbKey", "name": "parent", "uom": null}
{"key": "p1d45bc4f", "category": "Dimensions", "type": "Double", "name": "Computation Height", "uom": "ft"}
{"key": "pe01bd7ef", "category": "Extents", "type": "String", "name": "Scope Box", "uom": null}
{"key": "p9ffb245", "category": "Materials and Finishes", "type": "Integer", "name": "Color", "uom": null}
{"key": "p1b3b6224", "category": "Materials and Finishes", "type": "String", "name": "Transparency", "uom": null}
{"key": "pd9fcab30", "category": "Materials and Finishes", "type": "Boolean", "name": "Glow", "uom": null}
{"key": "pf62e5a3c", "category": "Structural", "type": "Double", "name": "Structural Framing Length Roundoff", "uom": "ft"}
```

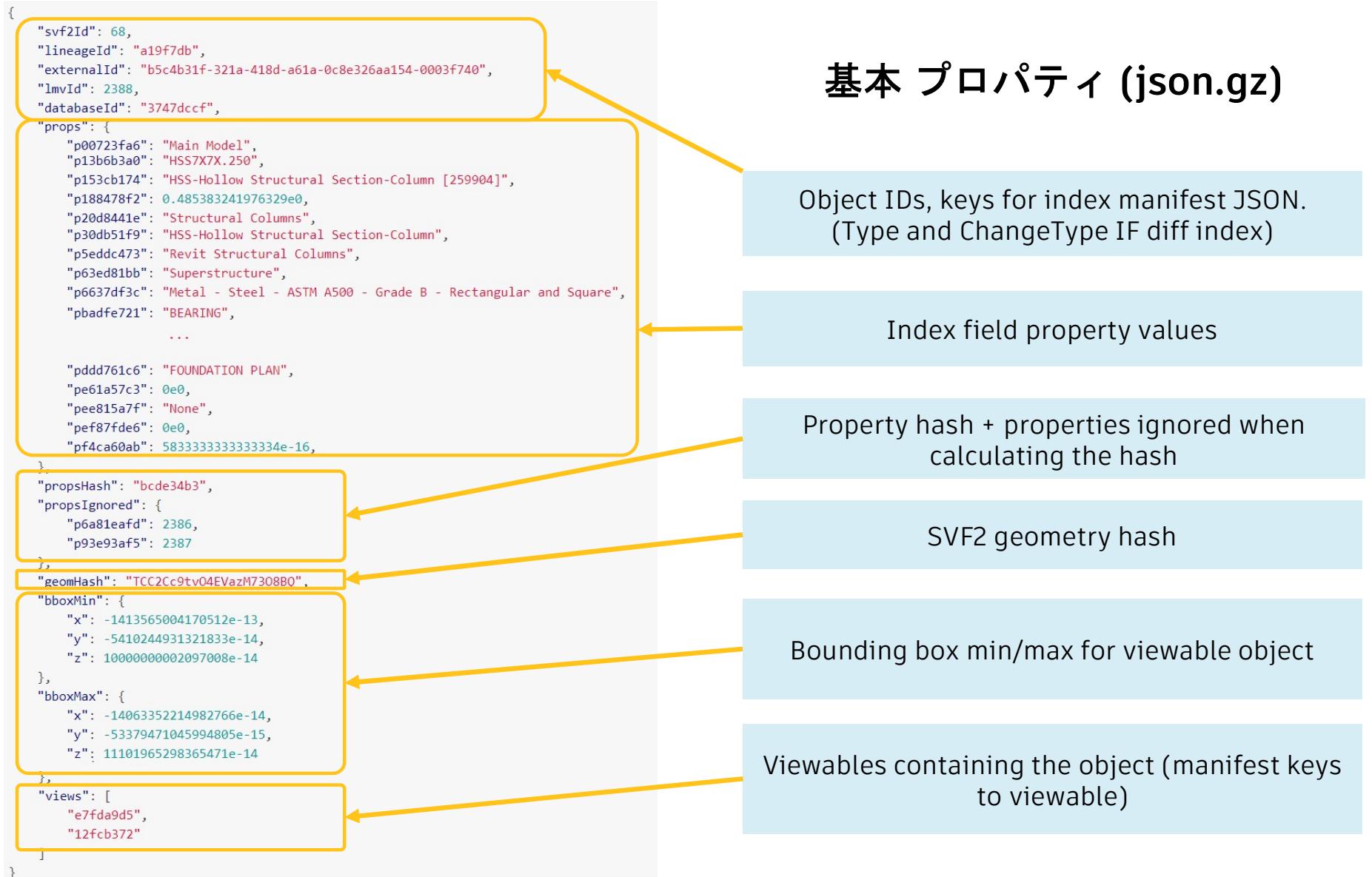
フィールドキー →
SQLカラム名

カテゴリー

タイプ

名前

UOM
(Unit of Measurement)



How does it work?

Index エンドポイント - Query/クエリー

エンドポイント	
Index	POST indexes:batch-status
	GET indexes/:indexId
	GET indexes/:indexId/manifest
	GET indexes/:indexId/fields
	GET indexes/:indexId/properties
Query	POST indexes/:indexId/queries
	GET indexes/:indexId/queries/:queryId
	GET indexes/:indexId/queries/:queryId/properties

- クエリを構築して実行。
 - インデックスクエリはカスタム JSON スキーマを使用して記述されます (フィルター表現に変換されます。 AWS S3 Select)。
 - Column/カラムを制限することができます。エイリアスを使用できます (別のヘッダーを持つことができます)
- Pollで 進捗状況 を確認。
 - state: PROCESSING, FINISHED, FAILED

```

// Forge viewer element display name field
{"key": "p153cb174", "category": "__name__", "type": "String", "name": "name", "uom": null}
// Revit category name field
{"key": "p20d8441e", "category": "__category__", "type": "String", "name": "__RC", "uom": null}
// Revit family name field
{"key": "p30db51f9", "category": "__category__", "type": "String", "name": "__RFN", "uom": null}
// Revit type name field
{"key": "p13b6b3a0", "category": "__category__", "type": "String", "name": "__RFT", "uom": null}

```

Index フィールド

サンプル クエリ: Column/列変換を使用して Revit Classification/分類を取得する

```

{
  Query
    "query": {
      "$and": [
        { "$notnull": "s.props.p20d8441e" },
        { "$notnull": "s.props.p30db51f9" },
        { "$notnull": "s.props.p13b6b3a0" },
        { "$gt": [{ "$count": "s.views" }, 0] }
      ]
    },
    "columns": {
      "svf2Id": true,
      "lmvName": "s.props.p153cb174",
      "revitCategory": "s.props.p20d8441e",
      "revitFamily": "s.props.p30db51f9",
      "revitType": "s.props.p13b6b3a0",
      "s.views": true
    }
}

```

Row has Revit classification

Views array has count more than 0

Columns define alias

Equivalent in S3 SQL

```

select
  svf2Id,
  props.p153cb174 as lmvName,
  props.p20d8441e as revitCategory,
  props.p30db51f9 as revitFamily,
  props.p13b6b3a0 as revitType,
  views
from S3Object[*] s
where
  props.p20d8441e is not null and
  props.p30db51f9 is not null and
  props.p13b6b3a0 is not null and
  count(views) > 0

```

How does it work?

Indexエンドポイント - クエリーの結果をダウンロード

		エンドポイント
Index	POST	indexes:batch-status
	GET	indexes/:indexId
	GET	indexes/:indexId/manifest 
	GET	indexes/:indexId/fields 
	GET	indexes/:indexId/properties 
Query	POST	indexes/:indexId/queries
	GET	indexes/:indexId/queries/:queryId
	GET	indexes/:indexId/queries/:queryId/properties 

- クエリ結果をダウンロード
 - クエリまたはクエリIDのCallで queryResultsUrl を使用して、送信されたクエリー一致するインデックス行をダウンロードします。
 - 結果: line delimited/行区切り の JSON
 - プロパティインデックス行のサブセット
 - フォーマットは前に見たプロパティとまったく同じです。

How does it work?

Diff エンドポイント

エンドポイント	
Diff	POST diffs:batch-status
	GET diffs/:diffId
	GET diffs/:diffId/manifest 
	GET diffs/:diffId/fields 
	GET diffs/:diffId/properties 
Query	POST diffs/:diffId/queries
	GET diffs/:diffId/queries/:queryId
	GET diffs/:diffId/queries/:queryId/properties 

- Diff - 手順は Index と同じ
- 比較する 2 つのバージョンの URN を指定します:

```
{  
  "diffs": [  
    {  
      "prevVersionUrn": "urn:adsk.wip...",  
      "curVersionUrn": "urn:adsk.wip..."  
    }  
  ]  
}
```

- stats: add, removed, modified

```
{
  "type": "OBJECT_CHANGED",
  "svf2Id": 160,
  "externalId": "552d2a83-4642-4d5c-8e7f-5de799129097-000d047a",
  "lmvId": 2699,
  "lineageId": "2b856593",
  "databaseId": "3d0bd846",
  "props": {
    "p002932a2": 0.0,
    "p01bbdcf2": "Arch-FIRST FLOOR",
    ...
  },
  "views": [
    "f109b687",
    "f24d458"
  ],
  "prev": {
    "lmvId": 2699,
    "lineageId": "b28c3429",
    "databaseId": "936acb06",
    "props": {
      "p1b2aab1": 10.5
    },
    "propsHash": "ad9828df",
    "propsIgnored": {
      "p6a81eaf1": 2545,
      "p93e93af5": 2546
    },
    "geomHash": "4s1yfJZd0hnBu2DdFL4HEw",
    "bboxMin": {
      "x": -1413565004170512e-13,
      "y": -5410244931321833e-14,
      "z": 10000000002097008e-14
    },
    "bboxMax": {
      "x": -14063352214982766e-14,
      "y": -53379471045994805e-15,
      "z": 11101965298365471e-14
    },
    "views": [
      "f109b687",
      "8e525582"
    ]
  }
}
```

Type if diff index

Previous (prev) object embedded in current row. Lineage manifest key & viewer id.

Array of property keys which have values different to current

Previous bounding boxes, hashes and viewable keys in manifest

Basic Index Row vs. Diff Index Row

説明	Current version	Previous version
IDs	s. svf2Id s. externalId	
Change type, previous vs. current		s. type s. changeType
lineage version info, SVF2 database URNs	s.lmvId s.lineageId s.databaseId	s. prev.lmvId s. prev.lineageId s. prev.databaseId
Property values	s.props.* s.propsHash s.propsIgnored.*	s.prev.props.* s.prev.propsHash s.prev.propsIgnored.*
Geometry hash and bounding box values IF viewable	s.geomHash s.bboxMin.x s.bboxMin.y s.bboxMin.z s.bboxMax.x s.bboxMax.y s.bboxMax.z	s.prev.geomHash s.prev.bboxMin.x s.prev.bboxMin.y s.prev.bboxMin.z s.prev.bboxMax.x s.prev.bboxMax.y s.prev.bboxMax.z
Viewable keys IF viewable	s.views s.views[i]	s.prev.views s.prev.views[i]

JSON Abstract Syntax Tree → S3 Select(AWS)

\$not	\$like	\$cat	\$char_length
\$and	\$between	\$coalesce	\$lower
\$or	\$in	\$mod	\$upper
\$gt	\$contains	\$cast	\$count
\$lt	\$isnull	\$nullif	\$sum
\$eq	\$notnull	\$date_add	\$avg
\$le	\$add	\$date_diff	\$min
\$ge	\$sub	\$extract	\$max
	\$mul	\$substring	\$trim
	\$div	\$to_string	\$utcnow
		\$to_timestamp	\$case



デベロッパリソース

モデルプロパティ API



デベロッパリソース

ドキュメンテーション

- フィールドガイド
 - [Introduction to Model Properties](#)
- Step-by-Step チュートリアル
 - [Index Querying](#)
 - [Tracking Changes](#)
 - [Query Language Reference](#)
- リファレンスガイド
 - [Index](#)
 - [Diff](#)

The screenshot shows the Autodesk Construction Cloud APIs Developer's Guide page. The left sidebar has a blue header 'Developer's Guide' and lists sections like 'Introduction', 'Field Guide' (with 'Assets (beta)' and 'Model Properties' highlighted with a yellow box), 'Rate Limits and Quotas', 'BIM 360 Compatibility', 'Step-by-Step Tutorials' (with 'Getting Started', 'Assets (beta)', 'Forms', 'RFIs (beta)', 'Takeoff', and 'Model Properties' highlighted with a yellow box), 'Index Querying', 'Tracking Changes', and 'Query Language Reference'. The right main content area has a breadcrumb 'Documentation / Autodesk Construction Cloud APIs / Developer's Guide' and the title 'Introduction to Model Properties'. It describes the Model Properties Service, which allows callers to build and query indexes from BIM models uploaded to Autodesk and BIM 360 Docs. It mentions that model indexes are built using PDB files extracted during SVF translation, and SVF2 viewable IDs are added to these indexes. It also notes that for a property field to be available for indexing, it must be supported in the SVF2 translation process. The content continues with 'Model Properties Service' and 'Diff index file type support' sections.

Autodesk Construction
Cloud APIs

Version 1

Developer's Guide

- Introduction
- Field Guide
 - Assets (beta)
 - Model Properties
- Rate Limits and Quotas
- BIM 360 Compatibility

Step-by-Step Tutorials

- Getting Started
- Assets (beta)
- Forms
- RFIs (beta)
- Takeoff
- Model Properties

Index Querying

Tracking Changes

Query Language Reference

API Reference

Documentation / Autodesk Construction Cloud APIs / Developer's Guide

Introduction to Model Properties

Model Properties Service

The model properties service allows callers to build and query indexes built from the BIM p...
models uploaded to Autodesk and BIM 360 Docs. These are the properties that can be disp...
viewer. Model indexes are built using the PDB (Property Database) files extracted as part of
translation process. SVF2 viewable IDs are then added to these indexes from the SVF2 files
SVF. For a property field to be available for indexing, it must be supported in the SVF2 trans...
backwards compatibility with existing Forge viewer applications, the index rows generated
contain both the SVF object IDs (lmvId) along with the newer SVF2 object IDs (svf2Id).

In addition to property data, the indexes built by the service contain the identities and boun...
coordinates for objects that are viewable via the Forge viewer, allowing callers to view the o...
queries. The API also allows users to trigger the service to calculate changes (diffs) that ha...
between consecutive versions of a model. To calculate a diff, callers specify a previous and
version, and the service compares these versions, computing changes to their property val...
box geometry.

Diff index file type support

Unlike basic property indexing, which only depends on SVF translation, diff indexing depen...
stability. In order for the model properties service to compare instances of the same design
consecutive versions of a file, the IDs of these elements must be the same. If the ID of a sp...
element changes between consecutive versions of the file, the ID is said to be unstable and
diff comparisons by the model properties service.

The file types supported by the index service for diff comparisons currently include 3D RVT
NWC files exported from Revit and AutoCAD verticals, IFC files exported from AutoCAD archi...
3D 2018 and onwards, ARCHICAD, Revit, MagiCAD for Revit, and Tekla Structures.

デベロッパリソース

- コードサンプル GitHub
 - [Postman Collection](#) (3つのStep-by-Step チュートリアルを含む)
 - [Model Properties API Walkthrough in PowerShell Core](#) (クエリ言語のスクリプトを含む)
 - [Element Filtering and Partial Model Load](#) (ビュアーとのインテグレーション)
 - [Compare Two Versions](#) (ビュアーとのインテグレーション)
- ブログ ポスト
 - “BIM 360/ACC Model Properties API”
<https://forge.autodesk.com/blog/bim-360acc-model-properties-api>
includes links to the resources
 - Search more with “Model Properties”, e.g.,
<https://forge.autodesk.com/blog/model-properties-api-vs-model-derivative-api>



Coming Next

Model Aggregation API



Viewing 8 models (Unsaved View) ▼



Model browser BETA Feedback X

🔍 🔍 🔍 🔍

FILTERS

Construction/Position
Not available

Constraints/Base Constraint
Select constraints/base constraint...

Disciplines
Select disciplines...

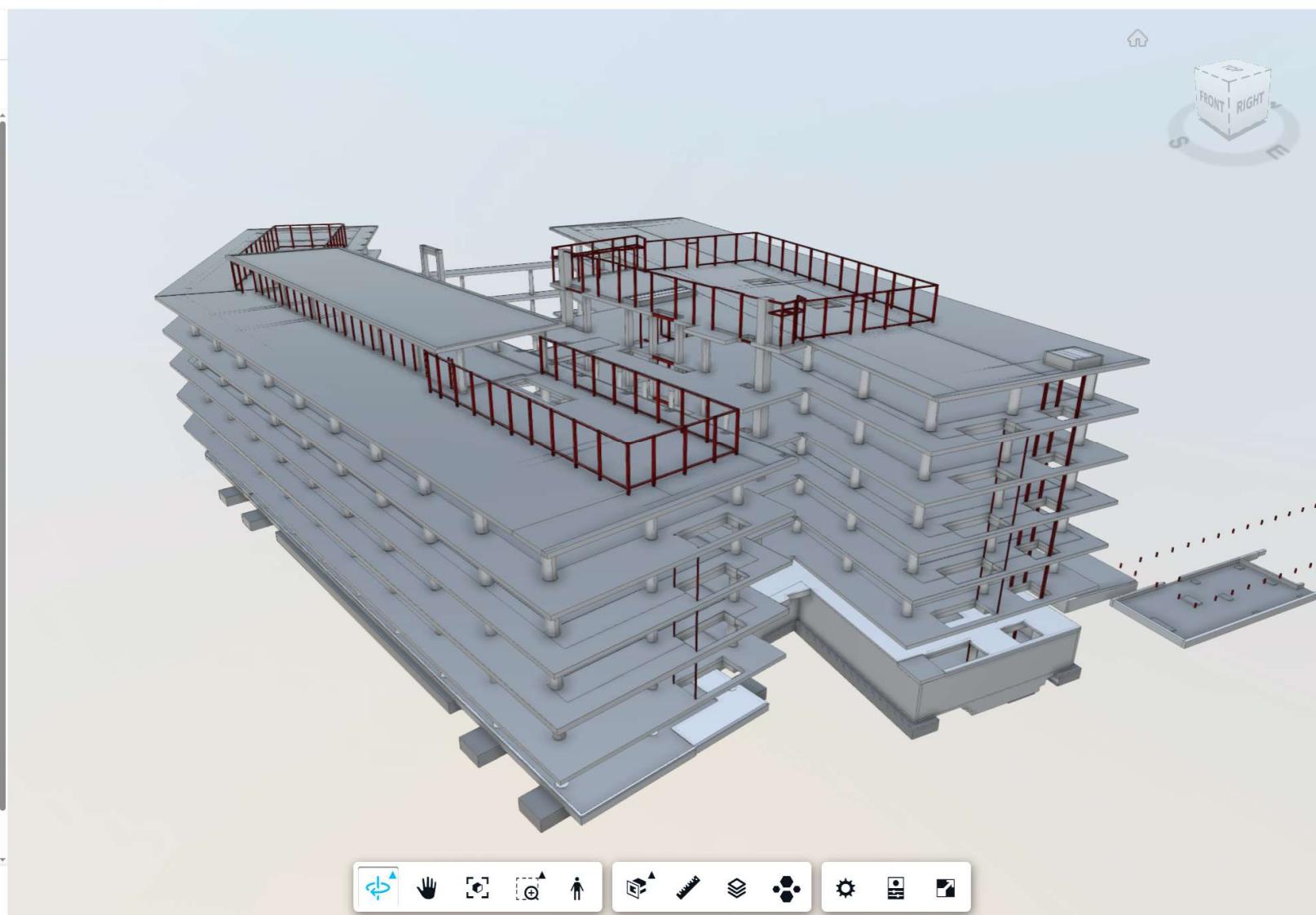
Show more ▼ Edit filters

Add a filter set

MODEL_TREE

- > PacificCenter_AY_Struct.rvt - 3D Level 1
- > PacificCenter_AY_Struct.rvt - 3D Level 2
- > PacificCenter_AY_Struct.rvt - 3D Level 3
- > PacificCenter_AY_Struct.rvt - 3D Level 4
- > PacificCenter_AY_Struct.rvt - 3D Level 5
- > PacificCenter_AY_Struct.rvt - 3D Level C
- > PacificCenter_AY_Struct.rvt - 3D Level 6

Select models Save view



Viewing 8 models (Unsaved View) ▼



Model browser BETA

Feedback X



Reset viewing changes and filters X



FILTERS

Construction/Position

Not available ▼

Constraints/Base Constraint

Select constraints/base constraint... ▼

Disciplines

Select disciplines... ▼

Show more ▼

Edit filters

Advanced filters

▼ Dimensions/Length > 30 ft

Dimensions/Length ▼

> ▼ 30 ft



+ Add a filter set

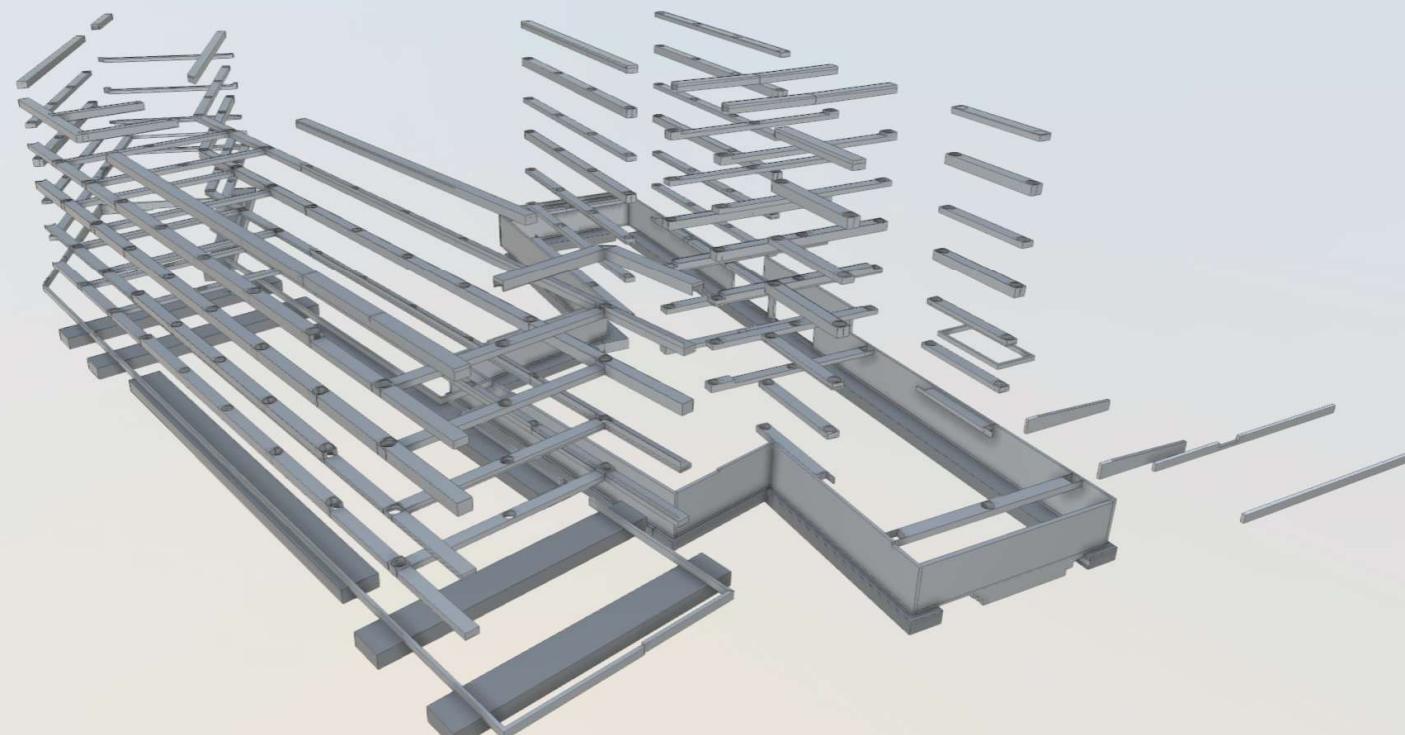
MODEL_TREE

> PacificCenter_AY_Struct.rvt - 3D Level 1

> PacificCenter_AY_Struct.rvt - 3D Level 2▼

Select models

Save view



Viewing 8 models (Unsaved View) ▼



Model browser BETA

Feedback X



Reset viewing changes and filters X



FILTERS

Construction/Position

Not available

Constraints/Base Constraint

Select constraints/base constraint... ▼

Disciplines

Select disciplines... ▼

Show more ▼

Edit filters

Advanced filters

▼ Dimensions/Length > 30 ft

Dimensions/Length ▼

> ▼ 30 ft



+ Add a filter set

MODEL_TREE

> PacificCenter_AY_Struct.rvt - 3D Level 1

> PacificCenter_AY_Struct.rvt - 3D Level 2*

Select models

Save view

Save view

Title *

Objects Longer than 30 Feet

Privacy

Public

Description

Filters to all objects with a length greater than 30 feet

Cancel

Save view



Objects Longer than 30 Feet Filtered

Objects Longer than 30 Feet
saved!

Model browser BETA

Feedback X

Search (1) X Eye

FILTERS

Construction/Position Not available

Constraints/Base Constraint Select constraints/base constraint...

Disciplines Select disciplines...

Show more Edit filters

Advanced filters ✖

▼ Dimensions/Length > 30 ft

Dimensions/Length > 30 ft

+ ✖

+ Add a filter set

MODEL_TREE

> PacificCenter_AY_Struct.rvt - 3D Level 1

> PacificCenter_AY_Struct.rvt - 3D Level 2

Select models Update view

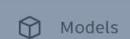
Reset viewing changes and filters X

The main workspace displays a complex 3D structural model composed of numerous steel beams and columns. The model is shown from a perspective angle, highlighting its multi-level and multi-directional framework. The software interface includes a top navigation bar with a globe icon, a search bar, and a feedback button. On the left, a 'FILTERS' panel is open, showing advanced filtering options for dimensions, including a specific filter for objects longer than 30 feet. A message in the top right corner indicates that the filter settings have been saved. At the bottom, there is a toolbar with various icons for selection, measurement, and modification. The overall environment is a professional 3D modeling application.



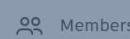
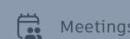
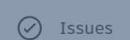
Views

Title	Save to Docs	Last saved to Docs	Created by	Updated on	Privacy	Details	Details
Objects Longer than 30 Feet	Save to Docs	-	AE Alan Edwardes Today at 11:34	Today at 11:34	Public	>	Objects Longer than 30 Feet Public Contents PacificCenter_AY_Struct.rvt - 3D Level 1, PacificCenter_AY_Struct.rvt - 3D Level 0, PacificCenter_AY_Struct.rvt - 3D Level 2, PacificCenter_AY_Struct.rvt - 3D Level 3, PacificCenter_AY_Struct.rvt - 3D Level 4, PacificCenter_AY_Struct.rvt - 3D Level 5, PacificCenter_AY_Struct.rvt - 3D Level 6, PacificCenter_AY_Struct.rvt - 3D Level 7 Last updated Alan Edwardes on Today at 11:34 Last saved to Docs - Created by AE Alan Edwardes Today at 11:34 Description
Kim's view	Save to Docs	-	KP Kim Pita Yesterday at 16:50	Yesterday at 16:50	Protected	>	



Views

Last clash check Today at 11:46



Title	Save to
Objects Longer than 30 Feet	Save to Docs
Kim's view	Save to Docs

Select a folder to save to

Name in Docs *

Eduardo

Edwarda

- Hospital
- Test Alignment Space

Eileen

Elias

Elisa

Cancel Save

Privacy	Details	Details
Public	Save to Docs	Objects Longer than 30 Feet
Public	Save to Docs	PacificCenter_AY_Struct.rvt - 3D Level 1, PacificCenter_AY_Struct.rvt - 3D Level 0, PacificCenter_AY_Struct.rvt - 3D Level 2, PacificCenter_AY_Struct.rvt - 3D Level 3, PacificCenter_AY_Struct.rvt - 3D Level 4, PacificCenter_AY_Struct.rvt - 3D Level 5, PacificCenter_AY_Struct.rvt - 3D Level 6, PacificCenter_AY_Struct.rvt - 3D Level 7

Last updated

Alan Edwardes on Today at 11:34

Last saved to Docs

Created by

AE Alan Edwardes Today at 11:34

Description



Objects Longer than 30 Feet

V1

1.1 KB

24 Aug 2023 11:52

AS ACC system

Objects Longer than 30 Feet (V1) ... X

Model Browser

Q Filter Eye

Levels Select levels...

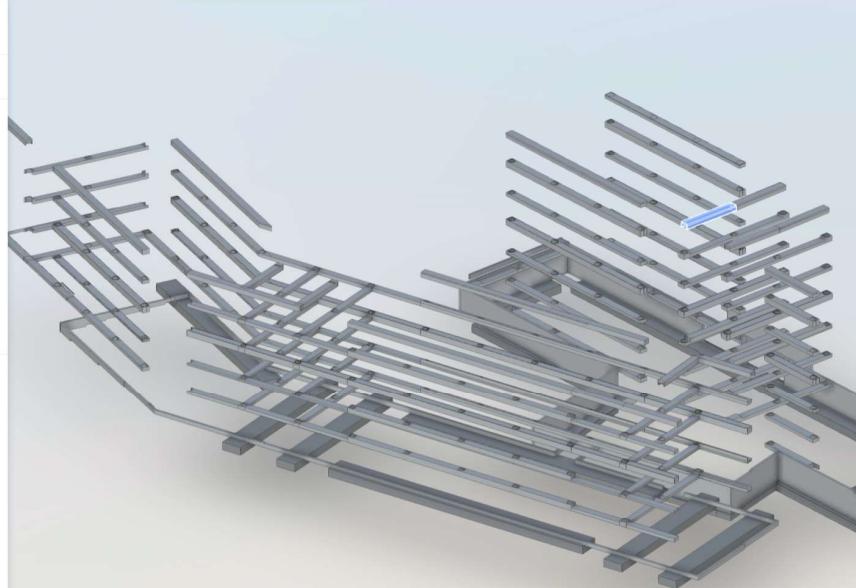
Categories Select categories...

Disciplines Not available

Show more Edit filters

PacificCenter_AY_Struct.rvt

- > Structural Framing
- > Walls
 - > Basic Wall
 - > HE - 12" Concrete
 - > HE - 16" Concrete
 - Basic Wall
 - Basic Wall
 - > Slab Edges
 - > Slab Edge
 - > HE-Slab Edge
 - > HE-Slab Edge 2
 - Slab Edge



A 3D rendering of a structural model showing a complex network of beams and concrete slabs. The model is viewed from an isometric perspective, highlighting various structural components.

Concrete-Rectangular BeamX

Type Comm...
Section Na...
Assembly D... Superstructure
Assembly C... B10
Type Mark
Type Image
OmniClass ... 23.25.30.11.14.14
Code Name
Fire Rating

Dimensions

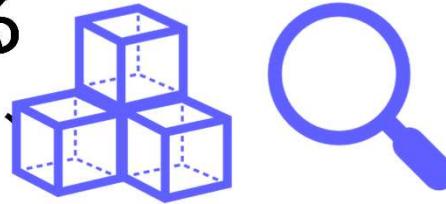
Length	30.00205986580751016'
Volume	268.97 ft ³
Elevation...	0.00000000000000000000000000000000'
Elevation...	0.00000000000000000000000000000000'

Tools:

Preview

Model Aggregation API

Curate Aggregateを収集する
プロパティ クエリ、ビューパーツ、
オブジェクトセットを使用



POST /construction/aggregate/projects/:projectId/folders/:folderUrn/aggregates

```
{  
  "isPrivate": false,  
  "name": "Objects Longer than 30 Feet",  
  "description": "Filters to all objects with a length greater  
than 30 feet",  
  "extensions": [  
    {  
      "typeId": "construction.modelCoordination:view-1.0.0",  
      "extension": {  
        "modelSetId": "3caca621-4268-4324-b0d4-  
88a84f6d211b"  
      }  
    }  
  ]  
}
```

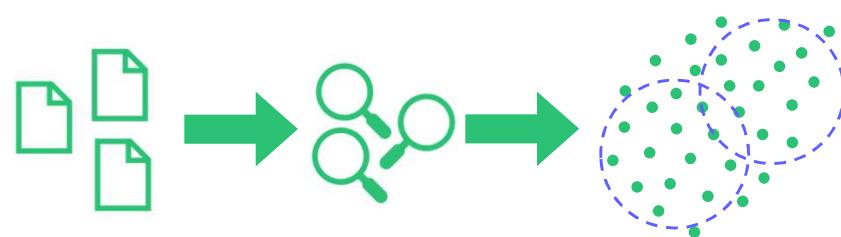
POST /construction/aggregate/projects/:projectId/folders/:folderUrn/aggregates/:aggregateId/versions

```
{  
  "include": [  
    {  
      "indexFilter": {  
        "filter": {  
          "$and": [{"$gt": ["s.props.p15f8f5ec", 30]}]  
        }  
      },  
      "viewParts": [  
        {  
          "urn": "urn:adsk.wipqa:dm.lineage:309spSXFTSitsv23HpTsPg",  
          "viewParts": [  
            "3D Level 1",  
            "3D Level 7",  
            "3D Level 0",  
            "3D Level 2",  
            "3D Level 3",  
            "3D Level 4",  
            "3D Level 5",  
            "3D Level 6"  
          ]  
        }  
      ]  
    }  
  ]  
}
```

Preview

Model Aggregation API

Aggregateをインスタンス化する
モデルプロパティサービスを使用し、
アライメントを組み込む



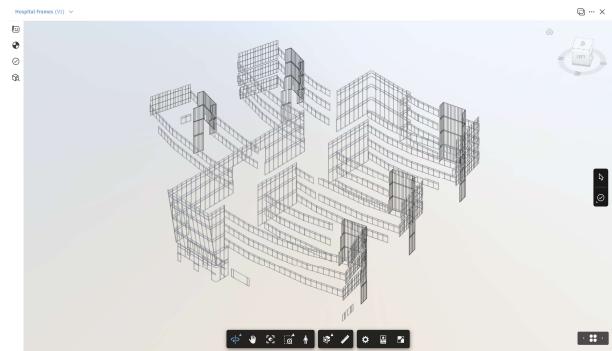
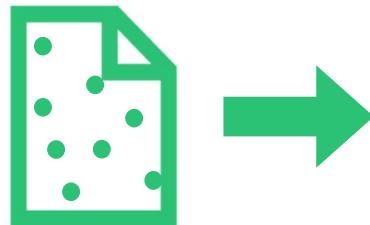
```
POST /v1/projects/:projectId/folders/:folderUrn/aggregates/:aggregateId/versions/:version/snapshots
```

```
{  
  "sourceVersions": [  
    "urn:adsk.wipprod:fs.file:vf.b909RzMKR4mhC307UBY_8g?version=2"  
  ],  
  "id": "3fa85f64-5717-4562-b3fc-2c963f66afa6",  
  "name": "Aggregate snapshot name",  
  "description": "Aggregate snapshot description"  
}
```

Preview

Model Aggregation API

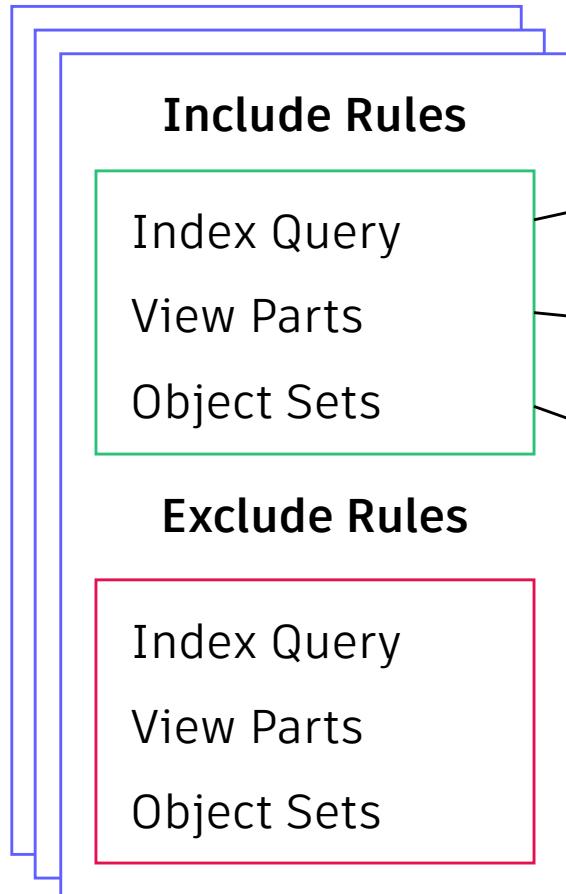
SVF2 fileをパブリッシュ
一連の安定したオブジェクト ID とアライ
メントを使用する



```
POST /v1/projects/:projectId/folders/:folderUrn/aggregates/:aggregateId/versions/:version/snapshots
```

```
{  
  "id": "3fa85f64-5717-4562-b3fc-2c963f66afa6",  
  "folderUrn": "urn:adsk.wipprod:fs.folder:co.WI8ro018TU2C13P9y64z4w",  
  "name": "HVAC System",  
  "snapshotId": "3fa85f64-5717-4562-b3fc-2c963f66afa6"  
}
```

Anatomy of an Model Aggregation



Model Property サービスクエリ
“all visible elements of the HVAC system”

特定の Viewables
“Level 1” from Lineage A

明示的な安定した SVF2 オブジェクト ID
“523”, “152”, “10432” from Lineage A

Aggregateはバージョン管理されており、
複数の包含/除外ルールを許可します

Preview

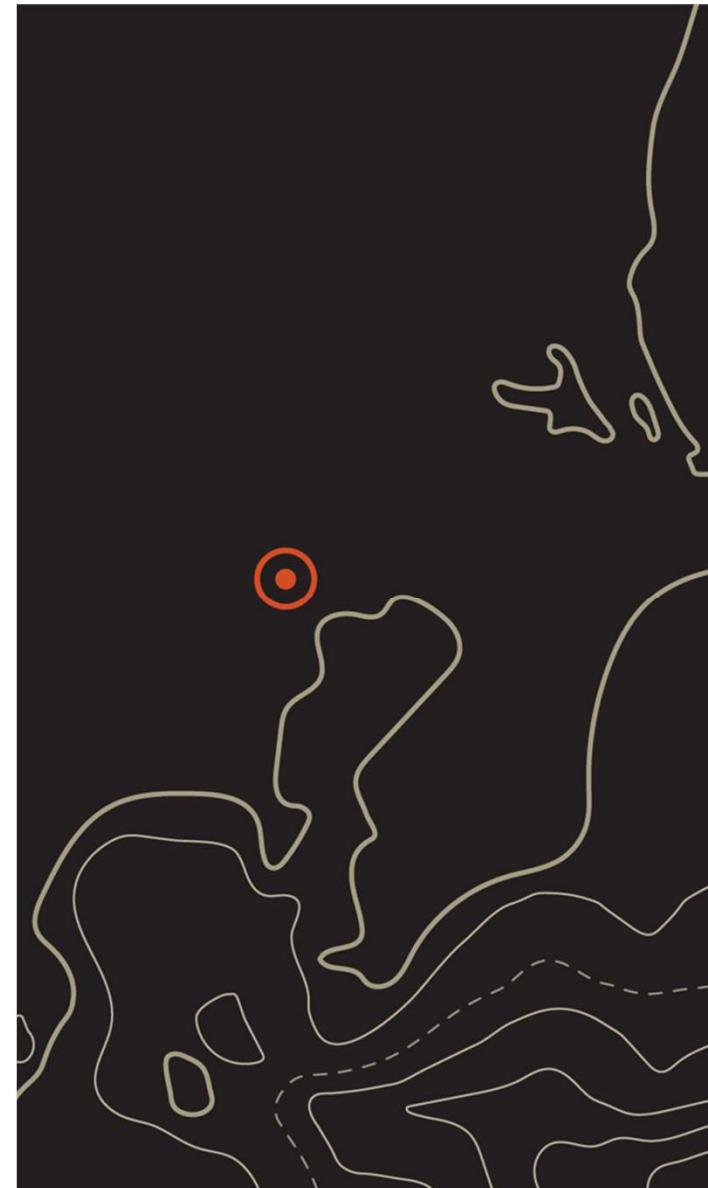
Model Aggregation API

現在 Model Coordination で使用されている

ベータ API リリース予定

まとめ

- 1 モデルプロパティAPI
- 2 サンプル アプリケーション
- 3 モデルプロパティAPIの仕組みは?
- 4 デベロッパリソース
- 5 次のステップ:
モデルアグリゲーション（集約）API





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