Expert Know-How extraction

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- International Trading-, Engineering- and Logistics-Company for fasterner technology
- Headquarter Zug, Switzerland
- 30 Countries – 80 locations worldwide
- 2500 employees

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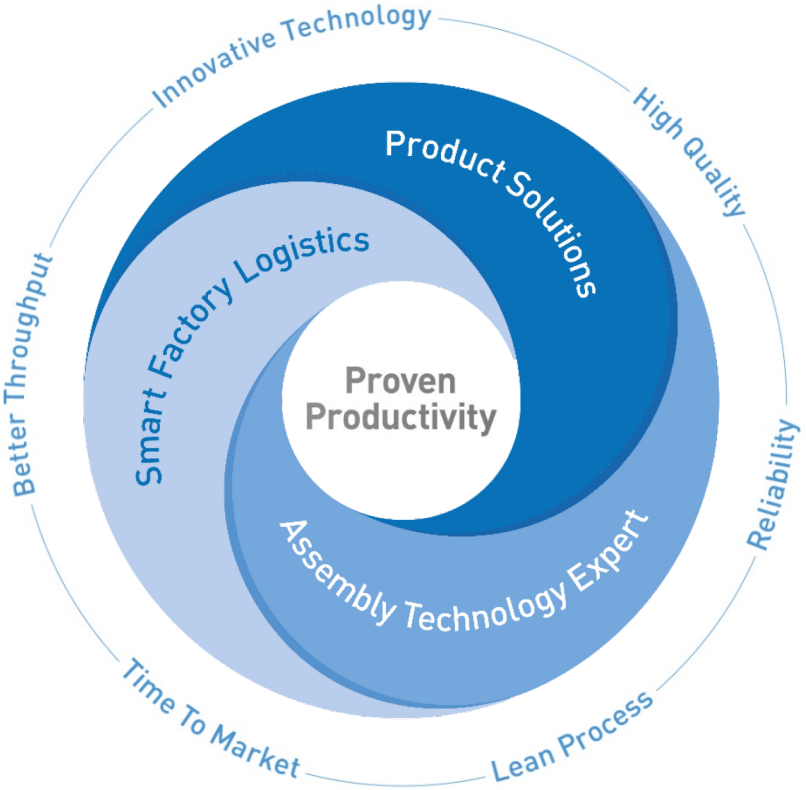
THE STRATEGY OF SUCCESS
MAKING OUR CUSTOMERS MORE COMPETITIVE



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PRODUCT SOLUTIONS

BOSSARD NORM

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Anwendungshinweise, Index	Indications d'utilisation, Index	Avvertenze, Indice
Innensechskant- und Innensechsrund-Schrauben	Vis à six pans creux et à six lobes internes	Viti con esagono incassato e con cava esalobata
Sechskantschrauben	Vis à tête hexagonale	Viti a testa esagonale
Muttern, Gewindeeinsätze	Ecrous, douilles filetées	Dadi, inserti filettati
Grobschrauben, Dübel	Vis exécution grossière, chevilles	Bulloni grossolani, tasselli
Schlitz-, Kreuzschlitz-, Kombischrauben	Vis à fente, vis à empreinte cruciforme, vis combinées	Viti con intaglio, viti con impronta a croce, viti con rosetta preassemblata
Gedrehte Schrauben, Gewindestangen, Gewindestifte, Schlauchbriden	Vis décolletées, tiges filetées, vis sans tête, colliers de serrage	Viti tornite, barre filettate, viti senza testa, fascette stringitubo
Scheiben, Sicherungselemente	Rondelles, éléments de sécurité	Rosette, elementi di sicurezza
Stifte, Niete, Keile	Goupilles, rivets, clavettes	Spine, rivetti, linguette
Blechschrauben, Bohrschrauben, gewindeformende Schrauben	Vis à tôle, vis autoperceuses, vis autoformeuses	Viti autofilettanti, viti autoperforanti, viti automaschianti
Holzschrauben	Vis à bois	Viti per legno
Verbindungselemente aus INOX	Eléments d'assemblages en INOX	Elementi di collegamento in INOX
Verbindungselemente aus diversen Werkstoffen	Eléments d'assemblage en divers matériaux	Elementi di collegamento in altri materiali
Beschichtungen	Revêtements	Pretrattamenti
Technische Informationen	Informations techniques	Informazioni tecniche

BRAND PRODUCT PARTNERS

NORD-LOCK Bolt securing system
elesa
EJOT
EMHART TEKNOLOGIES
PANDUIT
Richco
NYLTITE
SPAX
Marutex
VERBUS-RIPP
Kerb Konus
MIKALOR
ALCOA
DEJOND COLD FORMING
J.Lanfranco
HEYCO
SPIROL
PEM

OVERVIEW OF PRODUCTS

Quick release pins and spring plungers

Bonding fasteners

Only CH

Construction fasteners

Blind rivet nuts

Blind rivet technology

Only CH / AT

Stud welding systems

Sealing Technology

Industrial Screw Technology

Only DE / AT

Pressure intensifiers

Self-clinching fasteners

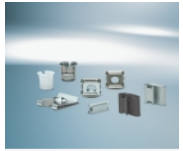
Thread inserts

Only CH / AT

Adhesives and sealants

Only DE / CH

Quick connectors



Quick fastening elements and clips

Lock nuts

Only CH

Special processes

Installation equipment

Access solutions

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More than

1,000,000

different fastening solutions available

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How can we help our people to find the right product solution for our customers?

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PRODUCT SOLUTION

- This is simple!
  - Build up a Knowledge Base
  - Set up a few Decisions Trees

- We tried this serval times
  - To complex and cumbersome

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Product Solution Advisor

IDEA
PRODUCT SOLUTION ADVISOR

- Have a AI based «Product Solution Advisor»
- Has the KVT/Bossard knowledge
- Structure customers problems
- Relates to similar solutions
- Guides Engineers to the solution

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ADVANTAGES
PRODUCT SOLUTION ADVISOR

- Standard / repetitive solutions could be found by less qualified consultant
- High qualified experts focus on new solutions
  - Which will be trained to the AI
- New engineers are “trained” faster
- Knowledge is in the AI
  - (In case an expert leaves the company)

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Goal:

Bossard has a system that manages the product knowledge and make it available to employees efficiently in "real time".

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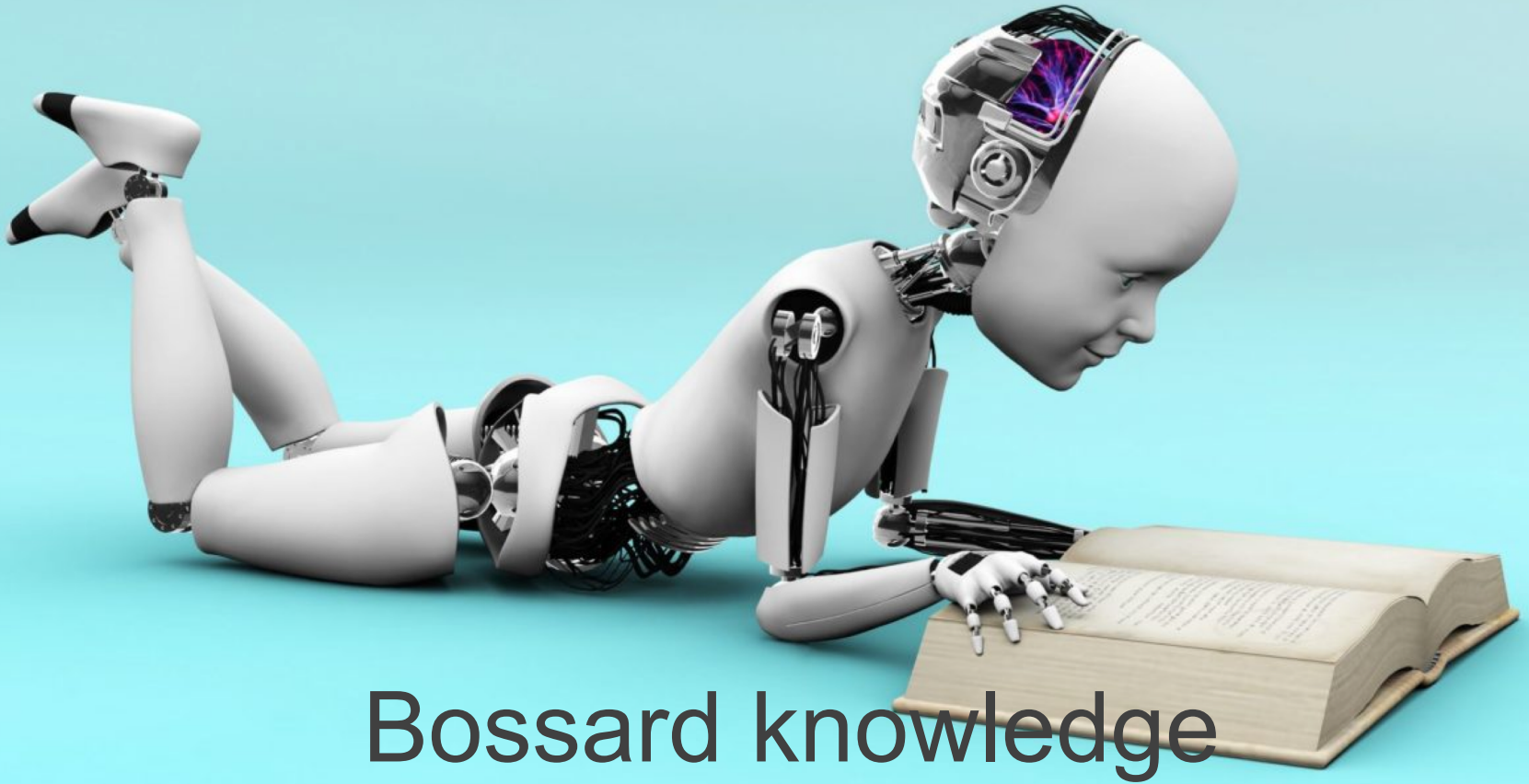
How to train the AI with the



Bossard knowledge

DATA SOURCES
PRODUCT SOLUTION ADVISOR

- ERP / Assortment Data
- CRM
- FAQ of Account-Team
- Supplier questionnaire
- KTGx Project Control
- Stars - success stories
- e-shop

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Dear D-ONE

Can you collect the Bossard knowledge and teach it to an artificial intelligence?

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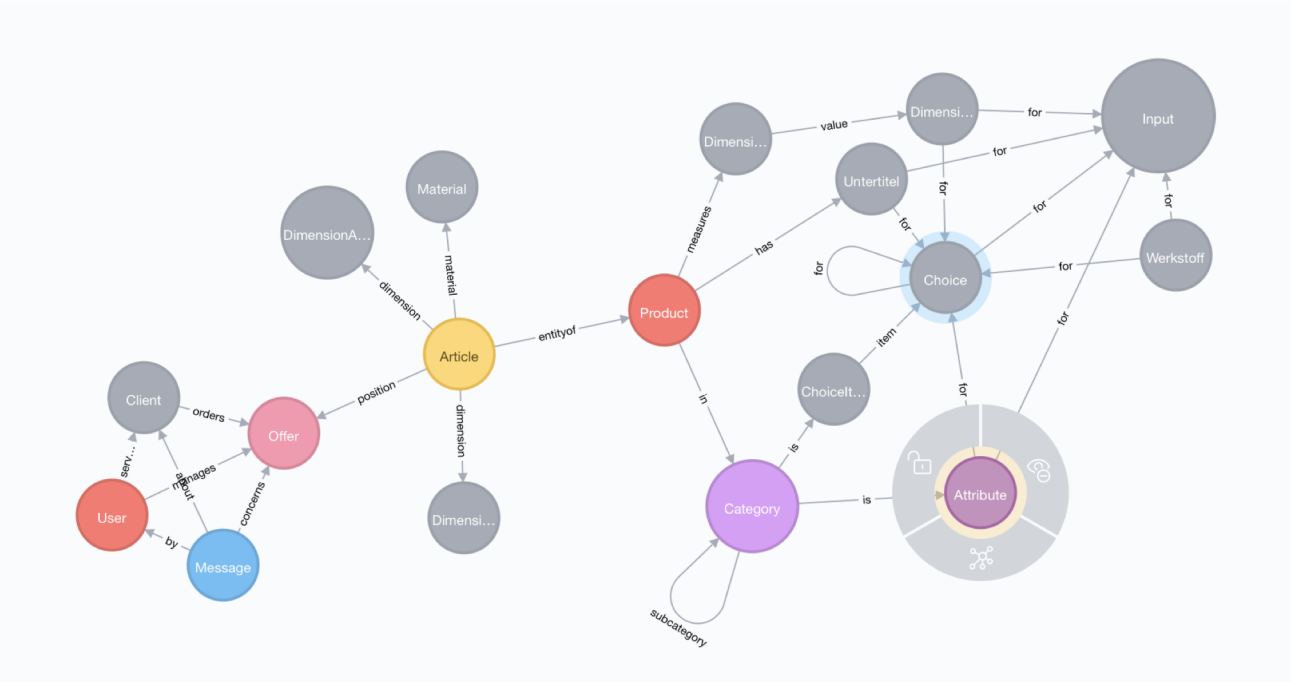
JOURNEY

- Kick Off: Tutorial in AI for Bossard project team
- Workshops: scope, goals, how to shape expert knowledge, what data to use, etc.
- Iterations of the Ontology
- Creation of UI
- Meeting at KVT Germany with users
- Go live with pilot phase

ONTOLOGY

- Product, Article
- Product-Hierarchy
  ⇒ Category
- Dimensions
- Material
- Offers
- CRM-messages
- Expert Knowledge
  ⇒ Attribute, Choice



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UI - LIVE DEMO

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Product Solution Advisor

Suche

Suche

× Blindniete

☑ CRM Einträge einblenden
☑ Artikel einblenden

Suche Reset

Standard Filter

Material (422) | Nietmaterial (103) | Dornmaterial (96) | Kopfform (78)
Nietdurchmesser (d1) (80) | Klemmlänge (77) | Kopfdurchmesser (d2) (70)
Hülsenlänge (L) (54) | Zu verbindende Materialien (23) | Dicht (13)
Bohrloch (0)

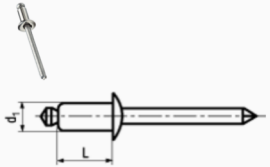
Filter Vorschläge (32)

Brand (409) | Verarbeitbarkeit (116)
Zulassung für spezielle Branche bzw. geeignet für Anwendungsbereich (114)
offenes Ende (113) | Ersatzteile (108) | Werkzeuge (61)
Billig, günstig (-> Fasteks) (116) | PPM-Rate (114)
Hohe Temperatur-beständigkeit (114) | Bauteil vorlackiert (114)
mehr Filter anzeigen

Filter Legende ausblenden
- Attribut
- Auswahl
- CRM
- Dimension
- Kategorie

Produkte (100/422)

BN E-Shop	Code	Marke	Produkt
BN 1409	SSD...SSBS	POP®	None



id	Code	Name	Nietdurchmesser (d1)	Bohrdurchmesser	Klemmlänge	Scherkraft	Zugkraft	Kop
	SSD 44 SSBS	SSD 44 SSBS Blindniete Standard Flachrundkopf INOX A2	3,2	3,3-3,4	4,8-6,4	2400.0	3000	6,04
	SSD 48 SSBS	SSD 48 SSBS Blindniete Standard Flachrundkopf INOX A2	3,2	3,3-3,4	9,5-12,7	2400.0	3000	6,04
	SSD 42 SSBS	SSD 42 SSBS Blindniete Standard Flachrundkopf INOX	3,2	3,3-3,4	1,6-3,2	2400.0	3000	6,04

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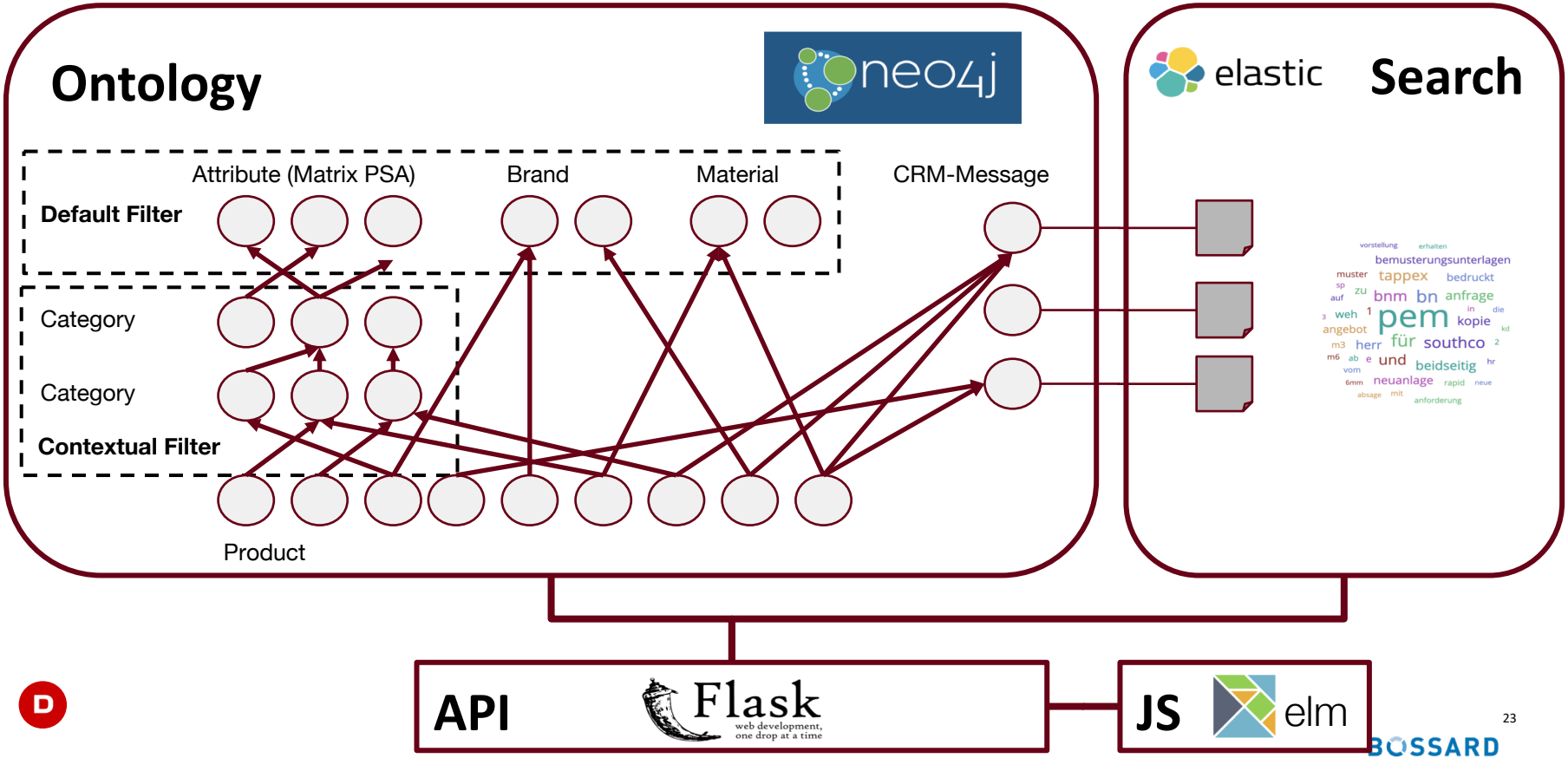
APPLICATION ARCHITECTURE



EXPERT KNOWLEDGE

- Matrix:

Stufe 3: Product Group	Stufe 4: Product Family	Brand	Brand Type	Materialien verbinden	Einseitige Zugänglichkeit	Beidseitige Zugänglichkeit	Demontierbar	Lösbar	Vibrations-beständig
10110113 (113 Cover caps)	10110113147 (147 Accessories)								
10110120 (120 Lock bolts)	10110120164 (164 High-strength)	Huck®	BobTail®	x		x	x		x
10110120 (120 Lock bolts)	10110120164 (164 High-strength)	Huck®	Magna-Grip®	x		x			x
10110120 (120 Lock bolts)	10110120164 (164 High-strength)	Huck®	C50L®	x		x	x		x
10110120 (120 Lock bolts)	10110120164 (164 High-strength)	Huck®	C6L®	x		x			x
10110120 (120 Lock bolts)	10110120164 (164 High-strength)	Huck®	C120L	x		x			x
10110120 (120 Lock bolts)	10110120164 (164 High-strength)	AVDEL®	Maxlok®	x		x			x
10110132 (132 Blind rivet nuts)	10110132134 (134 Assortment box)	TUBTARA®		x	x	x			
10110132 (132 Blind rivet nuts)	10110132164 (164 High-strength)	TUBTARA®		x	x	x			x
10110132 (132 Blind rivet nuts)	10110132164 (164 High-strength)	ecosyn®-BCT		x	x	x			x
10110132 (132 Blind rivet nuts)	10110132186 (186 Open end)	AVDEL®	Hexsert®	x	x	x			
10110132 (132 Blind rivet nuts)	10110132186 (186 Open end)	AVDEL®	Nutsert®-TS	x	x	x			
10110132 (132 Blind rivet nuts)	10110132186 (186 Open end)	AVK®		x	x	x			
10110132 (132 Blind rivet nuts)	10110132186 (186 Open end)	FASTEKS®	FILKO	x	x	x			
10110132 (132 Blind rivet nuts)	10110132187 (187 Closed end)	TUBTARA®		x	x	x			
10110132 (132 Blind rivet nuts)	10110132187 (187 Closed end)	FASTEKS®	FILKO	x	x	x			
10110132 (132 Blind rivet nuts)	10110132187 (187 Closed end)	AVK®		x	x	x			

- Rule based:
  e.g. Korrosionssicher ⇔ Material in { Edelstahl, Monel }

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KNOWLEDGE INFERENCE

Ranking of Results

- Graph-Centrality

CRM-Messages

- Word2Vec for synonyms
- "Mentions" of Products, Attributes, Dimensions, …
- Named Entity Extraction

Offers

- Product-Embeddings, Customer-Embeddings
- Recommendations

Usage of the ProductSolutionAdvisor

Learnings

WELL ACEPTED
PRODUCT SOLUTION ADVISOR

- The Product Solution Advisor is well accepted
  - Engineer's
  - Account Management Team
- People are willing to accept “small” inaccuracies
- People are open to share the knowledge with D-ONE/AI

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CHALLENGES AND OBSTACLES
PRODUCT SOLUTION ADVISOR

- The more accurate we can search, the more data errors and data inconsistencies will be found
  - Typing errors or missing attributes (Product Name “None”)
  - Different wording for same attribute
  - Missing data
  - Not structured data

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CHALLENGES AND OBSTACLES
PRODUCT SOLUTION ADVISOR

- There is no single point of truth for Product Data

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ERP Data
- Master Data Standardized
- Compressed Dimensions
- No Product/BN Specific Data

Catalog Data (Assortment)
- Only „Group“ Assortment
- No Specials
- Optimized for print catalog

E-Shop Data
- Additional Data
- Optimized for e-Shop

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CHALLENGES AND OBSTACLES
PRODUCT SOLUTION ADVISOR

- Never Ending Story
  - Der Hunger kommt mit dem essen

    Hunger comes with eating
  - 1’000’000 data set => you always could improve it
  - More attributes
    - you will find additional attributes
    - By combination you can create new attributes
  - ……

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NEXT STEPS
PRODUCT SOLUTION ADVISOR

- Increase granularity of Ontology
- Optimize data sources
- More user test
- Rollout to more departments
  - Quality before speed

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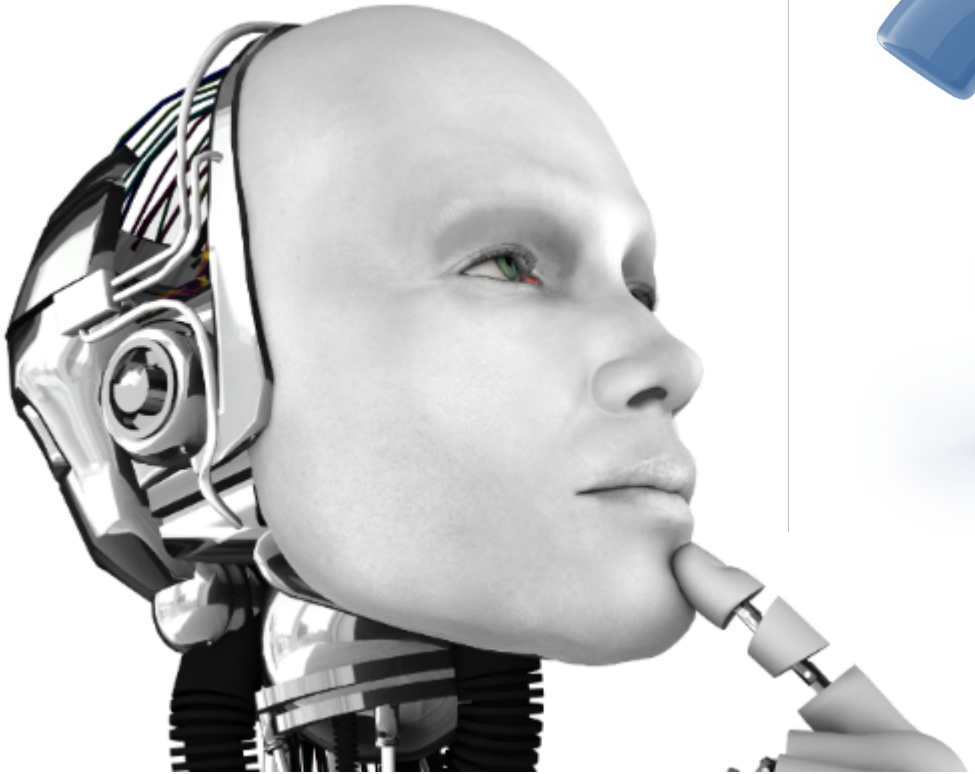

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