

CATENA-X
STANDARD



CX - 0039 Semantic Model: Fleet Claim Data

BUSINESS DOMAIN: PLM & QUALITY

USE CASE: LIVE QUALITY LOOPS

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Note: Please specify the platform capability in the email subject line.

| | | |
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ABOUT THIS DOCUMENT & MOTIVATION

Catena-X is the first open and collaborative data ecosystem. The goal is to provide an environment for the creation, operation, and joint use of end-to-end data chains along the entire automotive value chain. All partners are on an equal ground, have sovereign control over their data and no lock-in effects occur. This situation provides a sustainable solution for the digitalization of supply chains, especially for medium-sized and small companies, and supports the cooperation and collaboration of market participants and competitors.

The ever-growing Catena-X ecosystem will enable enormous amounts of data to be integrated and collaboratively harnessed. To ensure that these complex data volumes can be sent, received, and processed smoothly across all stages of the value chain, one language for all players: common standards.

The standards of the Catena-X data ecosystem define how the exchange of data and information in our network works. They are the basis for ensuring that the technologies, components, and processes used are developed and operated according to uniform rules.

Common standards create added value for all partners: Within our network, data flows more smoothly through interfaces. In addition, we avoid cumbersome individual IT solutions for sharing data with other partners. In the field of international standardization, Catena-X follows the proven international standardization institutions: ISO/IEC/ITU and CEN-CENELC/ETSI.

For users and data providers, implementation of standards will reduce the costs that would arise from adapting different systems. In addition, no important data is lost. On the contrary, it even becomes easier to collect data across companies. For operators and developers, standards will create a framework that provides reliable orientation and planning security.

The following document describes one of the reference implementations used in the Catena-X ecosystem and the requirements needed to implement it. Here, it serves as main resource to illustrate the following data model. It contains information starting from the format of the model, up to the conceptual and physical model. Defining the data model as a reference implementation enables faster information exchange and homogeneity across the Catena-X ecosystem.

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¹ https://catena-x.net/fileadmin/user_upload/Vereinsdokumente/Catena-X_IP_Regelwerk_IP_Regulations.pdf

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¹ <https://catena-x.net/de/standardisierung/catena-x-einfuehren-umsetzen/standardisierung/standard-library>

MANAGEMENT SUMMARY

The Catena-X use case Live Quality Loops (QAX) provides the ability to detect quality issues the earliest possible to start root cause analyses and/or to enable an early warning feature for new quality topics. In subsequent steps counter measures can also be defined earlier and monitored. In sum, this reduces the number of vehicles affected by quality issues and increases the availability of the vehicle and built-in components. Catena-X use case Live Quality Loops is powered by Catena-X standard core components to share data from OEM and suppliers based on data sharing agreements and usage policies.

The Catena-X use case Live Quality Loops (QAX) uses multiple data models to exchange data between automotive manufacturer (OEM) and component supplier (TIER1). Each of these data models can be supplied independently.

The Fleet.ClaimData model is used to exchange customer complaints that are recorded in a workshop: If a customer has a complaint with his car during the warranty period, he goes to the workshop and wants the issue to be fixed. The data model Fleet.ClaimData allows to exchange multiple complaints with a component manufacturer at once.

1 INTRODUCTION

A quality topic has different natures: Proactive quality and reactive quality work.

Example for proactive quality work: A component supplier (TIER1) releases a new component for a vehicle. The TIER1 delivers this component to an automotive manufacturer (OEM). The OEM launches a new vehicle model with this component.

For both companies, the end-user experience of this component/of the new vehicle is key. Therefore, they align in a Catena-X QualityTask to exchange anonymized component performance data from the real vehicle to closely track the behavior of this component. They use Catena-X core infrastructure to exchange relevant data and start the collaborative quality monitoring.

Example for reactive quality work: More and more end-customers are complaining about a potentially faulty component in a specific vehicle model. The component supplier (TIER1) and the automotive manufacturer (OEM) are defining a Catena-X QualityTask to eliminate this quality topic.

They use the Catena-X core infrastructure to exchange relevant data and start the collaborative quality work to define countermeasures for the root cause(s).

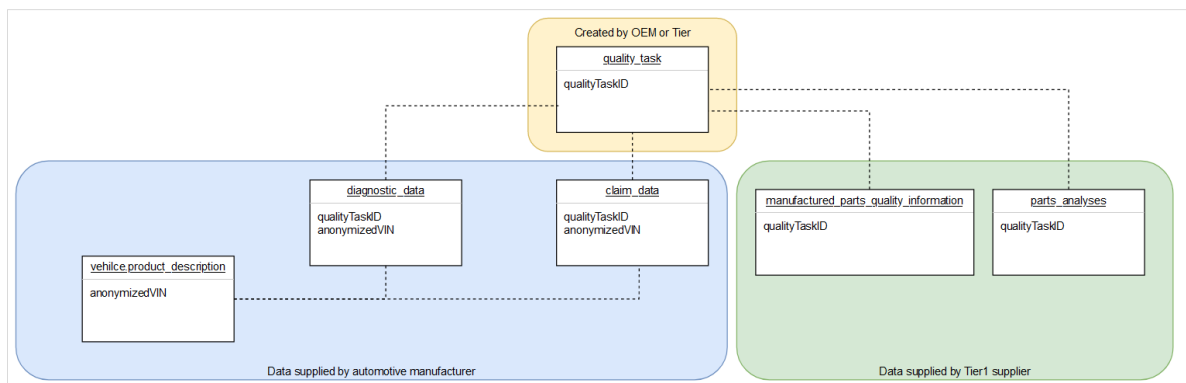


Figure 1: Hierarchy of Catena-X Live Quality Loops data models

Data models in QAX and their content:

- QualityTask is the root element and describes why companies are working together on a quality topic and what they want to do. All involved companies and their contact people are named. In addition, a flag tells what should be done with exchanged data after a QualityTask is closed.
- Vehicle.ProductDescription: This data model is a representation of one vehicle affected by this QualityTask. The model represents the vehicle when it was sold to the end-customers from an end-customers point of view: Which standard equipment was installed in the vehicle and which extra equipment was installed in the vehicle.

- Fleet.DiagnosticData: Diagnostic data coming from multiple vehicles that are affected by this QualityTask + Diagnostic data from similar vehicles that are not affected by this QualityTask.
- **Fleet.ClaimData**: Customer complaints that are linked to this QualityTask + Data about the exchange of potentially faulty parts
- ManufacturedPartsQualityInformation: A selection of manufacturing-related parameters that help to solve the QualityTask
- PartsAnalyses: Analyses results of replaced, potentially faulty parts, that are linked to this QualityTask

The Fleet.ClaimData model consists of a list of claims. Each claim represents a customer complaint. Some customer complaints are fixed by doing a software update, for some customer complaints a potentially faulty part is replaced by a new one/spare part. Each claim entity has a link to the quality task via qualityTaskID.

If diagnostic data sessions to this claim exist, the reference to these sessions can be added using the list element of diagnostic data sessions. In this case, a diagnostic data session id is added here. The claim entity has a repair date, a technician comment, and an optional customer comment. The vehicle identifiers entity is used to get the reference to the Vehicle.ProductDescription data model.

During the fixing of a claim, a list of parts can be replaced, updated by a new software version, etc. This information is stored in the list of claimed parts. Each claimed part entity has a sub-entity for the replaced part and the spare part that was put into the vehicle. Both parts can come from different component suppliers. Each part can have a number for common parts, a unique serial number for serial parts and a Catena-X Id for parts where a digital twin of this part exists.

2 PURPOSE OF THE DOCUMENT

The purpose of this document is to make the reader familiar with the Catena-X use case Live Quality Loops (QAX) and the Catena-X data models that were defined by QAX. The Fleet.ClaimData is used to describe vehicle repairs like part replacements. The reader of this document should be able to understand the core principles of this Catena-X data model.

The Fleet.ClaimData is made of a list of claims. The claims come from the customers and can be solved either by software updates or by replacement of spare parts. This model is linked with the model QualityTask via qualityTaskID.

3 SCOPE OF THE IMPLEMENTATION

This chapter serves to situate the given reference implementation, to outline its prerequisites and to point out its limitations.

3.1 PRECONDITIONS AND DEPENDENCIES

Like all Catena-X data models, this model will be available in a machine-readable format on GitHub¹.

This aspect model is written in BAMM 2.0 as a modeling language, which is a separate industry standard from the open manufacturing platform, see Open Manufacturing².

The data contained in this Catena-X data model is requested and exchanged via Catena-X using an Eclipse Dataspace Connector (EDC), which is a separate Catena-X standard and an implementation of the IDSA standard.

The recommendation is to use Apache parquet⁴ file format together with EDC S3 data plane for file data exchange.

3.2 CONSTRAINTS AND LIMITATIONS

There are no constraints and limitations to this reference implementation document.

3.3 LICENSE

This Catena-X data model is an outcome of Catena-X use case group Live Quality Loops (QAX). This Catena-X data model is made available under the terms of the Creative Commons Attribution 4.0 International (CC-BY-4.0) license, which is available at Creative Commons³.

¹ <https://github.com/eclipse-tractusx/sldt-semantic-models>.

² <https://openmanufacturingplatform.github.io/>

³ <https://creativecommons.org/licenses/by/4.0/legalcode>

⁴ <https://parquet.apache.org/>

4 DATA MODEL

The data model is described in BAMB and is available in the semantic hub from which the following description originates.

4.1 OVERVIEW

The data model can be described in different formats. The graphical representation of this data model can be found in the annex.

| ClaimData | |
|-------------|-------------------------|
| Description | Claim data from a fleet |
| Name | ClaimData |

4.2 PROPERTIES

A property of a BAMB Aspect Meta Model represents a named value and the following are the properties that refer to the aspect of the model.

| ListOfClaims | |
|----------------|--|
| Description | List of Claims |
| Name | listOfClaims |
| Characteristic | List Has a certain order Duplicates allowed Type urn:bamm:io.catenax.fleet.claim_data:1.0.0#Claim |
| Optional | No |
| In Payload | Yes |
| Payload Key | listOfClaims |

4.3 ENTITIES

An entity is a logical encapsulation of multiple values. It has a number of properties, which are described in the following, starting with the entity, followed by its properties.

4.3.1 Properties of the Entity Part

| Part | |
|-------------|-------------------|
| Description | One specific part |
| Name | Part |

| IsPartReplaced | |
|-----------------------|--|
| Description | Flag is set if part was replaced. True: replaced False: not replaced |
| Name | isPartReplaced |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#boolean |
| Example | true |
| Optional | No |
| In Payload | Yes |
| Payload Key | isPartReplaced |

| IsPartCausal | |
|-----------------------|---|
| Description | Flag set to true if part was causing the problem. True: part caused the problem. False: part did not cause the problem. |
| Name | isPartCausal |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#boolean |
| Example | True |
| Optional | No |
| In Payload | Yes |
| Payload Key | isPartCausal |

| AmountOfReplacedParts | |
|-----------------------|---|
| Description | Counter for non-serial parts which have been replaced |
| Name | amountOfReplacedParts |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#nonNegativeInteger |
| Example | 2 |
| Optional | Yes |
| In Payload | Yes |
| Payload Key | amountOfReplacedParts |

| ReplacedPart | |
|-----------------------|--|
| Description | The part which was affected and replaced |
| Name | replacedPart |
| Characteristic | PartCharateristic |

| | |
|--------------------|--|
| | Type urn:bamm:io.catenax.fleet.claim_data:1.0.0#Part |
| Optional | No |
| In Payload | Yes |
| Payload Key | replacedPart |

| | |
|-----------------------|---|
| Spare Part | |
| Description | The part which has been built in |
| Name | sparePart |
| Characteristic | PartCharateristic Type urn:bamm:io.catenax.fleet.claim_data:1.0.0#Part |
| Optional | No |
| In Payload | Yes |
| Payload Key | sparePart |

4.3.2 Properties of Entity Part/PartCharateristic

| | |
|--------------------|--|
| Part | |
| Description | A generic description of a part of the car |
| Name | Part |

| | |
|-----------------------|--|
| Number | |
| Description | OEM specific part number |
| Name | number |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | FZ206460050202212 |
| Optional | No |
| In Payload | Yes |
| Payload Key | number |

| | |
|-----------------------|--|
| Name | |
| Description | OEM specific name of the part |
| Name | name |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | Getriebe |

| | |
|--------------------|------|
| Optional | No |
| In Payload | Yes |
| Payload Key | name |

| SerialNumber | |
|-----------------------|--|
| Description | OEM serial part number of the part - only available for serial parts |
| Name | serialNumber |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | ECU20646005020221 |
| Optional | Yes |
| In Payload | Yes |
| Payload Key | serialNumber |

| Catena-X Identifier | | |
|----------------------------|--|-------------|
| Description | A fully anonymous Catena-X identifier that is registered in C-X Digital twin registry. This property is being used for vehicles, parts, workshops, etc. Optional, not always available. | |
| Name | catenaXId | |
| Characteristic | Trait Type http://www.w3.org/2001/XMLSchema#string | |
| Example | urn:uuid:580d3adf-1981-44a0-a214-13d6ceed9379 | |
| Optional | Yes | |
| In Payload | Yes | |
| Payload Key | CatenaXId | |
| Constraints | Catena-X Id Regular Expression | |
| | <table border="1"> <tr> <td>Description</td> <td>The provided regular expression ensures that the UUID is composed of five groups of characters separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 hexadecimal characters and</td> </tr> </table> | Description |
| Description | The provided regular expression ensures that the UUID is composed of five groups of characters separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 hexadecimal characters and | |

| | | |
|--|--------------------|---|
| | | 4 hyphens), prefixed by "urn:uuid:" to make it an IRI. |
| | Reference | https://datatracker.ietf.org/doc/html/rfc4122 |
| | Regular expression | <code>^urn:uuid:[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$</code> |

| Supplier ID | |
|----------------|--|
| Description | OEM-specific ID of the supplier that manufactured the part that was put out - available if known |
| Name | supplierId |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | ZF2064600502 |
| Optional | Yes |
| In Payload | Yes |
| Payload Key | supplierId |

4.3.3 Properties of Entity Claim

| Text | |
|-------------|--------------------------------|
| Description | Everything to describe a claim |
| Name | Text |

| ListOfDiagnosticSessionId | |
|---------------------------|---|
| Description | References to a list of diagnostic session IDs |
| Name | listOfDiagnosticSessionId |
| Characteristic | List Has a certain order Duplicates allowed Type http://www.w3.org/2001/XMLSchema#string |
| Example | 20221205-04 |
| Optional | Yes |
| In Payload | Yes |
| Payload Key | listOfDiagnosticSessionId |

| Repair mileage | |
|-----------------------|---|
| Description | Mileage of the car when the claim was reported |
| Name | repairMileage |
| Characteristic | Measurement Unit Kilometer Symbol km Code KMT Conversion factor 10 ³ m Type http://www.w3.org/2001/XMLSchema#positiveInteger |
| Example | 10251 |
| Optional | No |
| In Payload | Yes |
| Payload Key | repairMileage |

| RepairDate | |
|-----------------------|--|
| Description | References the date when the claim was initially reported |
| Name | repairDate |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#dateTime |
| Example | 2022-02-04T14:48:54 |
| Optional | No |
| In Payload | Yes |
| Payload Key | repairDate |

| TechnicianComment | |
|-----------------------|--|
| Description | Short description of the claim from the technician |
| Name | technicianComment |
| Characteristic | Type http://www.w3.org/1999/02/22-rdf-syntax-ns#langString |
| Example | Lenkung ist defekt |
| Optional | No |
| In Payload | Yes |

| | |
|--------------------|-------------------|
| Payload Key | technicianComment |
|--------------------|-------------------|

| CustomerComment | |
|------------------------|--|
| Description | Short description of the claim from customer view |
| Name | customerComment |
| Characteristic | Type http://www.w3.org/1999/02/22-rdf-syntax-ns#langString |
| Example | Lenkung ist defekt |
| Optional | Yes |
| In Payload | Yes |
| Payload Key | customerComment |

| ClaimID | |
|-----------------------|--|
| Description | Claim ID is unique for each OEM |
| Name | claimId |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | a214-13d6 |
| Optional | No |
| In Payload | Yes |
| Payload Key | claimId |

| vehicle identifiers | |
|----------------------------|--|
| Description | One single vehicle |
| Name | vehicleIdentifiers |
| Characteristic | SingleEntity Type urn:bamm:io.catenax.fleet.claim_data:1.0.0#VehicleIdentifiers |
| Optional | No |
| In Payload | Yes |
| Payload Key | vehicleIdentifiers |

| ListOfParts | |
|--------------------|--|
| Description | A list of parts which will be replaced or repaired |

| | |
|-----------------------|--|
| Name | listOfParts |
| Characteristic | SingleEntity Type urn:bamm:io.catenax.fleet.claim_data:1.0.0#ClaimedPart |
| Optional | No |
| In Payload | Yes |
| Payload Key | listOfParts |

| QualityTaskID | |
|-----------------------|---|
| Description | Reference to a Quality Task: A unique identifier. The company creating this quality task sets this identifier. The identifier should contain the BPN to make it unique inside the CX network. |
| Name | qualityTaskId |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | BPN-811_2022_000001 |
| Optional | No |
| In Payload | Yes |
| Payload Key | qualityTaskId |

| DamageCode | |
|-----------------------|--|
| Description | OEM-specific damage code |
| Name | damageCode |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | Lenkmuffe |
| Optional | Yes |
| In Payload | Yes |
| Payload Key | damageCode |

4.3.4 Properties of Entity Vehicle Identifiers

| Vehicle identifiers | |
|----------------------------|---------------------|
| Description | One single vehicle |
| Name | Vehicle identifiers |

| vehicleCatenaXId | | | | | | | |
|-----------------------|--|-------------|---|-----------|---|--------------------|--|
| Description | Catena-X car ID /digital twin of car | | | | | | |
| Name | vehicleCatenaXId | | | | | | |
| Characteristic | Trait Type http://www.w3.org/2001/XMLSchema#string | | | | | | |
| Example | 580d3adf-1981-44a0-a214 | | | | | | |
| Optional | Yes | | | | | | |
| In Payload | Yes | | | | | | |
| Payload Key | vehicleCatenaXId | | | | | | |
| Constraints | Catena-X Id Regular Expression | | | | | | |
| | <table border="1"> <tr> <td>Description</td> <td>The provided regular expression ensures that the UUID is composed of five groups of characters separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 hexadecimal characters and 4 hyphens), optionally prefixed by \"urn:uuid:\" to make it an IRI.</td> </tr> <tr> <td>Reference</td> <td>https://datatracker.ietf.org/doc/html/rfc4122</td> </tr> <tr> <td>Regular expression</td> <td>(^[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$) (^urn:uuid:[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$)</td> </tr> </table> | Description | The provided regular expression ensures that the UUID is composed of five groups of characters separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 hexadecimal characters and 4 hyphens), optionally prefixed by \"urn:uuid:\" to make it an IRI. | Reference | https://datatracker.ietf.org/doc/html/rfc4122 | Regular expression | (^[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$) (^urn:uuid:[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$) |
| Description | The provided regular expression ensures that the UUID is composed of five groups of characters separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 hexadecimal characters and 4 hyphens), optionally prefixed by \"urn:uuid:\" to make it an IRI. | | | | | | |
| Reference | https://datatracker.ietf.org/doc/html/rfc4122 | | | | | | |
| Regular expression | (^[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$) (^urn:uuid:[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}\$) | | | | | | |

| Anonymized Vin | |
|-----------------------|--|
| Description | OEM-specific hashed VIN; link to car data over pseudonymized/hashed VIN or Catena-X unique digital twin identifier |
| Name | anonymizedVIN |
| Characteristic | Type http://www.w3.org/2001/XMLSchema#string |
| Example | ABC20654378784512 |
| Optional | No |
| In Payload | Yes |
| Payload Key | anonymizedVIN |

5 NORMATIVE REFERENCES

The following references refer to related Catena-X reference implementation and external standards. This is intended to place the present reference implementation in the context of existing references.

5.1 CATENA-X REFERENCE IMPLEMENTATIONS

| Catena-X Reference Implementations ² | |
|---|------------------------------------|
| CX - 0003 | BAMM Aspect Meta Model |
| CX - 0004 | Governance Process |
| CX - 0010 | Business Partner Number |
| CX - 0018 | Eclipse Data Space Connector (EDC) |

5.2 COMMON STANDARDS

| Common Standards | |
|------------------|--|
| IDSA | International Data Spaces Association ¹ |

¹ <https://internationaldataspaces.org/we/the-association/>

² <https://catena-x.net/de/standard-library>

GLOSSARY

ABBREVIATIONS

| Abbreviations | Description |
|---------------|---------------------------------------|
| BAMM | BAMM Aspect Meta Model |
| IDSA | International Data Spaces Association |

ADDENDUM FOR CONFORMITY ASSESSMENT

DISCLAIMER

The following pages are not part of the standard documentation.

CATENA-X

ADDENDUM FOR CONFORMITY
ASSESSMENT



CX – 0039 SEMANTIC MODEL: FLEET CLAIM DATA

BUSINESS DOMAIN: PLM & QUALITY

USE CASE: LIVE QUALITY LOOPS

Contact: standardisierung@catena-x.net

Note: Please specify the platform capability in the subject line.

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ABOUT THIS DOCUMENT & MOTIVATION

The **standards of the Catena-X data ecosystem** define how the exchange of data and information in our network works. They are the basis for ensuring that the technologies, components, and processes used are developed and operated according to uniform rules.

The addendum for conformity assessment clarifies the requirements and scope for each standard. It contains conformity assessment criteria (CAC) that specify how a participant can receive a certificate for the correct application of the standard.

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¹ https://catena-x.net/fileadmin/user_upload/Vereinsdokumente/Catena-X_IP_Regelwerk_IP_Regulations.pdf

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¹ <https://catena-x.net/de/standard-library>

1 INTRODUCTION

This document describes the semantic model “Fleet Claim Data” used in the Catena-X network.

1.1 AUDIENCE & SCOPE

This section is non-normative

The described semantic model is relevant for :

- Data Provider / Consumer
- Business Application Provider

1.2 CONTEXT

This section is non-normative

The Catena-X use case Live Quality Loops (QAX) uses multiple data models to exchange data between automotive manufacturer (OEM) and component supplier (TIER1). Each of these data models can be supplied independently.

The Fleet.ClaimData model is used to exchange customer complaints that are recorded in a workshop: If a customer has a complaint with his car during the warranty period he goes to the workshop and wants the issue to be fixed. The data model Fleet.ClaimData allows to exchange multiple complaints with a component manufacturer at once.

1.3 CONFORMANCE

As well as sections marked as non-normative, all authoring guidelines, diagrams, examples, and notes in this specification are non-normative. Everything else in this specification is normative.

The key words MAY, MUST, MUST NOT, OPTIONAL, RECOMMENDED, REQUIRED, SHOULD and SHOULD NOT in this document are to be interpreted as described in [BCP 14](#) [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

1.4 PROOF OF CONFORMITY

This section is non-normative

All participants and their solutions will need to prove, that they are conform with the Catena-X standards. To validate that the standards are applied correctly, Catena-X employs Conformity Assessment Bodies (CABs).

For Data Provider: To prove conformity you have to fulfill all MUST criteria mentioned in chapter [Normative criteria for Data Provider](#).

There is no proof of conformity necessary for Data Consumer.

For Business Application Provider: To prove conformity you have to fulfill all MUST criteria mentioned in chapter [Normative criteria for Business Application Provider](#).

A model validator needs to be created, to proof the correctness of the data model. A generic test set created for the model needs to proof the expected results

1.5 EXAMPLES

Example payload in JSON format:

```
{
  "listOfClaims" : [ {
    "damageCode" : "Lenkmuffe",
    "vehicleIdentifiers" : {
      "anonymizedVIN" : "ABC20654378784512",
      "vehicleCatenaXId" : "580d3adf-1981-44a0-a214"
    },
    "listOfDiagnosticSessionId" : [ "20221205-04" ],
    "customerComment" : "Lenkung ist defekt",
    "qualityTaskId" : "BPN-811_2022_000001",
    "technicianComment" : "Lenkung ist defekt",
    "repairMileage" : 10251,
    "claimId" : "a214-13d6",
    "listOfParts" : {
      "isPartCausal" : true,
      "sparePart" : {
        "name" : "Getriebe",
        "number" : "FZ206460050202212",
        "catenaXId" : "580d3adf-1981-44a0-a214-13d6ceed9379",
        "serialNumber" : "ECU20646005020221",
        "supplierId" : "ZF2064600502"
      },
      "replacedPart" : {
```

```
"name" : "Getriebe",  
"number" : "FZ206460050202212",  
"catenaXId" : "580d3adf-1981-44a0-a214-13d6ceed9379",  
"serialNumber" : "ECU20646005020221",  
"supplierId" : "ZF2064600502"  
},  
"isPartReplaced" : true,  
"amountOfReplacedParts" : 2  
},  
"repairDate" : "2022-02-04T14:48:54"  
}]  
}
```

1.6 TERMINOLOGY

This section is non-normative

Business Partner Number (BPN)

A BPN is the unique identifier of a partner within Catena-x.

2 ASPECT MODEL FLEET CLAIM DATA

2.1 INTRODUCTION

Catena-X use case “Live Quality Loops” (QAX) uses several Catena-X standardized data models to exchange data:

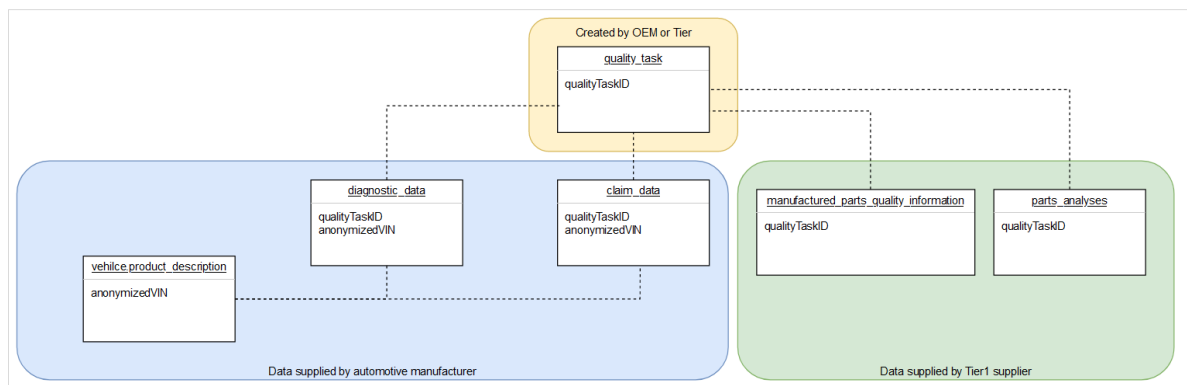


Figure 1: Hierarchy of Catena-X data models used in QAX

Data models in QAX and their content:

- QualityTask is the root element and describes why companies are working together on a quality topic and what they want to do. All involved companies and their contact people are named. In addition, a flag tells what should be done with exchanged data after a QualityTask is closed.
- Vehicle.ProductDescription: This data model is a representation of one vehicle affected by this QualityTask. The model represents the vehicle when it was sold to the end-customers from an end-customers point of view: Which standard equipment was installed in the vehicle and which extra equipment was installed in the vehicle.
- Fleet.DiagnosticData: Diagnostic data coming from multiple vehicles that are affected by this QualityTask + Diagnostic data from similar vehicles that are not affected by this QualityTask.
- Fleet.ClaimData: Customer complaints that are linked to this QualityTask + Data about the exchange of potentially faulty parts
- ManufacturedPartsQualityInformation: A selection of manufacturing-related parameters that help to solve the QualityTask
- PartsAnalyses: Analyses results of replaced and potentially faulty parts that are linked to this QualityTask

2.2 NORMATIVE CRITERIA

The usage of the described semantic model “Fleet Claim Data” is a MUST for Data Provider and Data Consumer that want to work together on a quality topic over Catena-X automotive network.

2.2.1 Normative criteria for Data Provider

Every data provider MUST provide the data conformant to the semantic model specified in CX-0039.

It is a MUST to provide a unique claimId. This claimId MUST be unique in the data provider’s company.

It is a MUST to provide the property “anonymizedVIN”. “anonymizedVIN” MUST match with “anonymizedVIN” property of Vehicle Product Description in CX – 0037 for the same vehicle.

It is a MUST to provide the property qualityTaskId. qualityTaskId MUST match with qualityTaskId property of Quality Task in CX – 0036.

If available vehicleCatenaXId of entity vehicleIdentifiers SHOULD be provided.

In the Catena-X data space “Fleet Claim Data” MUST be exchanged via Eclipse Dataspace Connector (EDC) conformant to CX-0018 and CX-0002.

It is RECOMMEND to use Apache parquet¹ file format together with EDC S3 data plane for file data exchange of “Fleet Claim Data”.

2.2.2 Normative criteria for Business Application Provider

It is a MUST for Business Application Provider to support at least 2 standardized Catena-X QAX aspect models from Catena-X Release 3.0 (2 out of Catena-X standards CX – 0036, CX – 0037, CX – 0038, CX – 0039, CX – 0040, CX – 0041) to get the label “Catena-X Certified Solution” for their quality application.

It is RECOMMEND to be able to read the semantic model “Fleet Claim Data”.

¹ <https://parquet.apache.org/>

2.3 LICENSE

This Catena-X data model is an outcome of Catena-X use case group Live Quality Loops (QAX). This Catena-X data model is made available under the terms of the Creative Commons Attribution 4.0 International (CC-BY-4.0) license, which is available at Creative Commons¹.

The license information is available in github.

In case of doubt the license, copyright and authors information in github overwrites the information in this specification document.

2.4 IDENTIFER OF SEMANTIC MODEL

This semantic model has the unique identifier
urn:bamm:io.catenax.fleet.claim_data:1.0.0

2.5 FORMATS OF SEMANTIC MODEL

2.5.1 RDF Turtle

The rdf turtle file, adhering to the Semantic Aspect Meta Model, is the master for generating additional file formats and serializations. It is provided here:

https://github.com/eclipse-tractusx/sldt-semantic-models/tree/main/io.catenax.fleet.claim_data/1.0.0

The open source command line tool of the Eclipse Semantic Modeling Framework²(ESMF) is used for generation of other file formats like for example a JSON Schema, aasx for Asset Administration Shell Submodel Template or a HTML documentation.

2.5.2 JSON Schema

A JSON Schema can be generated from the RDF Turtle file using the Eclipse ESMF tooling. The JSON Schema defines the Value-Only payload of the Asset Administration Shell for the API operation "GetSubmodel".

If present, example JSON-payloads MUST validate against the generated JSON schema.

¹ <https://creativecommons.org/licenses/by/4.0/legalcode>

² <https://github.com/eclipse-esmf/esmf-sdk>

3 REFERENCES

3.1 NORMATIVE REFERENCES

- CX – 0003 SEMANTIC ASPECT META MODEL
- CX – 0004 GOVERNANCE PROCESS FOR SEMANTIC MODELS
- CX – 0018 ECLIPSE DATA SPACE CONNECTOR (EDC)