

Management Summary

Catena-X DCM-Standard

CX-0128 Version 2.00

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1. Introduction

The Catena-X Demand and Capacity Management (DCM) standard is aimed at all members of the automotive supply chain - including suppliers and OEMs (Original Equipment Manufacturers), regardless of their size and position in the supply chain.

The implementation of the standard in IT systems creates an alternative to customized systems and manual processes, which are often resource-intensive and error-prone. The common semantics ensure compatibility between different IT systems and the technical requirements preserve the data sovereignty of all users.

The process described is the one of collaborative demand and capacity management.

DCM involves the exchange of demand and capacity data between customers and suppliers within their direct business relationships. Customers communicate their expected material demands for defined time periods, and suppliers respond with their planned production and logistics capacities for these materials and time periods.

The aim is to identify supply bottlenecks caused by changes in material demands or in production and logistics capacities at an early stage. The standard focuses on medium-to-long-term planning and covers a horizon of up to 24 months in the future.

2. Exchanged Objects

To achieve this goal, the standard describes 4 data models, data exchange protocols and a basic logic for interpreting the data:

- Material or component demands: `WeekBasedMaterialDemand`
- Production or logistics capacities: `WeekBasedCapacityGroup`
- Comments: `IdBasedComment`
- Requests to update data: `IdBasedRequestForUpdate`

2.1 WeekBasedMaterialDemand

This model is used to send material demand data from customer to supplier. Today, this information is typically shared between companies in the form of call-offs.

The model takes into account different master data for the material, such as “Material Number Customer” and “Material Number Supplier”.

Depending on the combination of “Material Number Customer”, “Demand Category” and “Customer Location”, volumes can be exchanged at the granularity of calendar week.

The WeekBasedMaterialDemand data model has the following structure:

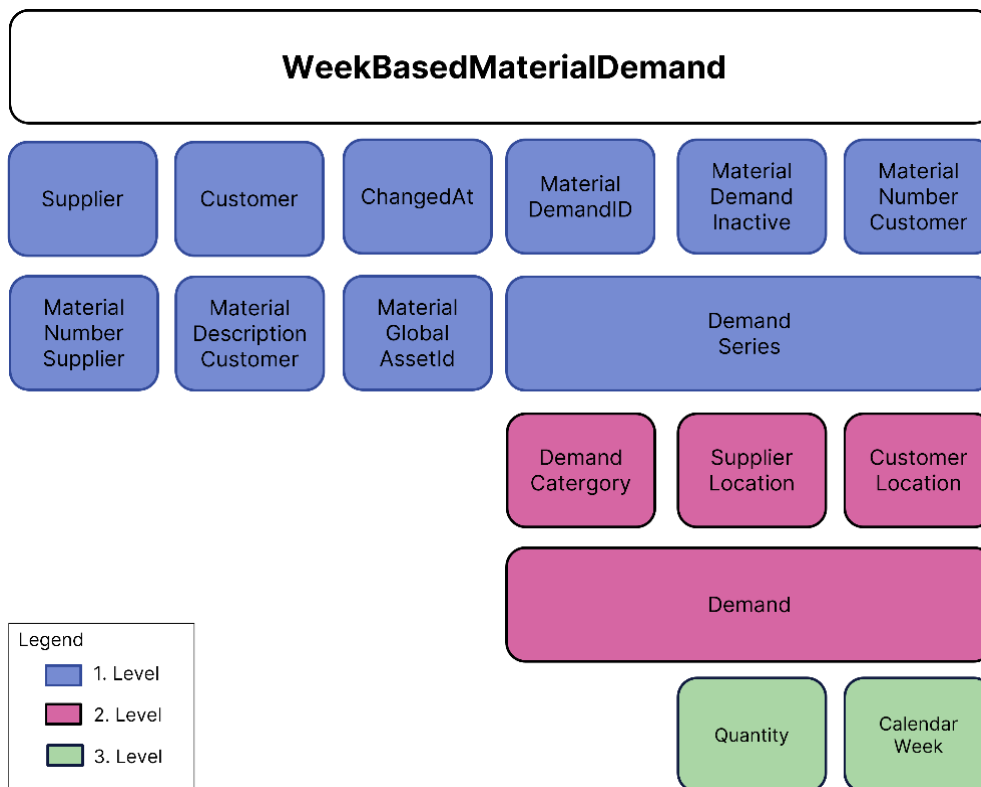


Fig 1: WeekBasedMaterialDemand structure

2.2 WeekBasedCapacityGroup

This model is intended for the exchange of information on capacity groups from supplier to customer.

The model considers different master data on capacity, such as “Name”, “Supplier Locations” and “Unit of Measure”.

The agreed capacity, the actual capacity and the maximum capacity per calendar week can be defined for each capacity group. Pre-production can also be documented.

The link between capacities and demands is established by linking a capacity group with one or more demand series. With this linking, a so-called "Load Factor" can be applied to the demand volumes as a multiplier.

The WeekBasedMaterialDemand data model has the following structure:

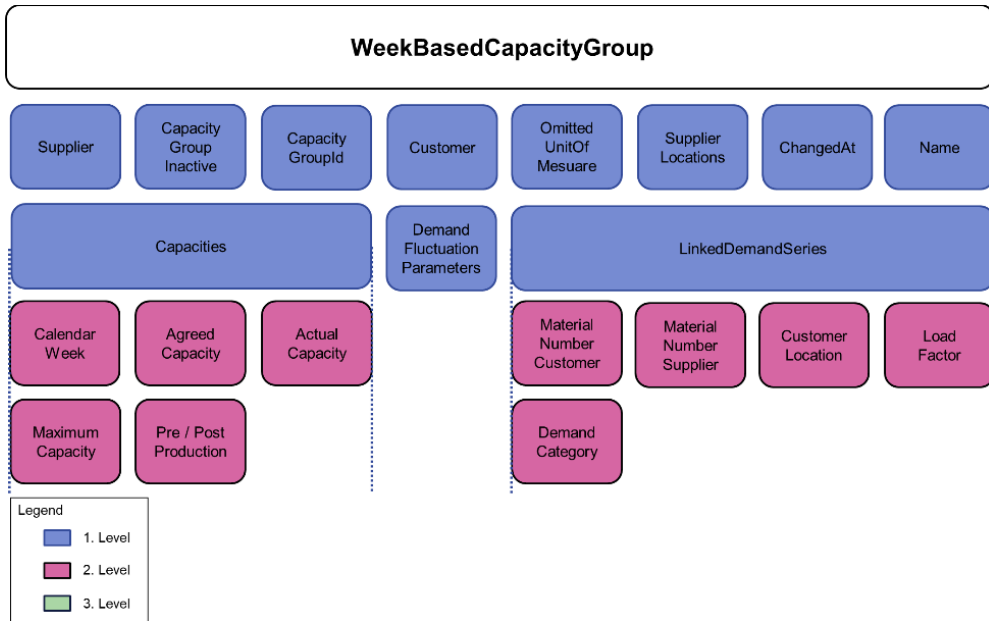


Fig 2: WeekBasedCapacityGroup structure

2.3 IdBasedComment

This model enables the exchange of comments on material demand or capacity group data. The use of comments is optional.

The IdBasedComment data model has the following structure:

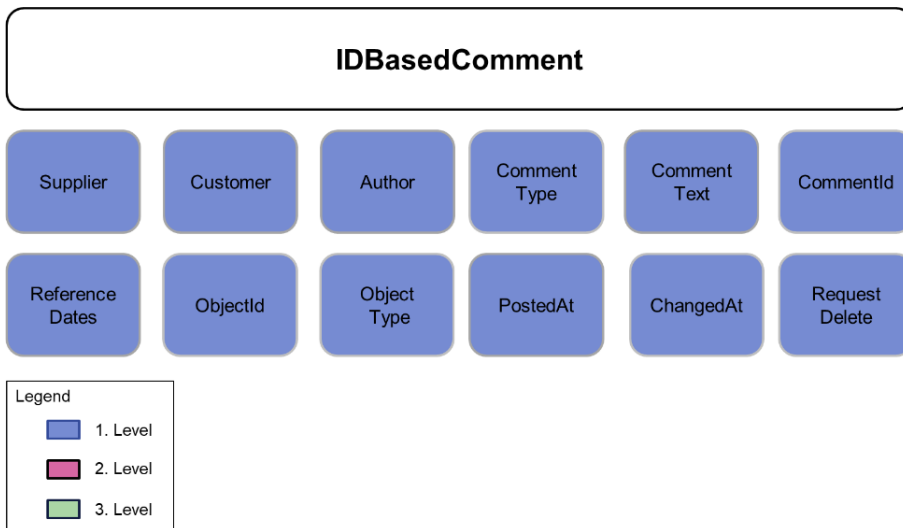


Fig 3: IDBasedComment structure

2.4 IdBasedRequestForUpdate

This model describes the request to update objects that have already been shared between the customer and supplier. The use of this 'Request for Update' is optional.

3. Process

3.1 Players and Roles

The process has the following main actors: customer and supplier. A company can take on distinct roles in different business relationships, like being a customer in one relationship and a supplier in another.

3.2 Overview of the process flow

The DCM process begins with the customer transferring their material demands to the supplier. The supplier in return shares its capacities, including links to relevant demands. Demands and capacities are then compared for each capacity group.

In the event of a bottleneck, the aim is to work together to find a suitable measure to resolve the bottleneck. This can be, for example, expanding production capacities or fulfilling material demands through earlier deliveries from the supplier. With these measures shortages or surpluses can be eliminated.

3.2.1 Provision of demand data

Customers provide suppliers with demand forecasts that indicate future demand for certain components per week. Customers are obliged to share demands from two weeks into the future. This data should be provided regularly, ideally without gaps and at least nine months in advance. The demands can cover various types such as series production, after-sales or single-orders.

Inactive demands can be labelled as such and are no longer included in the planning according to the specified flag.

3.2.2 Provision of capacity data

Suppliers provide customers with capacity data that shows how the received demands are to be covered. This data includes information on the actual, maximum, and agreed capacity that is available per capacity groups. Capacity groups can represent machines, facilities or entire plants and are directly linked to the material demands to provide a common view of capacity planning.

Inactive capacities can be labelled as such and are no longer included in the planning according to the specified flag.

Information on demand volatility metrics is also part of the capacity group object. The volatility metric enables suppliers to measure and analyse fluctuations in demand. These metrics are calculated by comparing current and previous demand data and provide important information for pot. adjustment of production capacities.

The following example shows the calculation logic: The demand forecast for CW21-25 received in the current week (e.g. CW9) is compared with the demand forecast received in the previous week (e.g. CW8) for the period CW21-25. The comparison of the two-time series makes it possible to calculate absolute and relative deviations.

	KW21	KW22	KW23	KW24	KW25
Previous Demand: KW8	458	411	386	515	520
Last Demand: KW9	444	392	393	495	550
Absolute Difference	-14	-19	7	-20	30
Percentage Difference	3.15%	-4,85%	1.78%	-4%	5,45%

3.2.3 Comparison of demand and capacity

The comparison of aggregated demands and capacities per capacity group helps to identify bottlenecks and surpluses.

The chart shows examples where demand either exceeds or falls short of capacity. Such deviations require close cooperation between customer and supplier to find measures to resolve them. Various cases from the chart are explained individually below:

- Demand < actual capacity:
In weeks 1-4, the demand is less than or equal to the supplier capacity. In these cases, the parts supply is therefore secured.
- Demand > max. capacity:
In weeks 5 and 7, there is a high demand that the planned supplier capacity cannot cover. These are bottlenecks that need to be resolved. Pre /postproduction offers one way of doing this. The pre-production in week 5 (in blue) shows the possibility of pre-production in week 4.
- Actual capacity < demand < max. capacity:
In weeks 6 and 7, you can still see that the demand is higher than the actual supplier capacity but does not exceed the maximum capacity. In this case, suppliers can implement measures already agreed with the customer to free up the maximum capacity internally.

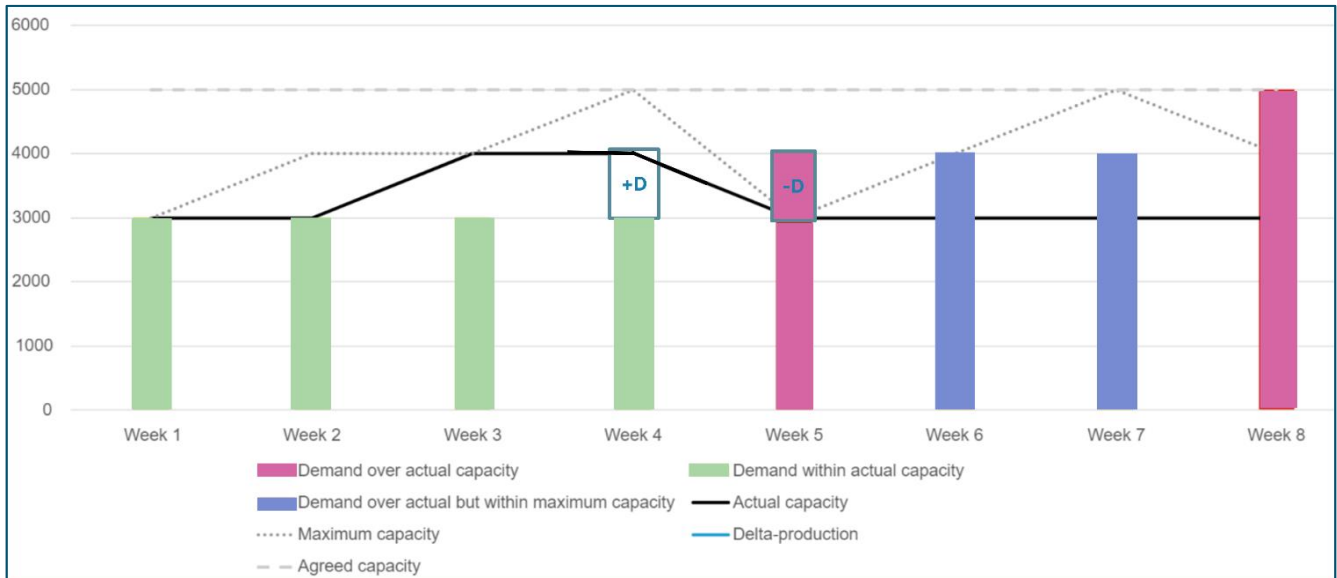


Fig. 4: Demand and Capacity Diagram

3.2.4 Comment function

Collaboration between customer and supplier plays a central role in the DCM process through the exchange of comments, which can be linked to specific data objects such as material demands or capacity groups.

These comments help to improve communication and decision-making by providing additional information or instructions.

3.2.5 Request for Update (RfU)

The RfU feature enables customers and suppliers to request updates to demands and capacities in order to avoid working with outdated data sets. This can be done in four different ways:

- Updating all relevant data within a customer-supplier relationship
- Updating all data within a customer-supplier relationship with the specific object identifier 'WeekBasedMaterialDemand' or 'WeekBasedCapacityGroup'
- Updating individual data objects within a customer-supplier relationship
- Updating individual data objects within a customer-supplier relationship that were last updated after a specific timestamp

4. Requirements for Data Exchange

Before data exchange can begin, customers and suppliers must fulfil the following requirements:

- Registration in the Catena-X network
- Signing of the data exchange contracts
- Use of specific connectors (Eclipse Dataspace Connector (EDC))
- Compliance with the standardised data models, APIs and business logic
- Compliance that is verified by a certification body for each IT system