

Configure to Order

A project report on the implementation
of a holistic approach to a manufacturer
of special transport trailers

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Configure to Order: A project report ...



1. **Introduction of Faymonville**
2. **Configure to Order**
3. **Challenges and objectives**
4. **A holistic approach**
5. **Summary**





Introduction of Faymonville



Faymonville



- European leading manufacturer of semi-trailers for the special haulage industry.
- 185.000.000 € turnover in 2014
- ± 1500 produced units in 2014
- 3 manufacturing plants (BE-LU-PL)



Areal views of the manufacturing plants Büllingen / Belgium



Areal views of the manufacturing plants Lentzweiler/Luxembourg



Areal views of the manufacturing plants Goleniow / Poland



Some examples of products



Some examples of products



Some examples of products



Some examples of products



Some examples of products





Configure to Order



Configure to Order



- Why configure to order ?
 - Product variability
 - Leadtime from order to production
 - Think it once, reuse it many times
 - Possibility of stable BOMs → less logistics issues (BOM is known at order from customer)



CTO at MaxTrailer



DE | FR | NL | EN

MAX TRAILER / TRAILER CONFIGURATOR

1. Type

2. Element

3. Options

4. Color

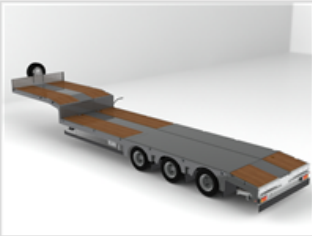
5. Your MAXTrailer

6. Your inquiry

Start new configuration

1

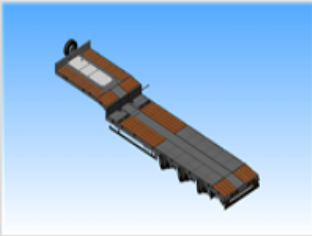
In order to start a new configuration, please select a model first.



MAX100

The MAX 100 model is a 3 to 5 axles extendable semi-trailer. Max100 is designed to perform special transportation in the industrial, construction and public work domains.

CONFIGURE



MAX110

The MAX 110 model is a 3 or 4 axles semi-trailer with knuckle-steering (hydraulic) axles. It's also available as an extendable version. Max110 is designed to perform special transportation in the industrial, construction and public work domains.

CONFIGURE

Load configuration

Please enter the configuration key and **load a previous configuration.**

LOAD CONFIGURATION

Or

FAYMONVILLE
TRAILERS TO THE **MAX**

CTO at MaxTrailer



MAX TRAILER		Angebot		NEW						
Angebot Nr.	1-150426101009	0								
Sachbearbeiter	Roland Fuhrmann									
Händler	MAX Trailer Distribution									
Homologations Land	LU									
	<input type="checkbox"/> kein land									
MAX100-N-3-8.60										
Typ	Details	Angebot	Skizze/Bild							
Schwanenhals				Ladefläche				Rampen		
Typ	Standard									
Länge	3 450 mm									
Anschragung Stinwand	<input type="checkbox"/>									
Sattelhöhe	1 150 mm									
Durchlenkradius	2 100 mm									
Sattellast	18 t									
Beschreibung Schwanenhals mit hinterer Abschrägung von ca. 750 mm x 10°. 3 Paar Verzurringe (LC 5 000 daN). Hartholzbelag 30 mm stark.				Ladeflächentyp Standard Ladeflächelänge 8 600 mm Auszug Nein Achsen Typ Nachlaufgelenkt Ausziehbar Nein Hebebett Nein Belag Hebebett: Anzahl Achsen 3 St. Radmulde Nein Beschreibung Ladefläche mit hinterer Abschrägung von ca. 1 000 mm x 8°. 4 Paar Verzurringe nach aussen klappbar (LC 5 000 daN). 3 Paar Verzurringe nach aussen klappbar (LC 10 000 daN). 1 Paar Verzurringe liegend vorne in der Ladefläche (LC 10 000 daN). Hartholzbelag ca. 48 mm stark, über den Achsen Riffelblechbelag.				Rampentyp Breite Belag Hebewerk Verschiebbarkeit Beschreibung		





Challenges and objectives



Challenges



- Integration of existing offering/configuration tool
- Integration of different authoring systems
 - M-CAD: Solidworks
 - E-CAD: E3
- Solidworks is not used in an overloaded way
- E3 is a 150% defined design file



Risks



- Impact of Change Management → data quality of configured products
- Organization change needed → mandatory
- All to be done in a running system



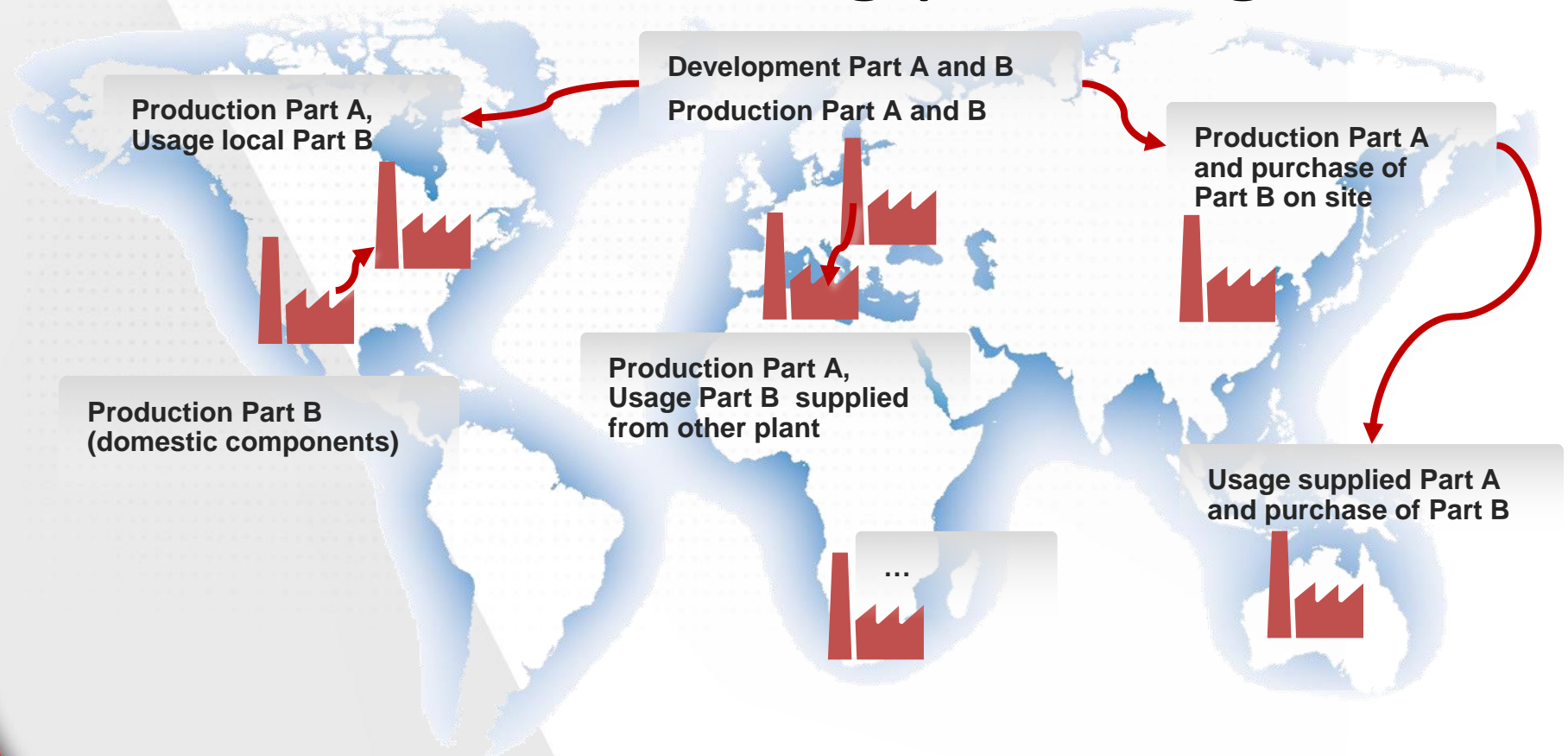


Objective

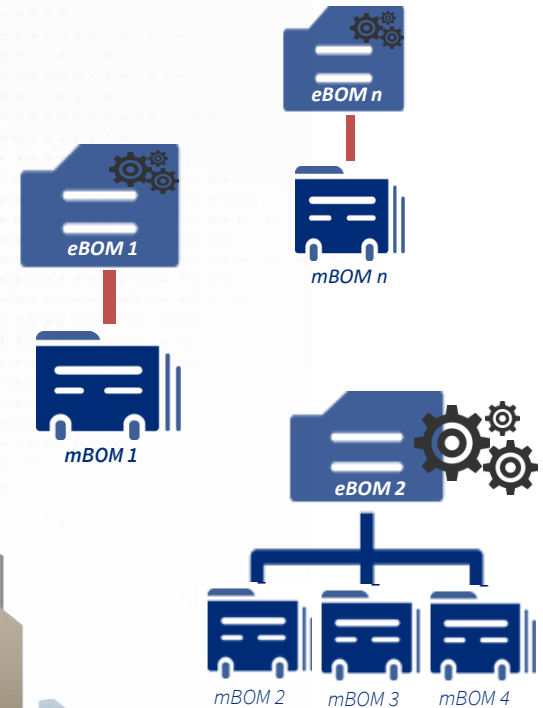
- Short time between analysis and live system
- Integration of existing systems
- Migration of existing data
- Target: shorter time between order and production
- Creating a platform for smarter ECM
- Integrated BOM management



Globally distributed manufacturing planning



Order specific manufacturing

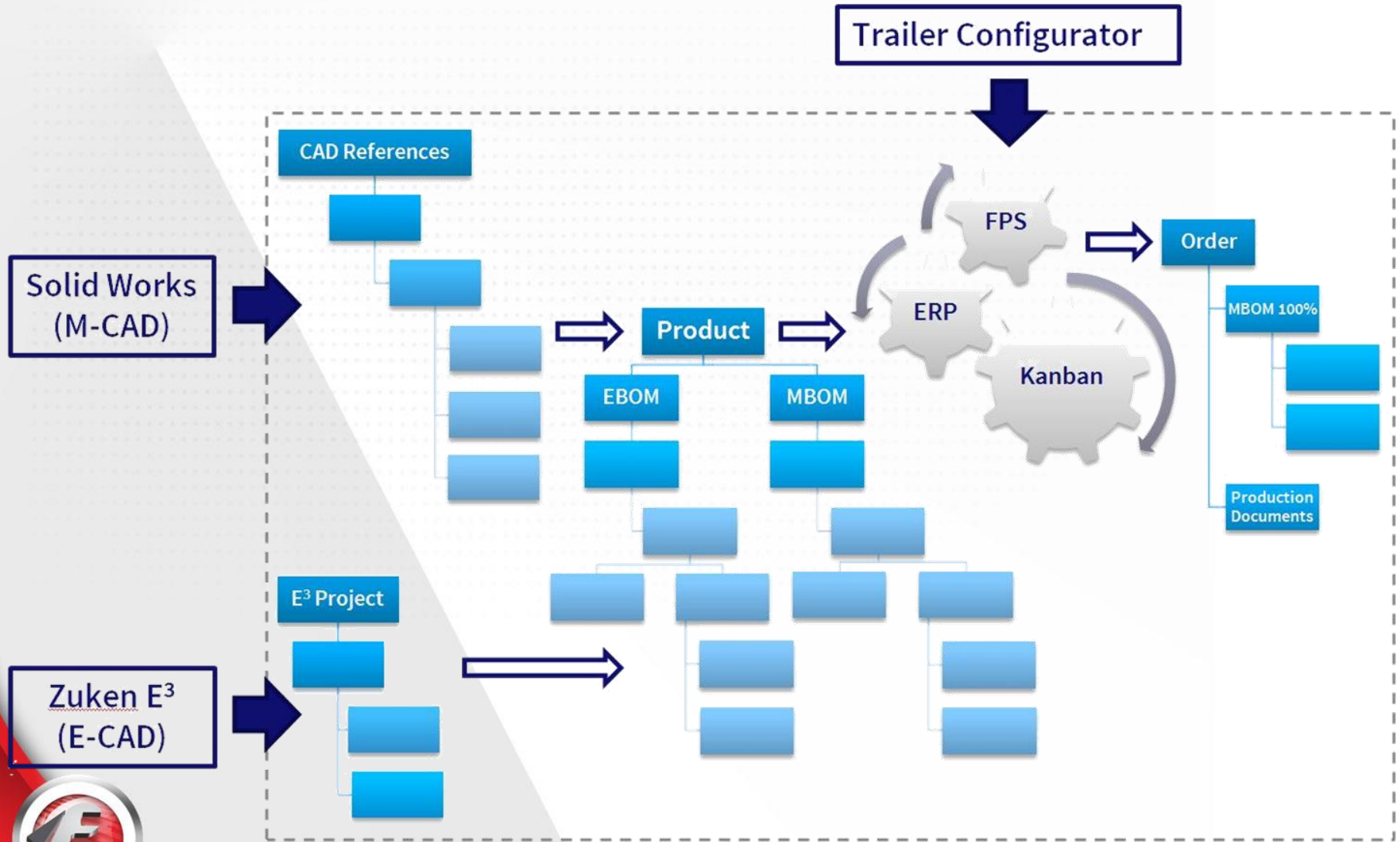




A holistic approach



System Overview



Overall Potential



- Logistic optimization (cost, risk, quantities, flexibility, ...)
- Site-specific manufacturing capabilities and processes – also with large differences between the sites
 - IT Systems, level of automation personnel qualification, material compliance, safety regulations, environmental restrictions, ...
- Several BOMs to a product or a product component - Transportation of changes
- The more important: close gaps between development and production!

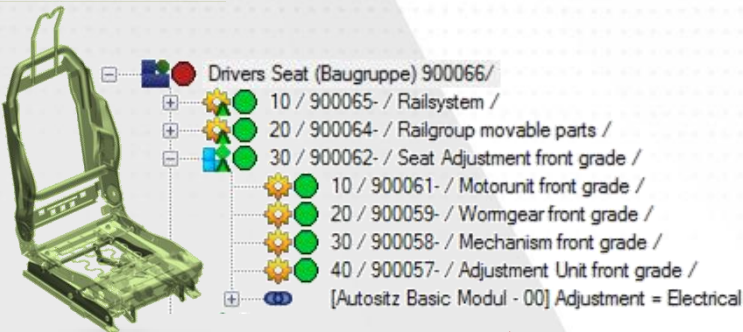




eBOMs and mBOMs

Engineering BOM (eBOM) Reflects the product as designed

Often closely linked to the product structure driven by CAD (mechanical, electrical)



Manufacturing BOM (mBOM) Reflects assembling levels

Including logistical parts, pseudo-components, logical units

Integration of lubricants, transit devices, ...

BOM Pos	Part No.	Part name	Quantity
10	900065	Rail systems	1
20	900064	Rail mov. P.	4
30

Transport changes
Completeness check





mBOM - "sovereignty"?

Four Reasons for PLM System

1. The synchronization of the BOM in the ERP system is not well supported.
2. The PLM system is leading for technical changes (ECM).
3. Companies operating multiple ERP systems or instances.
4. The central production planning supplies several production sites.

“Synchronization of mBOMs is messy by default.”

Oleg Shilovitsky

<http://beyondplm.com/2014/05/09/manufacturing-bom-is-the-next-cool-thing-in-plm>

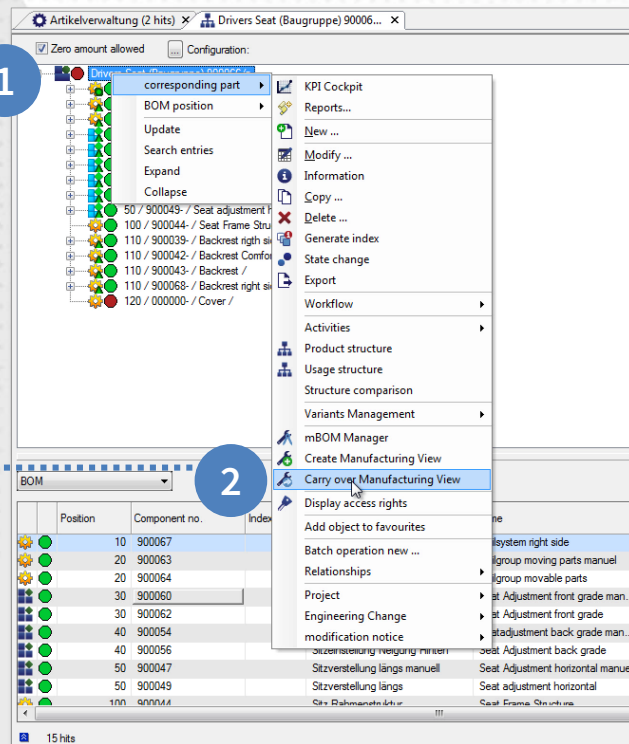


Building and maintaining plant or order-specific mBOMs



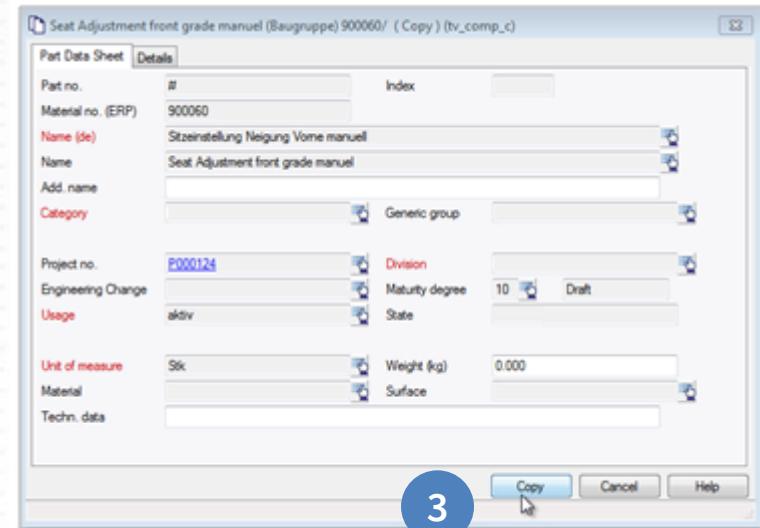
The starting point is the eBOM consisting of various sub assemblies and parts.

1



Context menu functions to carry out manufacturing view

2



3

In the manufacturing point of view, just let other details such as the development of reference or the manufacturing facility can be opened or modified.

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The mBOM Manager Difference Analysis



Clear description
of quantity
differences

1

mBOM Manager: Diff & Merge

Auswahl

eBOM Fahrersitz (Baugruppe) 900066/a

mBOM Fahrersitz (Baugruppe) 900085/ *mBOM

Mengendifferenzen (7)

Suche...

▼ Artikel-Nr.	▼ Index	▼ Benennung	▼ Kategorie	▼ eBOM	▼ mBOM	▼ Aktion mBOM
900051		Mechanismus Neigung hinten	Einzelteil	2	3	-1
900063		Schlenengruppe beweglich manuell	Einzelteil	1	0	+1
900067		Schlenensystem Rechtslenker	Einzelteil	1	0	+1
900052		Schneckenantrieb Neigung Hinten	Einzelteil	2	3	-1
900053		Verstelleinheit Neigung Hinten	Einzelteil	2	3	-1

900051 / Mechanismus Neig...

2D and 3D preview window - can be enlarged to full screen

4

Suche...

eBOM

mBOM

5

Clear side-by-side structure representation of eBOM and mBOM

Suche...

3D 2D

Suche...

1/2

1/3

Operationen

Search within
the eBOM

2

Navigation elements to
quickly navigate to
specific usages, articles
or terms

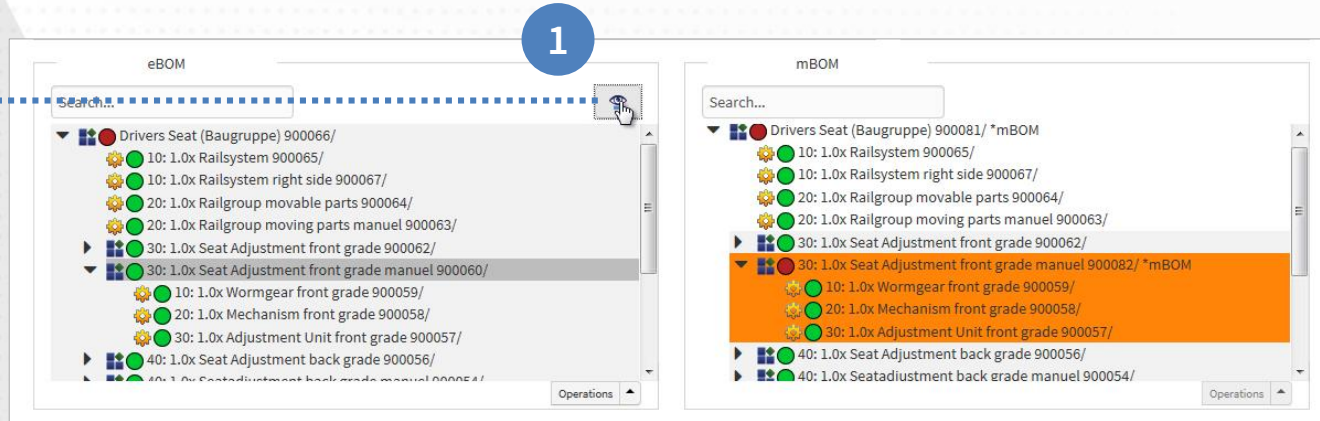
3



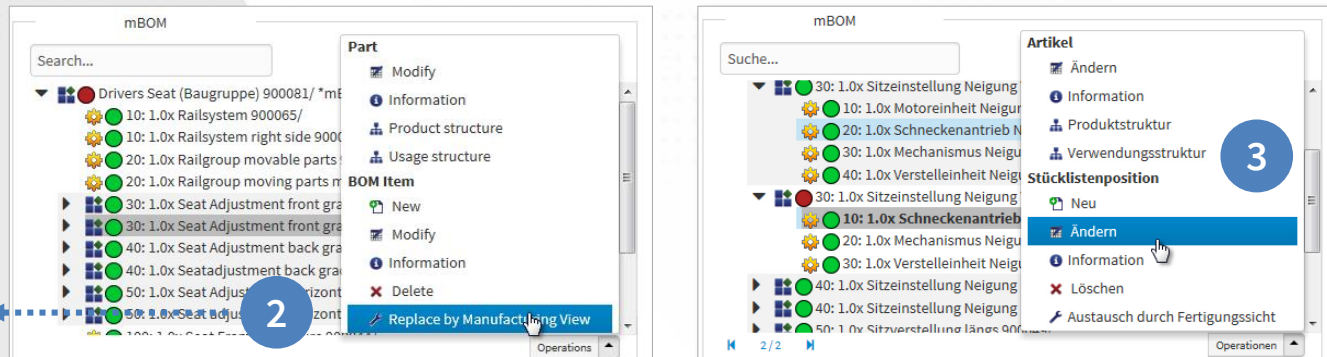
The mBOM Manager Synchronization



Highlighting components on both sides



Customize assemblies replacement by manufacturing point of view



Independing changes of mBOM



Production Planning

Werk Vormontage: * FAY LUX POL BEL

Werk Endmontage: * FAY LUX POL BEL

Wegekonfiguration für: C402615

▼ show all

Teilenummer	K / L	Benennung / Benennung2	VM: POL EM: POL			
▼ C402615-0 (in Prüfung)	(2D) (3D)	MAX100-N-3-8.60-U				
▶ 251854-1 (freigegeben)	(2D) (3D)	Montage Steckerblech	EM	POL	STW-Prep	delete
▼ C402422-1 (in Prüfung)	(2D) (3D)	Montage Stirnwand	EM	POL	EM 10	delete
▼ C402424-1 (in Prüfung)			EM	POL	STW-Prep	delete
▼ 249965-7 (freigegeben)			VM	POL	Stirnwand SNT	delete
161280- (freigegeben)			Laser >>	Kanten		delete
251346-0 (freigegeben)			Laser >>	Kanten		delete
251366-1 (freigegeben)			Laser			delete
249966-6 (freigegeben)	(2D) (3D)	Kantblech	Laser >>	Kanten		delete
251347-3 (freigegeben)	(2D) (3D)	Kantblech	Laser >>	Kanten		delete
251348-3 (freigegeben)	(2D) (3D)	Kantblech	Laser >>	Kanten		delete
25607- (freigegeben)	(2D) (3D)	Schraube Din933 M20x80 cI.8.8				
1446- (freigegeben)	(2D) (3D)	Unterlegscheibe Din7349 fr M20 Zn				
3248- (freigegeben)	(2D) (3D)	Schraube Din933 M8x20 8.8 Geo				
3880- (freigegeben)	(2D) (3D)	Beta-Splint Din11024 d4 Zn				
8770- (freigegeben)	(2D) (3D)	Sperrzahnmutter Tensilock M8 Cl.8 Geo				
4445- (freigegeben)	(2D) (3D)	Unterlegscheibe Din125A für M8 Geo				
10622-1 (freigegeben)	(2D) (3D)	Viereckscheibe Din436 für M20 Geo				
5148-0 (freigegeben)	(2D) (3D)	Sechskantmutter Din6915 M20 Cl.10 Geo (SW32)				
2602-1 (freigegeben)	(2D) (3D)	Hemmschuhhalter für G46 (verzinkt)				
130142- (freigegeben)	(2D) (3D)	Hemmschuh G46 (PVC gelb)				
3134- (freigegeben)	(2D) (3D)	Schraube Din933 M16x40 8.8 Geo				

Auf Kanban: Arbeitsplatz, Standort

BEL, SW, BEL
LUX, ST7, LUX
BEL, SS, BEL
POL, T14, POL



Production Planning Requirements

- Easy maintenance of manufacturing processes using an mBOM to generate production documents
 - Per plant and line
 - In respect of:
 - Kanban
 - Stocks
 - Process Constraints (routing configurations)
- Easy and quick viewing of 2D or 3D



Production Planning Features



- Product structure (mBOM)
- Live Kanban and stock information
- Process assignment
- Filters for pre- and final assembling Country
- Assignment of item processing
- Integrated 2D/3D preview



Production Planning Features



er	K / L	Benennung / Benennung2	VM: POL	EM: POL
5-0 (in Prüfung)	(2D) (3D)	MAX100-N-3-8.60-U		
1854-1 (freigegeben)	(2D) (3D)	Montage Steckerblech	EM	POL STW-Prep
402422-1 (in Prüfung)	(2D) (3D)	Montage Stirnwand	EM	POL EM 10
C402424-1 (in Prüfung)	(2D) (3D)	STW-Prep	EM	POL STW-Prep
▼ 249965-7 (freigegeben)	(2D) (3D)	Stirnwand	VM	POL Stirnwand SNT

Linie:

VM

EM

Werk: POL

Prozess:

Aufständer Bordwände , T13

Halter E-Rad , T13

Halter Seilwinde , T13

No Process

Stirnwand SNT , T15

Überhang SNT , T15

161280- (freigegeben)	(2D) (3D)	Kantblech	Laser >> Kanten
251346-0 (freigegeben)	(2D) (3D)	Kantblech	Laser >> Kanten



Production Planning Features



K / L		Benennung / Benennung2		VM: POL EM: POL		
Prüfung)	(2D) (3D)	MAX100-N-3-8.60-U				
(freigegeben)	(2D) (3D)	Montage Steckerblech		EM	POL	STW-Prep
-1 (in Prüfung)	(2D) (3D)	Montage Stirnwand		EM	POL	EM 10
2424-1 (in Prüfung)	(2D) (3D)	STW-Prep		EM	POL	STW-Prep
249965-7 (freigegeben)	(2D) (3D)	Stirnwand		VM	POL	Stirnwand SNT
161280- (freigegeben)	(2D) (3D)	Kantblech		Laser >> Kanten		
<div><div><div>Von:</div><div>Über:</div><div>Über:</div></div><div><div><div>Schere</div><div>PV-Prep</div><div>HS-Prep</div><div>HDR-Prep</div><div>Laser</div><div>Oxy</div><div>Säge</div><div>Stangena.</div><div>Ok</div><div>Abbrechen</div></div><div><div>Schweißen</div><div>Ch.Nr.</div><div>Bohren</div><div>Drehen</div><div>Fräsen</div><div>Kanten</div><div>Laser Rohr</div><div>Sand</div><div>SNV</div></div><div><div>Schweißen</div><div>Ch.Nr.</div><div>Bohren</div><div>Drehen</div><div>Fräsen</div><div>Kanten</div><div>Laser Rohr</div><div>Sand</div><div>SNV</div></div></div></div>						
251346-0 (freigegeben)	(2D) (3D)	Kantblech		Laser >> Kanten		
251366-1 (freigegeben)	(2D) (3D)	Formblech		Laser		
249966-6 (freigegeben)	(2D) (3D)	Kantblech		Laser >> Kanten		
251347-3 (freigegeben)	(2D) (3D)	Kantblech		Laser >> Kanten		





Summary

- Analysis and implementation time of 6 months (from signing contract to go live)
- Existing data have been migrated
- BOM management enabled and logistics issues solved

Not yet : shorter time from order to production



Outlook



- Introduction of an integrated variants model for the E-CAD side (E3.EDM, variants and options)
- Up to now, only MaxTrailer in new system. Further product lines in the pipeline
- Generation of manuals

