/// Kundentag 2024

# CLASSIFICATION AI

F. Wallner | 24.10.2024 | 14:00 Uhr

DR. WALLNER ENGINEERING

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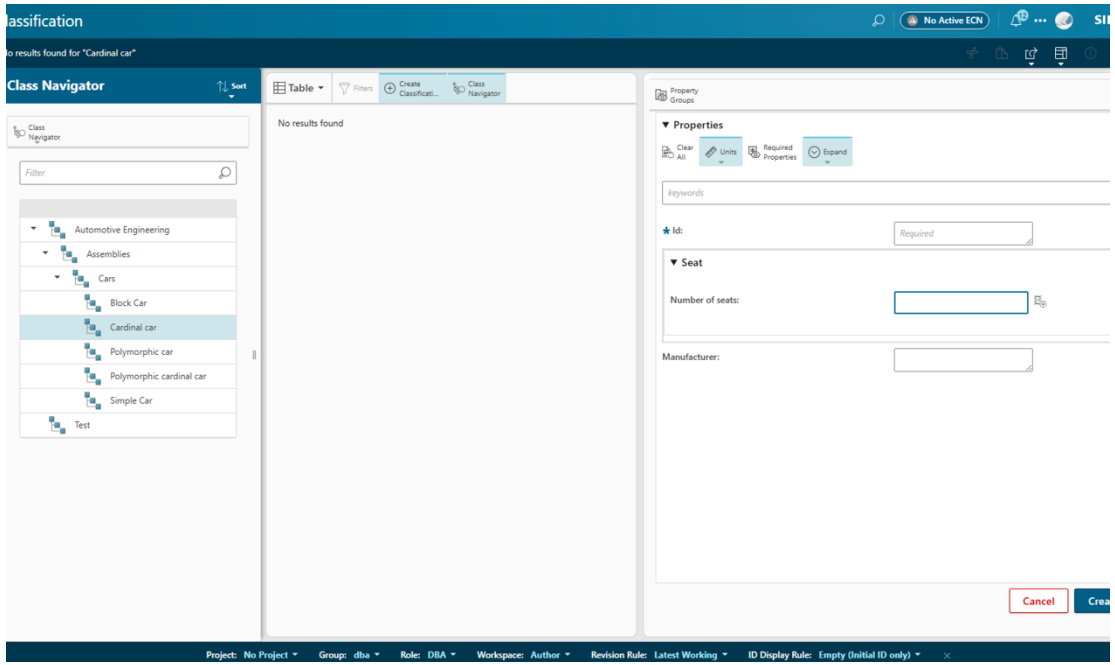
/// Was ist zu erwarten?

# AGENDA

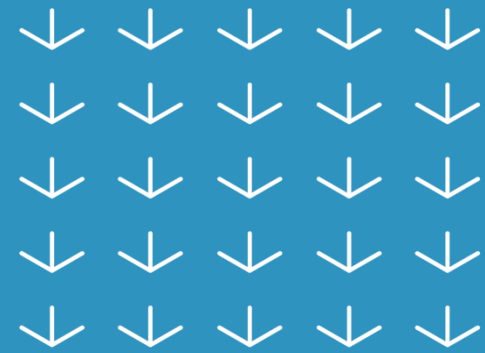
- Classification
  - Basic vs. Advanced
  - Features
  - Import
- AI
  - Funktion
  - Training
  - Demo
- Anwendung?



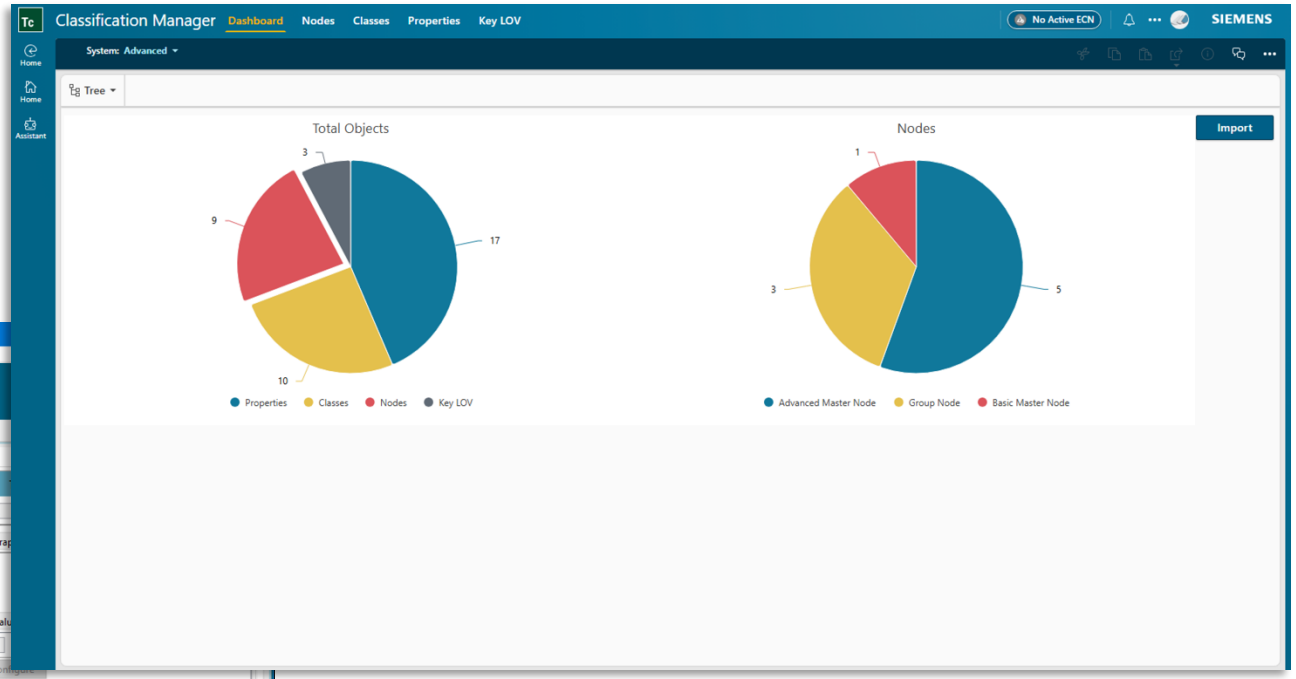
/// Classification

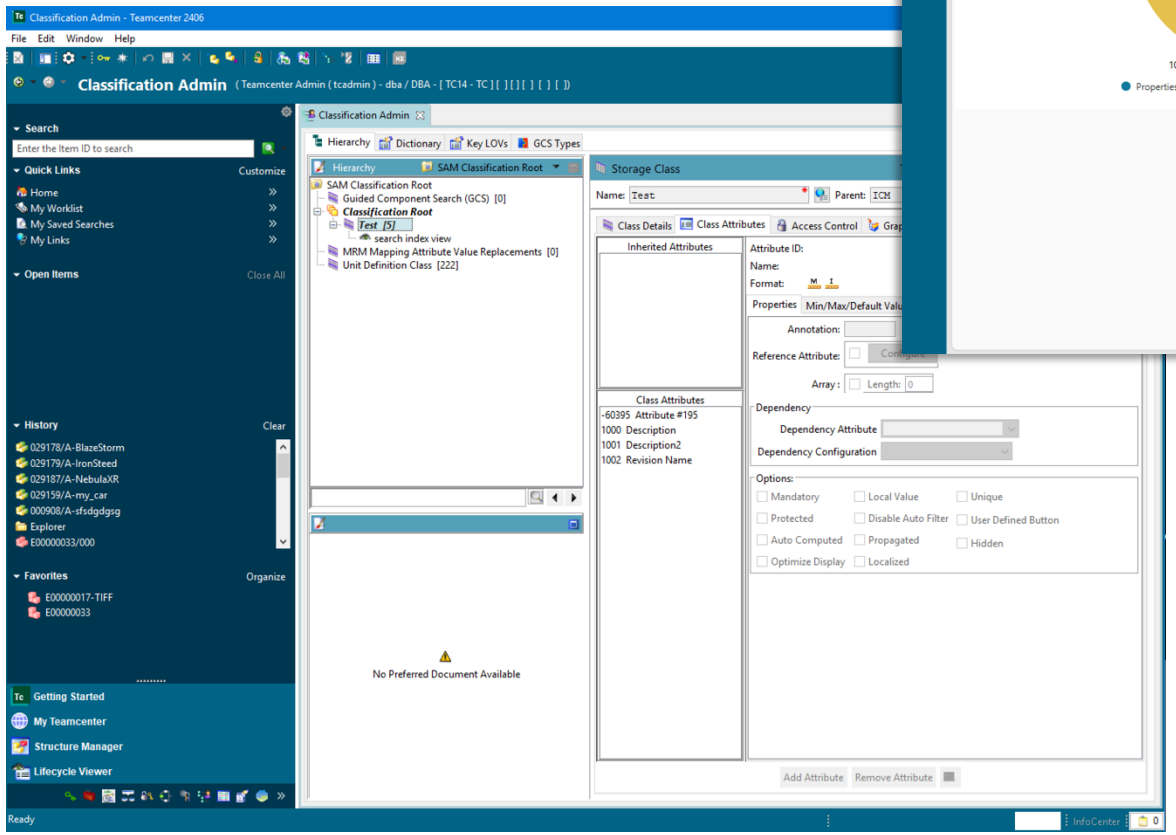
# BASIC VS. ADVANCED

- Oder Old vs. New?
- Warum sollte ich wechseln?



# Old vs. New

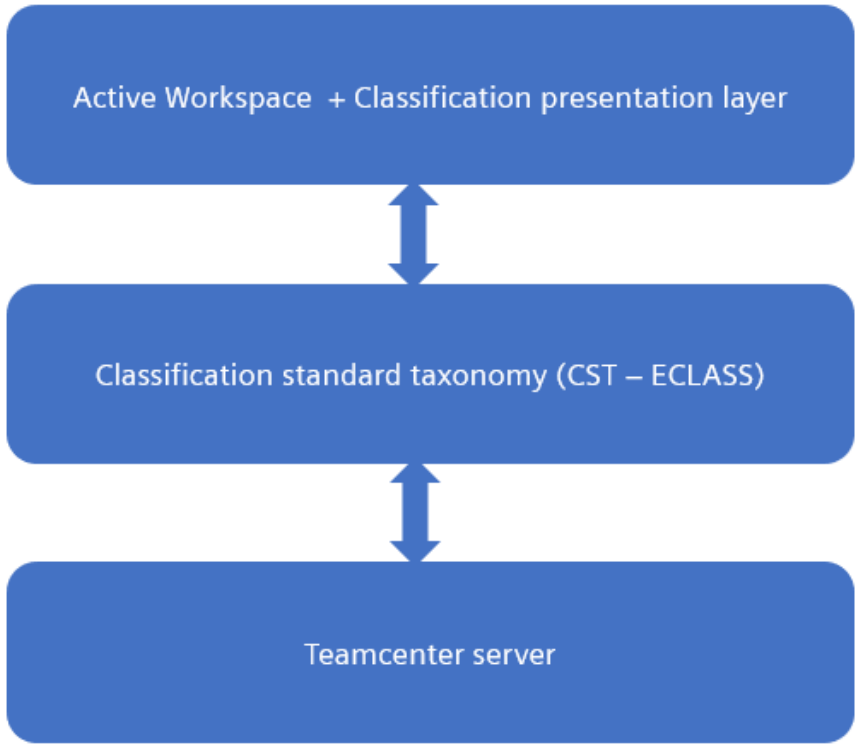


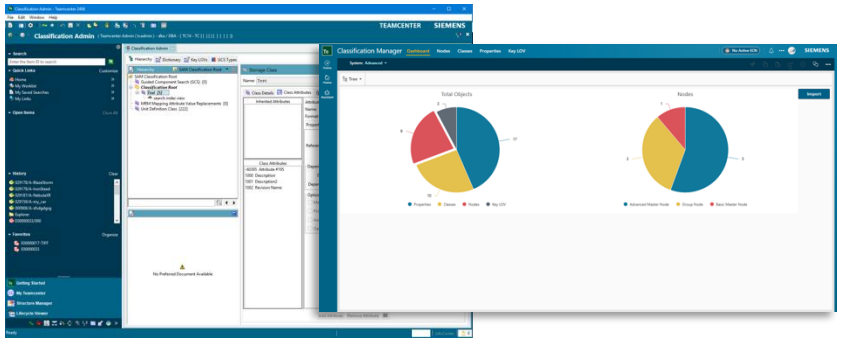




- Warum überhaupt klassifizieren?
- Welche Voraussetzungen?

# Basic vs. Advanced

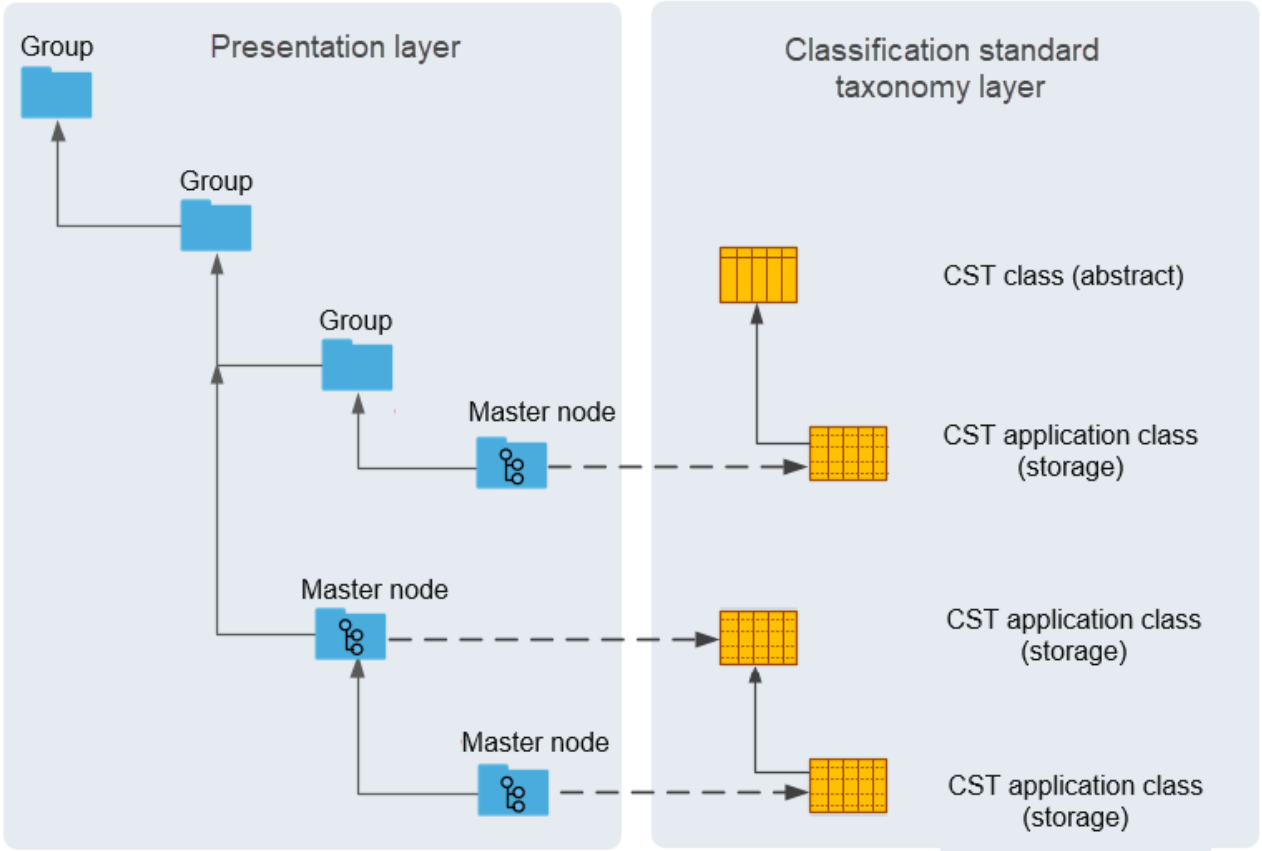
- Schlüssel ist der Presentation Layer (CLS0) um von Alt nach Neu zu kommen

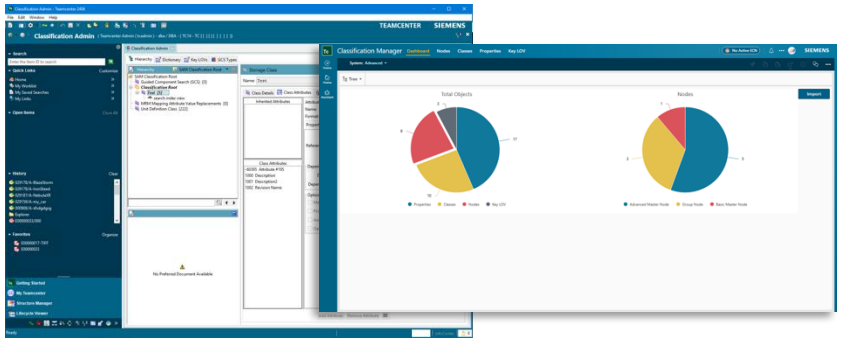


Quelle: https://docs.sw.siemens.com/en_US/doc/282219420/PL20231129261301184.class_aw/xid1567127

# Basic vs. Advanced Der Presentation Layer



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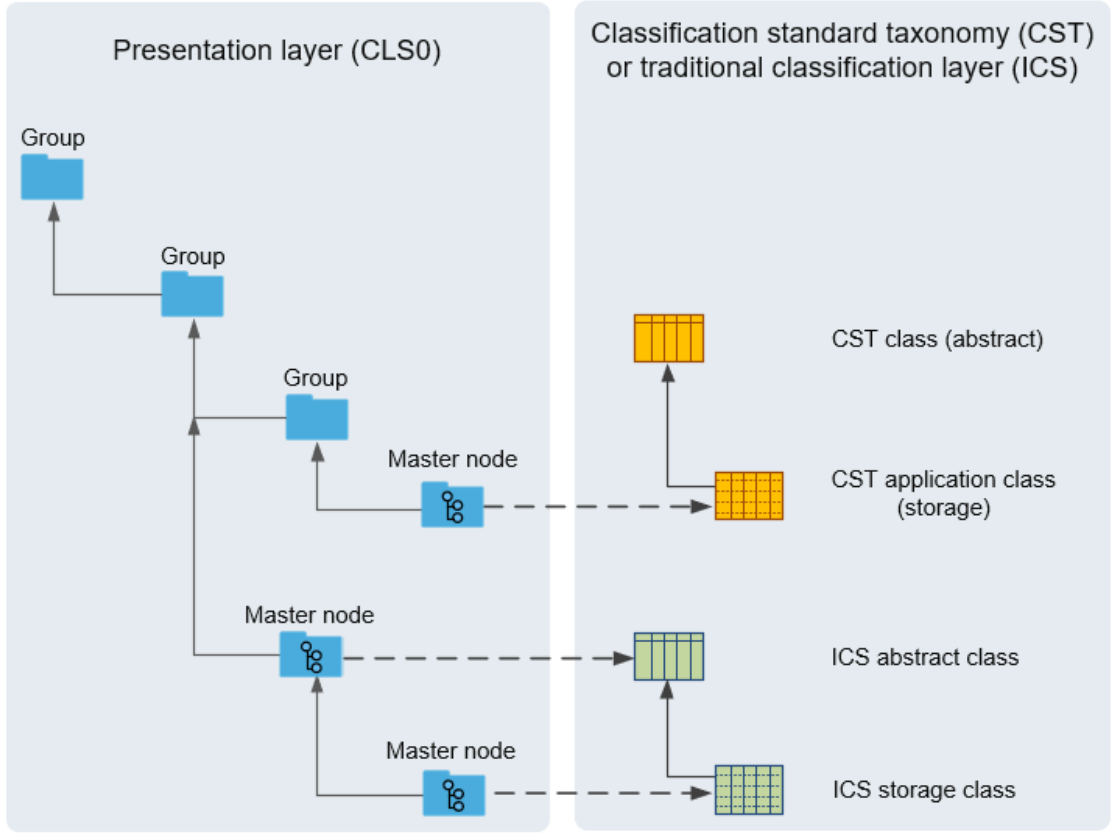
# Basic vs. Advanced Der Presentation Layer

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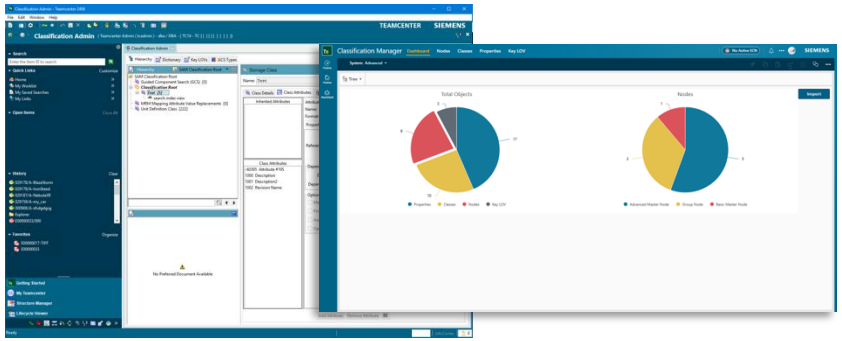
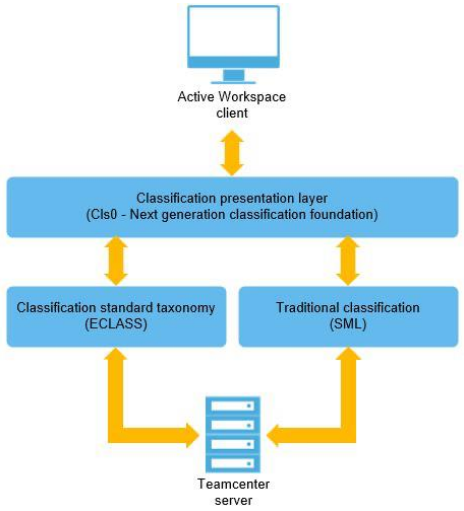




# Basic nach Advanced Migration?

```
clsutility -migrate -classification2cst -cid=class-ID [-recursive | -confirm| -include_icos]
```

```
Migration summary for traditional objects
-------------------------------------------------------------------------------------------------------------
               TYPE |         SML ID |                     CST ID |       Status | Note
-------------------------------------------------------------------------------------------------------------
     NodeDefinition |             AD |                SMPL1#AD#001 |  UNPROCESSED |
  PropertyDefinition |         -80001 |          SMPL1#02-f6f89w#001 |  UNPROCESSED |
  PropertyDefinition |         -80002 |          SMPL1#02-fsf89w#001 |  UNPROCESSED |
  PropertyDefinition |         -80005 |          SMPL1#02-e6f89w#001 |  UNPROCESSED |
  PropertyDefinition |         -80015 |          SMPL1#02-ccf89w#001 |  UNPROCESSED |
  PropertyDefinition |         -80018 |          SMPL1#02-bsf89w#001 |  UNPROCESSED |
    KeyLOVDefinition |         -80051 |          SMPL1#09-Tcf89w#001 |  UNPROCESSED |
  PropertyDefinition |         -80020 |          SMPL1#02-bMf89w#001 |  UNPROCESSED |
     ClassDefinition |  ADT-CONNECTION |  SMPL1#01-ADT-CONNECTION#001 |  UNPROCESSED |
      NodeDefinition |  ADT-CONNECTION |     SMPL1#ADT-CONNECTION#001 |  UNPROCESSED |
  PropertyDefinition |         -82005 |          SMPL1#02-q5989w#001 |  UNPROCESSED |
    KeyLOVDefinition |         -80040 |          SMPL1#09-WMf89w#001 |  UNPROCESSED |
  PropertyDefinition |         -86123 |          SMPL1#02-la989w#001 |  UNPROCESSED |
     ClassDefinition |   ADT-CONN-BUND |    SMPL1#01-ADT-CONN-BUND#001 |  UNPROCESSED |
      NodeDefinition |   ADT-CONN-BUND |       SMPL1#ADT-CONN-BUND#001 |  UNPROCESSED |

JSON input for KeyLOVDefinitions: C:\Users\ny6wyo\AppData\Local\Temp\KeyLOVDefinitions.json
JSON input for PropertyDefinitions: C:\Users\ny6wyo\AppData\Local\Temp\PropertyDefinitions.json
JSON input for ClassDefinitions: C:\Users\ny6wyo\AppData\Local\Temp\ClassDefinitions.json
JSON input for NodeDefinitions: C:\Users\ny6wyo\AppData\Local\Temp\NodeDefinitions.json

Operation completed successfully.
```

Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL20231129261301184.class_aw/xid1567127

Warum?

- CST bietet mehr Features
- Wird in Zukunft erweitert (analog ECLASS)

# Basic vs Advanced
# Was ist CST?

- Basierend auf dem classification standard taxonomy framework
  - Standardisierter Aufbau von Klassen und Daten zum leichten Austausch von Kunden und Zulieferern
  - Unterstützt den ECLASS Standard
- Advanced Classification kann aber auch genutzt werden um eigene Hierarchien und Definitionen aufzubauen

| ECLASS | CST | Traditional classification (ICS) |
|---|---|---|
| Value list | Key-LOV definition | Key-LOV |
| Property | Property definition | Dictionary attribute |
| Classification class | Node definition | -- |
| Application class | Class definition | Group/class |
| IRDI | IRDI | ID |
| Property block | Property block | -- |
| Application data | Classification object | ICO |
| Aspect | Aspect | -- |

Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL20231129261301184.class_aw/xid1567127

# Basic vs Advanced Übersicht

| | Basic classification | Advanced classification |
|---|---|---|
| Availability | Available on the rich client and Active Workspace. | Available Active Workspace. |
| Effectiveness | Effective in defining objects uniquely with properties for reuse. | Effective in capturing overall product information for PIM and MDM systems with support for ECLASS standard class hierarchy and definitions. |
| Standard Features | • Classification hierarchical representation<br>• Flat list of properties<br>• List of values<br>• Unit of measure<br>• Support for views<br>• Limited to 200 Properties in a class | • Class definition versioning<br>• Flexible data modeling with attribute blocks, aspects, cardinality, and polymorphism.<br>• Complex data type attributes<br>• Native data storage<br>• Support for namespaces<br>• Unlimited number of properties<br>• No Array limitations |
| Data model standards | Supports DIN-4000 standard and confirms to underlying specifications of ISO/TS-13399 standard. | Supports ECLASS standard and conforms to DIN 4002, ISO 13584-32, ISO 13584-42, IEC 61360 standards. |
| Hierarchy and class definitions | Define custom hierarchy and class definitions. | Define custom hierarchy and class definitions.<br><br>Additionally supports standard based ECLASS hierarchy spanning more than 48 domains. |
| Data exchange support | Supports PLMXML, TCXML, and multisite. | Supports JSON, OntoML, BMEcat. |

Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL20231129261301184.class_aw/xid2022380

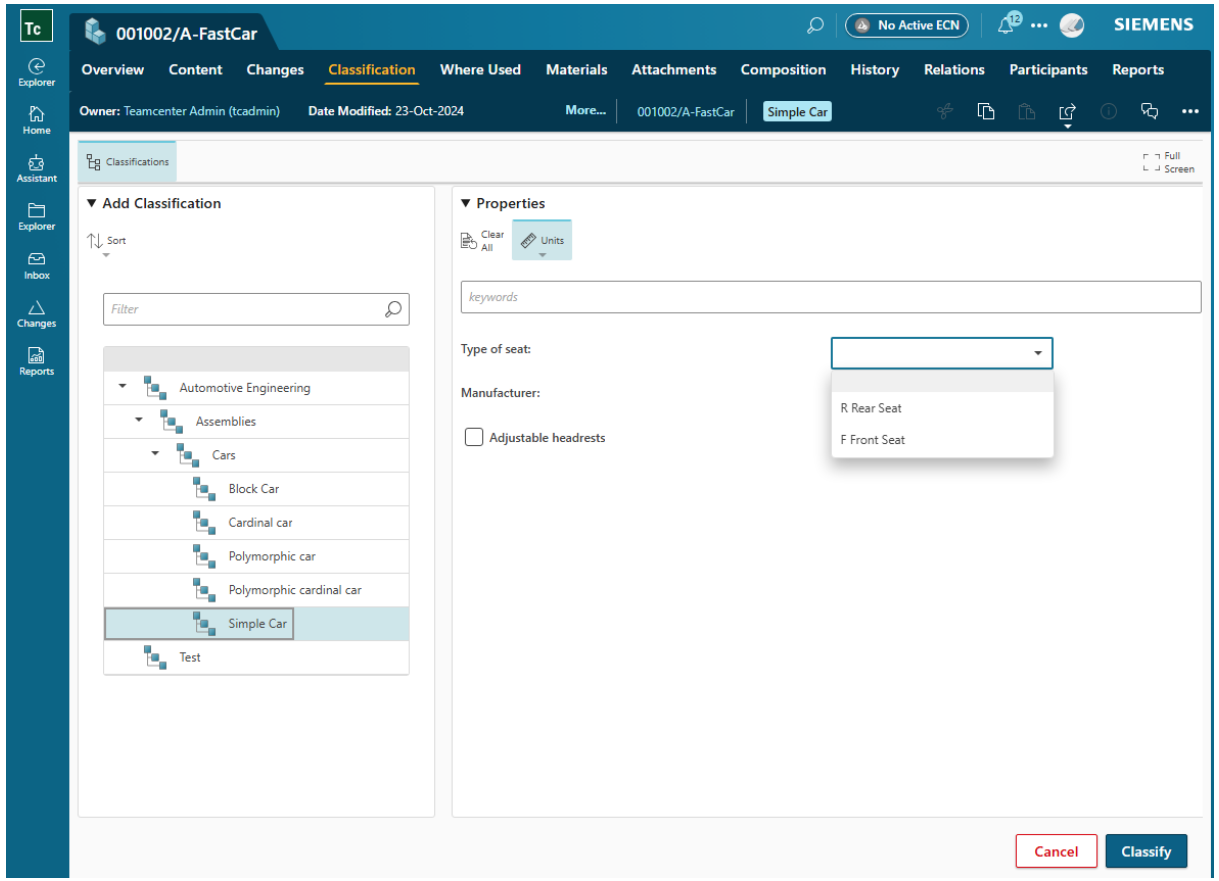
/// Classification

# FEATURES

- Basics
- Neuerungen

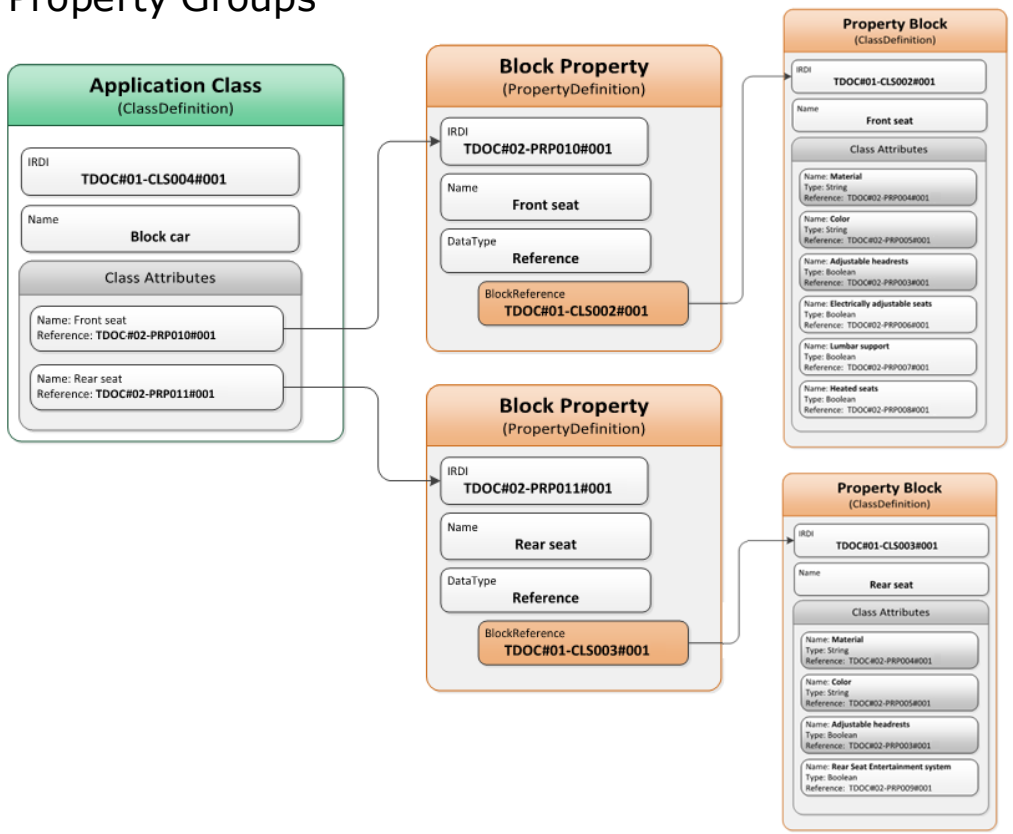
# Features
# Die Basics...

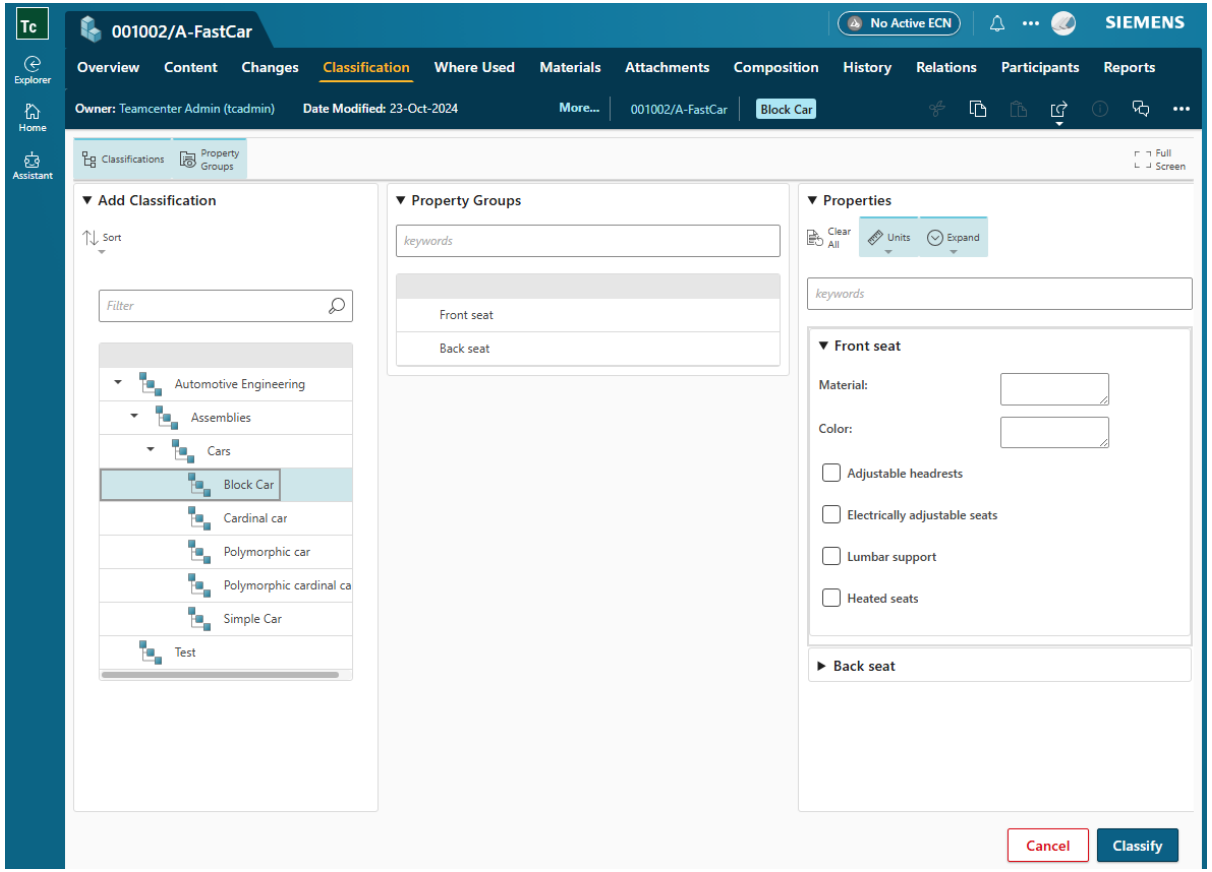
- KeyLov
  - Listen können verschachtelt sein
  - Referenzieren immer auf ein Property
- Properties
  - Beschreiben Attribute einer Klasse
  - String, Integer, Double, Bool,...
- Classes
  - Anwendungsklasse wird von Knoten referenziert und kann zum Speichern von Daten verwendet werden. Sie enthalten die Eigenschaften, die zur Definition der Klasse verwendet werden
  - Eigenschaftsblockklasse fasst Gruppen von Eigenschaften zusammen. Sie können häufig verwendete Eigenschaften gruppieren, um zu vermeiden, dass jede Eigenschaft wiederholt einer Klasse zugewiesen werden muss
- Nodes
  - Ein Gruppenknoten dient der Organisation und kann keine Daten enthalten.
  - Ein Masterknoten verweist auf eine Anwendungsklasse, die Daten enthält. Stammknoten können andere Stammknoten als Kinder haben.



# Features
# Die Neuerungen...

Property Groups

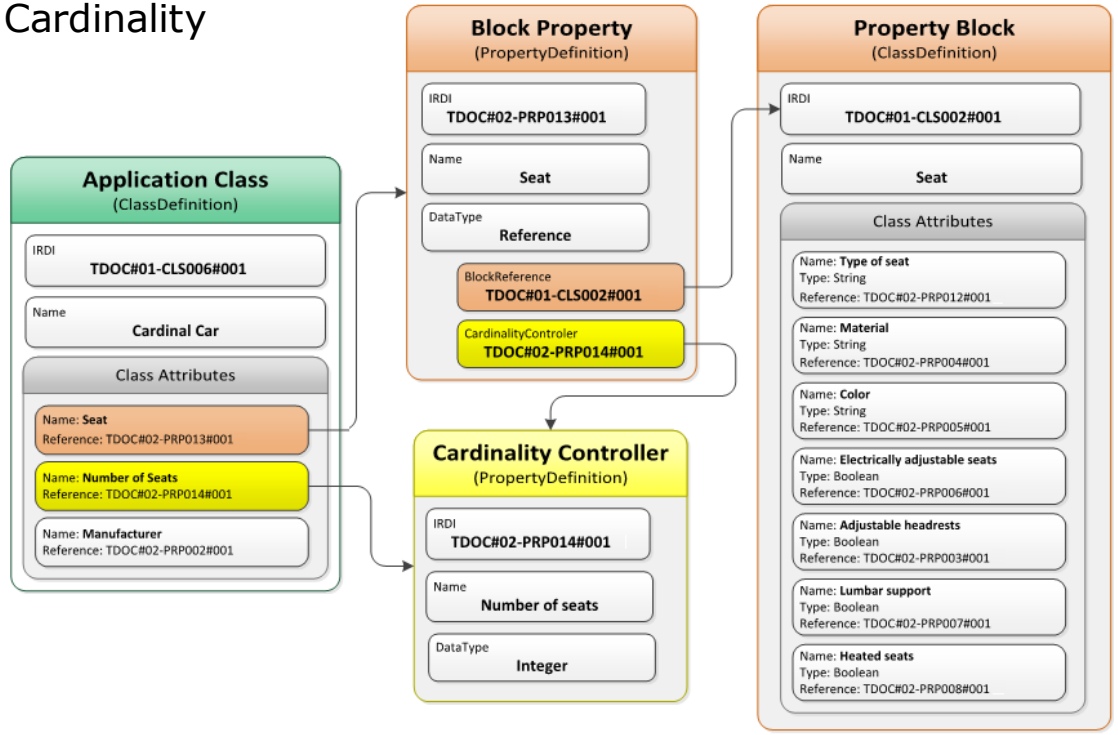


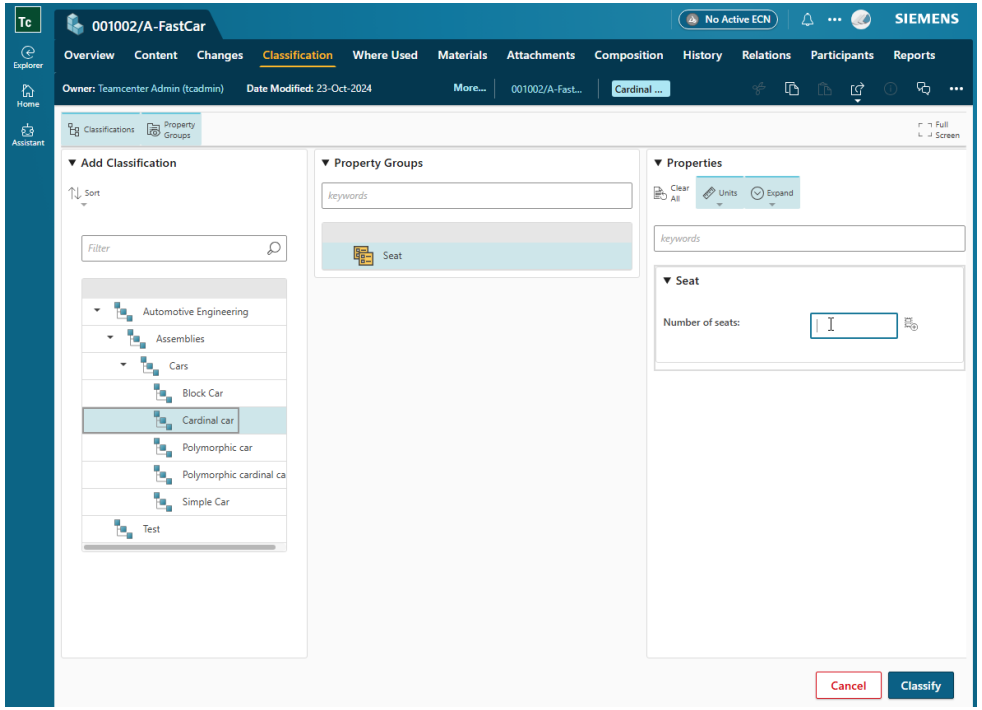

Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL20231129261301184.class_a w/xid1567127

# Features
# Die Neuerungen...

Cardinality

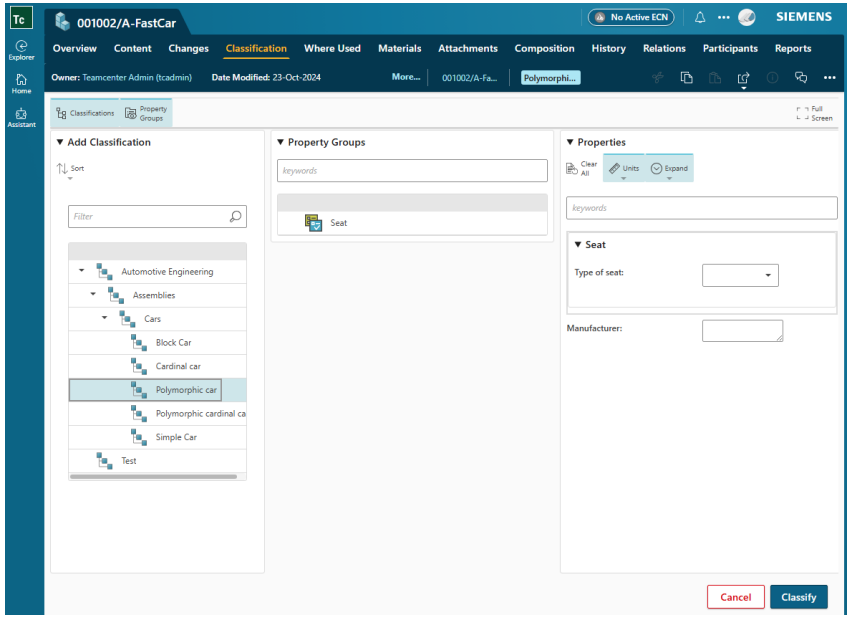


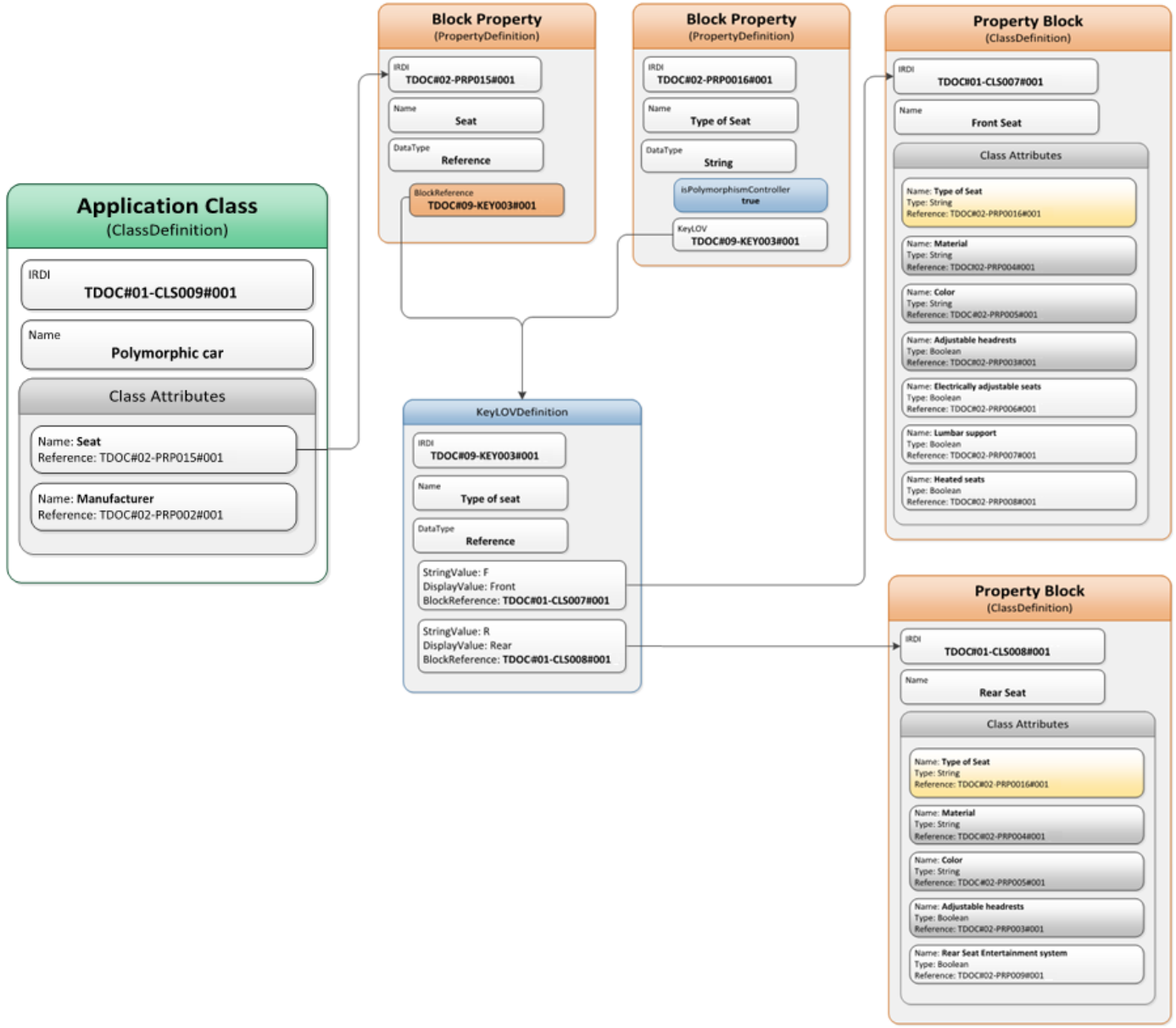

Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL20231129261301184.class_aw/xid1567127



# Features
# Die Neuerungen...

Polymorphism




Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL2023112926130118 4.class_a w/xid1567127

/// Classification

# IMPORT

- JSON
- Classification Manager

# Import JSON-Files

Generelle Struktur von JSON-Files

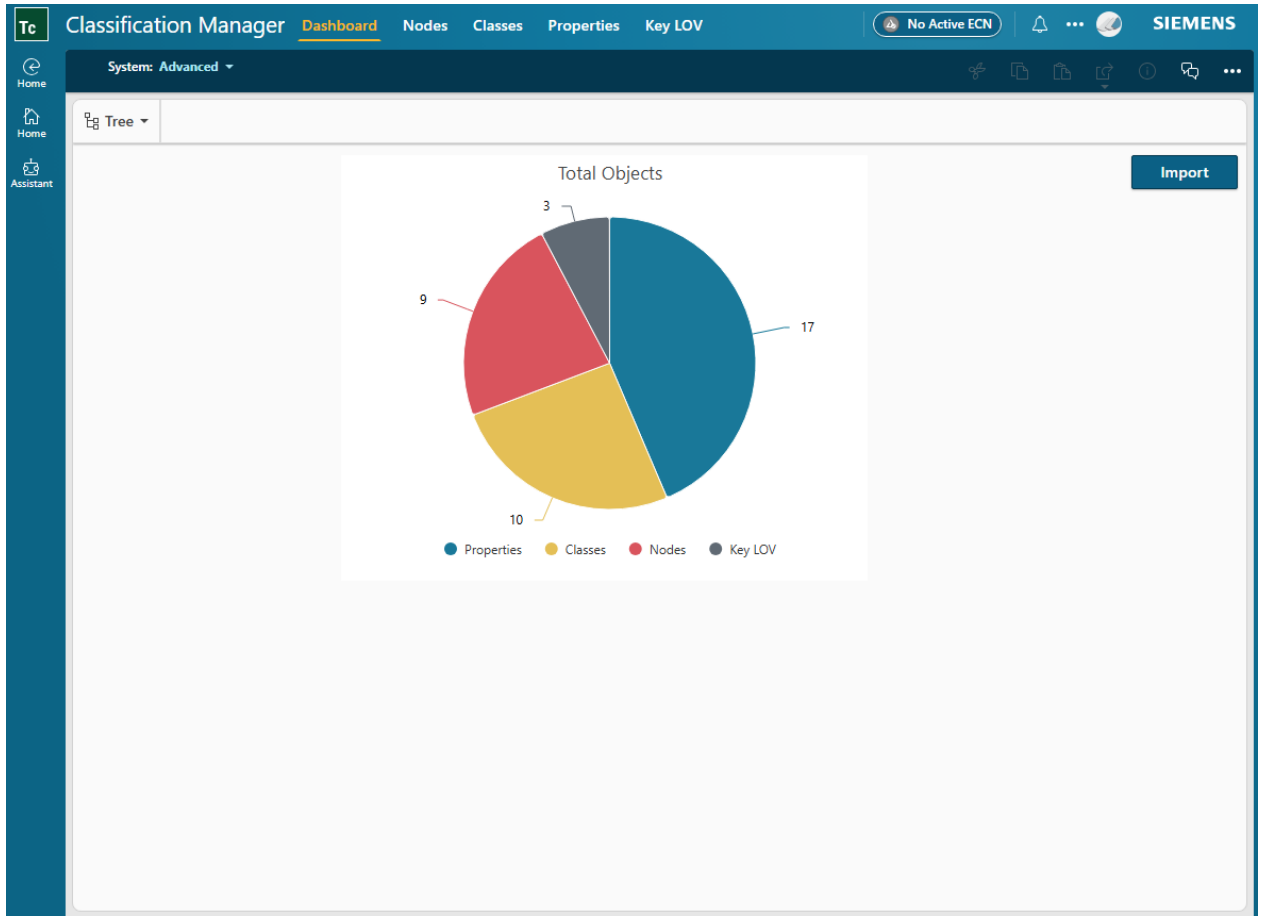
Zusatzinfo:

- Auch nützlich für das Anlegen von neuen Objekten
- `clsutility -create -classification_objects -request=itemCSTExample.json`

```
{
  "SchemaVersion": "1.0.0",
  "Locale": "en_US",
  "KeyLOVDefinitions": [
    {
      "ObjectType": "09",
      "Namespace": "DRWE",
      "ID": "KEY001",
      "Revision": "001",
      "Name": "Type of seat",
      "Status": "Develop",
      "LOVItems": {
        "DataType": "String",
        "LOVStringItems": [
          {
            "StringValue": "R",
            "DisplayValue": "Rear Seat"
          },
          {
            "StringValue": "F",
            "DisplayValue": "Front Seat"
          }
        ]
      }
    }
  ]
}
```

# Import Classification Manager

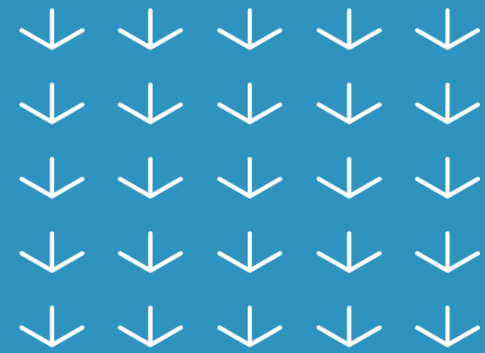
- Reihenfolge beachten
- Im- / Export in AWC möglich



/// Classification

# AI

- Funktion
- Training



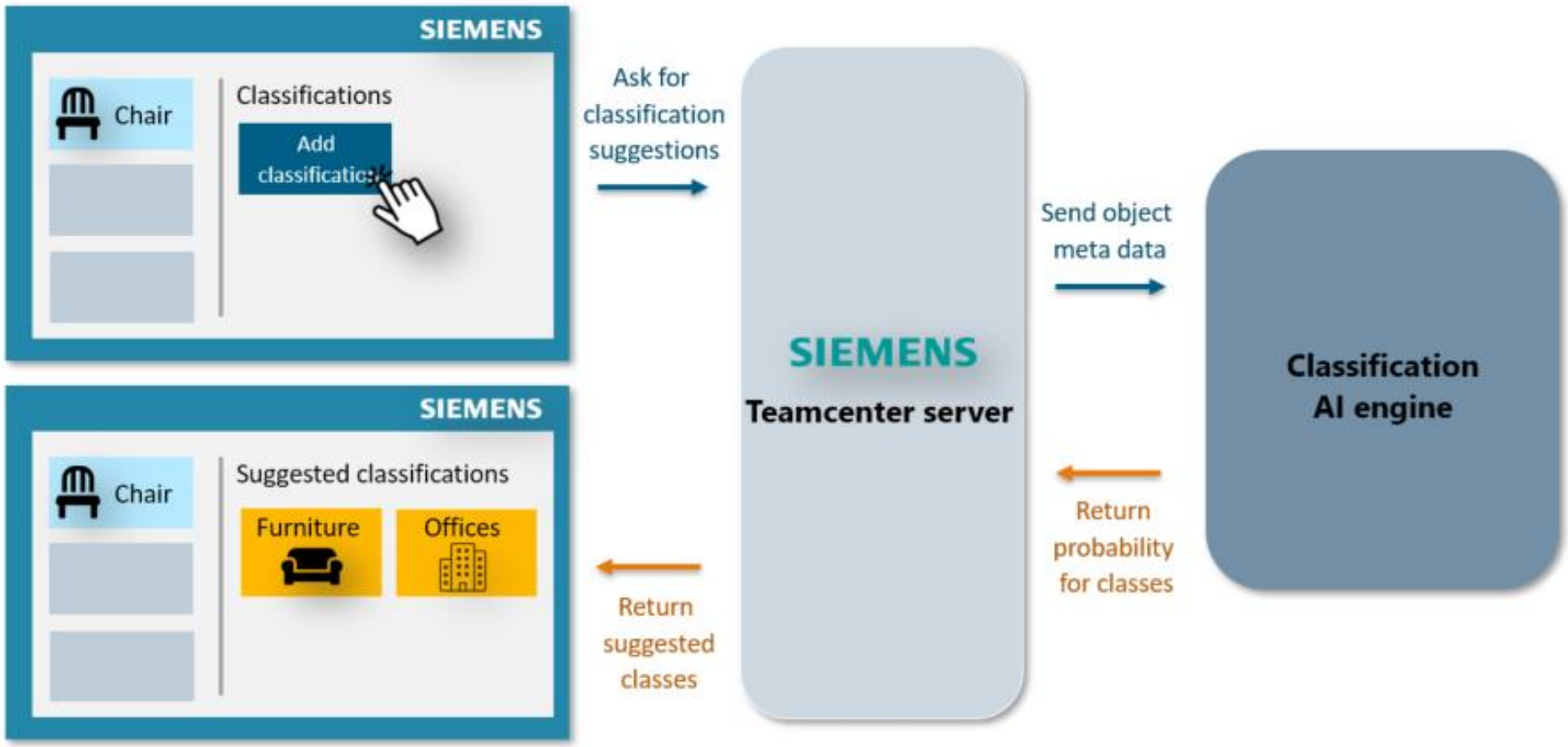
# AI Funktion?

Vorschlag von Klassen auf Basis von definierten Metadaten

- Basiert auf Tensorflow ML
- Kann auch mit Geolus Shape Search verknüpft werden

**Achtung:**

Nur bei großen Hierarchien und viele Daten sinnvoll.



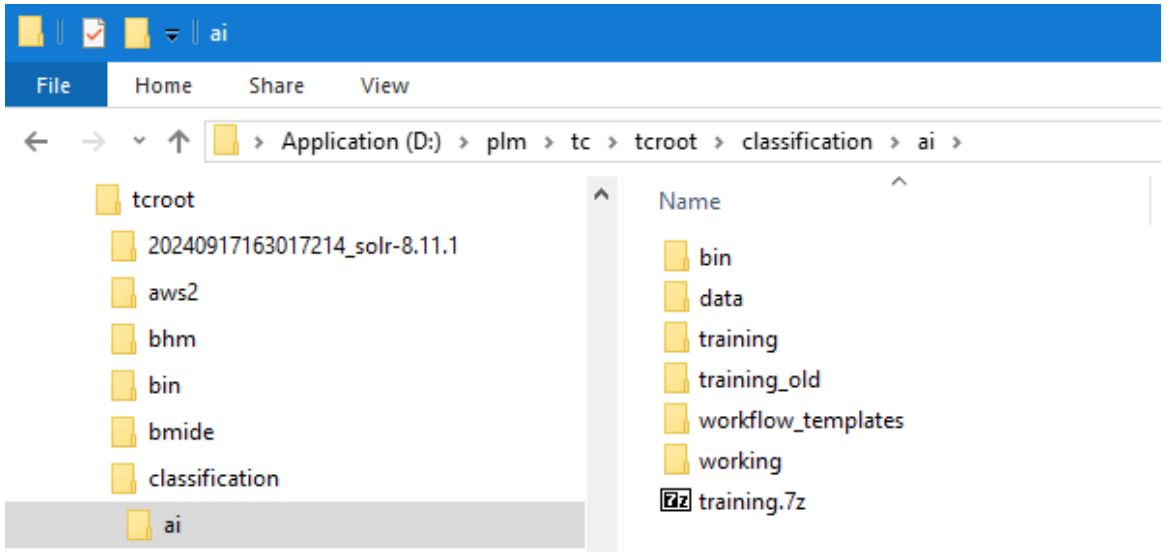

Quelle: https://docs.sw.siemens.com/en-US/doc/282219420/PL20231129261301184.class_aw/xid1567127

# AI Installation?

Installation laut Doku:

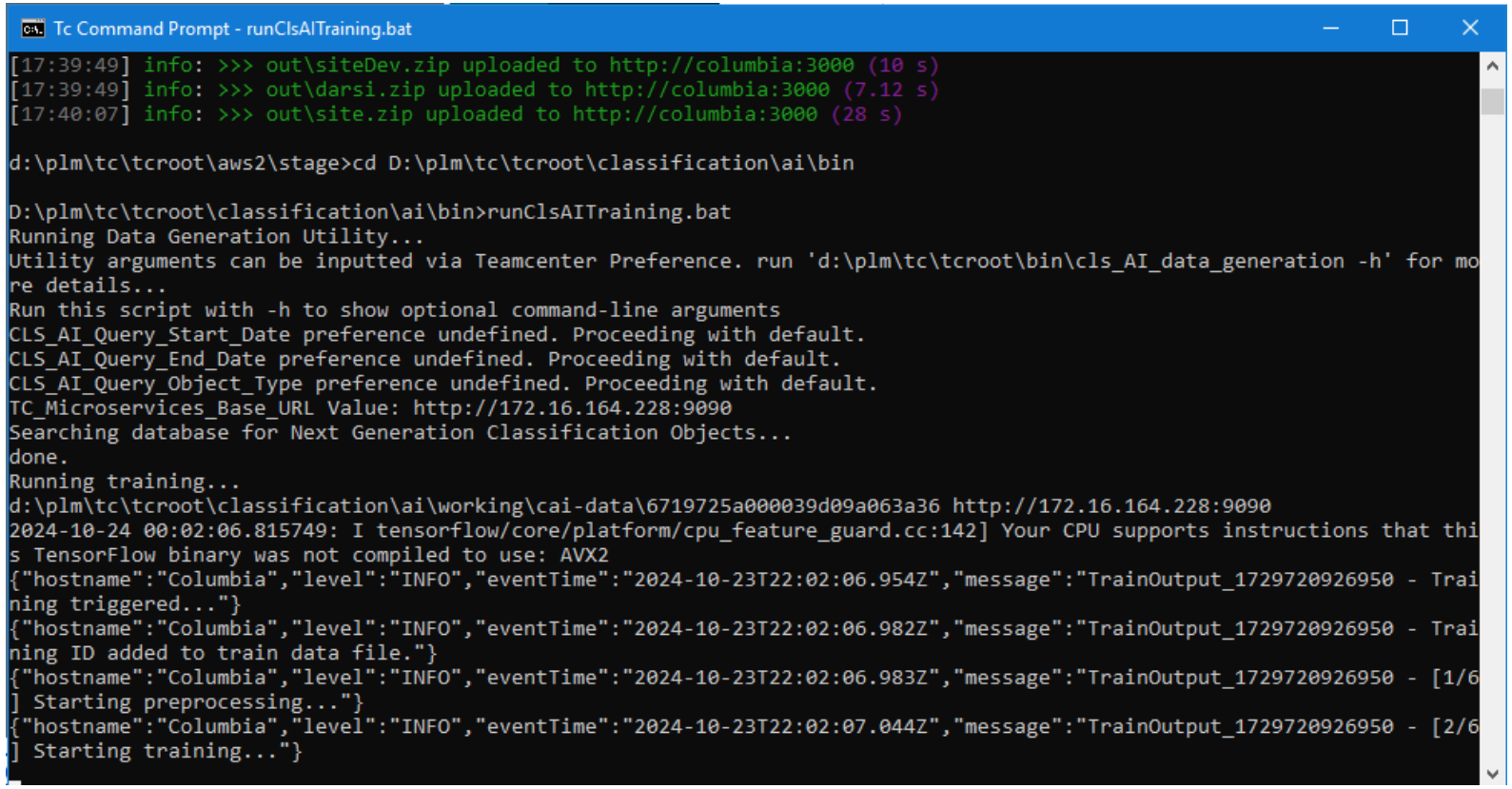
- Feature: Classification AI
- Feature: Classification AI Serving MS

Setzen von diversen Präferenzen nötig.

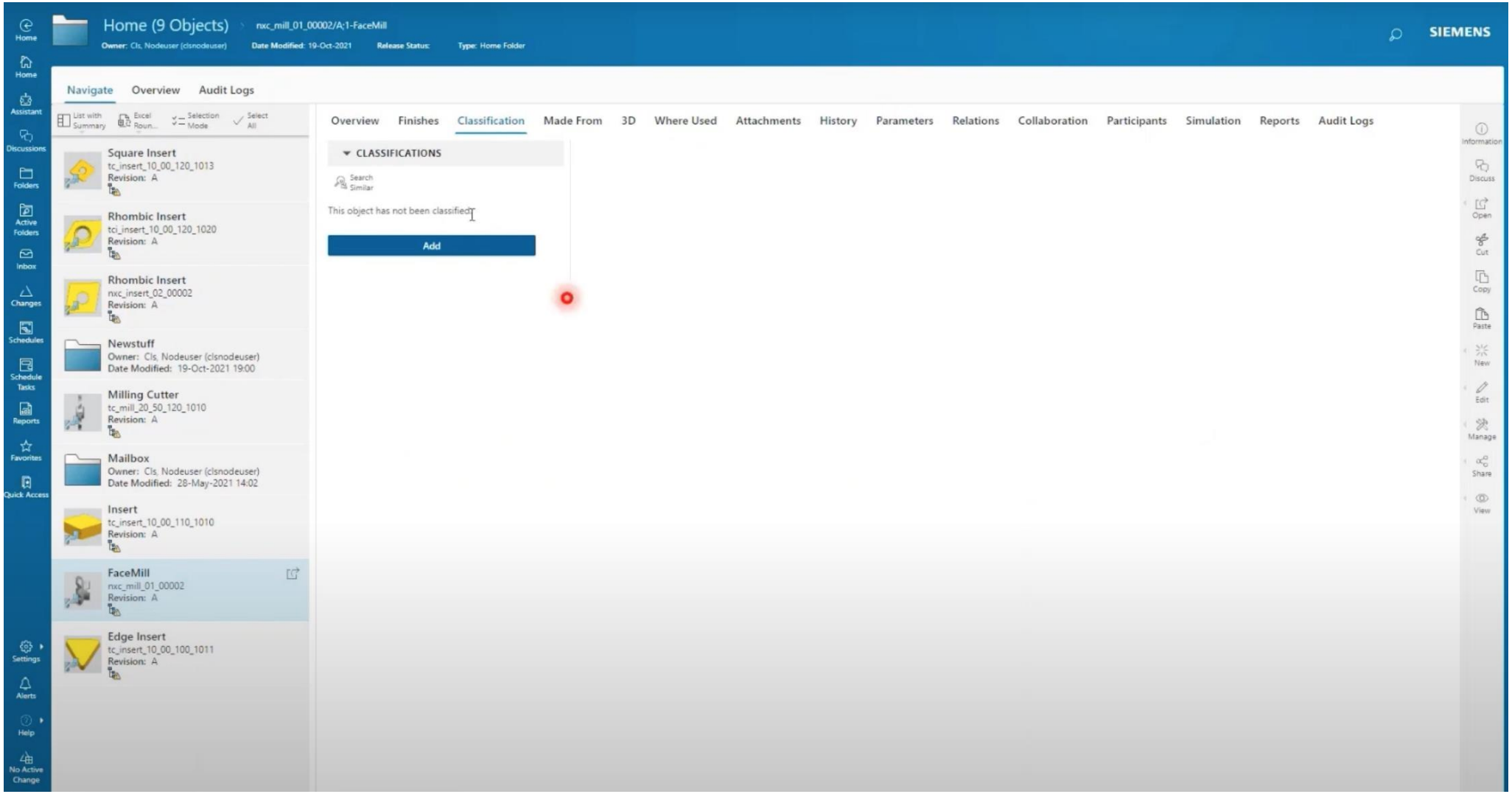


# AI Training?

- Skript `runClsAITraining` ausführen
- CSV Files monitoren per:
  - `cls_AI_data_generation`
- CSV Files landen automatisch im Filerepo und sind verfügbar



# AI Demo




Quelle: https://www.youtube.com/watch?v=Qc1Z0XMzuWo

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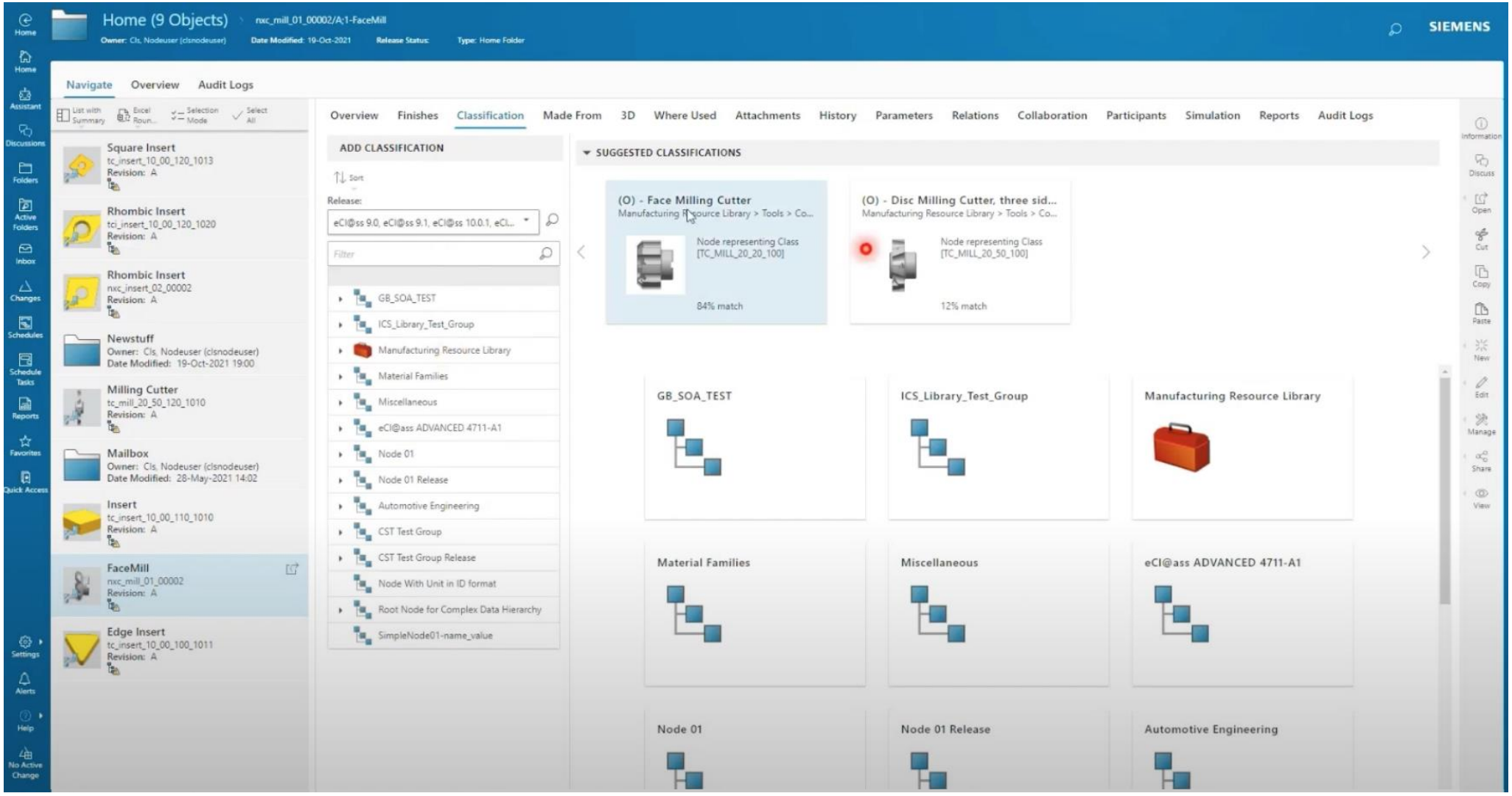
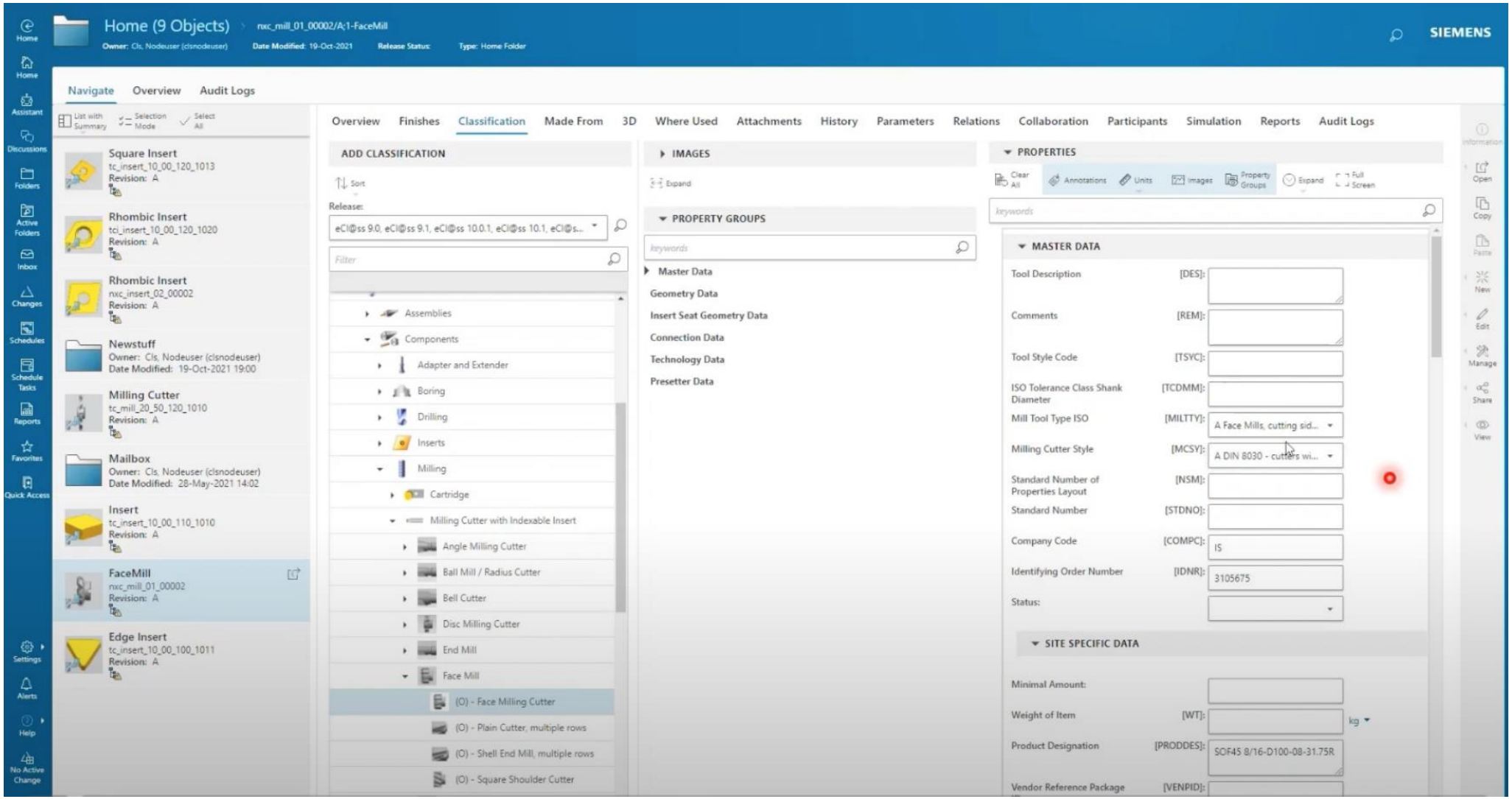



Quelle: https://www.youtube.com/watch?v=QclZ0XMzuWo

# AI Demo




Quelle: https://www.youtube.com/watch?v=Qc1Z0XMzuWo

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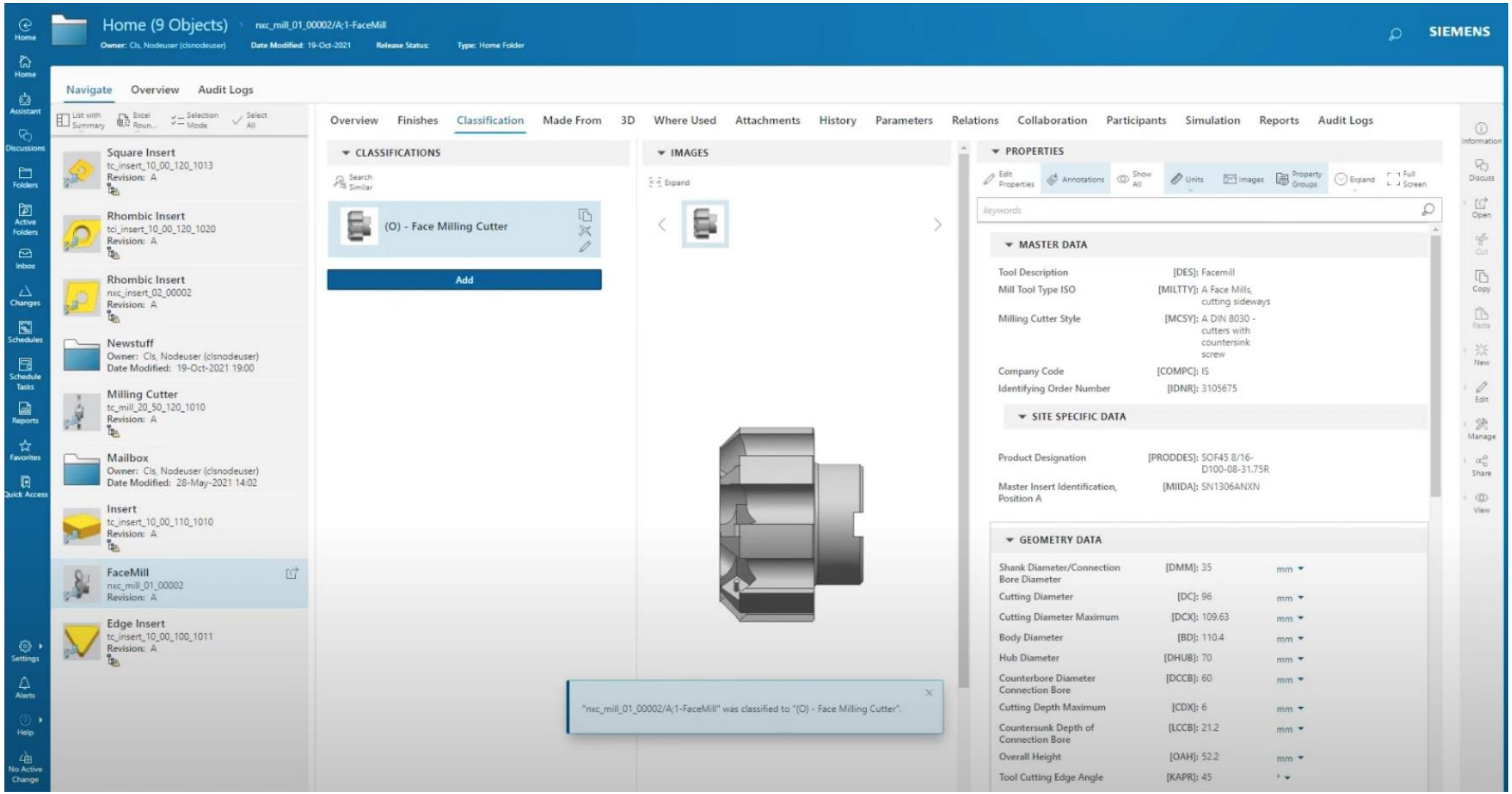


Quelle: https://www.youtube.com/watch?v=Qc1Z0XMzuWo

# VIELEN DANK!

DR. WALLNER ENGINEERING