

Standard and catalog parts in CAD

Motivation, function, development and vision

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WITTENSTEIN

Contents

- WSE presentation
- Selection of C product solution
- Standard and catalog parts in the WITTENSTEIN PLM landscape – infrastructure – preferred catalogs
- Material creation process for standard and C products
- Product data quality: numbers, data, facts and action fields
- Outlook – Field of action automatic standard part naming
- Outlook – Field of action initial loading – product data cleaning

Company milestones



1949
Founding of DEWITTA
Special Machinery Factory



1979
Manfred Wittenstein
takes over DEWITTA



1983
First low-backlash
planetary gearbox



1989
Start of
international expansion



1992
Expansion of the range of
services: Electromechanics



2001
Founding
WITTENSTEIN AG



2008
Training center
WITTENSTEIN talent arena



2008
WITTENSTEIN AG
acquires majority stake in
attocube systems AG



2011
"Urbane Production"
in Fellbach



2014
"WITTENSTEIN
Innovation Factory"
in Harthausen



2015
World first Galaxie® Drive
System revolutionizes high-
performance mechanical
engineering



2016
WITTENSTEIN AG
becomes
WITTENSTEIN SE



2017
WITTENSTEIN SE acquires
100% of the shares of
baramundi software AG

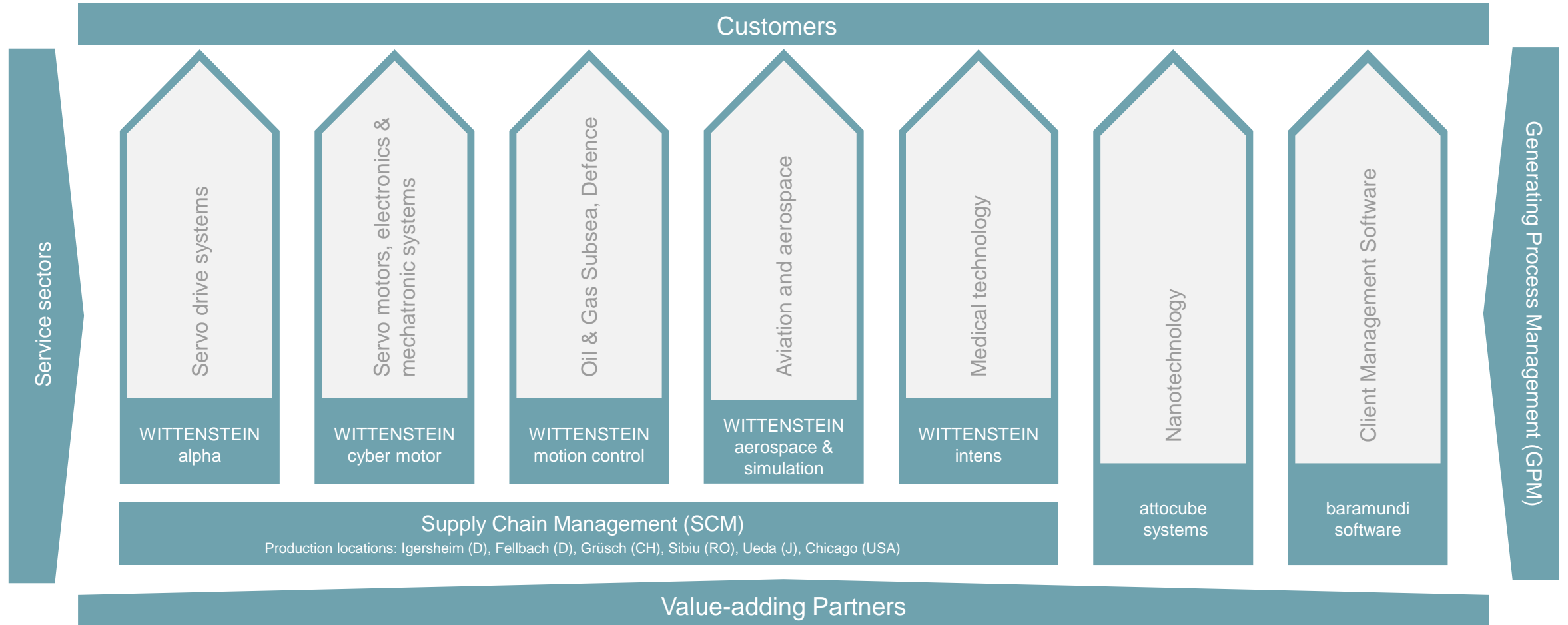
WITTENSTEIN international



... in about 40 countries worldwide

March 2018

Structure of WITTENSTEIN SE



Mechanical and mechatronic drive solutions



WITTENSTEIN alpha GmbH
Entwicklung und Produktion hochpräziser Servo-Antriebe



WITTENSTEIN aerospace & simulation GmbH
Mechatronische Antriebssysteme für die Luftfahrt



WITTENSTEIN motion control GmbH
Maßgeschneiderte lineare und rotative Servosysteme



WITTENSTEIN intens GmbH
Intelligente Antriebssysteme im und am Körper



WITTENSTEIN cyber motor GmbH
Hochdynamische Servomotoren und Antriebs-Elektroniken



attocube systems AG
Nanopräzise Antriebs- und Messtechniklösungen



Presentation of WITTENSTEIN SE

WITTENSTEIN alpha > Produkte > Sizing Tools

WITTENSTEIN alpha Sizing Tools – mehrere Wege zum Ziel

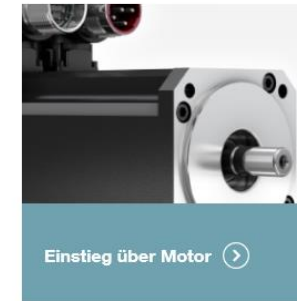
SIZING ASSISTANT

Empfohlene Getriebe

Meine Filter: Anwendung, Max. Drehmoment a 50 Nm x Ausgangsgl..., Übersetzung = 5

Modell	Übersetzung	Max. Drehmoment	Spül
NP 015	5	64 Nm	± 8'
NPS 015	5	64 Nm	± 8'
NPL 015	5	64 Nm	± 8'
NPT 015	5	60 Nm	± 8'
NPR 015	5	64 Nm	± 8'
NP 015	4	67 Nm	± 8'
NPS 015	4	67 Nm	± 8'
NPL 015	4	67 Nm	± 8'

SIZING ASSISTANT
YOUR GEARHEAD WITHIN SECONDS



ÜBERSPRINGEN

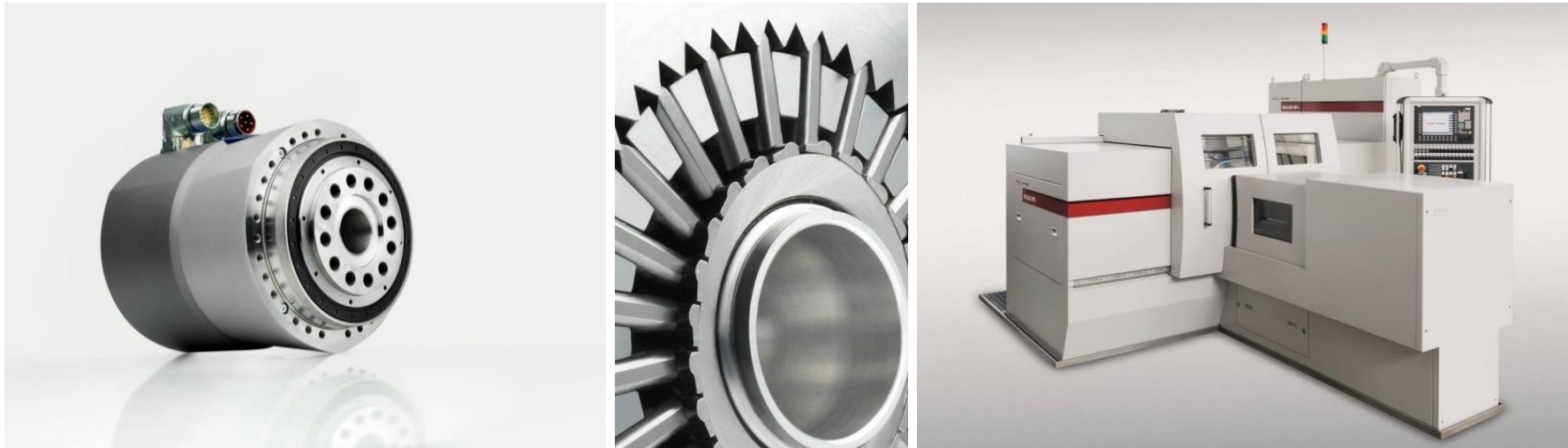
<https://alpha.wittenstein.de/de-de/produkte/sizing-tools/>

A world first: Galaxie[®] Drive System

40% increase in profile rolling productivity

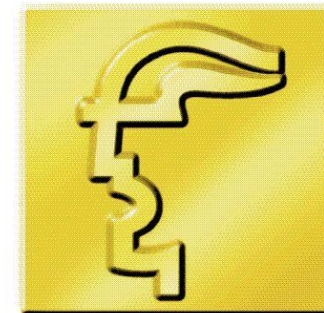
Application in gear rolling machines of Profiroll Technologies GmbH

- Extremely high torsional rigidity: 6 times higher than other types of gears
- With a 1.5-fold increase in process speed, an increase in productivity of 40% is achieved



“The Oscar for engineers”: HERMES AWARD 2015

WITTENSTEIN's elementary new Galaxy Propulsion System beat out almost 70 participants from ten countries and was also able to assert itself in the field of five finalists.



HERMES
AWARD
2015

Standard and catalog parts in the WITTENSTEIN PLM landscape

Standard and catalog parts in the WITTENSTEIN PLM landscape

Motivation



→ In 2015, when SAP was introduced, we were looking for a tool to help us clean up product data.

However, the limited budget was not sufficient for the full range of functions.

So we started in 09/2015 with 20 users under V9 with NX9.

Today max. 60 named users could use PARTsolutions.

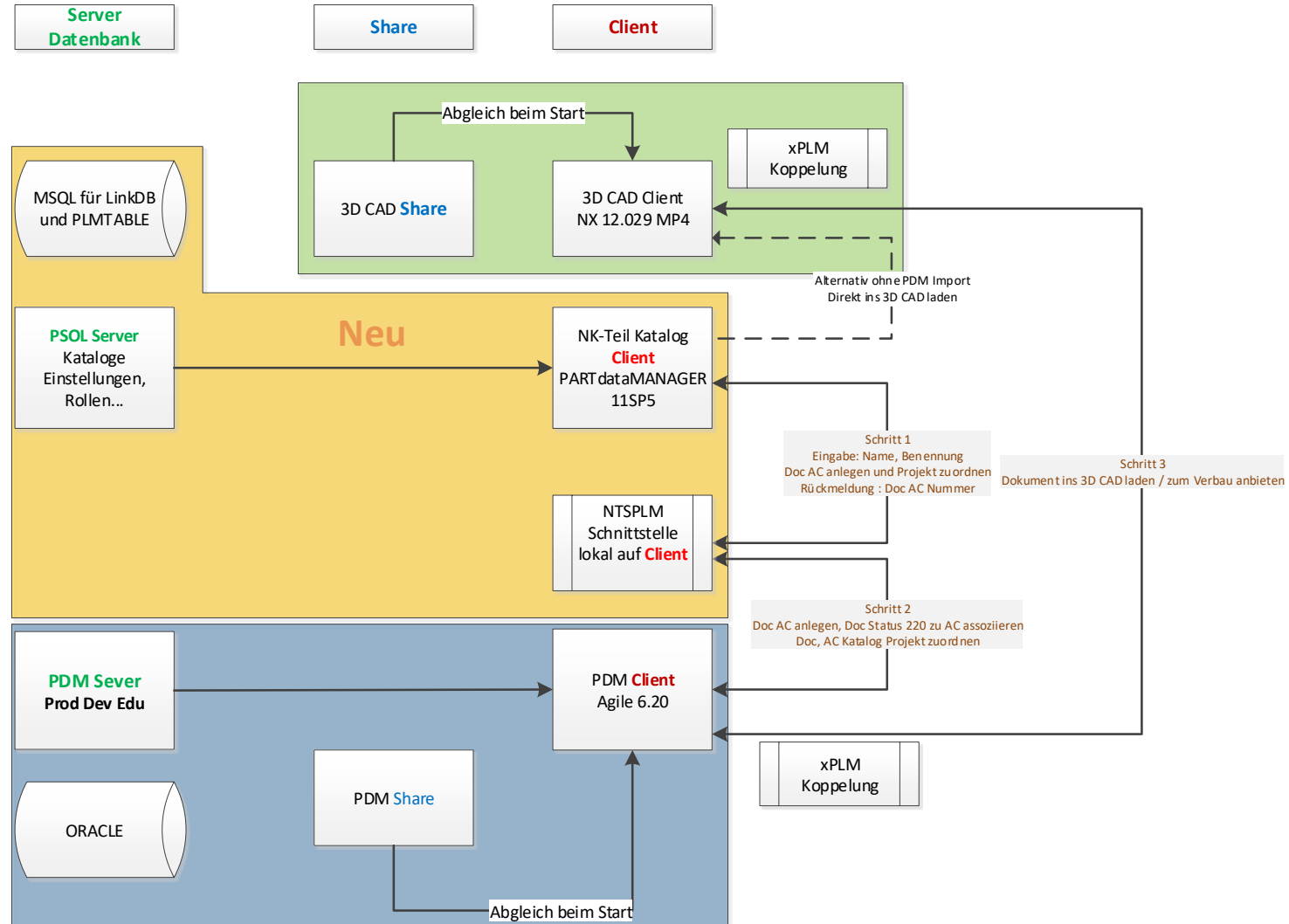
The following range of functions was defined: 

- Preferred catalogs – specification by the procurement department: **standard**, **green**, **yellow**, **red** all catalogs are searchable
- Automatic import into PDM-Agile E6 via the NTSPLM interface (Maier CSS / XPLM) with metadata filling
- Deep integration into NX-CAX with standardized geometric quality

Infrastructure

Standard and catalog parts in the WITTENSTEIN PLM landscape

Infrastructure 



Preferred catalogs

Standard and catalog parts in the WITTENSTEIN PLM landscape

PSOL – Preferred Catalogs – Classification by Purchasing Department – Role-based Export Rights to the PDM

Internal terotechnology
may also be red

Product design

- Standard catalog - cyan
Use whenever possible. Standard parts are available from many suppliers at best quality, price and shortest delivery time
- Preferred catalog green
There is a business relationship and supplier evaluation
- Catalog yellow
There is a vendor in the system, but e.g. no contracts for delivery security
- Catalog red
The catalog is provided. It can be researched and locally exported.

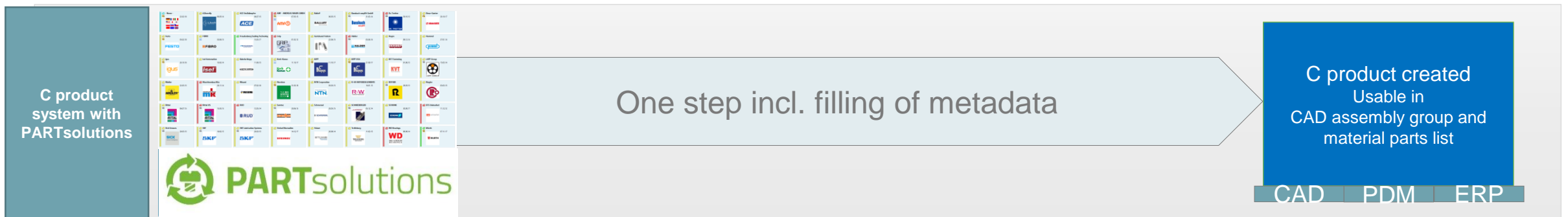
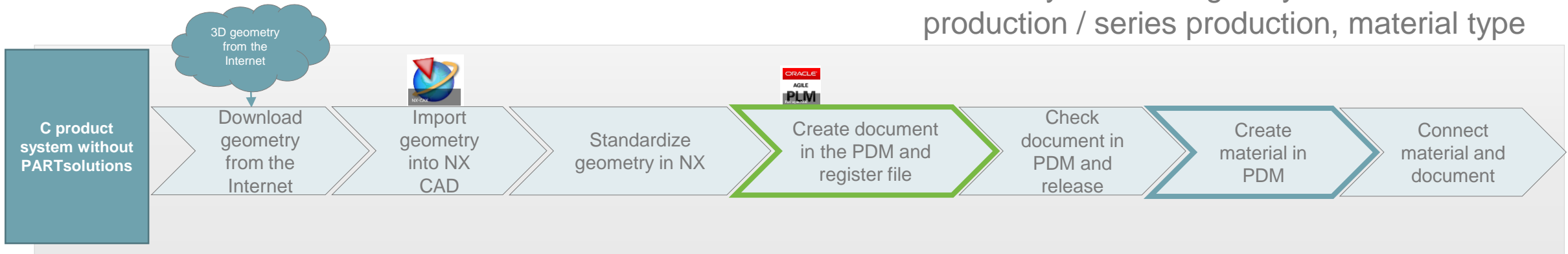


System process

C product system with and without PARTsolutions

Expenses for creating the data

Meta-data: e.g. X,Y,Z volume weight texts in foreign language, project assignment, laboratory / office target layer small-scale production / series production, material type



Standard and catalog parts in the WITTENSTEIN PLM landscape

Creation of PDM objects **Document**, **Material** and assignment to **Project**

The image displays three overlapping screenshots of the SAP PLM (Product Lifecycle Management) interface, illustrating the creation and management of PDM objects.

Top Screenshot (Material View): Shows the 'Material' (Mat) view for material number 0050964. Key data includes:

- Materialnummer: 0050964
- Dash: -
- Am: -
- Index: 01
- CM: 19
- Geschäftsfeld: WSE-TM
- Aktuell:
- Klasse: (empty)
- Produktierarchie: (empty)
- Art: 5 KT
- Phase: 3 PT
- Art-Gr.: 166
- Mt-Art: ZKAU
- Subtyp: NORM_KATALOGTEIL
- ME: ME
- Stk: Stk
- Zielstatus: 46 Kleinserie
- Kd-Bez.: 1 AN
- SAP-K: 2

Middle Screenshot (Document View): Shows the 'Document' (Dok) view for document number 1000/D108753. Key data includes:

- Firma: 1
- Dok.-Art: 000
- Zählnummer: D108753
- Rev.: 01
- Blatt: 0
- Geschäftsfeld: WSE-TM
- Beschreibung Dokumentart: 3D-Modell
- MD Status: 220
- Geprüft:
- Aktuell:
- Geheimhaltungsstufe: 2 Eingeschränkt

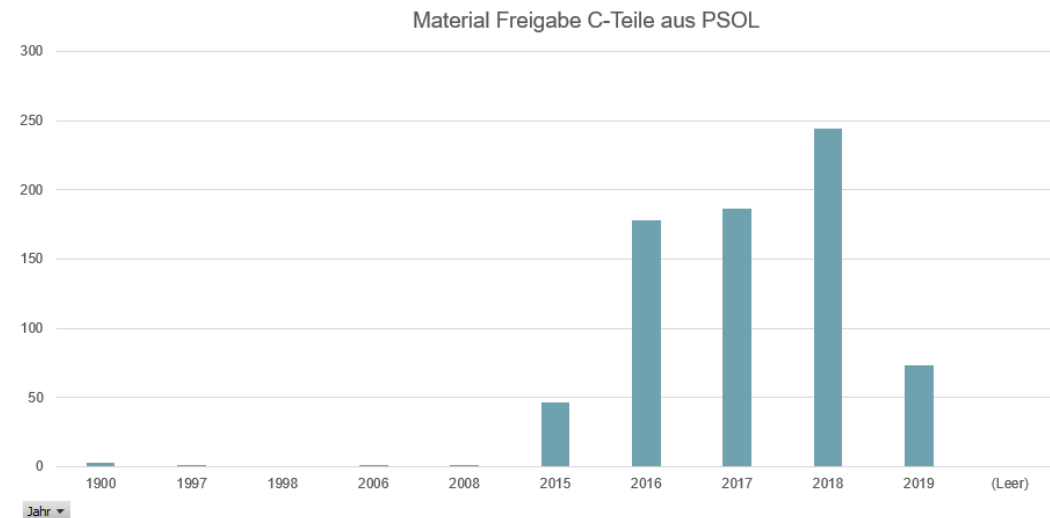
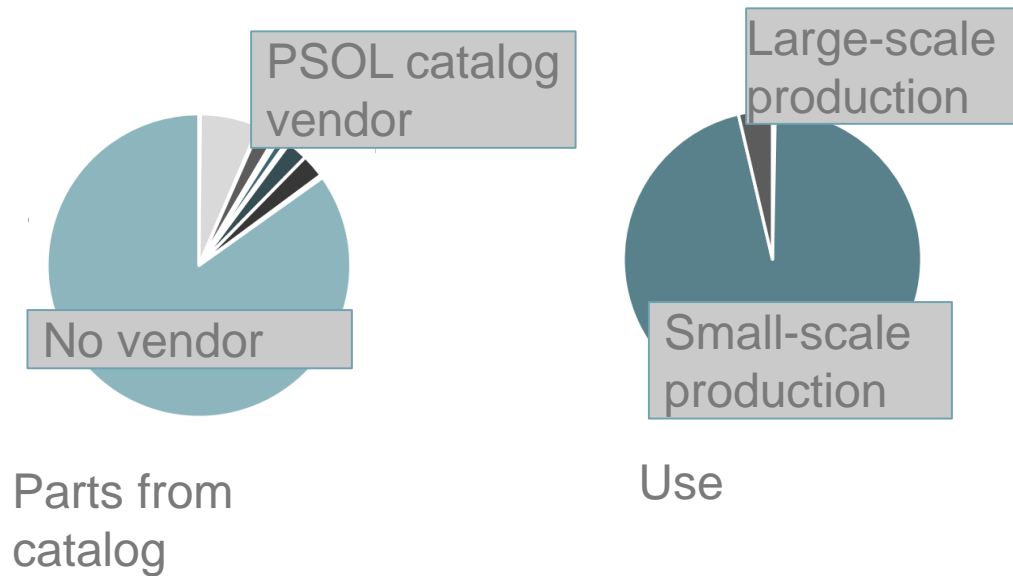
Bottom Screenshot (Material List View): Shows a list of materials in a project. The table includes columns for Materialnummer, Dash, Am, Änderungsindex, CM, Benennung, Status, e, Bezugs, best, G-Typ, G-Feld, CV, CV-Descr, RM, PZ, PP, Art, KdBez, Phase, Gültig ab, and Gültig bis. The list contains various components like 'ZBR-9 Zentrierhülse D8M 9', 'Elektrozylinder EPD', 'PB-Zylinder DIF12180AP0', etc.

Numbers, data and facts

Standard and catalog parts in the WITTENSTEIN PLM landscape

Statistical data for C products imported into Agile

Catalog projects 112 + 1 for parts from “red” catalogs 155 objects included
Target no longer offer all catalogs – via the evaluation of search frequency



Product data quality: Numbers Data Facts

Material and C products in Agile PDM



Materials

21298 created

16839 released

In business year 2016/2017



Purchase and & standard parts

1821 created

In business year 2016/2017

> 30,000 data records total

Outlook

Improving product data quality: Action fields



- Provide standard and purchase parts catalog for the construction, existing and newly added parts in the system thus have a high data technical standard. Duplicates are avoided and preferred parts are used. Follow-up benefits in the value-adding activities cycle



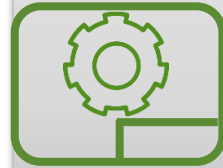
- Prepare data for initial loading (for existing PDM data) manually, semi-automatically through software / rules or as “offline” service, data withdrawal, preparation, replay



- Introduce classification / catalog of names / keyword search, semantic and geo-semantic expression possible. For existing and new parts. The benefit for semantic and geometric analysis is currently being tested. See also the following slide.

Automatic naming of C products

Action field automatic (standard part) naming



Naming rules

> 180 rules of thumb

only for screws
(2652 data records)

- **No uniform rules for the formation of designations**

For example with screws:

<Clear name>_<Standard/Manufacturer/Brand >_<Standard no.>_<Nominal diameter>x<Nominal length> Screw ISO 7380-2 M4x20
<Clear name>_<Standard/Manufacturer/Brand ><Standard no.>_<Nominal diameter>x<Nominal length>_<Strength class> Screw ISO4762 M12x120 12.9
<Clear name>_>Standard/Manufacturer/Brand ><Standard no.>-<Nominal diameter>x<Nominal length>->Strength class>>...> Screw ISO4762-M4x12-10.9...
<Clear name>_<abbr. Material ><Nominal diameter>x<Nominal length>-<Standard/Manufacturer/Brand >Standard no.>-<C...> Screw ST4.8x9.5-ISO7049-C..

- **No specification to ensure master data quality for standard / catalog part & auxiliary and operating materials (product-related)**
- **No coordinated procedure to ensure that the data records are up-to-date**
(e.g. if the standard DIN 912 changes to DIN EN ISO 4762)
- **Large amount of records with inconsistent field entries**

	Sprache	Bezeichnung
	DE	Stuetzscheibe CP040 5x10x0,7 X
	EN	Stützscheibe 5x10x0,7 DIN 988

Action field automatic standard part naming

Necessary preliminary work: Definition of assignments (excerpt)

zutreffende Norm/ Applicable standard			Klarname de/ Clear name de Klarname en/ Clear name en	Syntax Materialkurztext/ Syntax material short text								
DIN	EN	ISO		Klarnamenteil Clear name part	Technischer Teil Technical Part							
		4762, 4014, 4017	Schraube Screw	<Klarname> <Clear name>	" "	<Produktnorm ¹⁾ >	" "	<Gewindegröße>	"x"	<Nennlänge>	" "	<Festigkeitsklasse>

Standard and catalog parts in the WITTENSTEIN PLM landscape

Action field automatic standard part naming

- Assignment of standard to a CADENAS standard project - WSE TSC standardization
- Short and long naming - Clear name + parameters in German and English PI
- Length limitation of document 30 characters short text 130 characters long text (title block – ERP systems)
- Length limitation of material 30 characters short text 255 characters long text (basic data text SAP)
- The material long text is the template for the purchase order text

Example ISO 4762 → CADENAS catalog project din_en_iso_4762

Plain name

Screw

Material short text

Screw ISO4762 M8x60 12.9 Screw ISO4762 M8x60 12.9

Basic data text

Hexagon socket head cap screw ISO 4762 - M8 x 60 - 12.9

Hexagon socket head cap screw ISO 4762 - M8 x 60 - 12.9

Standard and catalog parts in the WITTENSTEIN PLM landscape

Action field automatic naming

- Result in Agile PDM example purchase part – article number and catalog info appear in basic data text

• Document





Firma	Dok.-Art	Zählnummer	Rev.	Blatt	Geschäftsfeld	Beschreibung Dokumentart	MD Status	Aktuell	Geheimhaltungsstufe
1	000	D113886	01	0	19 WSE-TM	3D-Modell	<input type="checkbox"/> 220 Geprüft	<input checked="" type="checkbox"/>	2 Eingeschränkt
Titel de / Zusätzlicher Titel de			Titel en / Zusätzlicher Titel en			Titel fr / Zusätzlicher Titel fr			
Abstreifer 10x16x3			Wiper ring 10x16x3			---			
Artikelnr 40422000 454478, AS 88 NBR 99035 10 x 16 x 3 MM;Freudenberg Sealing Technologies GmbH & Co. KG, 69465 Weinheim, DE			Item no. 40422000 454478, AS 88 NBR 99035 10 x 16 x 3 MM;Freudenberg Sealing Technologies GmbH & Co. KG, 69465 Weinheim, DE			---			

• Material

Materialnummer	Dash	Am	Index	CM	Geschäftsfeld	Aktuell	Mat Status	Klasse	Produktierarchie	Art	Phase	Art-Gr.
1	0053251	-	01		19 WSE-TM	<input checked="" type="checkbox"/>	40 In Arbeit			5 KT	3 PT	166
Mt.-Art	ZKAU	Subtyp	NORM_KATALOGTEIL		ME	Stk	Zielstatus	46 Kleinserie		Kd-Bez.	1 AN	SAP-K 2
Materialkurztext de / Grunddatentext de			Materialkurztext en / Grunddatentext en			Materialkurztext fr / Grunddatentext fr						
Abstreifer 10x16x3			Wiper ring 10x16x3			---						
Artikelnummer 40422000 454478, AS 88 NBR 99035 10 x 16 x 3 MM;Freudenberg Sealing Technologies GmbH & Co. KG, 69465 Weinheim, DE			Item no. 40422000 454478, AS 88 NBR 99035 10 x 16 x 3 MM;Freudenberg Sealing Technologies GmbH & Co. KG, 69465 Weinheim, DE			---						

What happens next with C products at WSE

Field of action initial loading – product data cleaning

-  Until today no initial loading has been done
-  Successful proof of concept with CADENAS and D&TS in 2018 for an in-house part and a C product category
-  The in-house parts catalog was approached with this in mind
-  Objective is complete classification of C products and in-house parts in the PDM via PARTsolutions if necessary
 - Jump from manufacturer catalog to standard part catalog, if standard catalog is available.
 - Order number can be generated. Today WSE custom solution
 - Nightly update from ERP system to LinkDb in PARTsolutions
 - Automatic Classification / Commodity Code
 - CADENAS is requested here : For standard parts, add strength and coating, in this way complete

BEISPIEL Eine Zylinderschraube mit Innensechskant mit Gewinde M5, Nennlänge $l = 20$ mm und Festigkeitsklasse 12.9 wird wie folgt bezeichnet:

Zylinderschraube ISO 4762 — M5 × 20 — 12.9

First results for in-house parts catalog and classification

<ul style="list-style-type: none"> ▼ - Wittenstein Standardteile - <ul style="list-style-type: none"> > Betriebsausstattung ▼ Endprodukt <ul style="list-style-type: none"> > Dienstleistungsprodukt > Elektromechanik Produkt > Elektronik Produkt > Mechanik Produkt > Mechatronisches System <ul style="list-style-type: none"> 📦 Softwareprodukt ▼ Komponente <ul style="list-style-type: none"> > Aufschrift/Kennzeichnung/Hinweis > Elektromechanische Komponente > Elektrotechnische Komponente > Formloser Stoff, Medium > Halbzeug/Werkstoff > Hydraulische/Pneumatische Komp > Informationstechnische Komponer > Mechanische Komponente > Mess-/Prüftechnische Komponent > Software Modul 	20038141							Planetenradträger_Abtrieb.xlsx	PLT	TP oder CPT?		m080	8	
	20038142							Wittenstein_Aplha	PLT	TP	_	m080	5	
	20038143							Wittenstein_Aplha	PLT	TP	_	m080	4	
	20038144							Wittenstein_Aplha	PLT	TP	_	m060	10	
	20038145							Planetenradträger_Abtrieb.xlsx	PLT	TP oder CPT?		m060	8	
	20038146							Planetenradträger_Abtrieb.xlsx	PLT	TP oder CPT?		m060	5	
	20038147							Wittenstein_Aplha	PLT	TP	_	m060	4	
	40000664							SCR	DIN 913	Gewindestift	M6	8	6	0,23622
	40001217							SCR	Eigenkonstruktion	Sonderschraube	M6	9,5	6	0,23622
	40001429							SCR	DIN 912	Zylinderschraube	M4	45	4	0,15748
	40001527							SCR	DIN 6912	Zylinderschraube	M4	8	4	0,15748
	40001528							SCR	DIN 7991	Senkschraube	M4	16	4	0,15748
	40001623							SCR	DIN 7985	Linsenschraube	M2	6	2	0,07874
	40001624							SCR	DIN 913	Gewindestift	M2	3	2	0,07874
	40001681							SCR	DIN 912	Zylinderschraube	M2	4	2	0,07874
	40001683							SCR	DIN 912	Zylinderschraube	M2	3	2	0,07874
	40001820							SCR	DIN 912	Zylinderschraube	M4	70	4	0,15748

Conclusion

- Selection of C product solution
- Standard and catalog parts in the WITTENSTEIN PLM landscape - infrastructure - preferred catalogs
- Material creation process for standard and C products
- Product data quality: numbers, data, facts and action fields
- Outlook - Field of action automatic standard part naming
- Outlook - Field of action initial loading - product data cleaning

- Gradually integrate user preferences, e.g. eliminate multiple necessary selections.

Standard and catalog parts in the WITTENSTEIN PLM landscape

Questions

Thank you for your interest