PLM Europe
The Voice of Siemens PLM Software Users

Presentation title: Good data quality is a key to successful digital transformation

Presentation date: 2019-10-08 16:30
Room name: St. Tropez

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Oliver Yalcintepe

Our Company

- Focus: PLM Consulting, Administration and Helpdesk
- Founded 1998 in Rüsselsheim
- Own software development to optimize Teamcenter
- Partner of Siemens Industry Software GmbH

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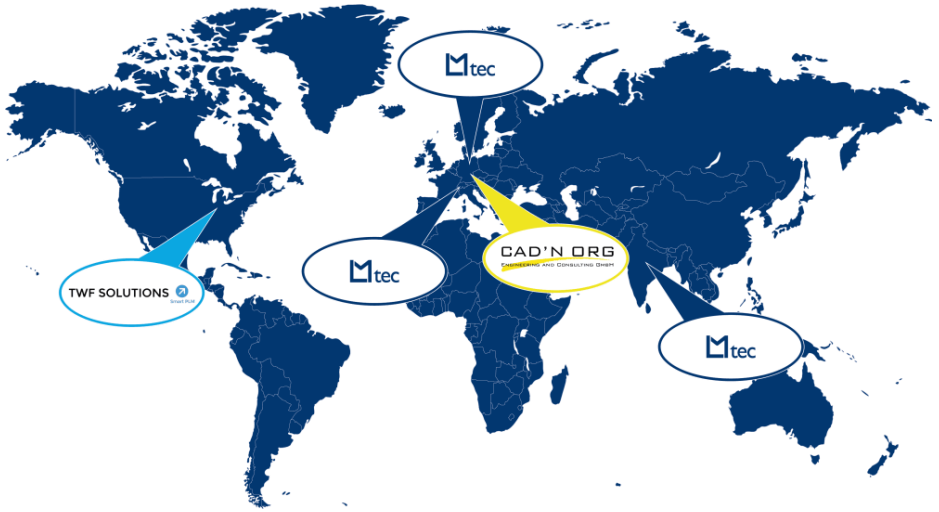
Member of the worldwide LMtec Group with locations in Germany, Switzerland, India and America



Teamcenter – Data Validation

Goal: Good data quality for a successful digital transformation

Additional Benefits:

- Higher value in data usage
- Clear and transparent processes
- Better business decisions
- Improved user acceptance
- Achieve higher product quality

Agenda

Part 1: Key points

- Impact of poor data quality
- Causes of data leaks in the PLM system
- Why automated data validation
- How to ensure data consistency

Part 2: Case studies

- Validation during data creation
- Simplification of release processes
- Changes and Validation Reports

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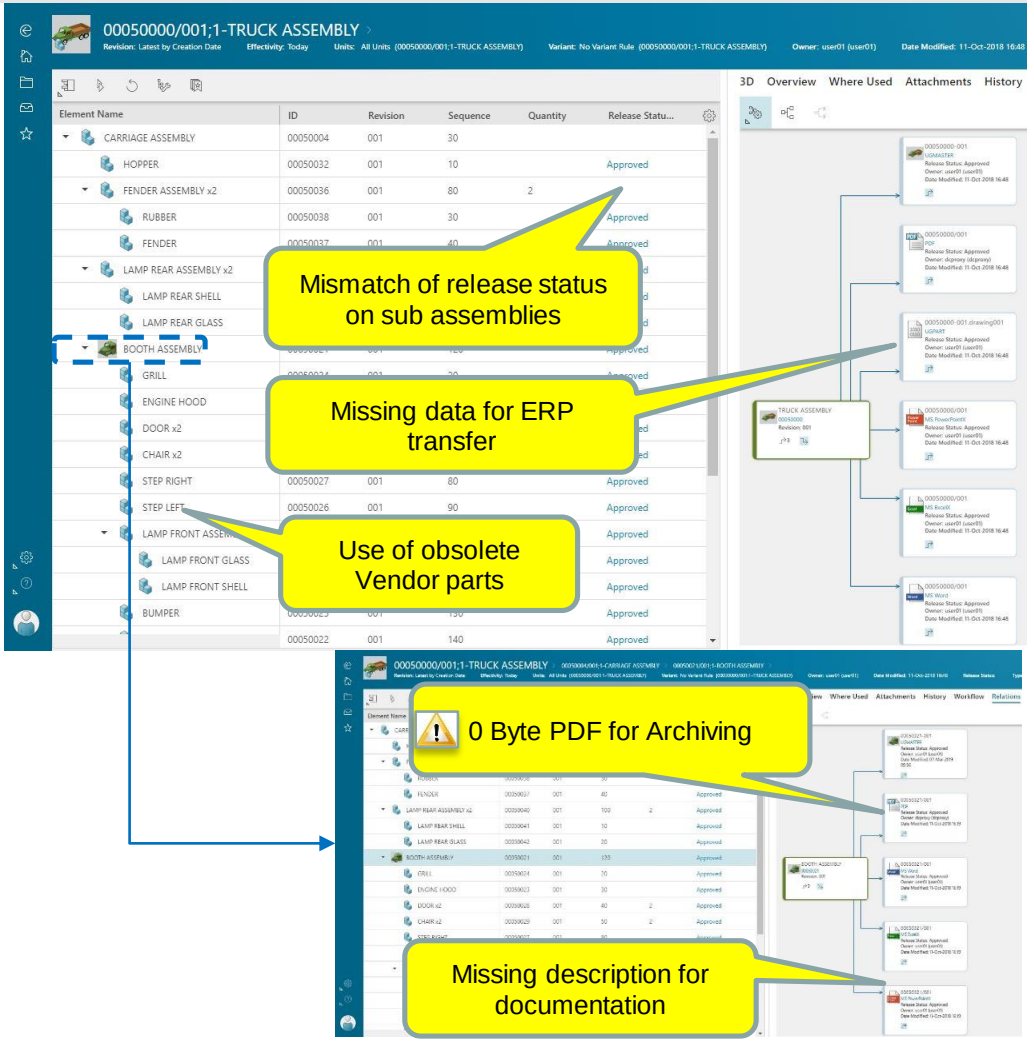
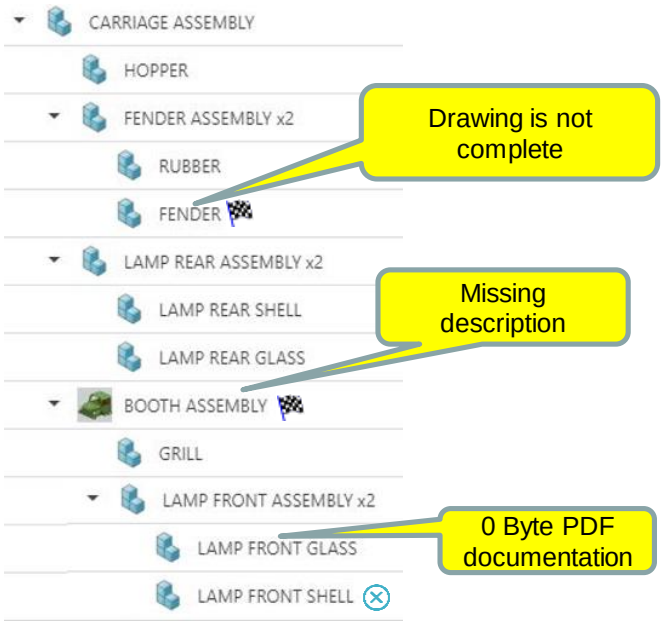
Impact of poor data quality on your business

- Expensive corrections in later development phases
- Problem in the supply chain
- Unprecise manufacturing data
- Corrupted archive data
- Missing product information
- Use of wrong or obsolete parts
- Incomplete orders
- Outdated part catalog data
- …



Causes of data leaks in the PLM system

- Incomplete work instructions / guidelines
- No use of naming conventions
- Insufficient automation
- Incorrect use of object types
  (complex structures)
- Different templates for documents
- Migrated data
- Lack of input and output management
- Missing integration with other systems
- Software errors
- …



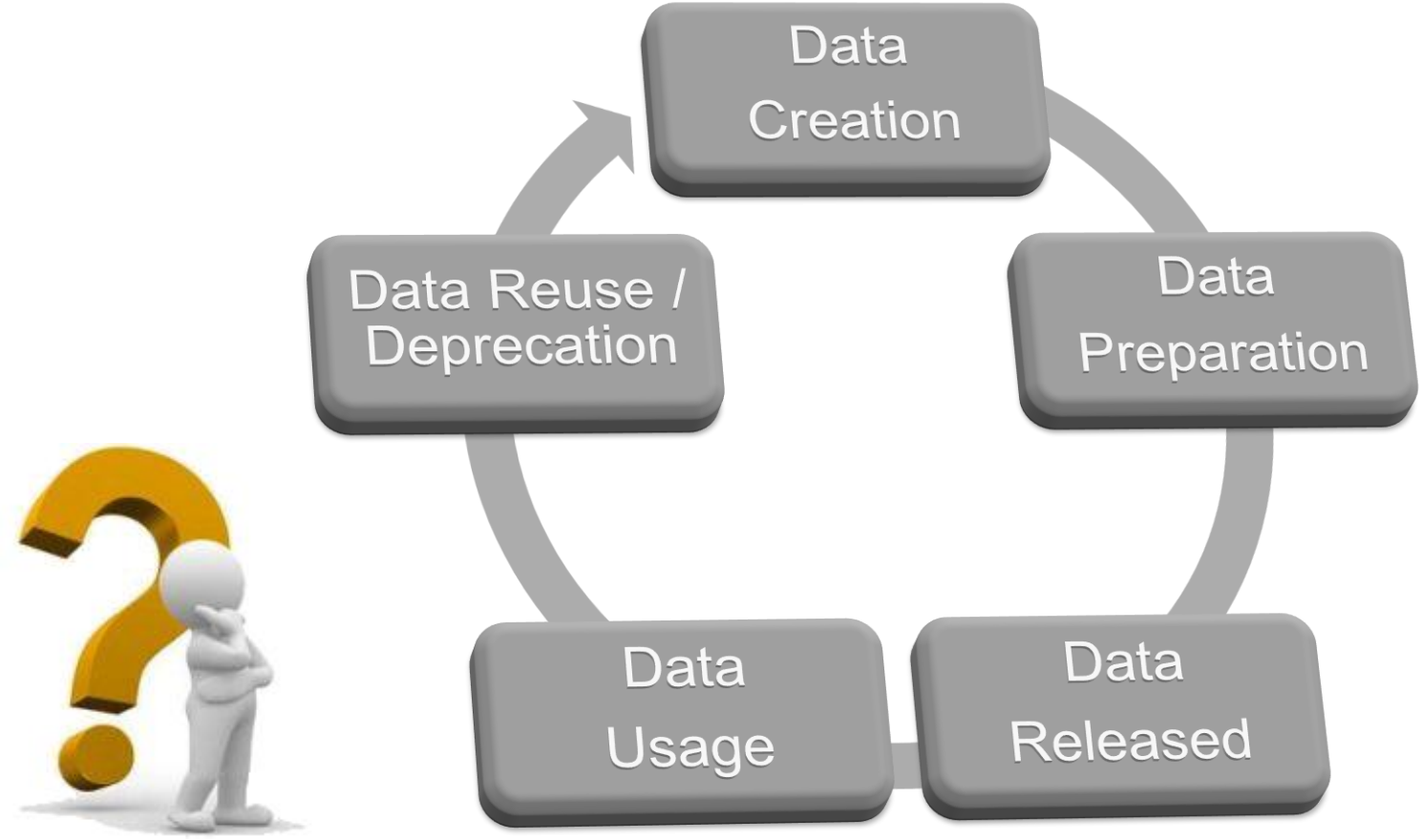
Why automated data validation?

Enabler for better performance and better business decisions:

- **100%** reliable data
  - consistent quality & not depending on user
  - no human error
- **Avoid** costly mistakes
  - identify an error soon is the best: less complexity and no correction required
- **Higher** user acceptance
  - Ramp-up of user knowledge of company standards
  - Smooth usage of data in every next step
  - Help user to achieve desired level of quality
- **Speed up** release processes
  - check existing product structures
  - **faster** quality checks
  - **faster** on new data creation
- **Reduce** administrative effort
  - include validation checks in every step
  - simplified integration of new processes
  - several sources: rules & methods
- **Faster** evolution of configuration
  - Flexibility/**Agility** & ability to evolve
  - User needs **no** specific knowledge
  - User needs **no** intensive training

How to ensure data consistency: **Data Lifecycle**

Support the user/system in every step of the data processing.



Agenda

Goal: Good data quality for a successful digital transformation

Part 1: Key points

- Impact of poor data quality
- Causes of data leaks in the PLM system
- Why automated data validation
- How to ensure data consistency

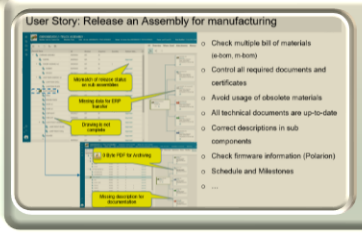
Part 2: Case studies

- Validation during data creation and preparation
- Simplification of a release process
- Changes and Validation Reports

User Stories: Overview

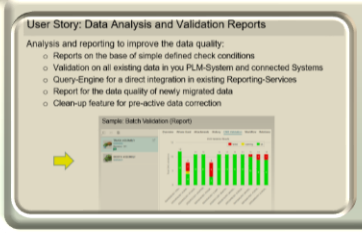
Data Creation / Preparation

- Input Validation
- Create BOM and Relations



Data Release

- Assembly ready for manufacturing



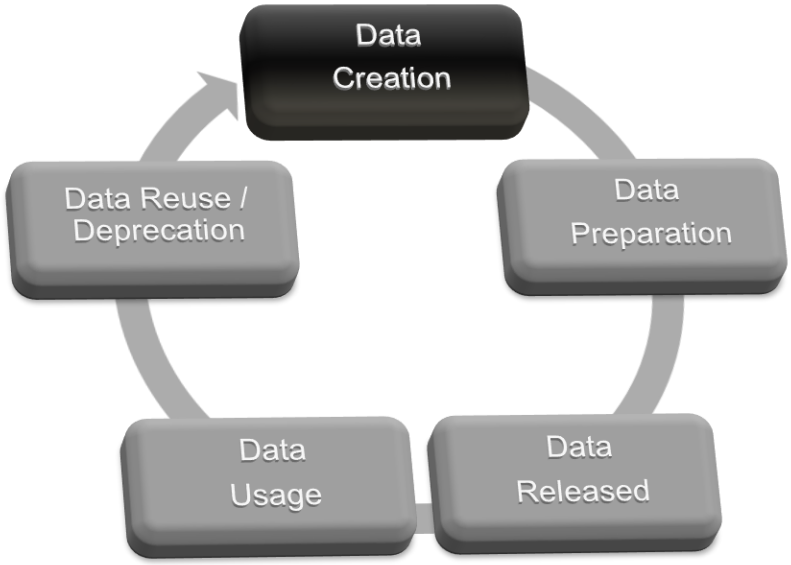
Data Usage

- Bill of Material Changes
- Analysis and Reports

How to ensure data consistency: Options

Data Creation / *Preparation*: Avoid incorrect entries

- Automation of data checks (for example, during create, revise, classify, ...)
- Automatically fill forms based on existing data
- Guide on relation creation or on BOM modifications
- Data validation in every application (Teamcenter RAC, Active Workspace, NX,…)

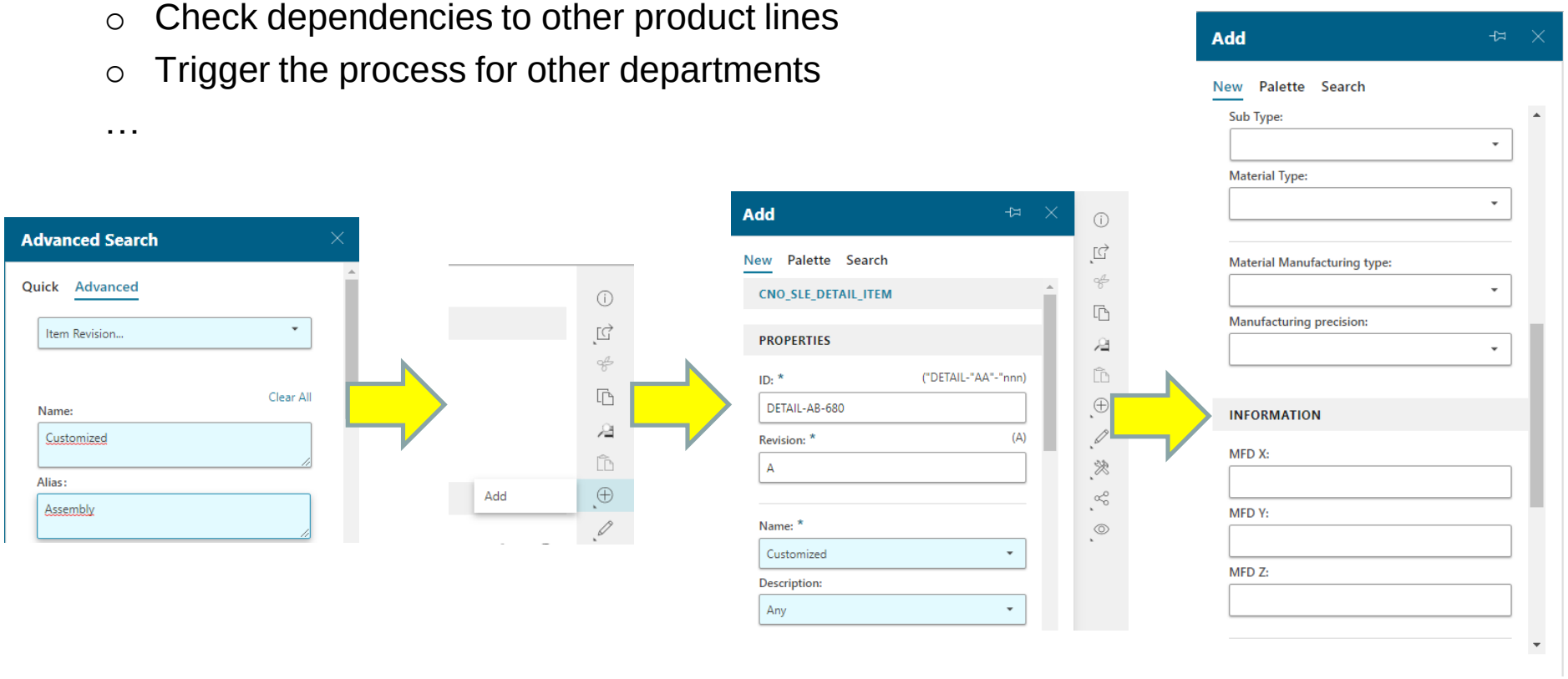


User Story: Create a new Part

User actions:

- Search to avoid duplicates
- Fill a lot of required attributes
- Check dependencies to other product lines
- Trigger the process for other departments

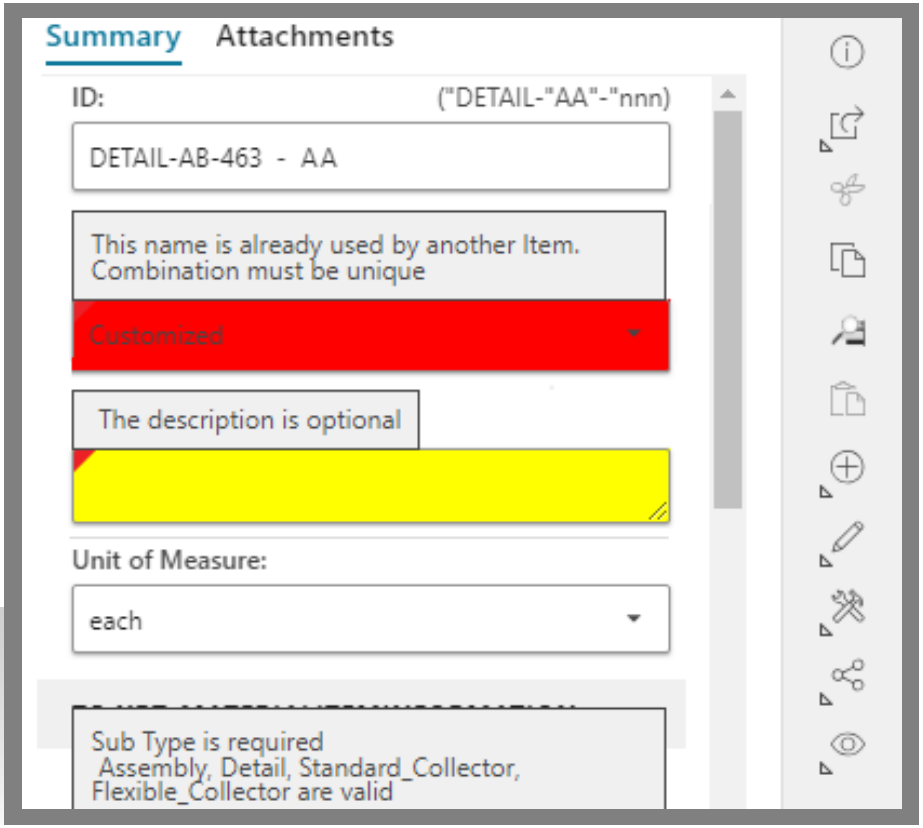
…



User Story: Create a new Part

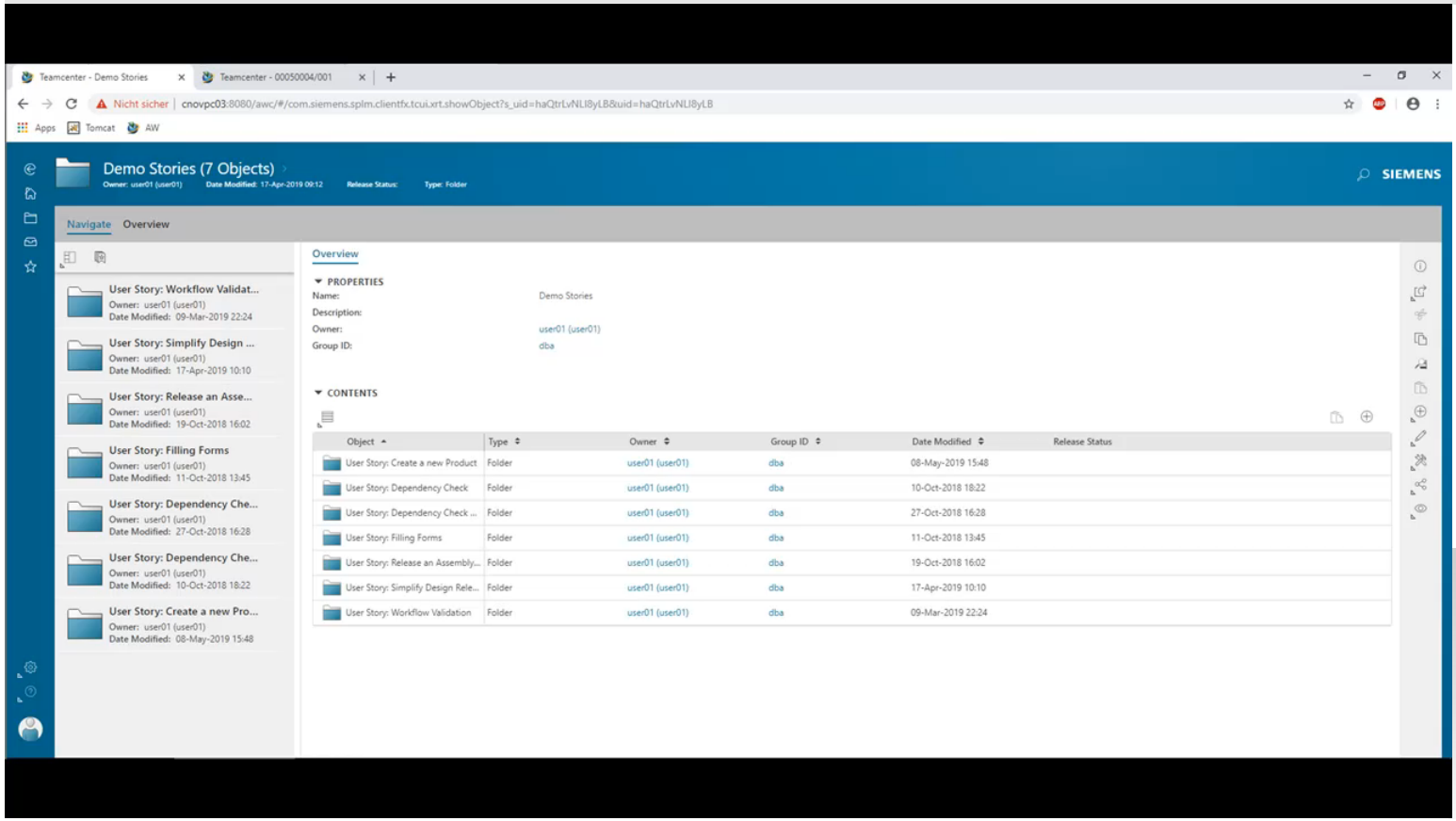
Simplified Object Creation:

- Prevent inconsistent data in the creation process
- Fix errors as soon as possible
- Ramp-up of user knowledge to company standards
- Smooth usage of data in every step
- Avoid invalid data with deeply integrated check conditions



Check for duplicates during object creation with user hints

User Story: Create a new Part



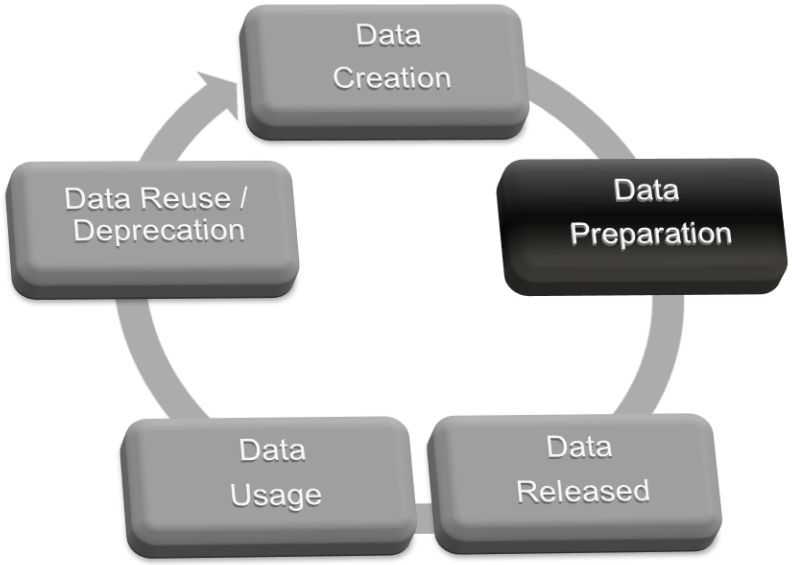
Demo:
Item Creation with input validation

Video:
https://youtu.be/krQVCXq_PCk

How to ensure data consistency: Options

Data Creation / Preparation: Avoid incorrect entries

- Automation of data checks (for example, on display, on copy/paste, on demand, ...)
- Automatically fill forms based on existing data
- Guide users on review and/or changes
- Data validation in every application (Teamcenter RAC, Active Workspace, NX,…)



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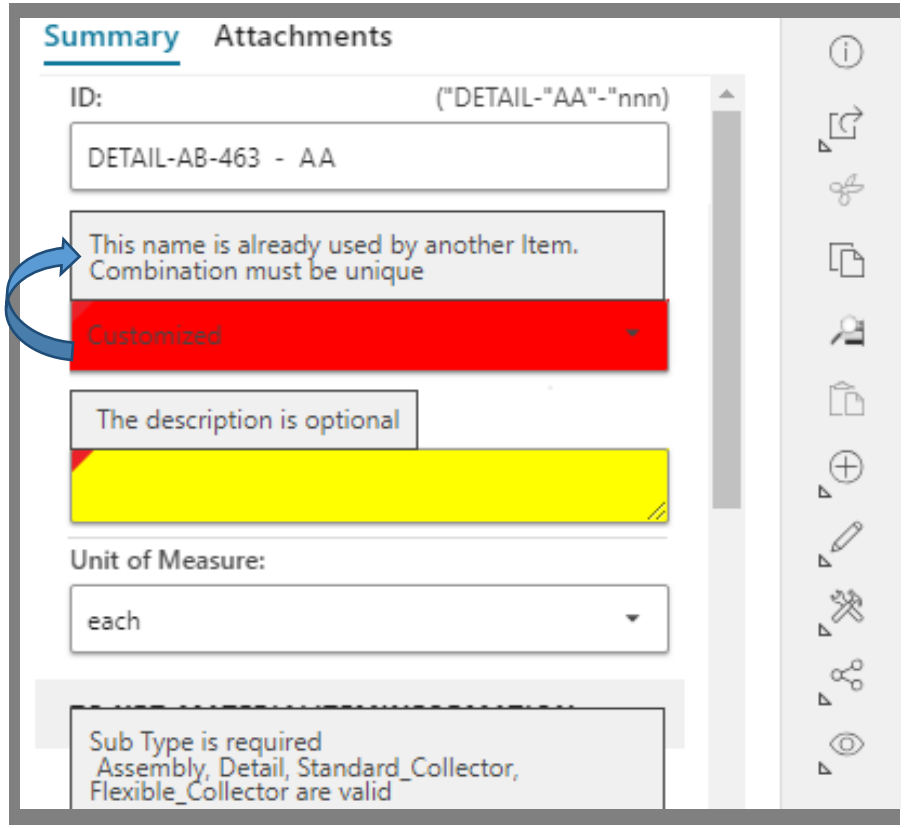
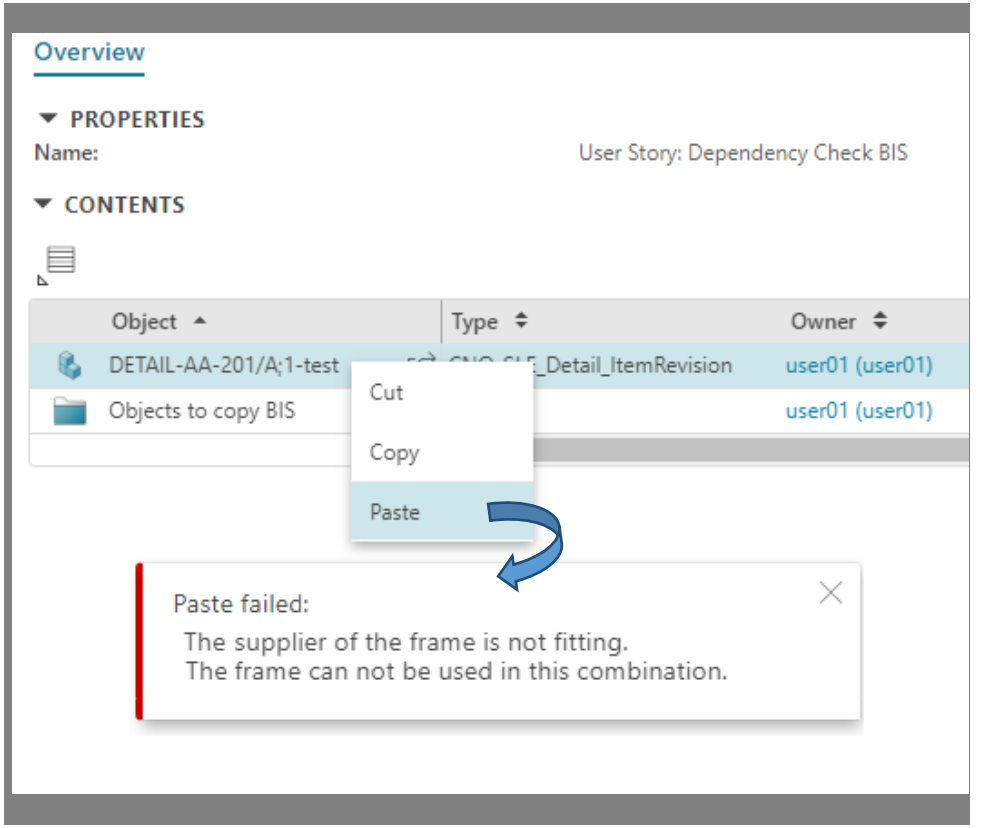
User Story: Changes and Dependencies

Extension: Stylesheet Check



Extension: Checking Dependencies



Video:
https://www.youtube.com/watch?v=v8QejjdDcqA

User Story: Data Creation / Preparation

CNO Validation Framework

- Quality level is consistent
- Quality level is reliable
- Avoid missing or invalid data
- + agility to evolve

=> Benefits :

- Reliability: **100%**
- Availability, continuity & resilience
- Usability: **all in one**
- Performance: **5 time faster**

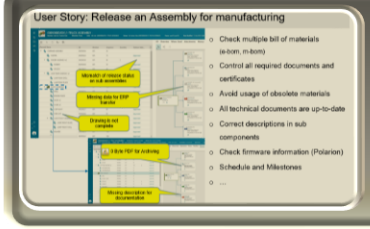
Manual creation & checks

- Quality level depends on user
- Quality level subjects to human error
- Several source: rules, Teamcenter, methods
- Data must be manually entered

User Stories: Overview

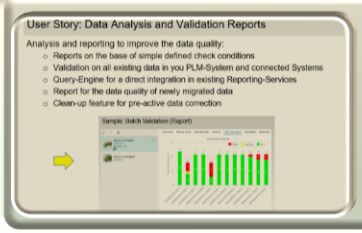
Data Creation / Preparation

- Input Validation
- Create BOM and Relations



Data Release

- **Assembly ready for manufacturing**



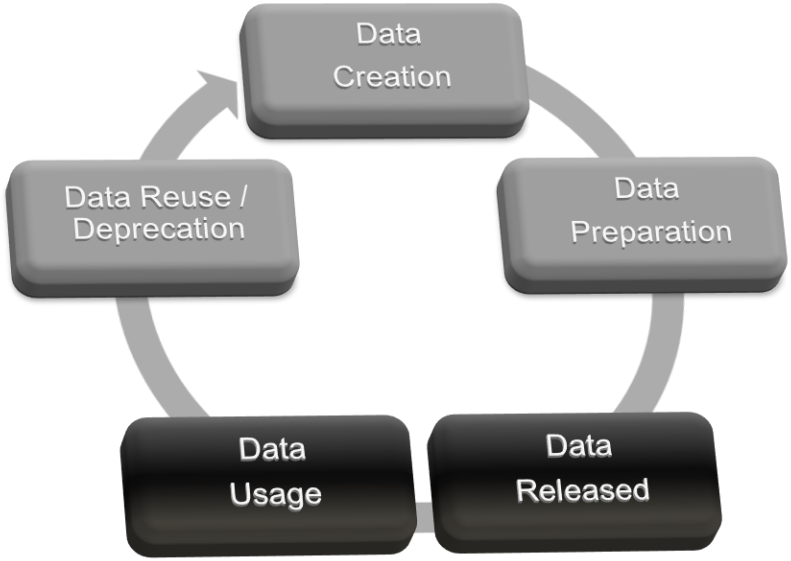
Data Usage

- Bill of Material Changes
- Analysis and Reports

How to ensure data consistency: Options

Data Release / Usage: Reduction of complexity

- Readable error messages
- Work instructions directly available (for example, wrong assignment of a component)
- Pre check (complete display of errors with work instructions)
- Validate each component (assembly specific conditions, dependency checks)



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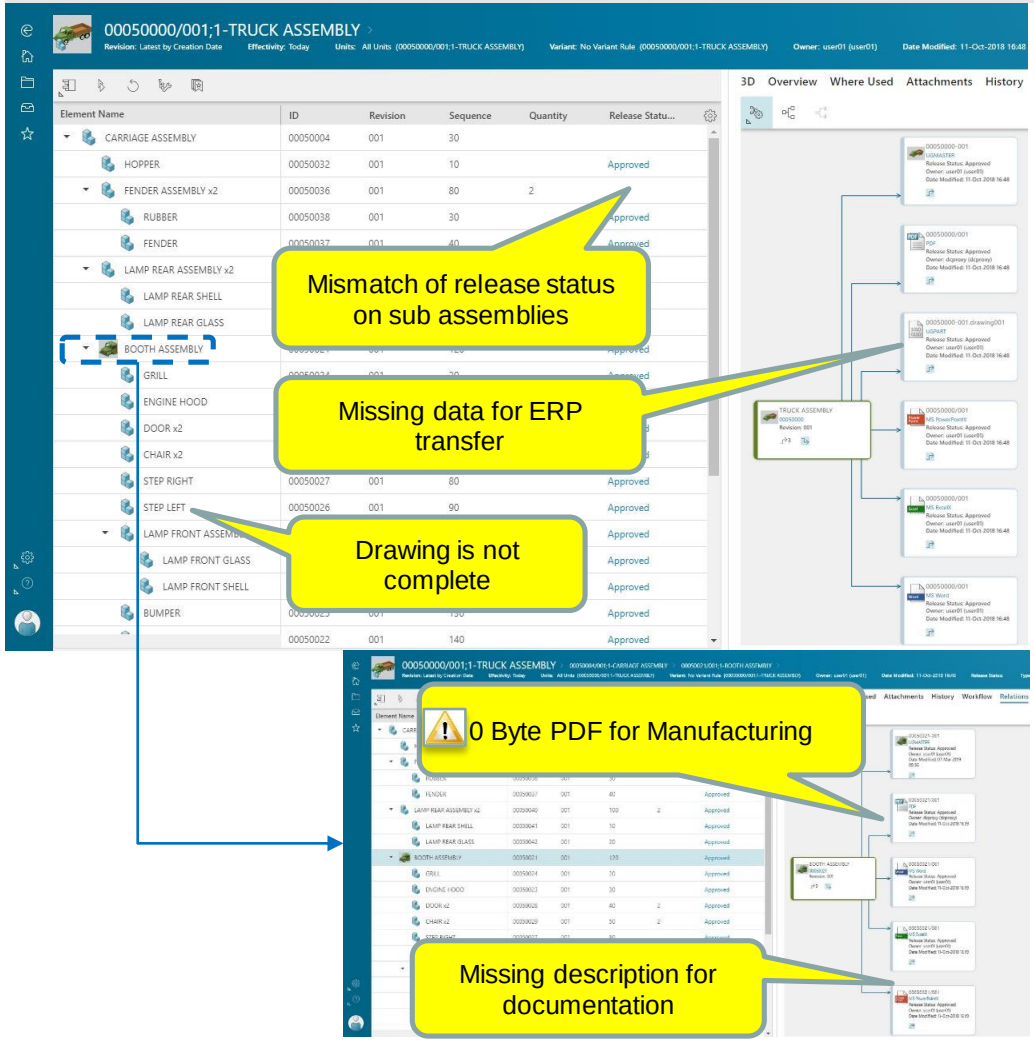
User Story: Release an Assembly for manufacturing

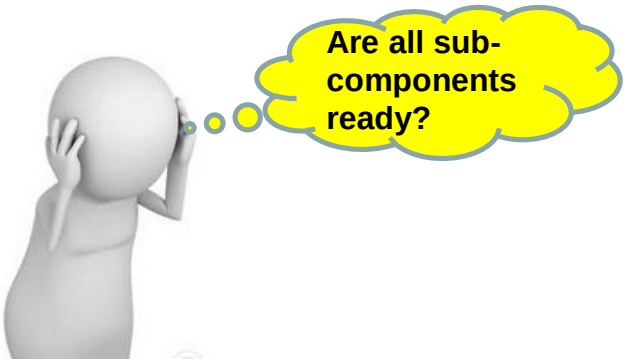


- Check multiple bill of materials (e-bom, m-bom)
- Control all required documents and certificates
- Avoid usage of obsolete materials
- All technical documents are up-to-date
- Correct descriptions in sub components
- Check firmware information (Polarion)
- Schedule and Milestones
- …

User Story: Release an Assembly for manufacturing

Manual checks (costly / time consuming)

- Quality level depends on user (project pressure)
- Quality level subjects to human error
- Several sources: rules, documentation, methods
- Several applications: Teamcenter, ERP-System, …



Requirement: Automated "Check BOM“

- Check a complete bill of material (expansion on all level)
- Check attributes based on other attributes
- Check for dependent fields and objects on BOM components
- On demand validation without workflow complexity

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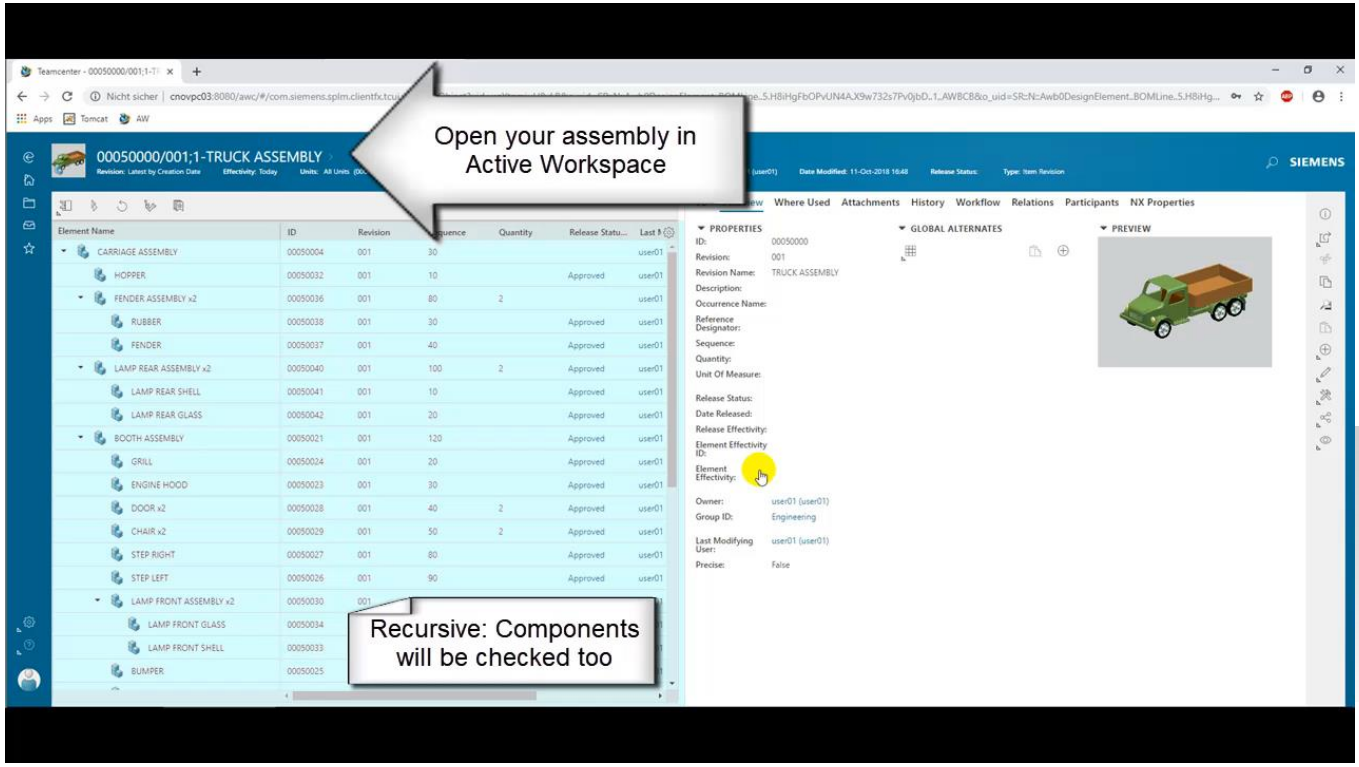
User Story: Release an Assembly for manufacturing

Ad-Hoc Validation

- Pre-Validation before starting the release process
- Direct integration and validation in any processing step
- Optional post processing based on the result of the verification



Demo: Assembly validation

- Check a complete bill of material (all levels)
- Checks dependent attributes or related objects
- Check properties of sub components

Video
https://youtu.be/rT028Gk61PE

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User Story: Release an Assembly for manufacturing

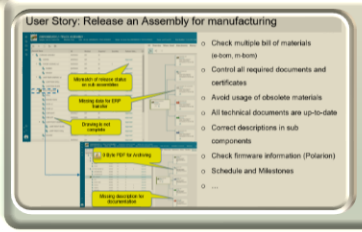
Enablers of better performances and competitiveness:

- **5x faster**
- **100%** reliable quality checks
- **Much better** usability
- **More** validation capacity
- User needs **no** intensive training
- Flexibility and agility to adapt to new needs
- Every information in **one location**
- Every thing in **one application**
- **Avoid** costly mistakes
- **Data quality:**

User Stories: Overview

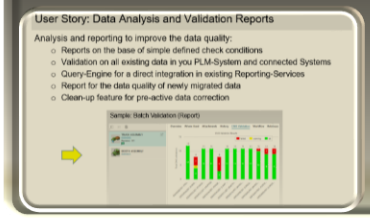
Data Creation / Preparation

- Input Validation
- Create BOM and Relations



Data Release

- Assembly ready for manufacturing



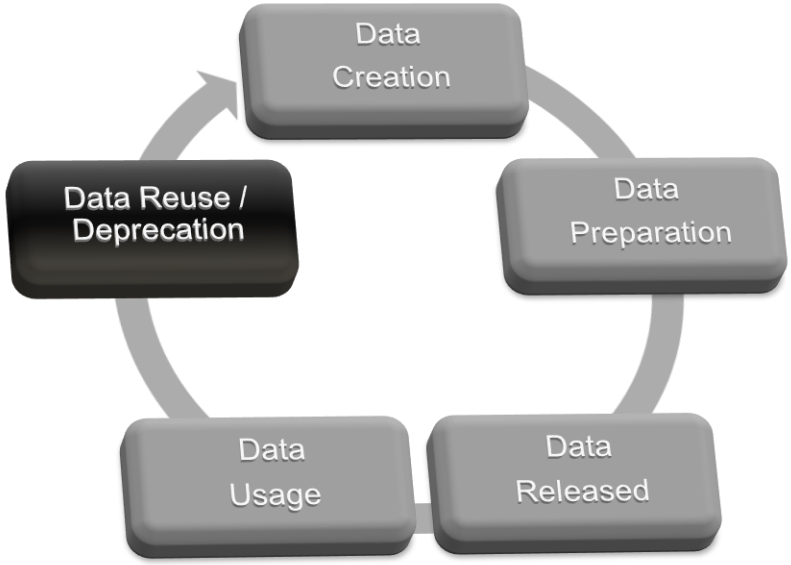
Data Usage

- **Bill of Material Changes**
- **Analysis and Reports**

How to ensure data consistency: Options

Data Deprecation: Validation of existing and old data

- Cyclic review of data in Teamcenter (reports)
- Use same procedure / rules for all validations
- Compare options with previous Revisions or different BOM



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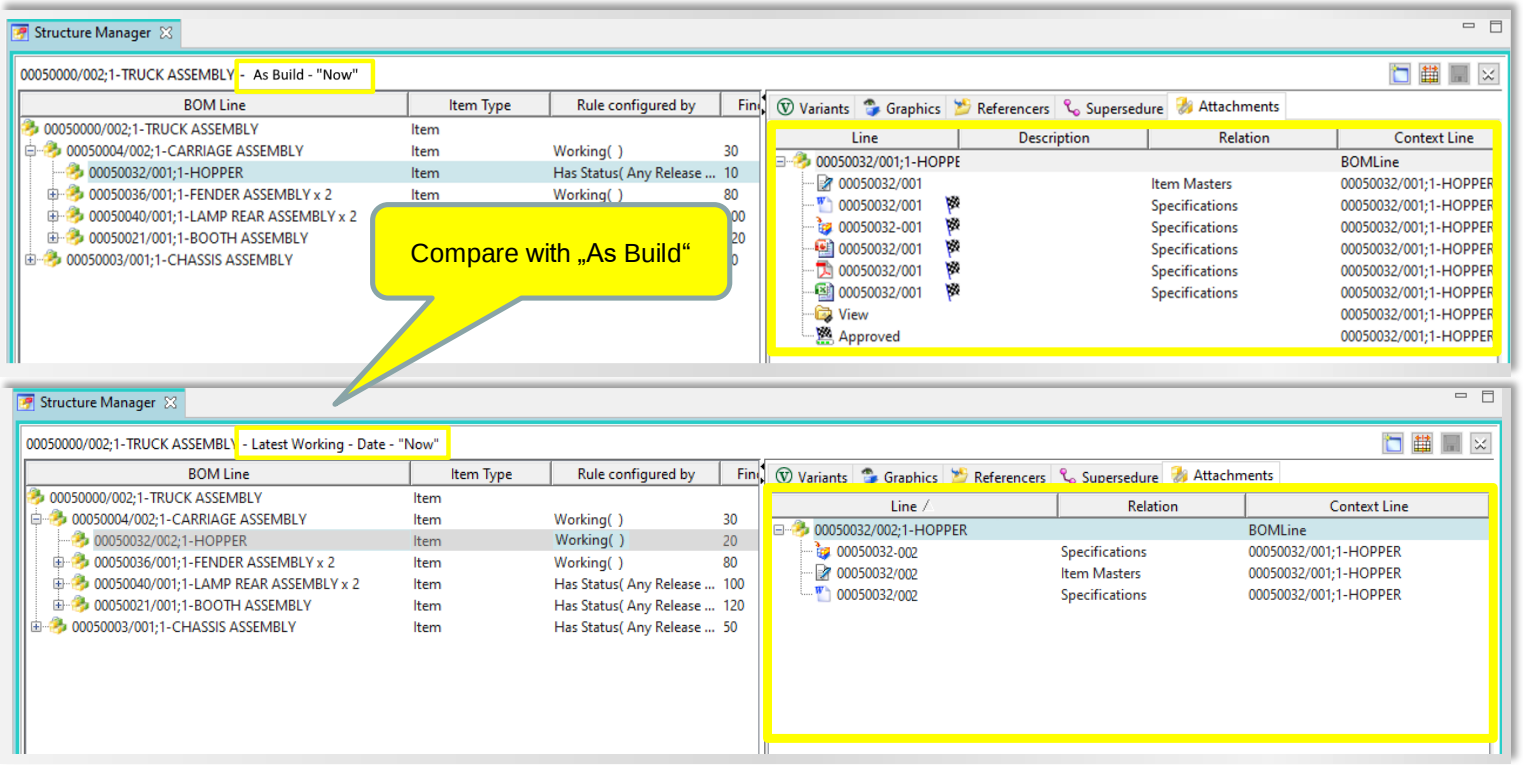
User Story: Track changes

Even small changes in assemblies become increasingly complex and require an accurate examination and traceability.



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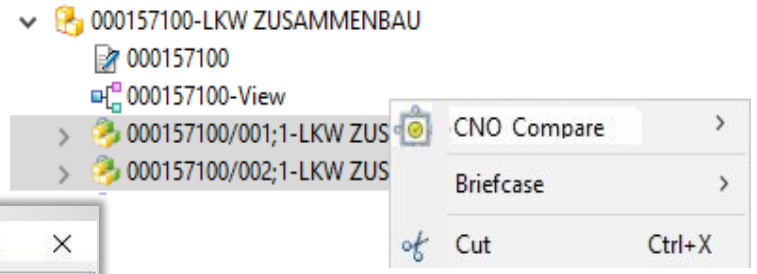
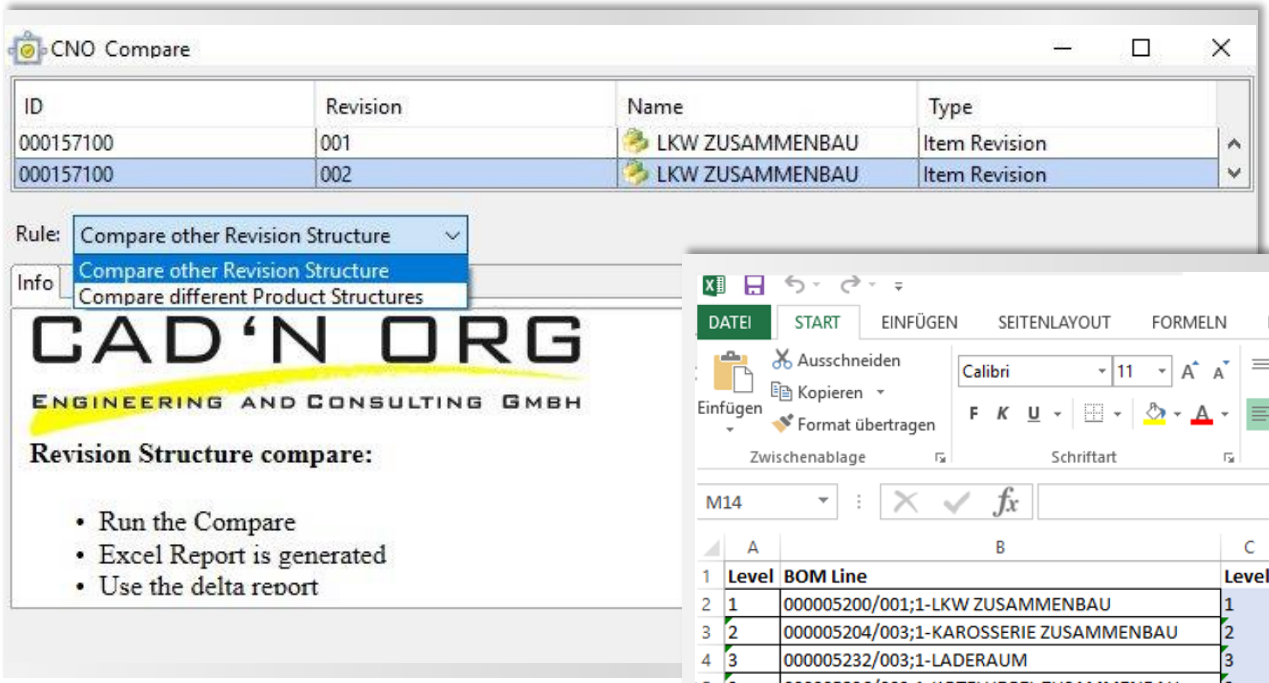
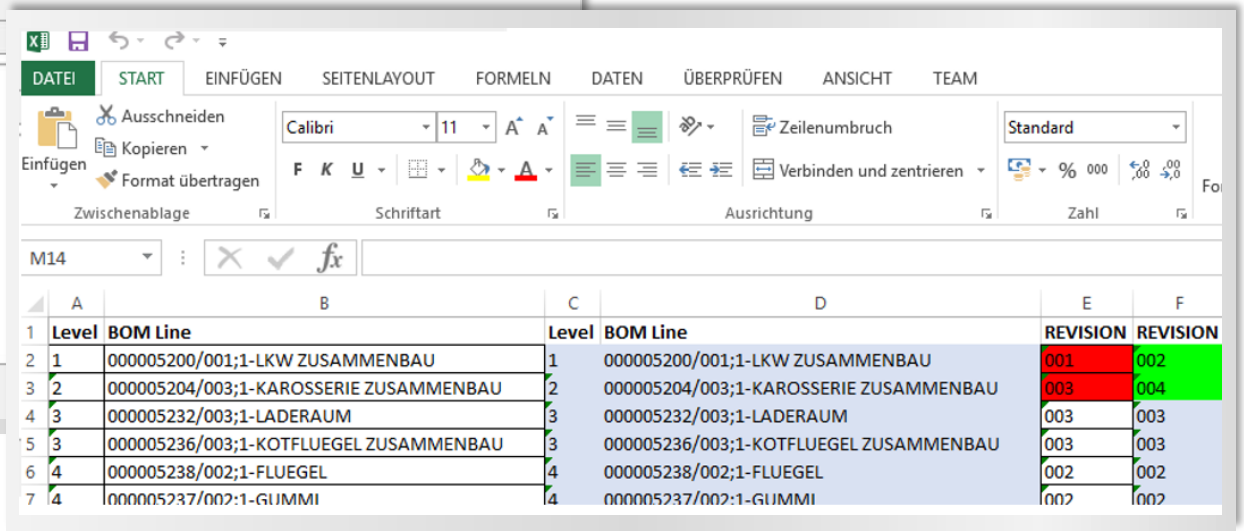
User Story: Track changes

- Easy identification of changes on the item revision
- Fast way to compare different bill of materials
- Generation of change lists and delta comparison



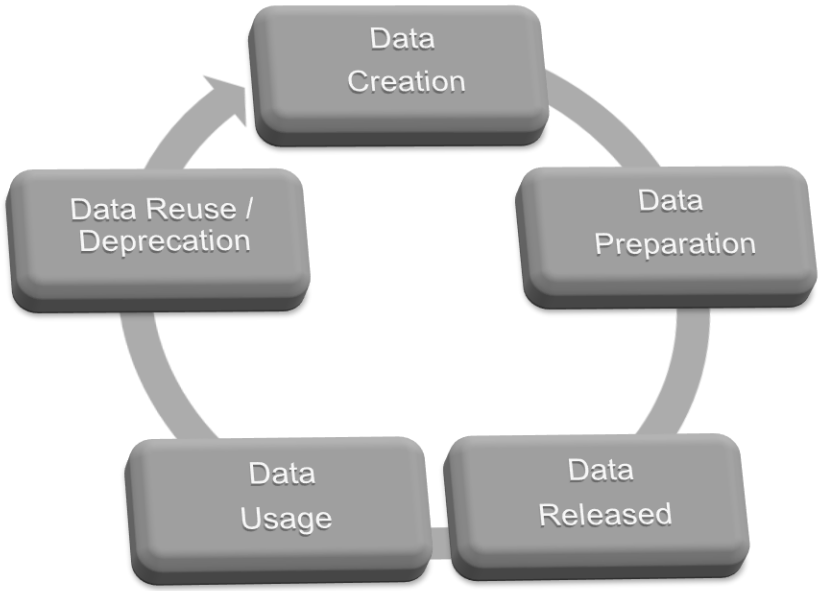




How to ensure data consistency: Options

On demand: Validation of existing and old data

- Review of all data in Teamcenter (reports)
- Use same procedure / rules for all validations
- Analysis overview



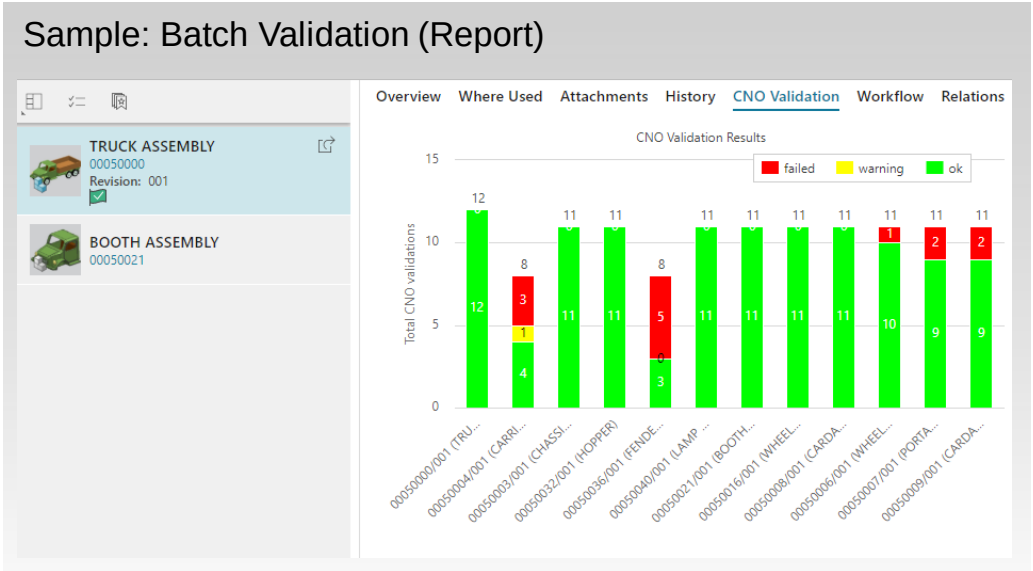
- **Any life cycle step**
- **Any time**
- **Any data**

User Story: Data Analysis and Validation Reports

Analysis and reporting to improve the data quality:

- Reports on the base of simple defined check conditions
- Validation on all existing data in you PLM-System and connected Systems
- Query-Engine for a direct integration in existing Reporting-Services
- Report for the data quality of newly migrated data
- Clean-up feature for pre-active data correction

Sample: Batch Validation (Report)



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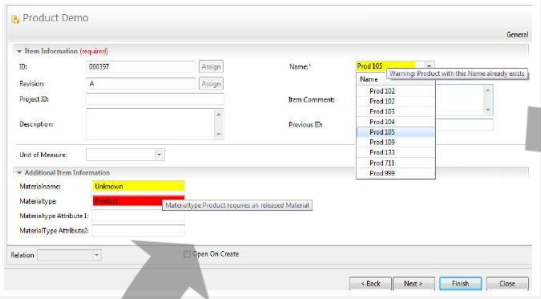
CNO Validation Framework: **Data Lifecycle Support**

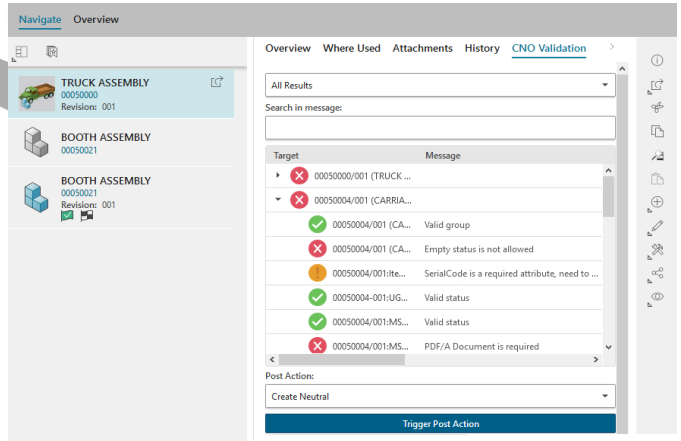
✔ Creation…

Validate input data
for objects and relations
in any application



✔ Ad-hoc…

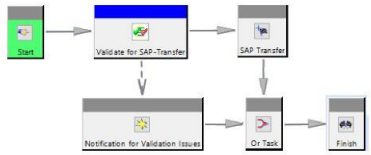
Validation during design and release activities



✔ Reports…

Data analysis and
reporting
of incomplete or
missing data

✔ Workflows…



Extend existing
workflows with
validation functionality

CNO Validation Framework: Customer Use Cases

International Automotive Supplier: Use validation to simplify their product development process, with more than 3,000 users, 100,000 assemblies and a million tasks

Electronic industry company (Europe): Use assembly checks and input validation to improve the data quality and provide a better usability to more than 3,500 users.

Medical components: Uses input validation and workflow validation to reduce the support- and training effort of 800 users.

Global Consumer Products company (Europe): Use Validation Framework on Active Workspace and reduced the time to release parts to 50%.

Machine manufacturer (Germany): Uses Rich Client with AutoFill to guide the users in the part creation process. Data validation is used for complete projects for a better quality to make better business decisions.

... and many more!

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Teamcenter: Data Validation – Questions?

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…and answers also here on
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