The CONTACT Elements Data Model

A high-level overview

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CONTACT Software

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CONTACT Software

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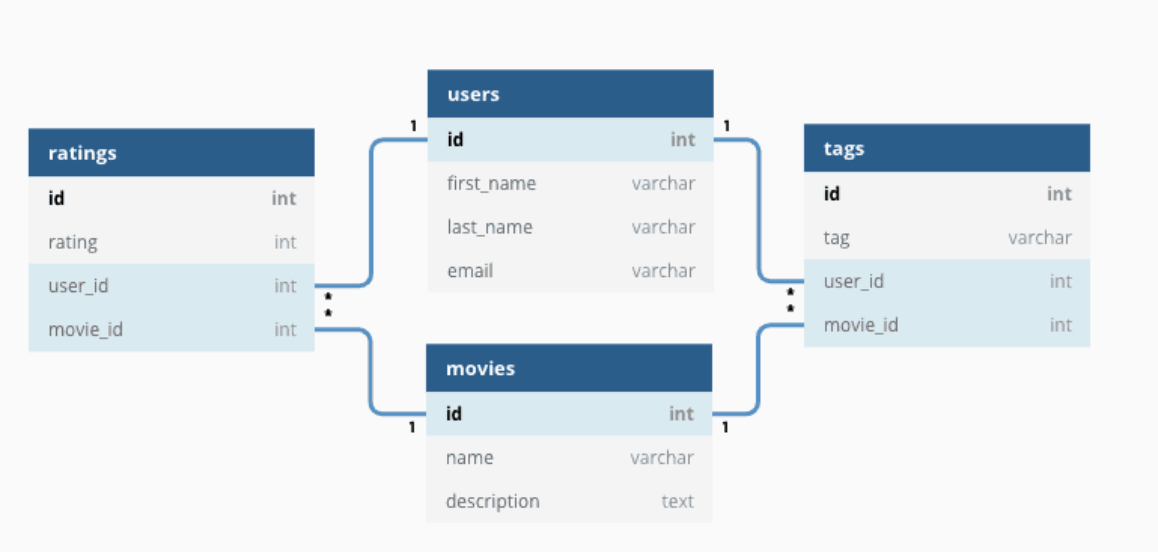
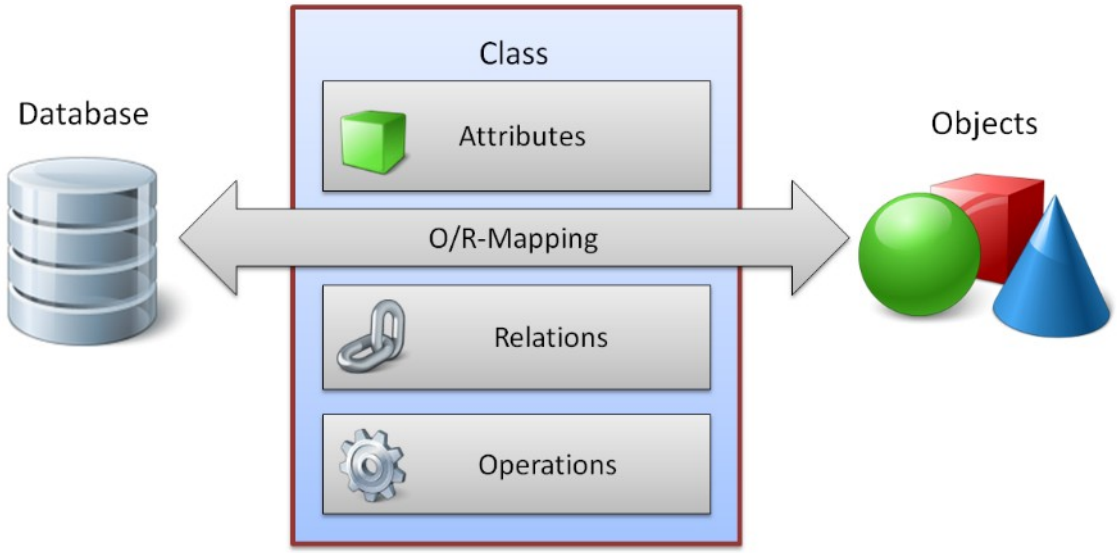
Classes and Objects: Basic Concepts for Relational Databases

- Data stored in SQL database
- Each table represents a certain object class (Person, Organization, Document, Part, …)
- Each column represents an attribute of that class (Person: Name, Address, Phone Number, Employer, …)
- Each row represents an object of that class
- Tables have primary keys that uniquely identfy each record, and may have foreign keys that establish relationships to other tables



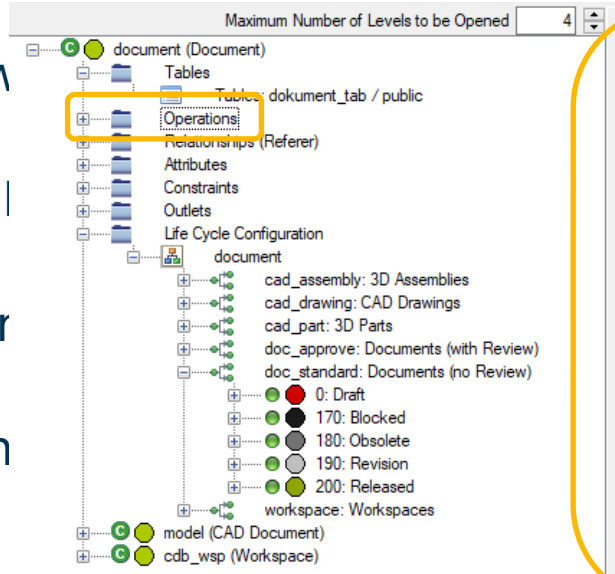
Classes and Objects: The Data Dictionary

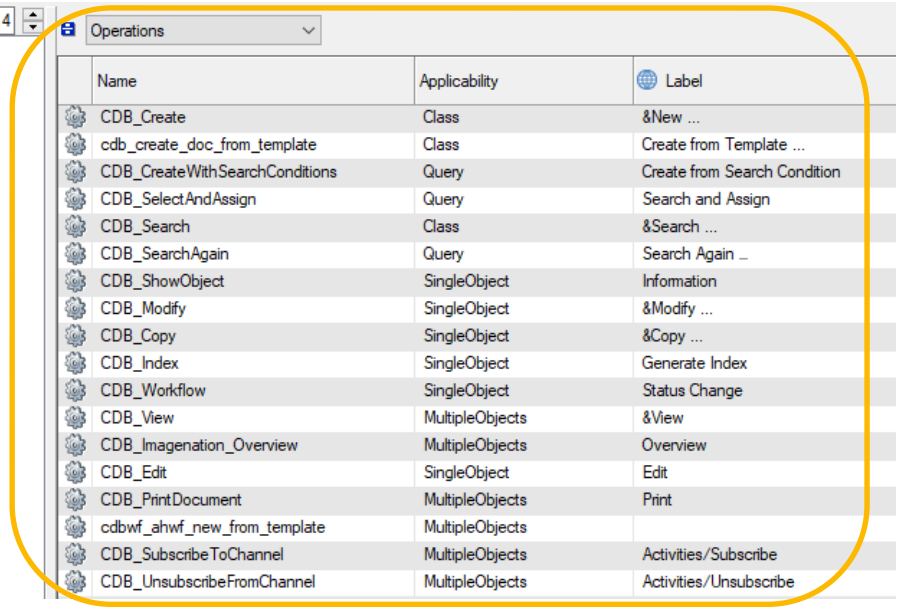
- The Data Dictionary is used to define classes in CONTACT Elements
- It serves as a blueprint for each object
- It defines attributes of various types: Char, Int, Float, Date, …
- Compiling a DD class creates a corresponding SQL database scheme
- The DD allows the definition of relationships to other classes



Classes and Objects: Operations

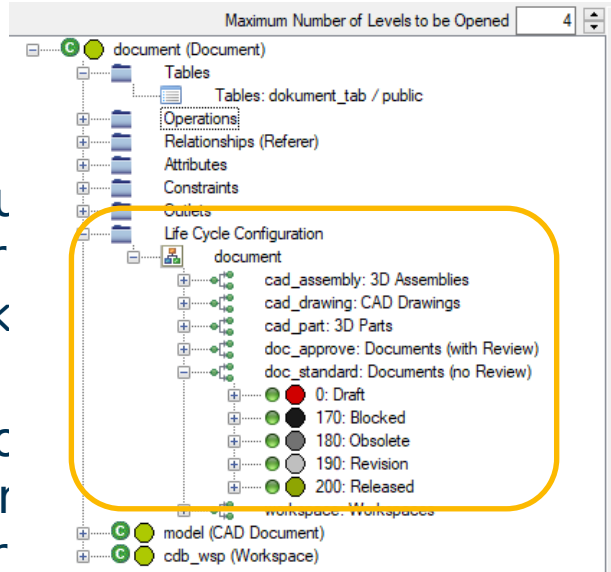
- Describe how the user interacts w
  class and its objects
- Examples: Create, Copy, Search, I
  Show Object, Status Change, …
- Operations are connected to the r
  and rights system
- Different input dialogs can be con
  for each operation
- User Exits connect business logic
  operations:
  - „Do X, Y and Z after a new document has been created.“
  - „Verify the input data before allowing a user to modify object X.“
  - „Automatically fill the author, department and project number when a new object is being created in a specific context.“
  - …

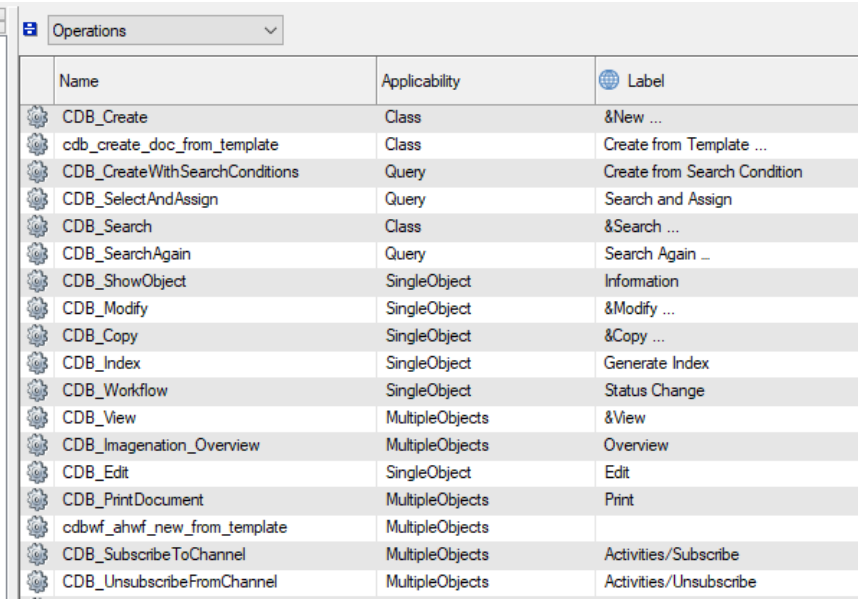


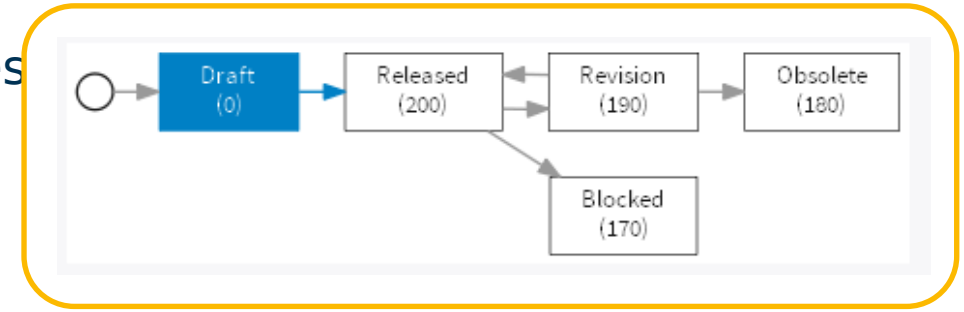


Classes and Objects: Object Lifecycle

- Describes the various states that object can be in
- Transitions can be triggered manu (by users with the correct role) or automatically during certain work or user exits
- Status changes can trigger their c follow-up processes, and determir which users have which rights for respective object
- Different lifecycles for different sub-categories of a class are possible







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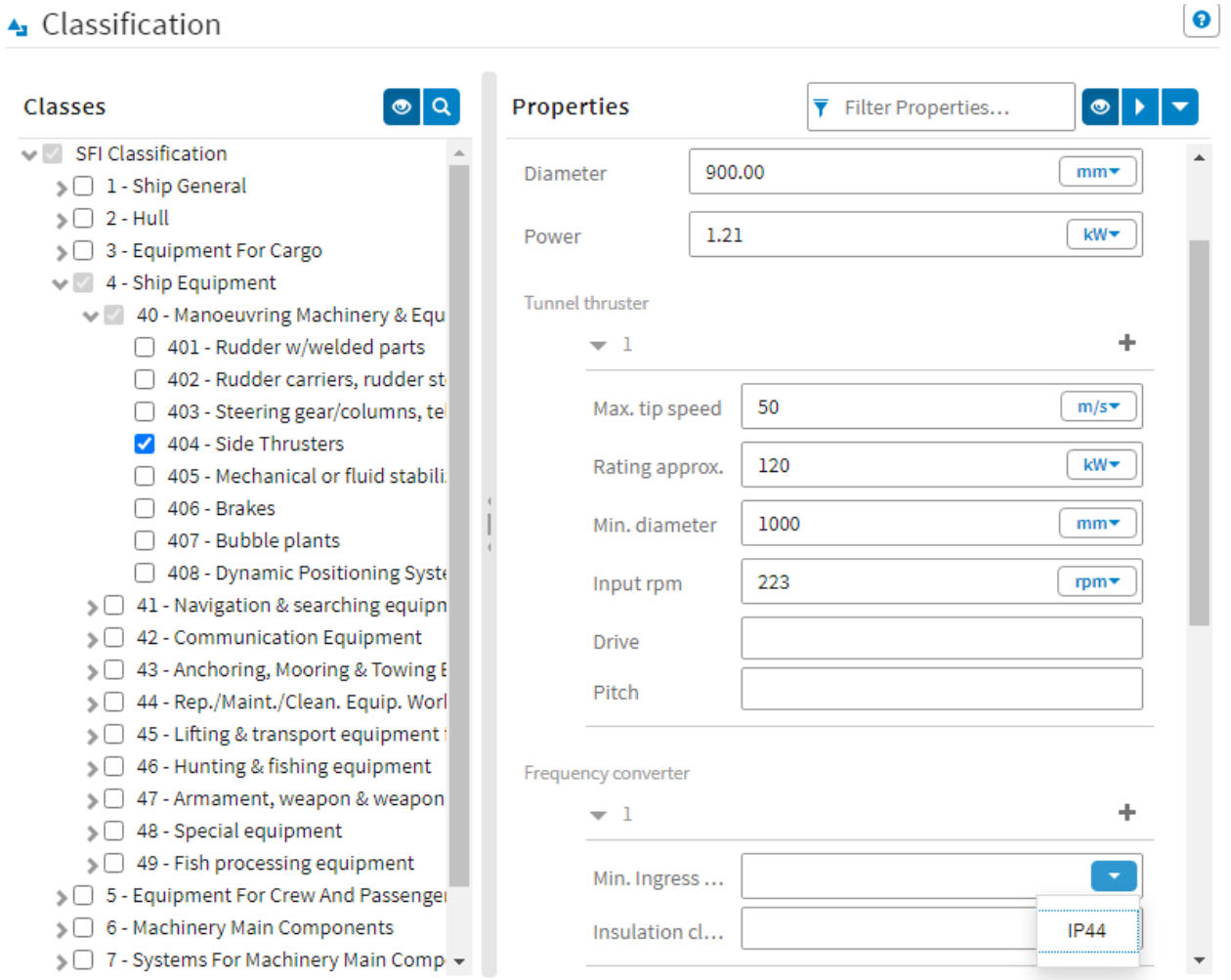
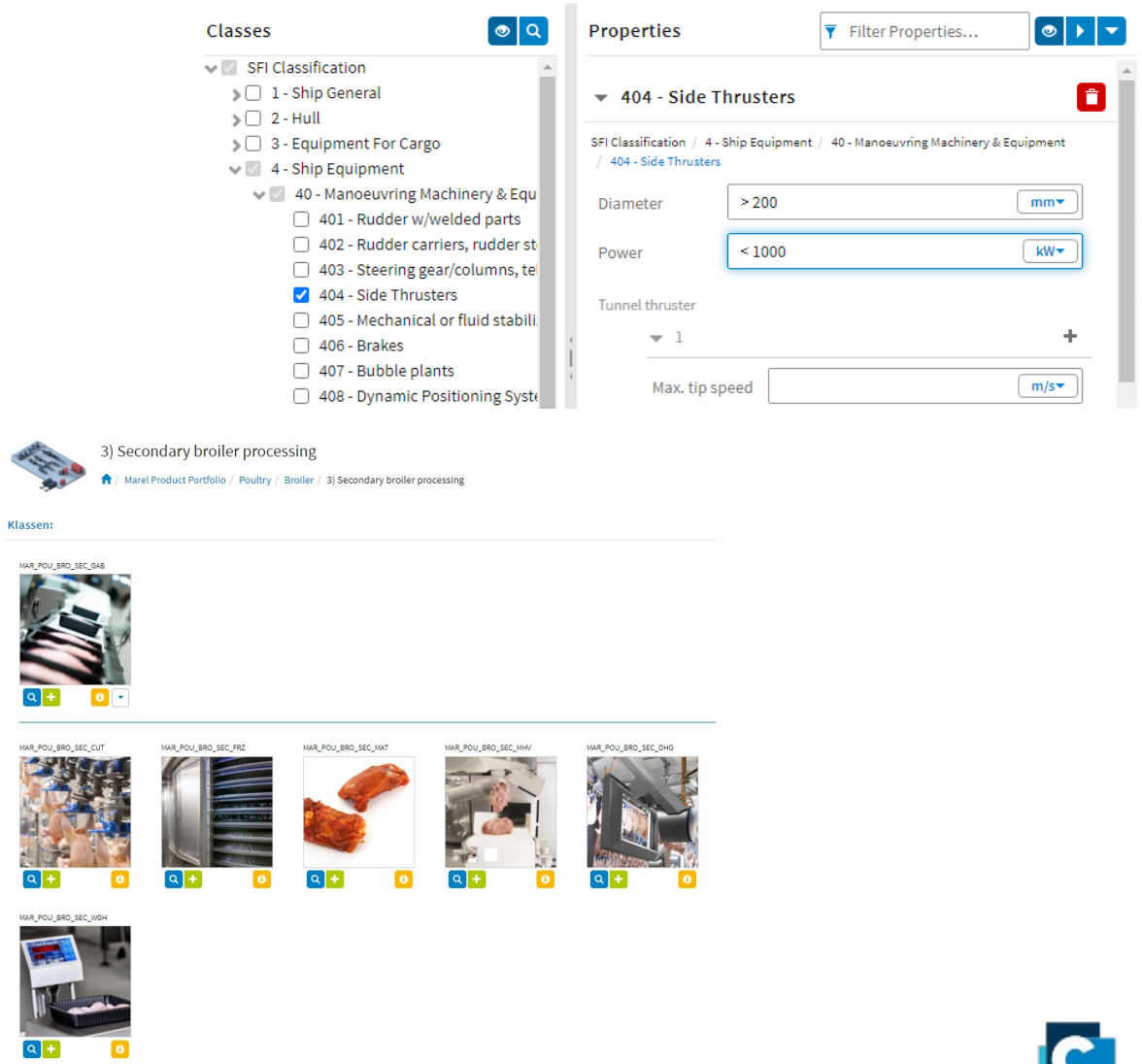
Universal Classification: Basic Concepts

- Allows the classification of all objects in the system for additional description, or separation or grouping
- Extends the data model, but only where needed
- Highly flexible
  - One UC class can be used for multiple data dictionary classes
  - Does not modify the database schema
  - Can be administrated by certain user groups



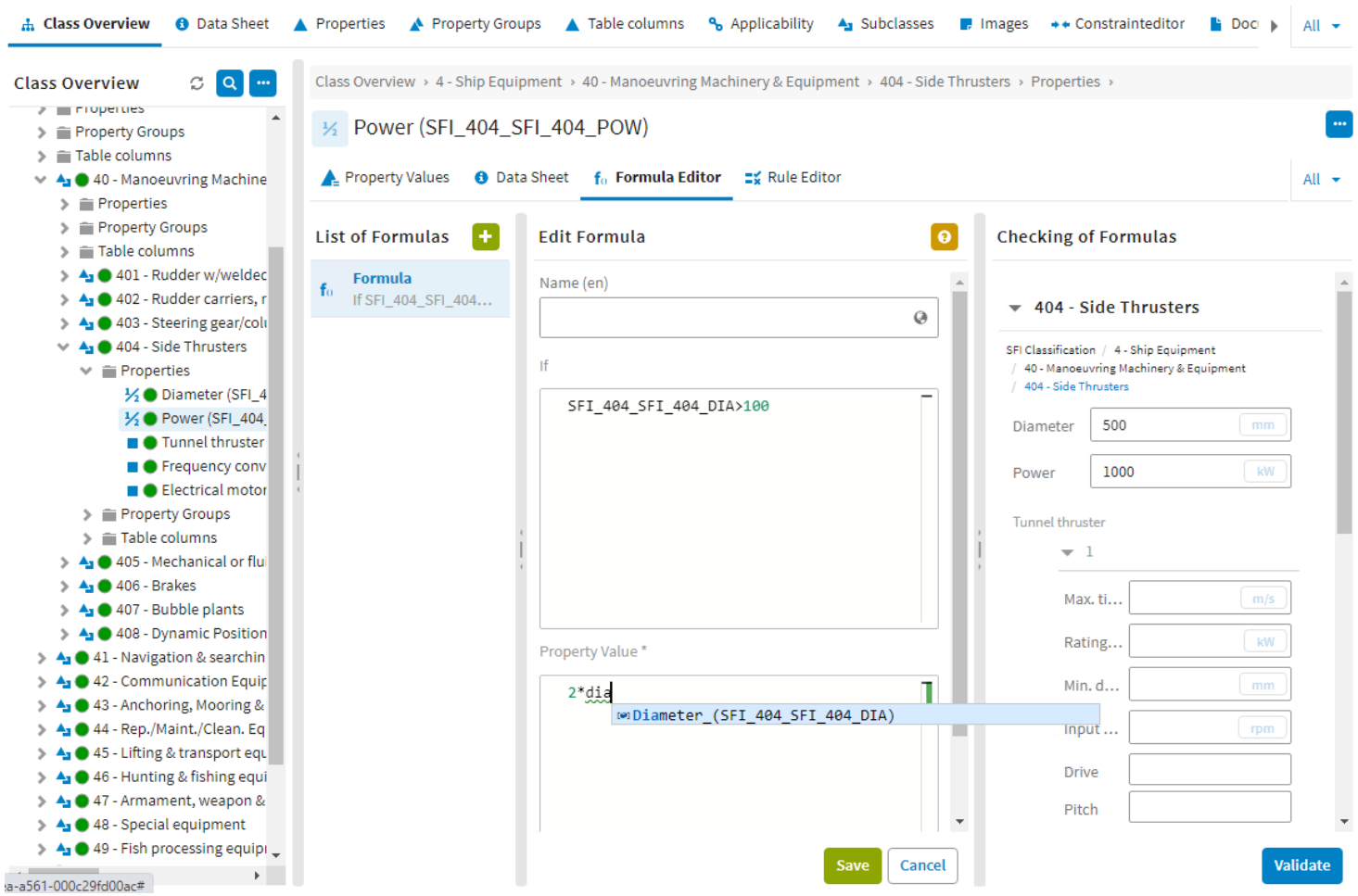
Universal Classification: Classes and Properties

- Any object can be classified with one or multiple Universal Classification classes
- Each UC class has a list of pre-defined class properties, for which an object can have its own property values
- The classified search allows users to find objects belonging to certain UC classes, and with specific property values within these classes
- The object plan allows for easy navigation and search based on the UC structure



Universal Classification: Rules, Formulas and Constraints

- Universal Classification brings certain features out of the box that would usually need to be customized through user exits:
  - Rules: set certain class properties to mandatory/optional and editable/read-only based on other property values
  - Formulas: automatically fill property values based on other property values
  - Constraints: restrict users from assigning specific property values or combinations



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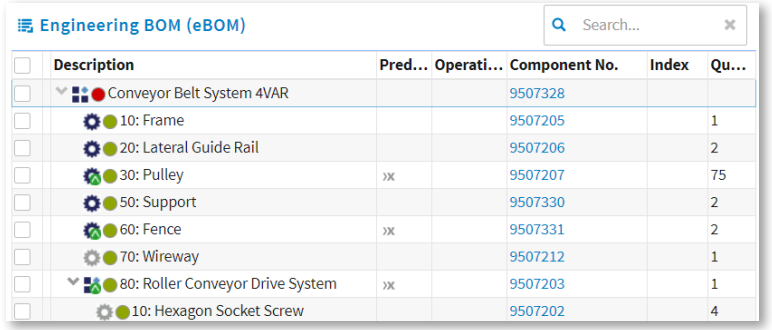
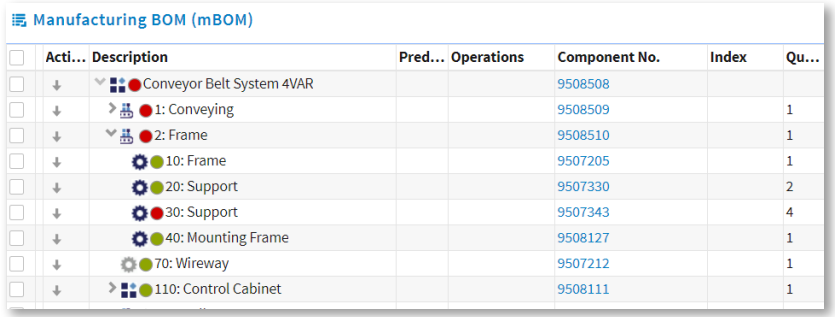
BOMs and XBOM Manager: Basic Concepts

- The Bill of Material (BOM) is a key component of CONTACT Element‘s Virtual Product module
- It describes the structure of a whole product, or one of its various sub-

eBOM reflects how the product has been designed



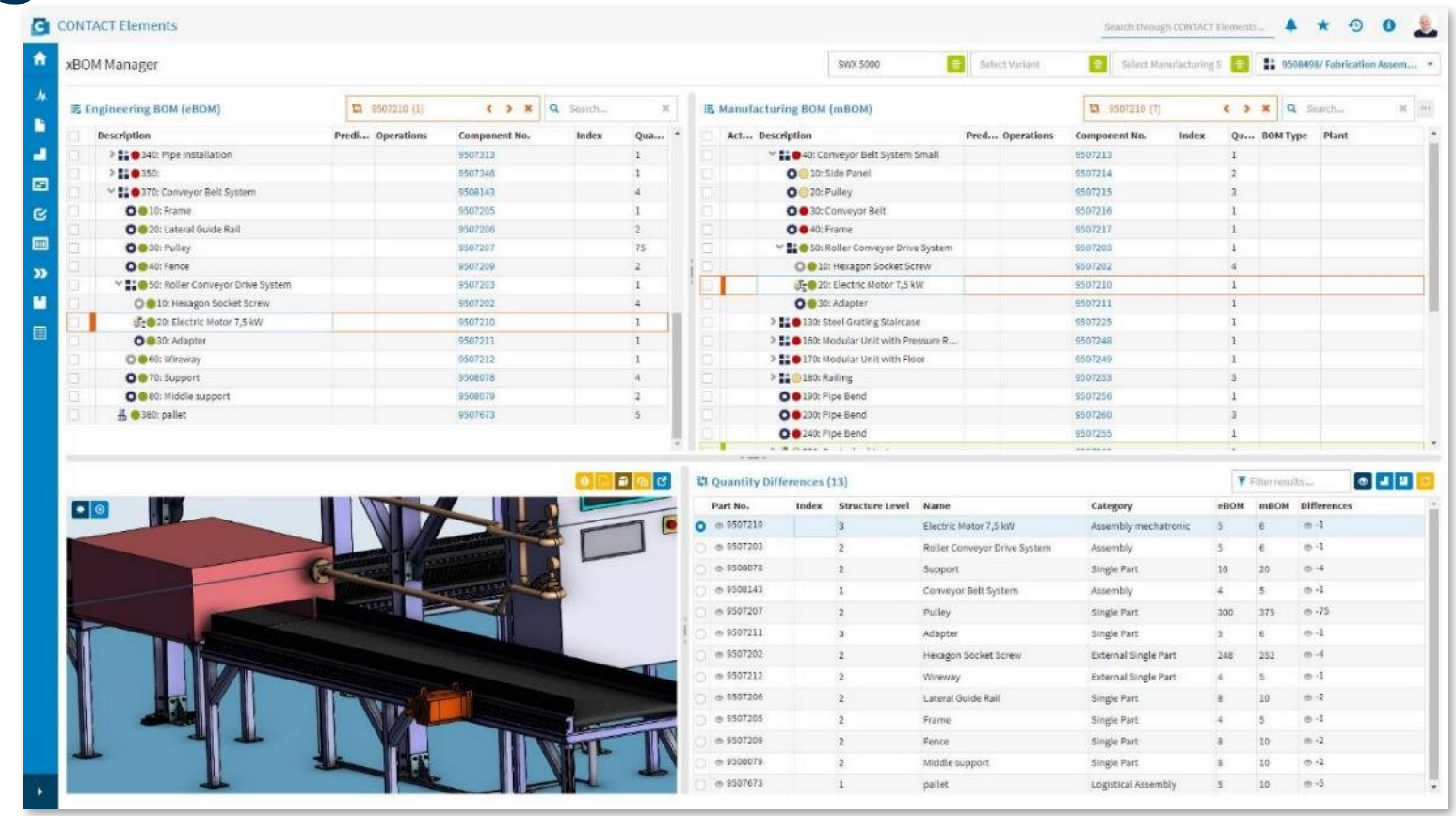
mBOM reflects the stages involved in assembly



Takes into account logistical parts, pseudo-parts, logistical units; integration of lubricants, shipping protection, …

BOMs and XBOM Manager: Features of the XBOM Manager

- The XBOM Manager offers side-by-side comparison between eBOMs, mBOMs, other BOM types
- Automatic calculation of quantity differences
- Highlighting of matching positions (and components in 3D model)
- Easy and intuitive creation and maintenance of derived BOMs



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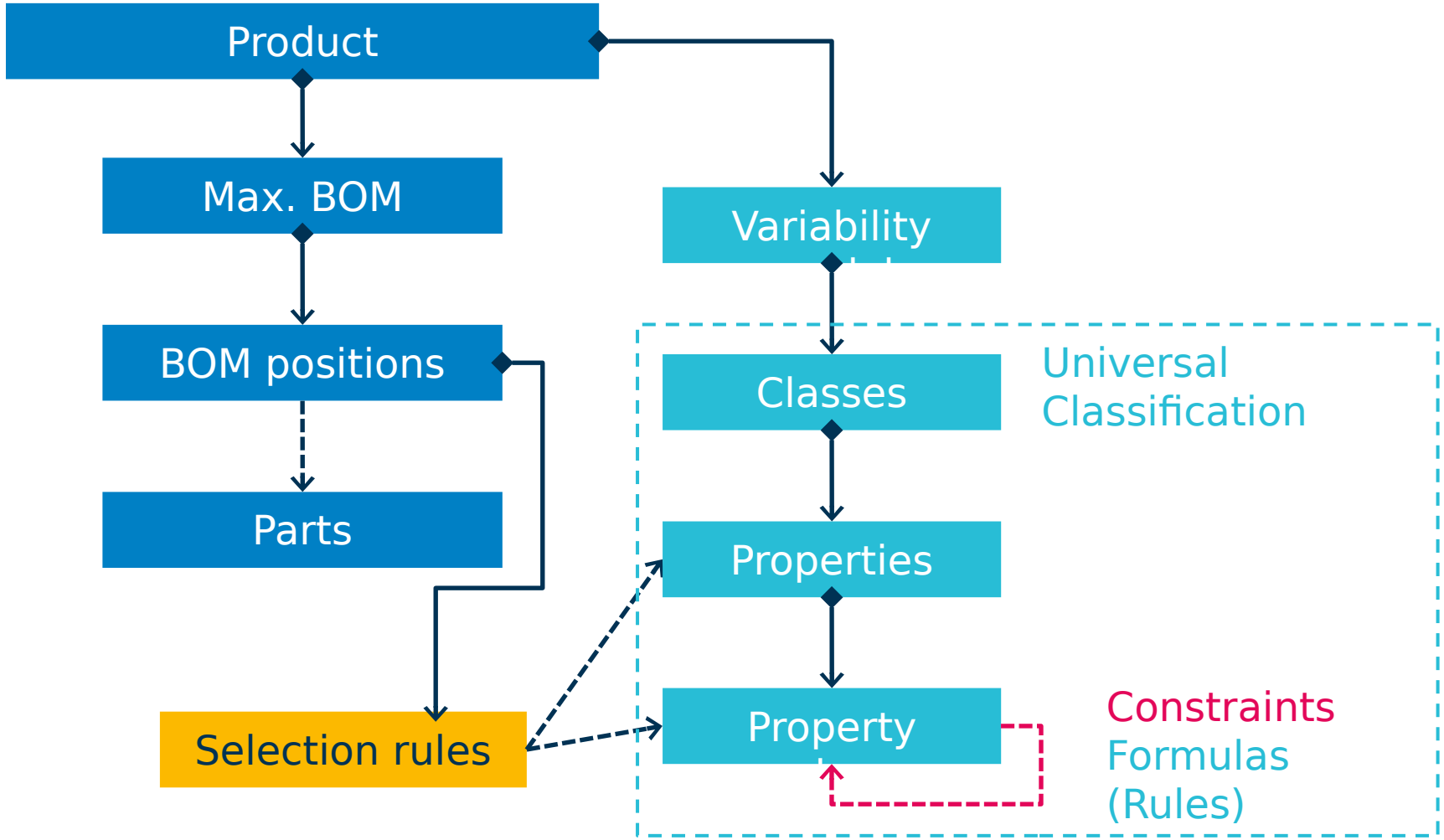
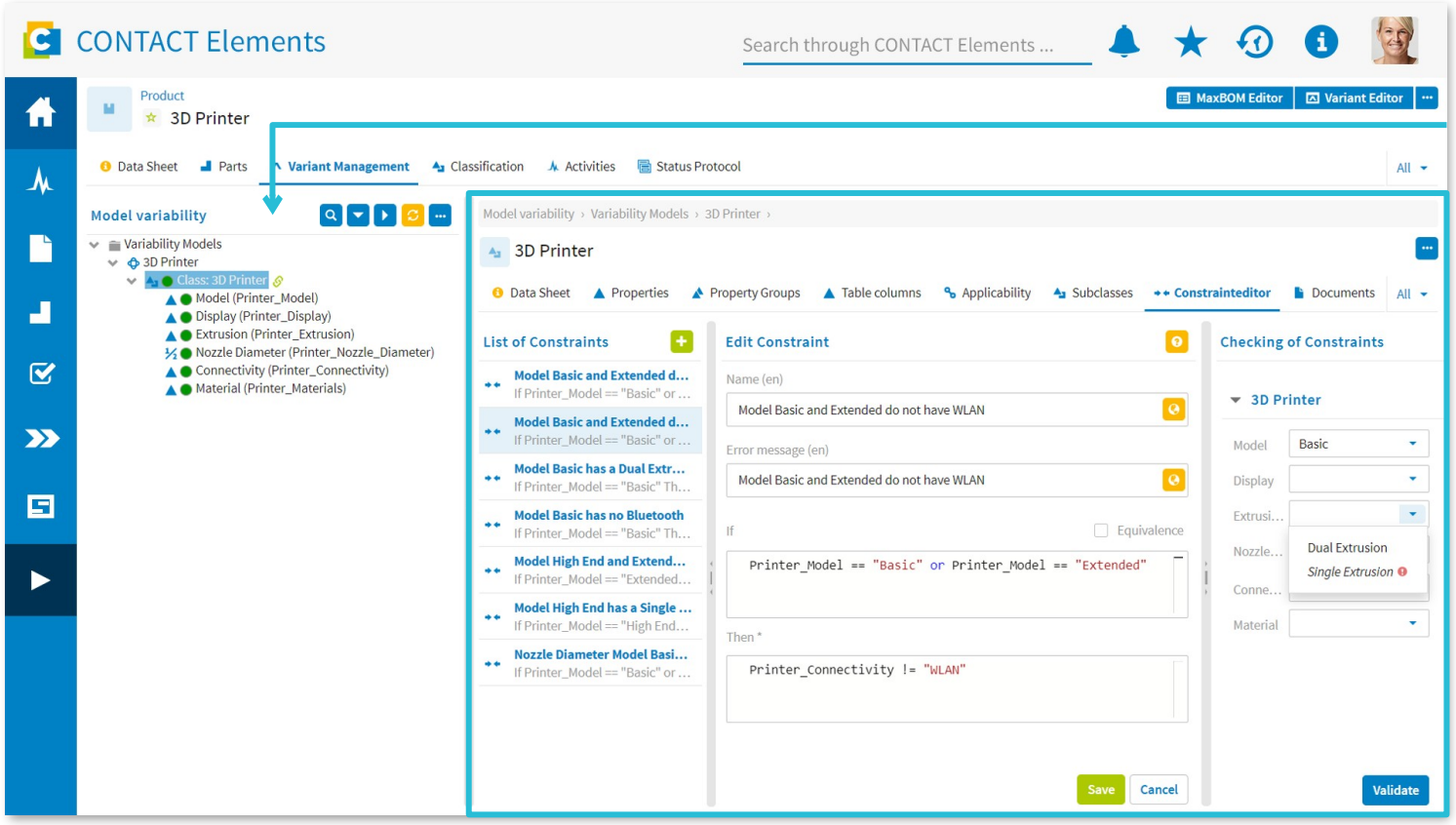
Variant Management: Basic Concepts

- Variant Management combines the worlds of BOM Management and Universal Classification
- A product‘s maximum BOM contains all possible parts and assemblies
- A UC-based variability model describes the variant space
- Selection rules define which of these variable parts are instantiated for

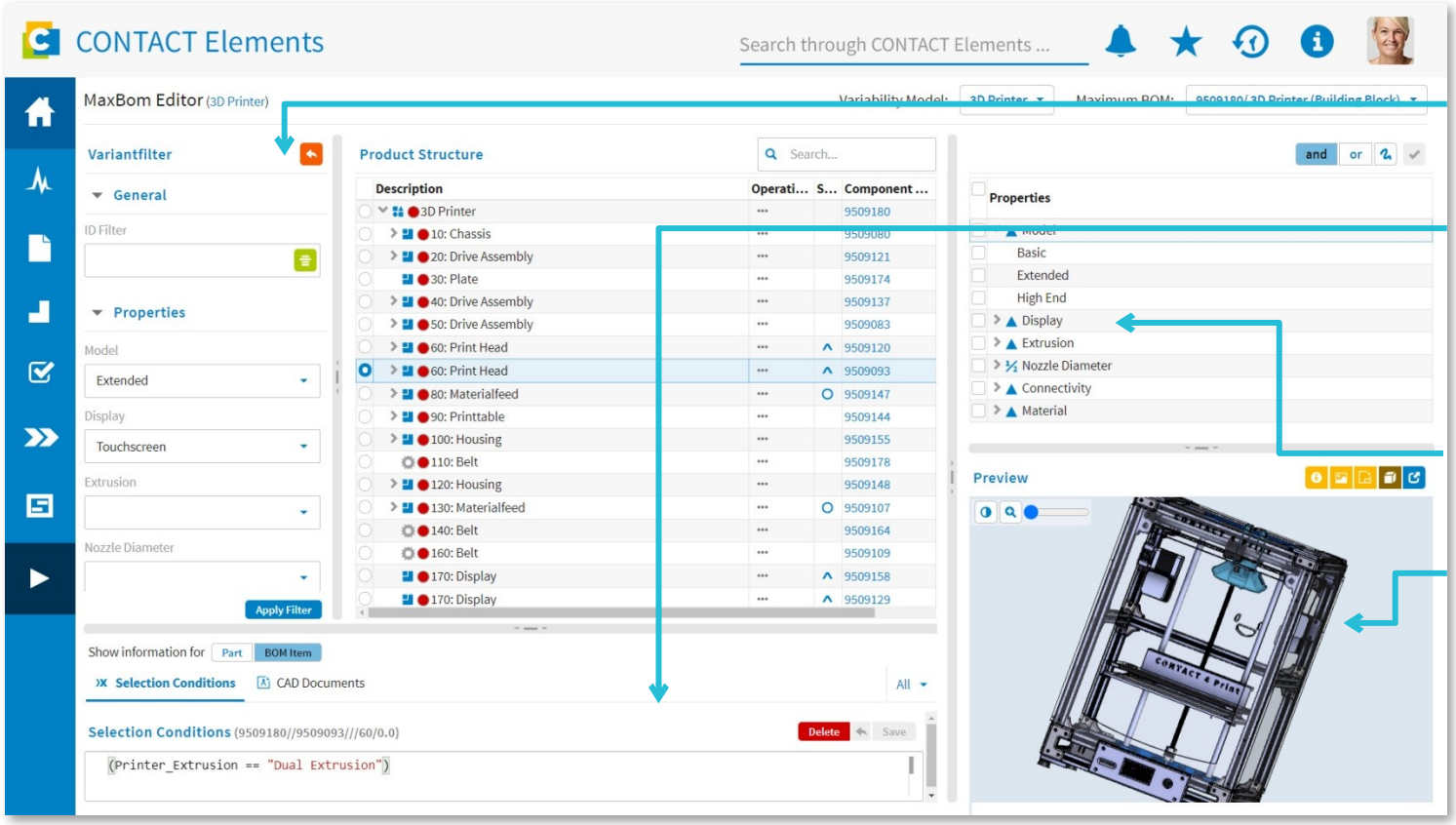


Variant Management: Variability Model



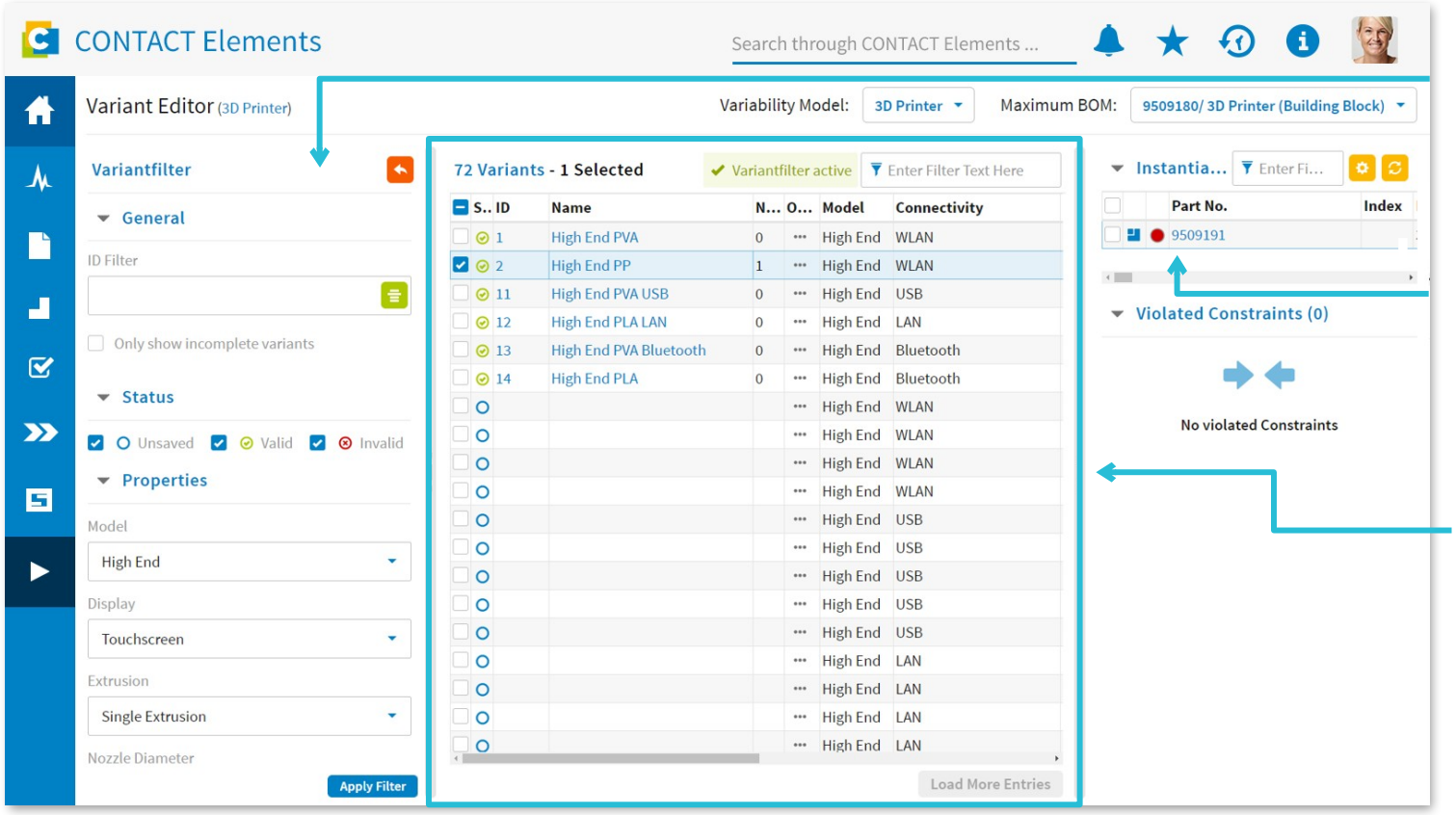
1. Create properties and their values
2. Easily define and validate constraints in the Constraint Editor

Variant Management: MaxBOM Editor



1. Variant filter for validating regulation of the maximum BOM
2. Definition of the selection conditions via text input with auto-completion ...
3. ... or with a few clicks
4. Visual support thanks to the integration of 3D preview

Variant Management: Variant Editor



1. Filter options for quickly limiting the variant space
2. Overview of a variant's instantiated parts
3. Entire variant space as a result of properties and constraints, variants can be saved, named, and instantiated from this view

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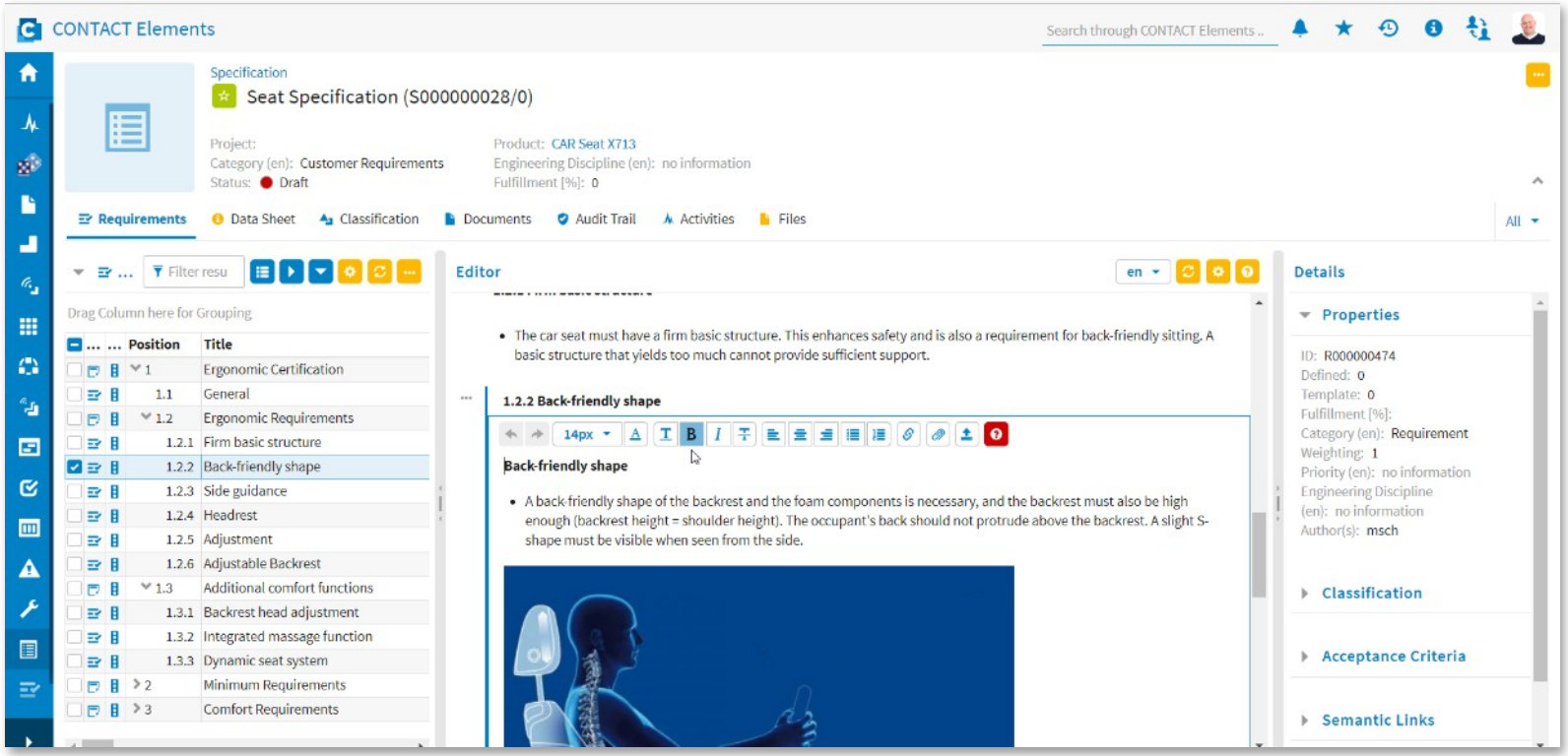
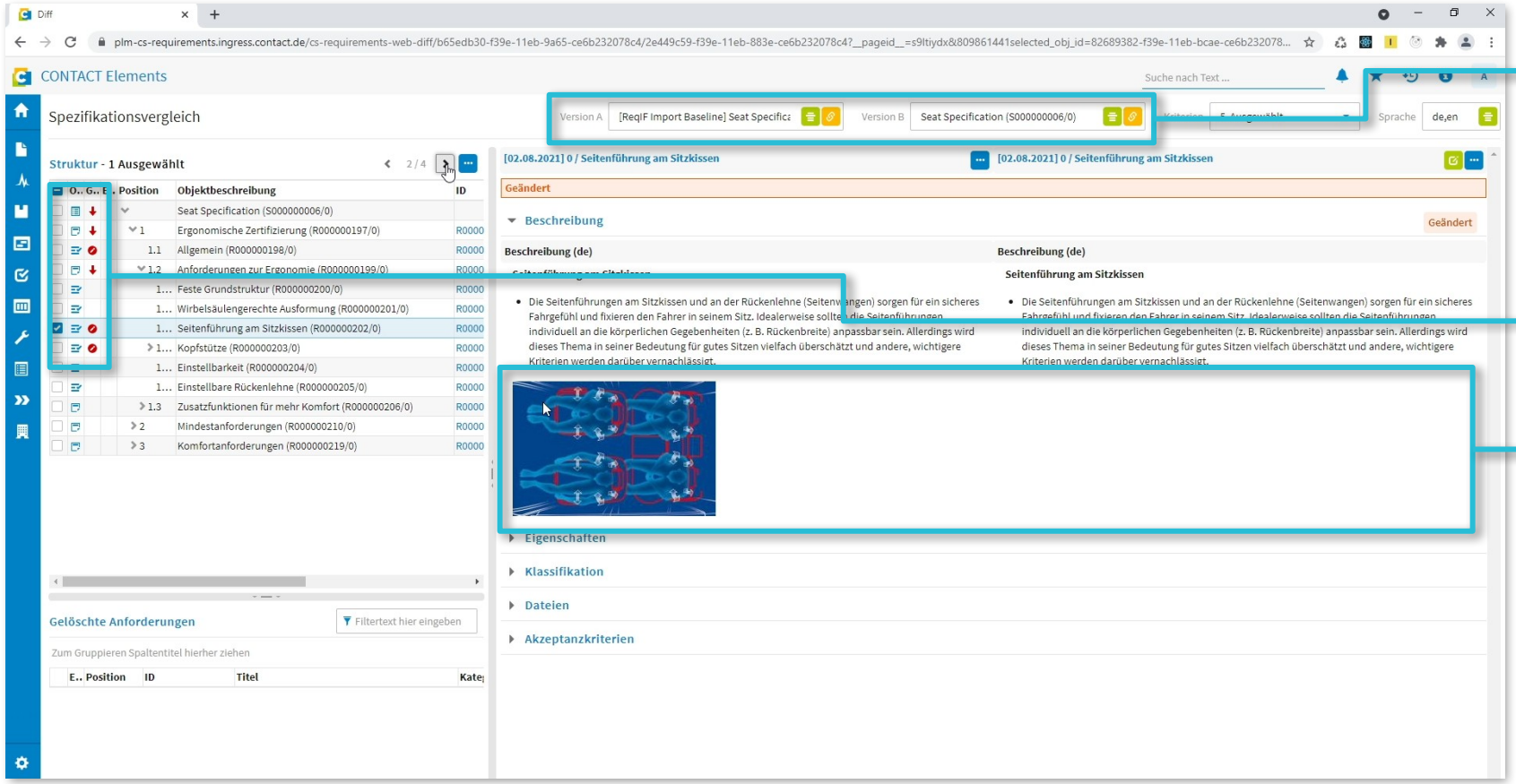
Requirements Management: Basic Concepts

- Create and edit web-based specifications, their requirements and acceptance criteria
- Add layouts and image information
- Classification and evaluation of requirements
- Link requirements to acceptance criteria



Requirements Management: Baselining



Comparison between a baseline and the current configuration

Overview of differences between compared configurations

Detailed view of a selected difference

CONTACT Elements

Specification

Standard PCT Specification (S000000046/0)

Specification [S]
Test Specification

Project: PCT Development, Testing and Industrialization
Category (en): Test Specification
Status: Draft

Product: Personal Car Tyre
Engineering Discipline (en): Mechanical Engineering
Fulfillment [%]:

Requirements | Data Sheet | Classification | Documents | Audit Trail | Activities | Files

Re... | Enter Fi...

Drag Column Headers Here to Group

R..	F..	Position	Title
		1	General Information
		2	D-Spec
		3	Processing
		4	Test Specification
		4.1	Outdoor Testing
		4.2	Indoor Testing
☑		4.2.1	High Speed Test
		4.2.2	Endurance Test
		5	Production Tool Specifications
		6	Bill Of Materials
		6.1	Vulcanized Tyre

Requirement [R]
Test Case

Editor

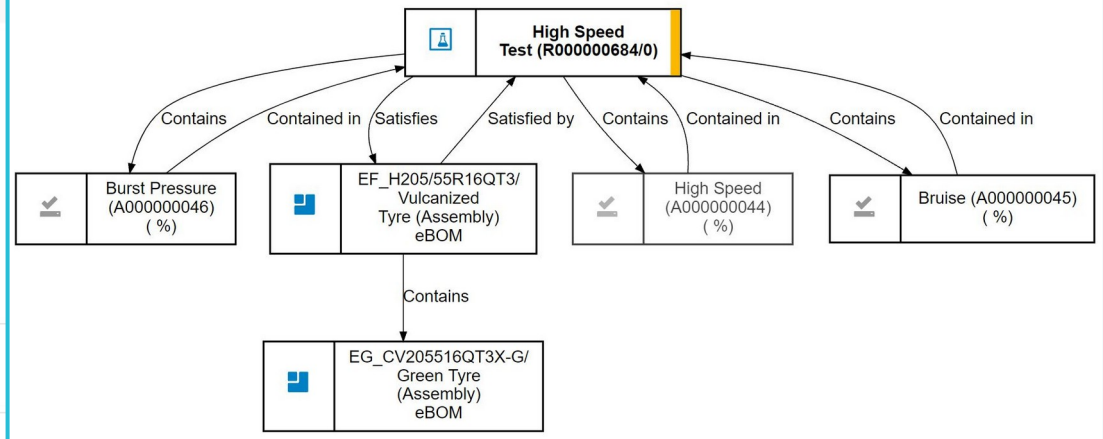
A testing request defines the testing to be performed on an article which (a part of) an article is made. This article could undergo a preparation or ageing before testing. Preparation and ageing other than the default are specified by the requester.
Testing is also performed as routine production control. In this case production articles are tested with a certain frequency in order to monitor the production quality.
1. All testing requests are stored and handled in the LIMS system.
2. Tests can only be performed on certain article types. When a request is created for a test on a certain article type, only tests can be selected that are valid for that article type.
3. The LIMS automatically creates requests from the control plan, when tests are within the scope of LIMS.
4. The LIMS allows easy entry of test results for production control (preferably without the need of creating a request)
5. Requesting a standard test is be possible with only a single code. Default values in preparation, aging, conditions and testing are used.
6. It is easy to request a test with ageing, preparation, test conditions and other settings than the default. The results of these results should not be mixed with results with the standard settings.

4.2.1 High Speed Test

14px

High Speed Test

4.2.2 Endurance Test



Acceptance Criteria [A]

ere to Group

Description ...	ID
High Speed	A000000044
Bruise	A000000045
Burst Pressure	A000000046

Semantic Links

Test Orders (1)

Test Result [TR]

Testruns (1) | Enter Filter Text Here

Drag Column Headers Here to Group

S..	Status	F..	ID	Titel
	Waiting		TR00000007	High Speed Test

Test Run [TR]

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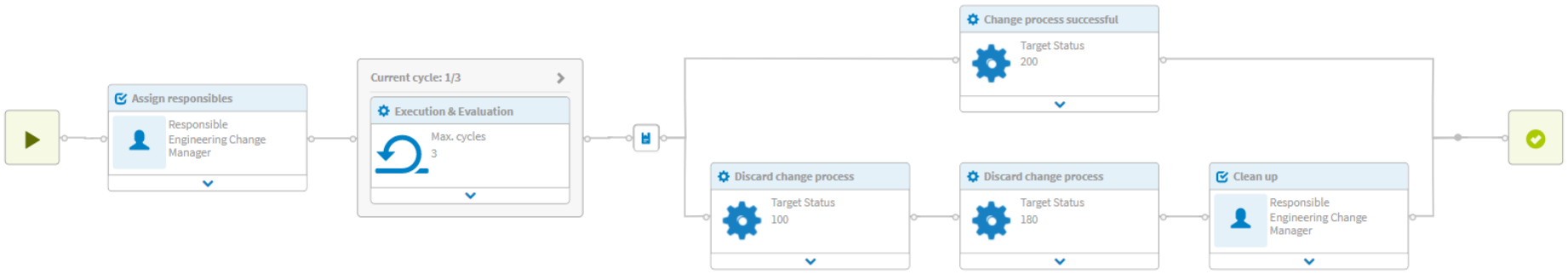
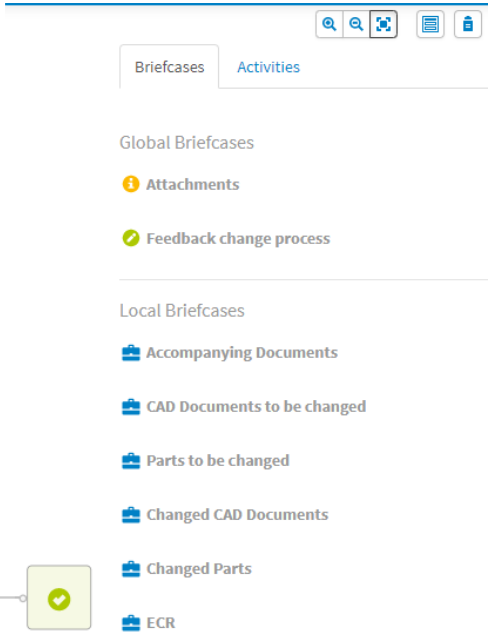
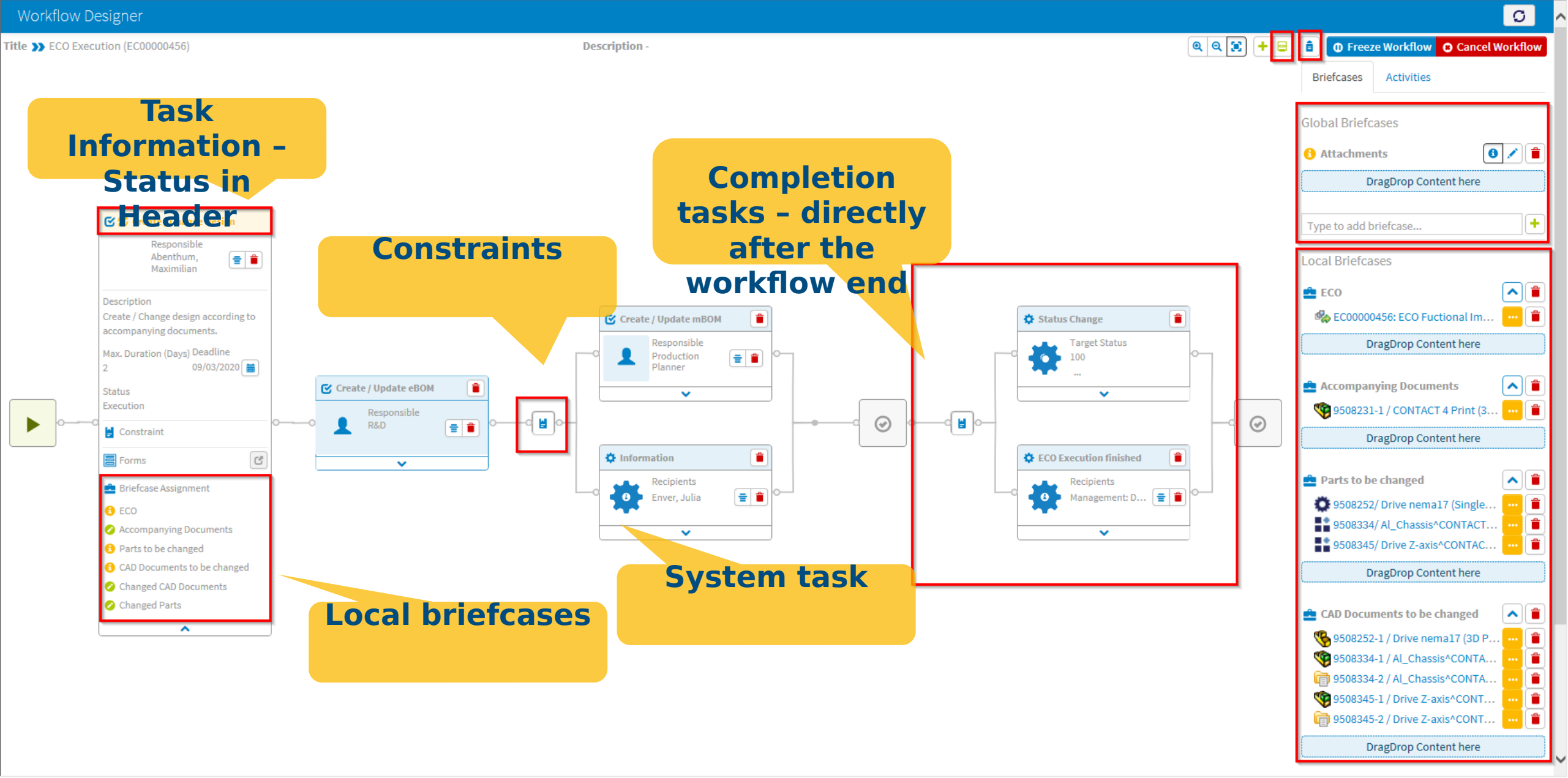
Workflows: Basic Concepts

- Workflows are used to model business processes in CONTACT Elements
- They can contain (among others):
  - Standardized tasks (Review, Approval)
  - Notification of users/user groups
  - Status changes
  - Forms that need to be filled out
- Workflow Designer: graphical interface
- Workflow Tasks show up in „My Tasks“







Questions

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