

tcworld conference - 2025

iiRDS as a Multipurpose Enabler

From Content to Conversation with Chatbots

Agenda

- Introduction of the speakers and the project
- What is iiRDS?
- Project overview
- Use case: Chatbots with iiRDS as their database
- Outlook and vision
- Q&A/discussion

Who are we?

Niko Schad
Head of Technical Documentation



Gebr. HELLER Maschinenfabrik

- Gebr. HELLER Maschinenfabrik
- Machine tool manufacturer based in Nürtingen
- 2,100 employees worldwide at 5 production sites in Europe, Asia, and North and South America
- Sales of individual machines through to fully automated turnkey manufacturing systems
- Customers from the automotive industry and its suppliers, general mechanical engineering, energy technology, fluid technology, aerospace, and many other industries

Fabienne Rothenberg
Team Leader Consulting

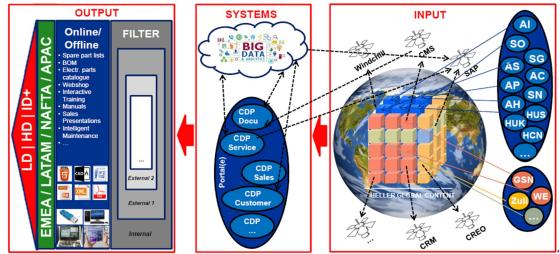
plusmeta GmbH

- Software company based in Karlsruhe, Germany
- Use of AI for automated metadata assignment and information process automation
- Creation of standard exchange formats (iiRDS, VDI 2770, AASX, etc.)
- Preparation of documents for modern applications such as CDP

Project Presentation

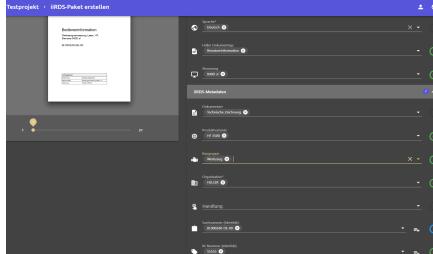
Initial situation and development to date

Idea & Big Picture



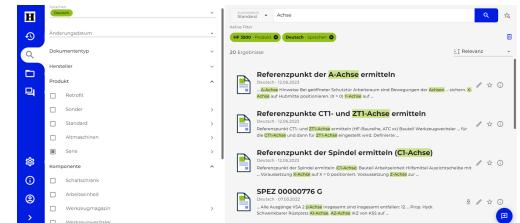
2015

Plusmeta Pioneer Program



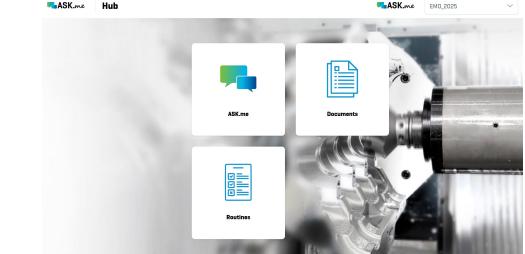
2020

Metadata iiRDS for customer documentation



2022

Metadaten iiRDS for HELLER ASK.me

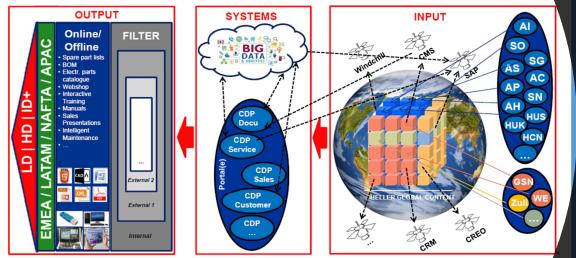


2025

Project Presentation

Initial situation and development to date

Idea & Big Picture



2015

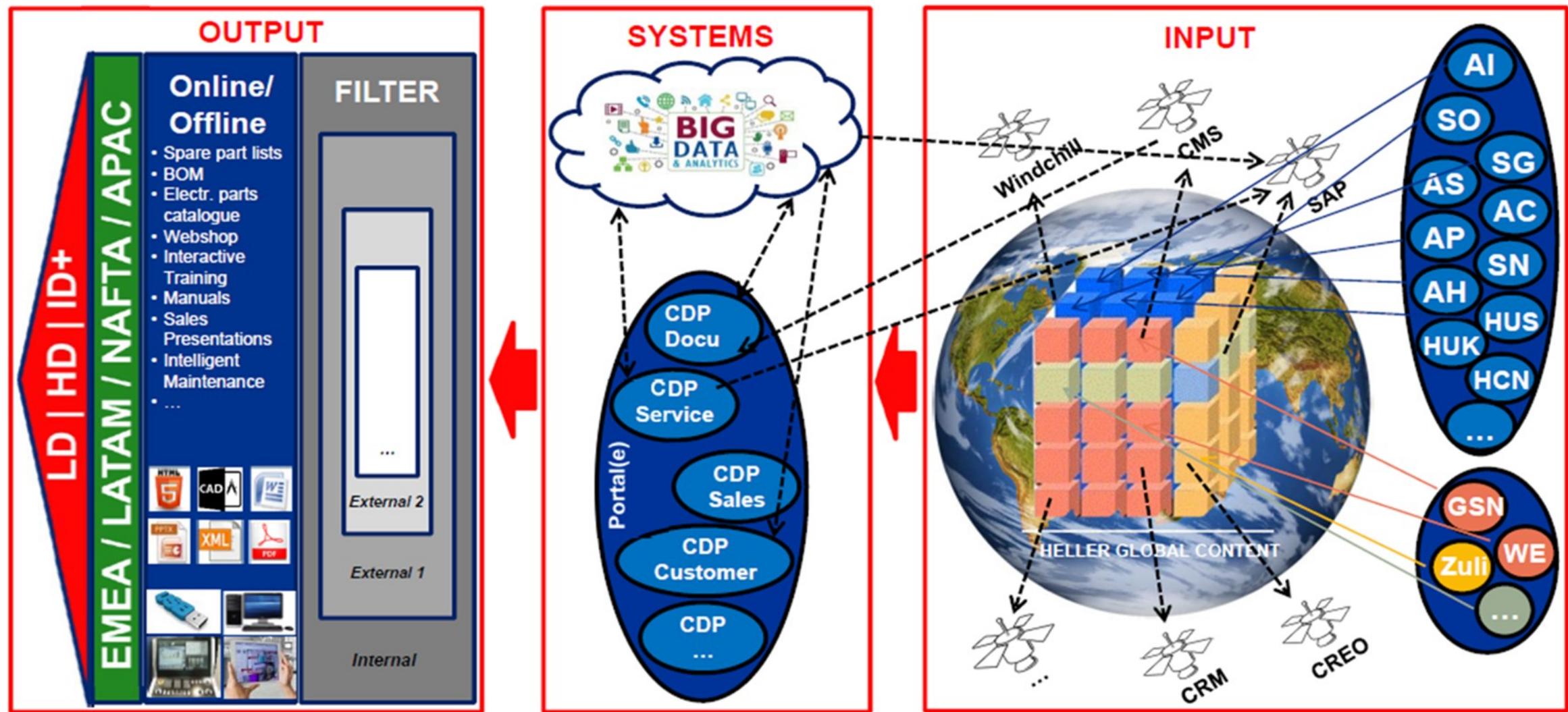
Plusmeta Pioneer Program

Metadata iiRDS for customer documentation

Metadata iiRDS for HELLER ASK.me

Project Presentation

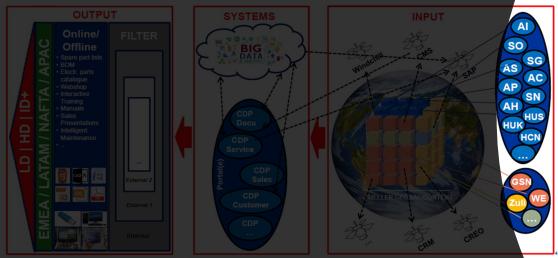
2015 Idea & Big Picture



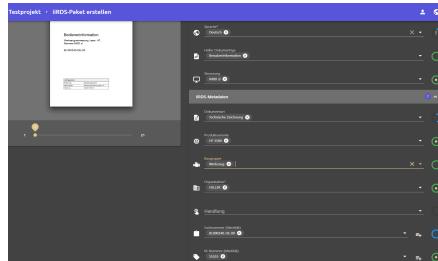
Project Presentation

Initial situation and development to date

Idea & Big Picture

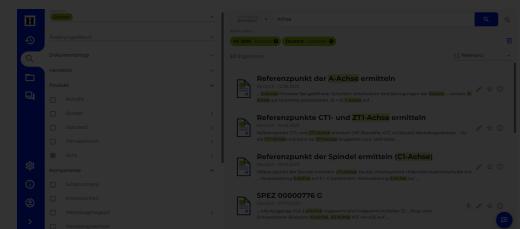


Plusmeta Pioneer Program



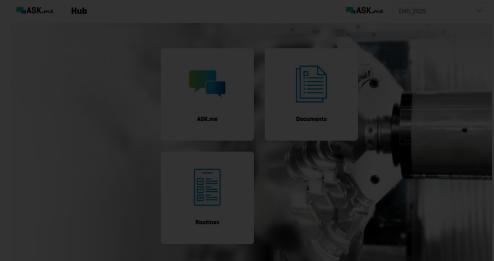
2015

Metadata iiRDS for customer documentation



2022

Metadata iiRDS for HELLER ASK.me



2025

Project Presentation

2020 Pioneer Program with plusmeta

Test project > Create iiRDS package

Bedienerinformation

Werkzeugvermessung Laser, HF,
Siemens 840D sl

BI.000340-DE-00

Auftragsdaten

Bestellung	Bestellungsstatus
Machinenteil	Werkzeugvermessung Laser, HF,
Steuerung	Siemens 840D sl

1 21

Sprache* Deutsch Language* German !

Heller Dokumenttyp Benutzerinformation Heller document type user information

Steuerung 840D sl Control 840D sl

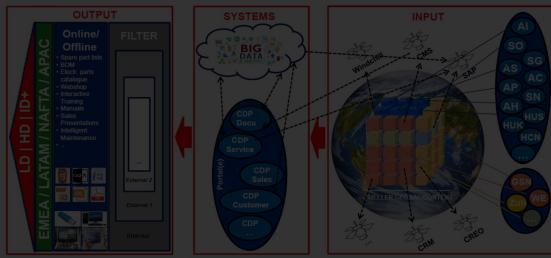
iiRDS-Metadaten **iiRDS metadata** 7

Dokumentart Technische Zeichnung <input checked="" type="button"/>	Document type
Produktvariante HF 3500 <input checked="" type="button"/>	Product variant
Baugruppe Werkzeug <input checked="" type="button"/>	Assembly
Organisation* HELLER <input checked="" type="button"/>	Organization*
Handlung	Action
Sachnummer (Identität) BI.000340-DE-00 <input checked="" type="button"/>	...
M-Nummer (Identität) 5555 <input checked="" type="button"/>	<input type="button"/> <input type="button"/>

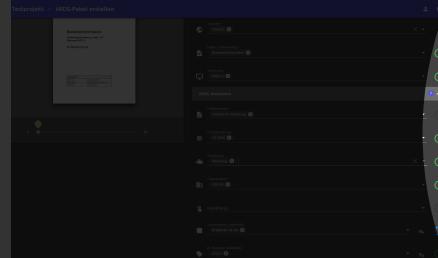
Project Presentation

Initial situation and development to date

Idea & Big Picture

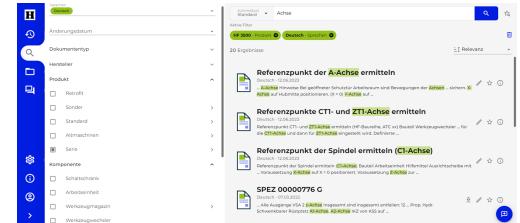


Plusmeta Pioneer Program



2015

Metadata iiRDS for customer documentation



2022

Metadata iiRDS for HELLER ASK.me



2025

Project Presentation Projekt

2022 Metadata iiRDS for customer documentation

Sprachen
Deutsch

Language

Änderungsdatum Date Modified/Last Updated

Dokumententyp Document type

Hersteller Manufacturer

Produkt Product

- Retrofit
- Sonder
- Standard
- Altmaschinen
- Serie

Komponente Component

- Schaltschrank
- Arbeitseinheit
- Werkzeugmagazin
- Werkzeugwechsler
- Control cabinet
- Work unit
- Tool magazine
- Tool changer

SUCHMODUS
Standard

Achse

Aktive Filter
HF 3500 - Produkt X Deutsch - Sprachen X

20 Ergebnisse

Relevanz

Referenzpunkt der A-Achse ermitteln
Deutsch - 12.06.2023
... A-Achse Hinweise Bei geöffneter Schutztür Arbeitsraum sind Bewegungen der Achsen ... sichern. X-Achse auf Hubmitte positionieren. (X = 0) Y-Achse auf ...

Referenzpunkte CT1- und ZT1-Achse ermitteln
Deutsch - 12.06.2023
Referenzpunkt CT1- und ZT1-Achse ermitteln (HF-Baureihe, ATC xx) Bauteil Werkzeugwechsler ... für die CT1-Achse und dann für ZT1-Achse eingestellt wird. Definierte ...

Referenzpunkt der Spindel ermitteln (C1-Achse)
Deutsch - 12.06.2023
Referenzpunkt der Spindel ermitteln (C1-Achse) Bauteil Arbeitseinheit Hilfsmittel Ausrichtscheibe mit ... Voraussetzung X-Achse auf X = 0 positioniert. Voraussetzung Z-Achse zur ...

SPEZ 00000776 G
Deutsch - 07.03.2022
... Alle Ausgänge VSA 2 z-Achse Insgesamt sind insgesamt entfallen: 12 ... Prop. Hydr. Schwenkbarer Rüstplatz A1-Achse, A2-Achse IKZ von KSS auf ...

Project Presentation

Initial situation and development to date

Idea & Big Picture

Plusmeta Pioneer Program

Metadata iiRDS for customer documentation

Metadata iiRDS for HELLER ASK.me



2025

Project Presentation

2025 Metadata iiRDS for HELLER ASK.me

The screenshot shows the ASK.me AI-powered chatbot interface. The top navigation bar includes a 'New Chat' button, a 'Agents' section with three items: 'manuals', 'production.data' (marked as 'HSI'), and 'machine.status' (marked as 'PLUS'), and a dropdown menu showing 'EMO_2025'. The left sidebar lists 'Chats' with various messages and a search bar. The main area features a 'Welcome to ASK.me' message, the ASK.me logo, and a description of the AI's capabilities. A text input field at the bottom allows users to 'Send a message to ASK.me...' and includes a microphone icon and a green notification bell icon.

Agents

- manuals
- production.data HSI
- machine.status PLUS

Chats

- Ausstoßmaß der Spindel
- Was bedeutet sbbk?
- How can i rethighten the chain magazi...
- HOW MUCH POWER THIS MACHINE DID...
- Wie fülle ich das Hydrauliköl an der Ma...
- Show me diagram of the spindletemp...
- What kind oil do I need for the machine?
- Wie fülle ich das Hydrauliköl nach?

Alt+C

Send a message to ASK.me...

EMO_2025

Welcome to ASK.me

ASK.me is an AI-powered chatbot that assists you with all questions related to machine documentation, maintenance, and production data.

Just ask your question...

HELLER

Project Presentation

2025 Metadata iiRDS for HELLER ASK.me

ASK.me | Hub

ASK.me

EMO_2025



iiRDS

Basics

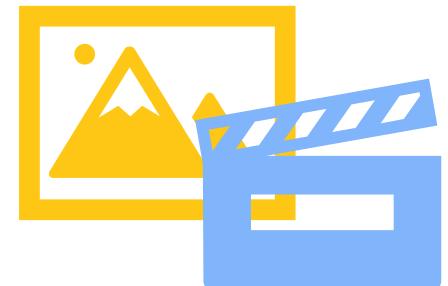
Special features

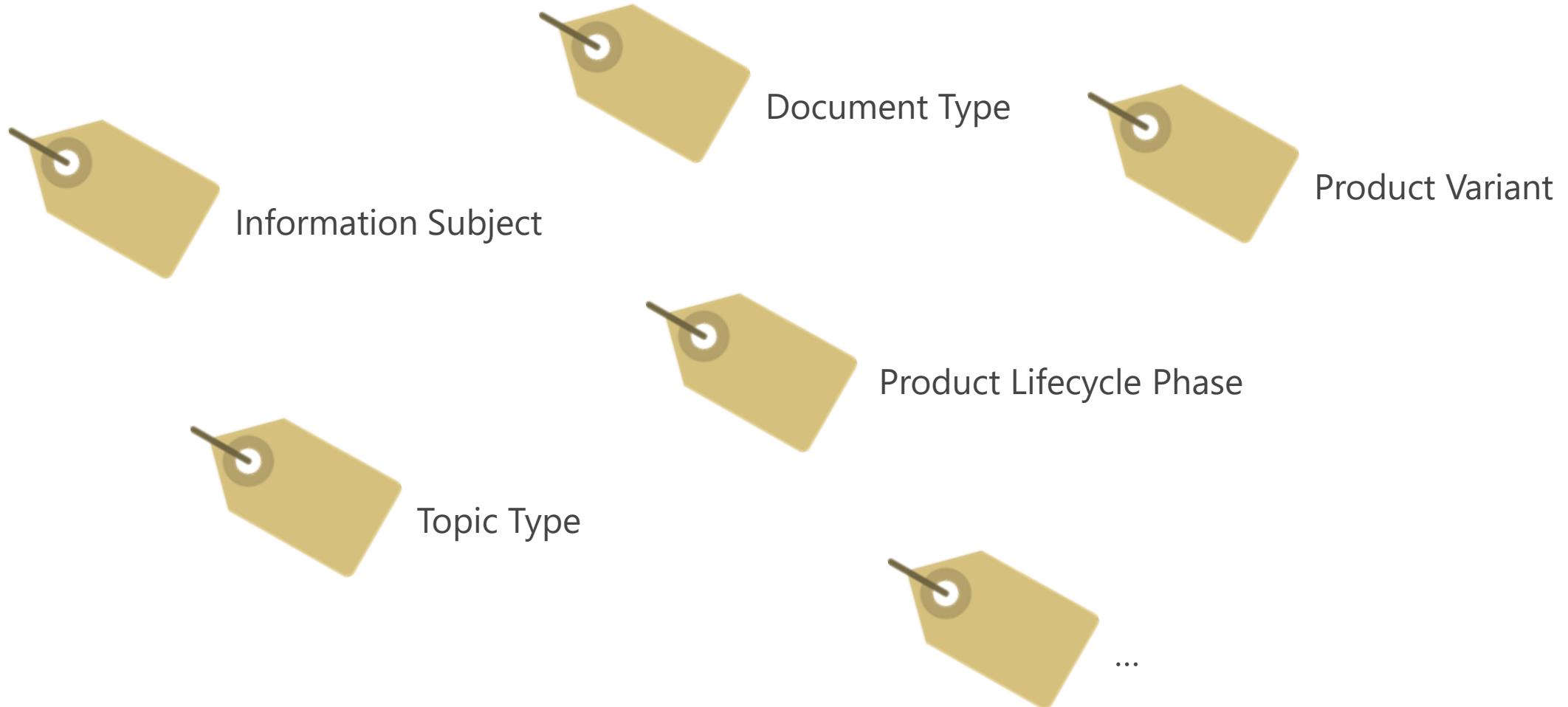
- Ontological data model
- Classes are not assigned
- Standard vocabulary for common metadata values (e.g., document types and topic types)
- Extensibility: Values with “generic”



```
<iirds:ProductVariant rdf:about="http://www.pi-fan-ag.de/metadata#t3-h1">
  <rdfs:label>T3-H1</rdfs:label>
  <iirds:relates-to-party>
    <iirds:Party rdf:about="urn:uuid:83721339-e266-59c9-a6f7-e32b8f91902f/manufacturer">
      <iirds:has-party-role rdf:resource="http://iirds.tekom.de/iirds#Manufacturer"/>
      <iirds:relates-to-vcard>
        <vcard:Organization rdf:about="urn:uuid:83721339-e266-59c9-a6f7-e32b8f91902f">
          <vcard:fn>PI-Fan AG</vcard:fn>
        </vcard:Organization>
      </iirds:relates-to-vcard>
    </iirds:Party>
  </iirds:relates-to-party>
</iirds:ProductVariant>
```

Supported Formats





Custom Metadata Values



Document Type



Operating instructions



Maintenance instructions

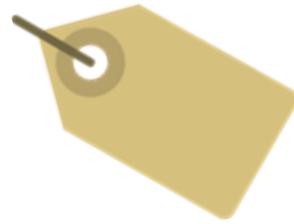


Your document type



...

Custom Metadata Values



Product Variant



Product A



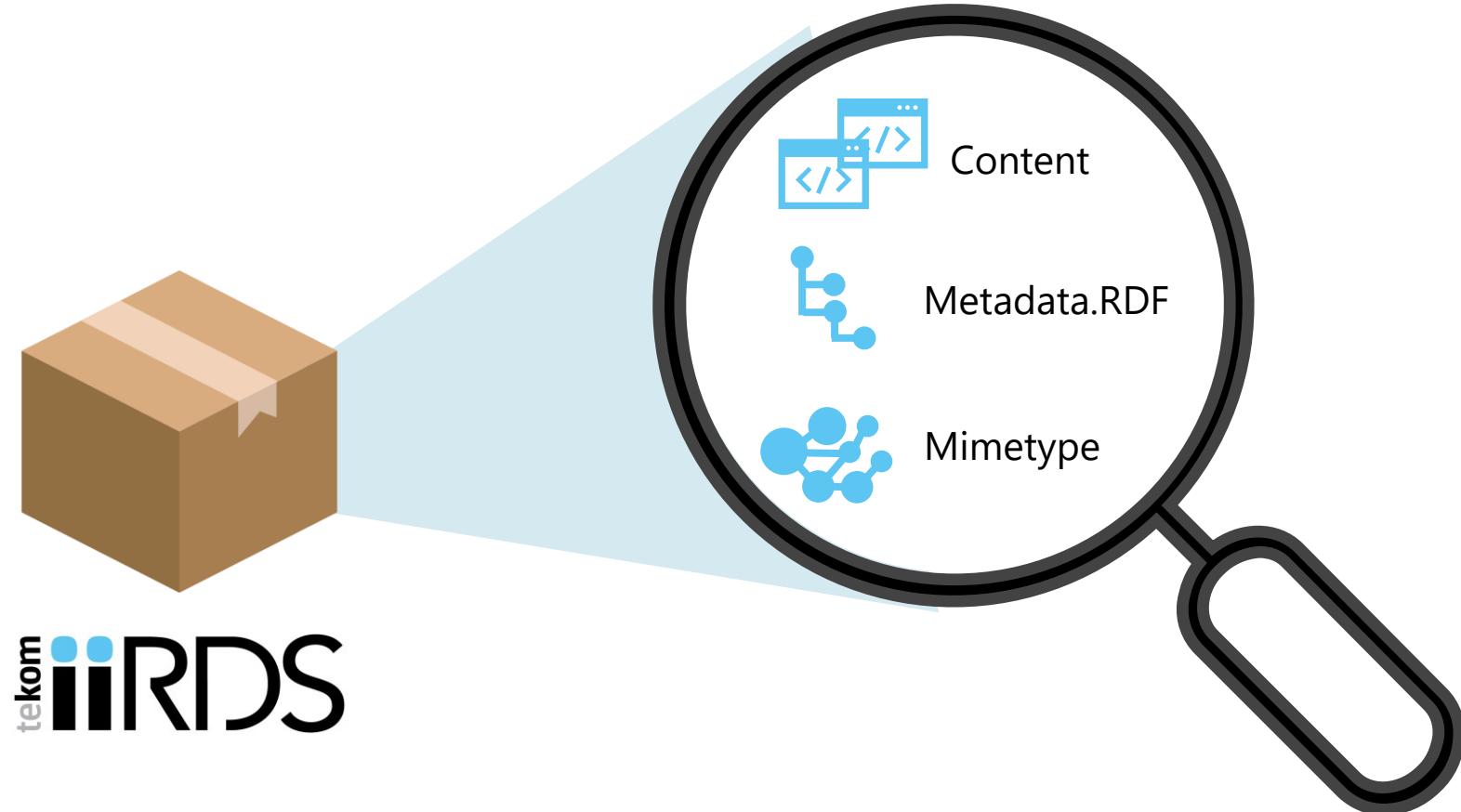
Product B



Product C

...

What does the iiRDS package contain?



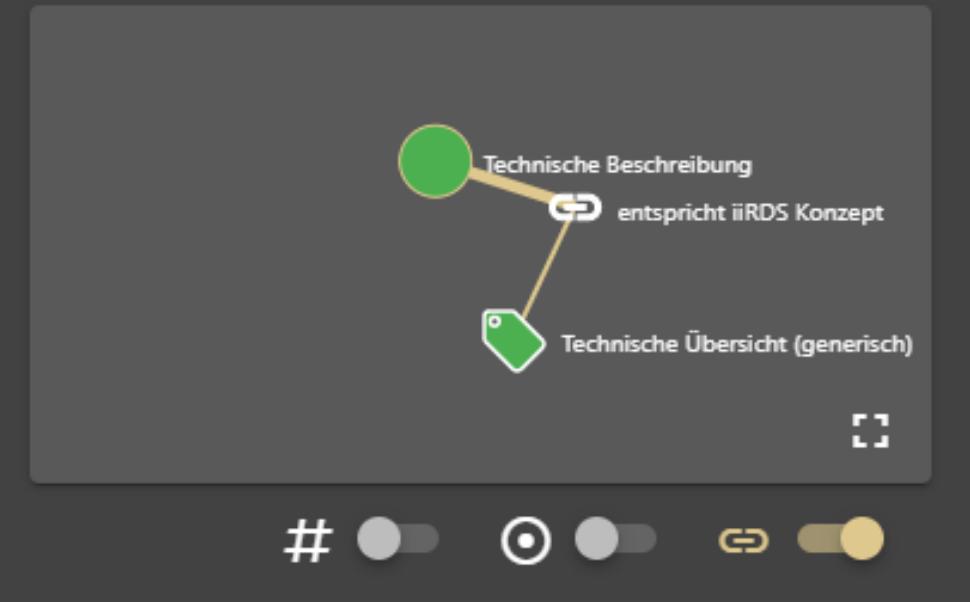
- **Reasons for standardized metadata**

- Avoid vendor lock-in, ensure interchangeability
- Use best practices, apply industry standards
- Use standard APIs, e.g., for content delivery
- Harmonize data sources across the board

- **Typical activities**

- Map your own metadata model (mapping)
- Define extensions (modeling)

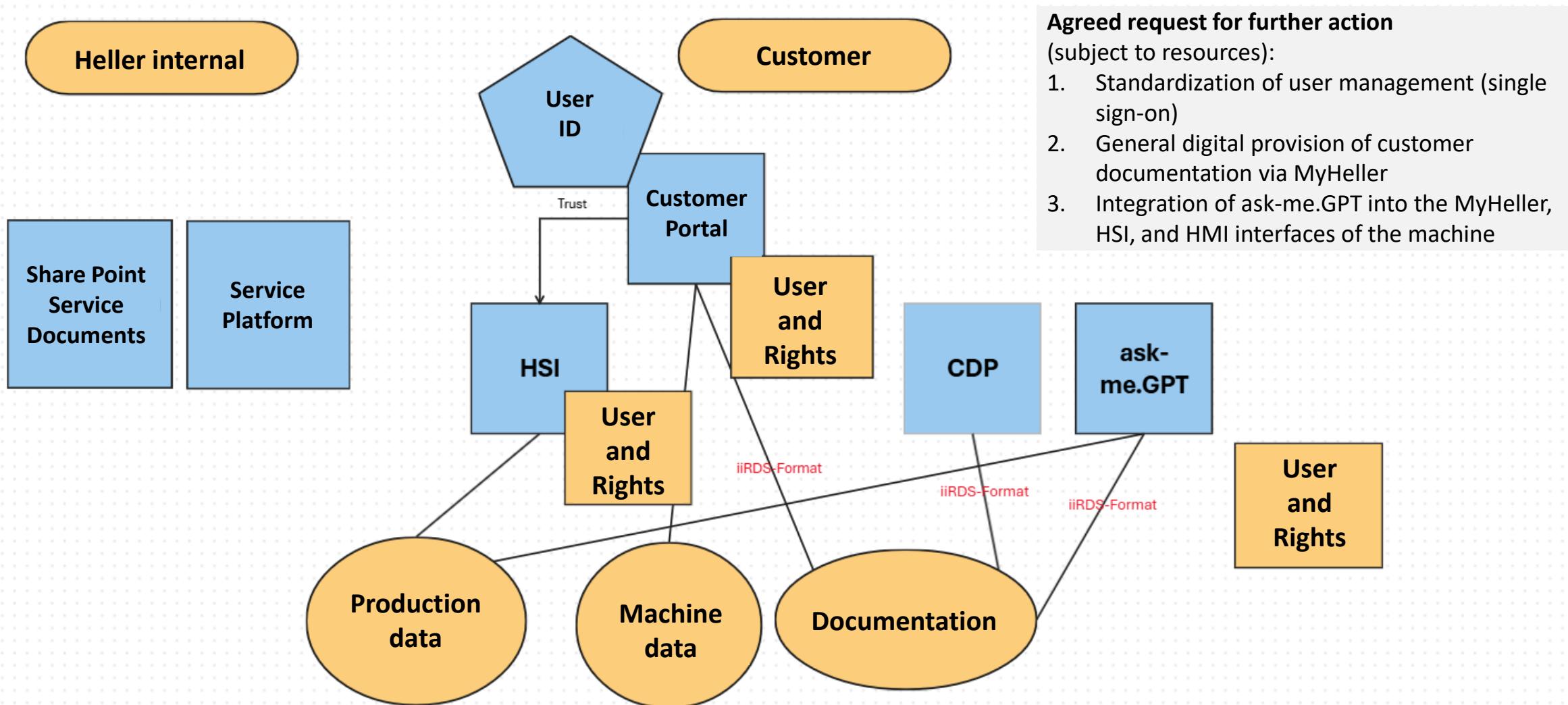
Beziehungen: Technische Beschreibung



Project Overview

Objective

Use iiRDS for LLM Chatbots as well



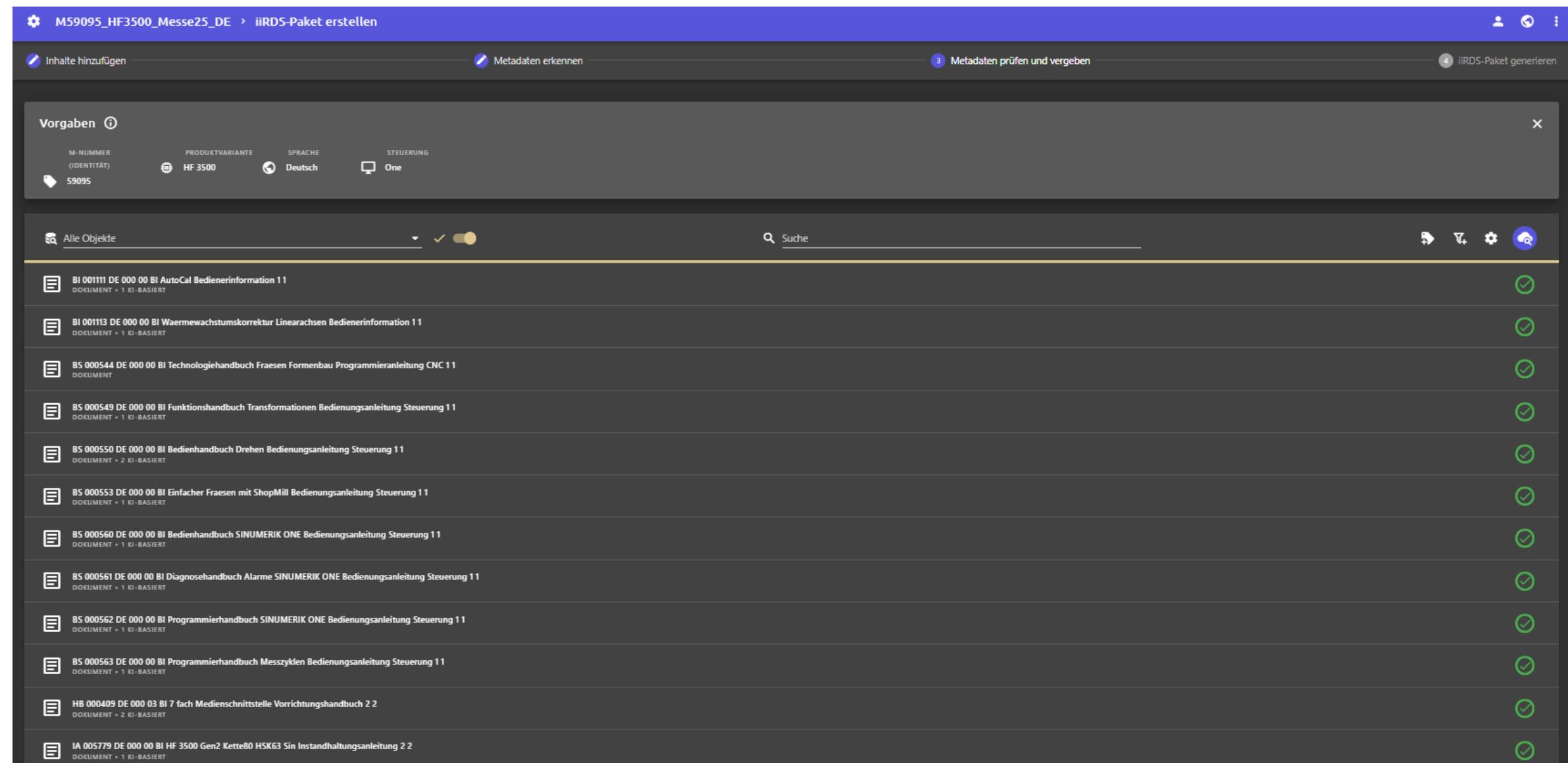
Optimization of Output Data

Updating metadata requirements for documentation

Metadata	CURRENT	FUTURE	Indicators	Examples
Metadataam Title	Cleaned Filename	For HELLER documents: <i>Title PDF</i>	Language code filename AI Recognition	Programming Manual, PA.000186-DE-00
Language	AI-driven	For ZULI- documents: <i>Generated Title</i>	Hybrid recognition rule-based & AI-driven	BI.001111-DE-00
HELLER Document Type	Rule-based	Hybrid recognition rule-based & AI-driven	Rule-based	Programming Manual, PA.000186-DE-00
HELLER Document Type	Rule-based	Rule-based	Rule-based	Programming Manual, PA.000186-DE-00
Control	Rule-based	Defined Assignment AI-driven	Control Labels	840D SL
iiRDS Document Type	AI-driven	Mapping of HELLER Document Type Indicators	iiRDS Document Types Labels in Document	Operation → Operator Manual
iiRDS Product Variant	Rule-based	Rule-based	HELLER Product Variants	HF3500
iiRDS Assembly Group	Rule-based	Rule-based	HELLER Assembly Groups	Work Unit
iiRDS Organization	Rule-based	HELLER AssentyGroups	HELLER Organizations	Siemens
iiRDS Activity	Rule-based	Rule-based	Rule-based	Work Unit
iiRDS Asset Number (ID)	Rule-based	Date Acronym + HELLER Activities	Asset Acronym + Identifier Length	00.750381
iiRDS Asset Number (ID)	Rule-based	Asset Acronym + Identifier Length	Asset Acronym + Identifier Length	00.750381
iiRDS Material Number (ID)	Rule-based	M-Number Acronym + [L1] M-Number Acronym + [L1]	Assembly → Assembling	M62345
iiRDS Material Number (ID)	Rule-based	M-Number Acronym + [L1]	M-Number Acronym + [L1]	M62345

Working with Specifications

Enrich metadata at project level (internal + supplier documentation)



The screenshot shows the iiRDS software interface for project management. The top navigation bar includes a gear icon, the project name 'M59095_HF3500_Messe25_DE', a breadcrumb 'iiRDS-Paket erstellen', and user icons. Below the navigation is a toolbar with four steps: 'Inhalte hinzufügen', 'Metadaten erkennen', 'Metadaten prüfen und vergeben', and 'iiRDS-Paket generieren'. The main area is titled 'Vorgaben' and shows project details: M-Nummer (59095), Produktvariante (HF 3500), Sprache (Deutsch), and Steuerung (One). A search bar and a list of documents are present. The document list includes:

Document ID	Language	Document Type	Notes	Status
BI 001111 DE 000 00 BI	Deutsch	AutoCal Bedienerinformation 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BI 001113 DE 000 00 BI	Deutsch	Waermewachstumskorrektur Linearachsen Bedienerinformation 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BS 000544 DE 000 00 BI	Deutsch	Technologiehandbuch Fraesn Formenbau Programmieranleitung CNC 11	DOKUMENT	Green Checkmark
BS 000549 DE 000 00 BI	Deutsch	Funktionshandbuch Transformationen Bedienungsanleitung Steuerung 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BS 000550 DE 000 00 BI	Deutsch	Bedienhandbuch Drehen Bedienungsanleitung Steuerung 11	DOKUMENT + 2 KI-BASIERT	Green Checkmark
BS 000553 DE 000 00 BI	Deutsch	Einfacher Fraesn mit ShopMill Bedienungsanleitung Steuerung 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BS 000560 DE 000 00 BI	Deutsch	Bedienhandbuch SINUMERIK ONE Bedienungsanleitung Steuerung 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BS 000561 DE 000 00 BI	Deutsch	Diagnosehandbuch Alarme SINUMERIK ONE Bedienungsanleitung Steuerung 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BS 000562 DE 000 00 BI	Deutsch	Programmierhandbuch SINUMERIK ONE Bedienungsanleitung Steuerung 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
BS 000563 DE 000 00 BI	Deutsch	Programmierhandbuch Messzyklen Bedienungsanleitung Steuerung 11	DOKUMENT + 1 KI-BASIERT	Green Checkmark
HB 000409 DE 000 03 BI	Deutsch	7 fach Medienschnittstelle Vorrichtungshandbuch 2 2	DOKUMENT + 2 KI-BASIERT	Green Checkmark
IA 005779 DE 000 00 BI	Deutsch	HF 3500 Gen2 Kette80 HSK63 Sin Instandhaltungsanleitung 2 2	DOKUMENT + 1 KI-BASIERT	Green Checkmark

Use Role-Based and AI-Based Enrichment Processes

Enrich metadata with documentation (internal + supplier documentation)

ZI 001671 DE 000 00 ZID Abdeckband Bosch Rexroth 1 1
DOKUMENT

ZI.001671-DE-000-00 ZID Abdeckband Bosch...
PDF-Dokument + 3,5 MB

1 / 36

Metadaten

Objekttyp: Dokument

Anzeigename: ZI 001671 DE 000 00 ZID Abdeckband Bosch Rexroth 1 1

Metadaten

Titel*: ZI 001671 DE 00 ZID Abdeckband Bosch Rexroth 1 1

Sprache*: Deutsch, Englisch, Französisch, Italienisch

Heller Dokumenttyp: Zuliefererinformation

Steuerung: One

iiRDS-Metadaten

Dokumentart: Betriebsanleitung, Montageanleitung

Produktvariante: HF 3500

Baugruppe: Maschinengestell

Organisation*: HELLER, Rexroth

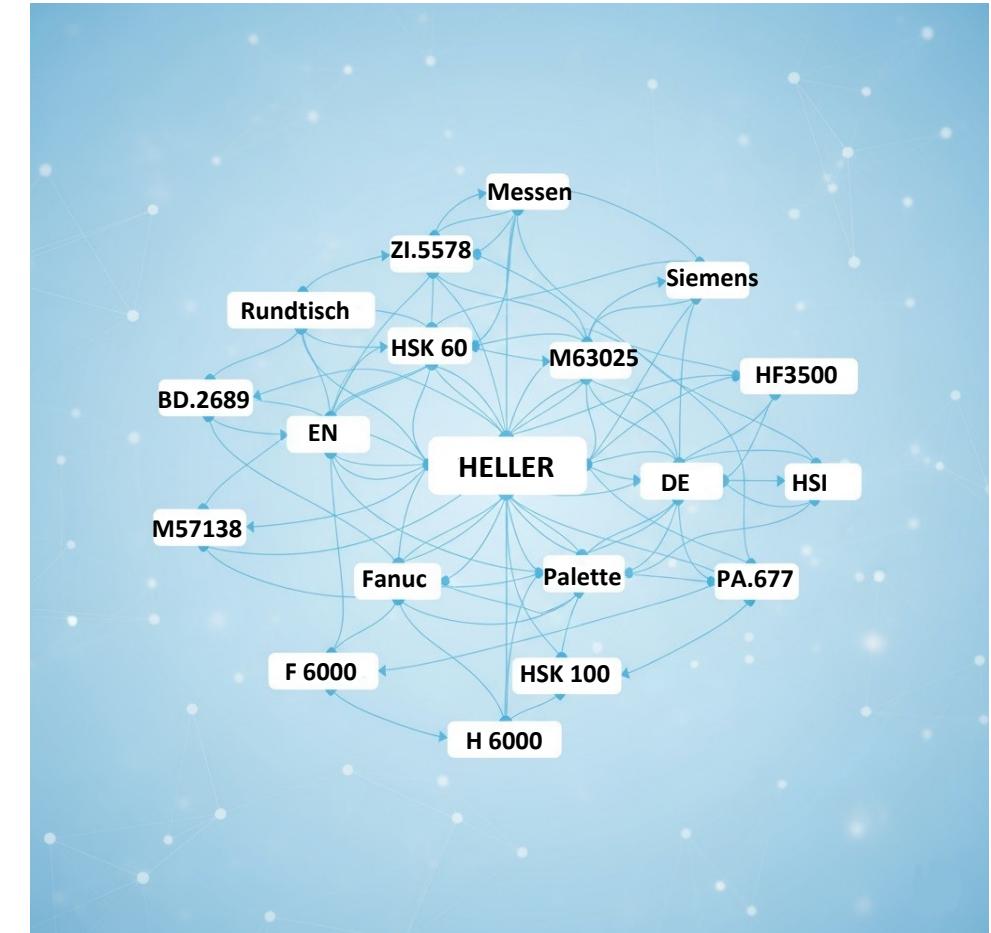
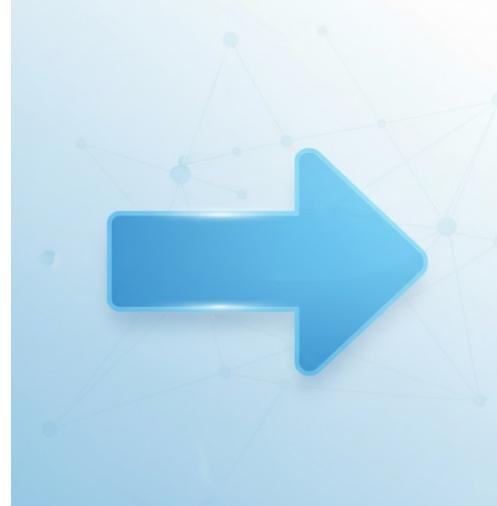
Handlung

Sachnummer (Identität): ZI.001671

M-Nummer (Identität): 59095

iiRDS as an Information Booster for Chunking

iiRDS as part of the chunking strategy and for distinguishing semantic proximity



Chatbots with iiRDS



Accuracy

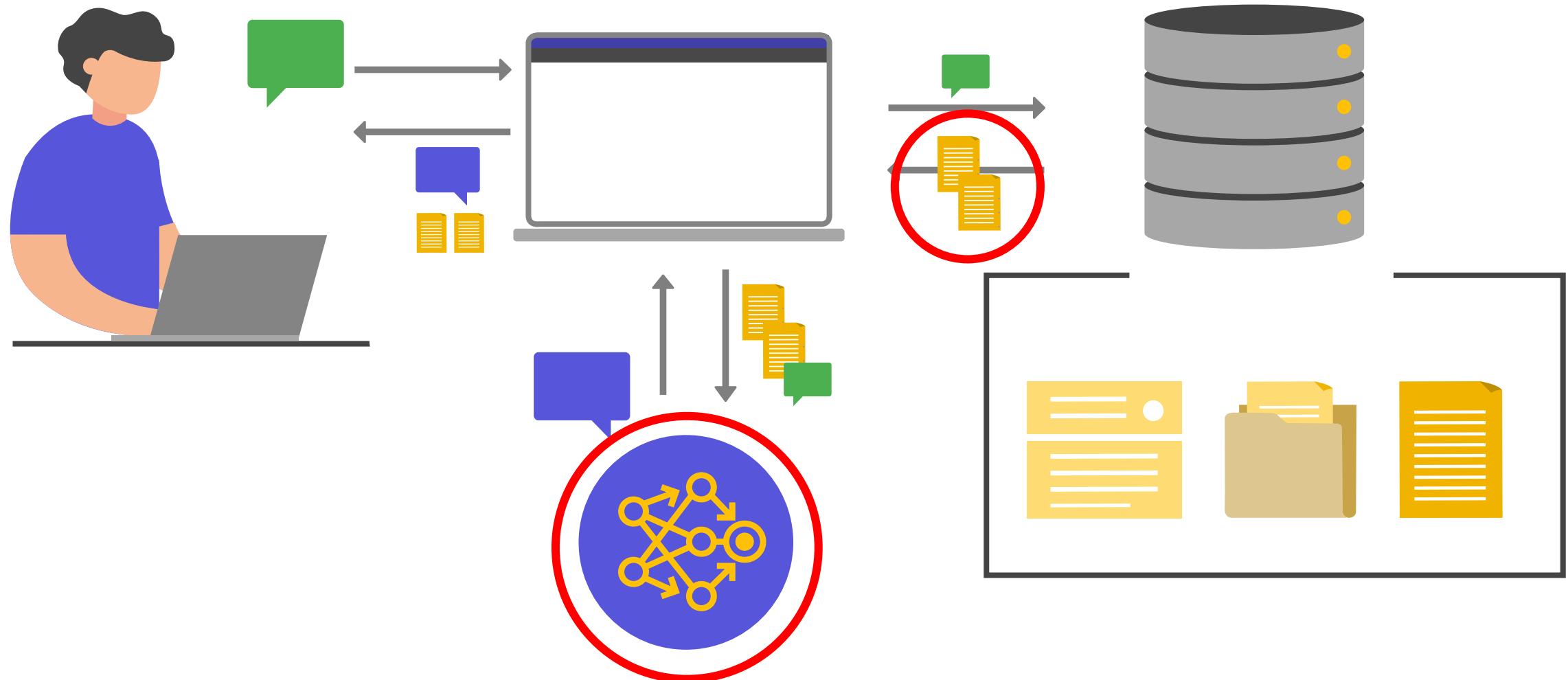


Correctness



Traceability

RAG Architecture

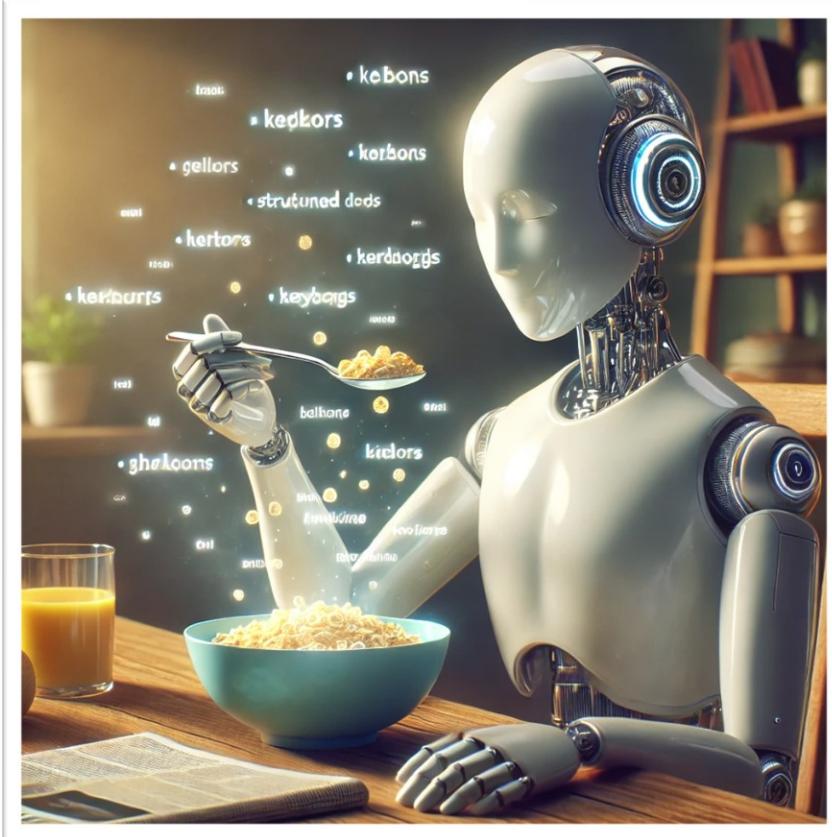


What are the advantages of RAG technology in the context of generative AI?

- With the help of RAG technology, an LLM can be applied to company-specific knowledge/documents/systems and questions can be asked of this pool of information.
- The LLM has access to information that may be more up-to-date than the data used to train the LLM.
- The data in the RAG architecture's knowledge repository can be continuously updated without significant cost.
- The RAG knowledge repository can contain data that is more context-specific than that in a generalized LLM.
- The source of the information in the RAG vector database can be identified. And since the data sources are known, incorrect information in the RAG can be corrected or deleted. (Whiteboxing, traceability to the original source)
- RAG improves the quality of generative AI

Content Requirements

Chatbots consume content differently than humans do.



- **The target audience for the content is the chatbot, not the user**
- A sequential context as found in documents is not relevant or available
- The sources must be verified, linked, and as homogeneous as possible

➤ Structuring, contextualization, and optimization are required

Typical Vulnerabilities: Hallucinations

Hallucinations often go unnoticed, but can be critical in the context of technical information.

Wie kann ich in plusmeta ein neues Metadatum konfigurieren?

 In plusmeta lässt sich ein neues Metadatum in der Regel über die Admin-Oberfläche konfigurieren. Der Prozess sieht grundsätzlich so aus:

1. Anmeldung und Zugriff auf den Konfigurationsbereich

- Melden Sie sich bei plusmeta mit einem Benutzerkonto an, das über Admin- oder Konfigurationsrechte verfügt.
- Navigieren Sie zum Bereich für die Metadatenverwaltung, der oft als „Metadaten-Editor“ oder „Konfiguration“ bezeichnet wird.

2. Erstellen eines neuen Metadatums

- Klicken Sie auf die Option zum Hinzufügen eines neuen Metadatums.
- Geben Sie dem Metadatum einen Namen (z.B. „Veröffentlichungsdatum“ oder „Dokumenttyp“) und, falls gewünscht, eine Beschreibung. Dies erleichtert die spätere Verwaltung und das Verständnis des Metadatums für andere Benutzer.
- Definieren Sie einen Typ für das Metadatum:
 - **Text:** Freitext-Eingaben
 - **Datum:** Eingabe im Datumsformat
 - **Auswahlfeld:** Eingabe über vordefinierte Auswahlmöglichkeiten
 - **Zahl:** Für numerische Werte
 - **Boolesch:** Ja/Nein-Feld

Role of Metadata & Structure

The principles of intelligent information also apply to chatbots.

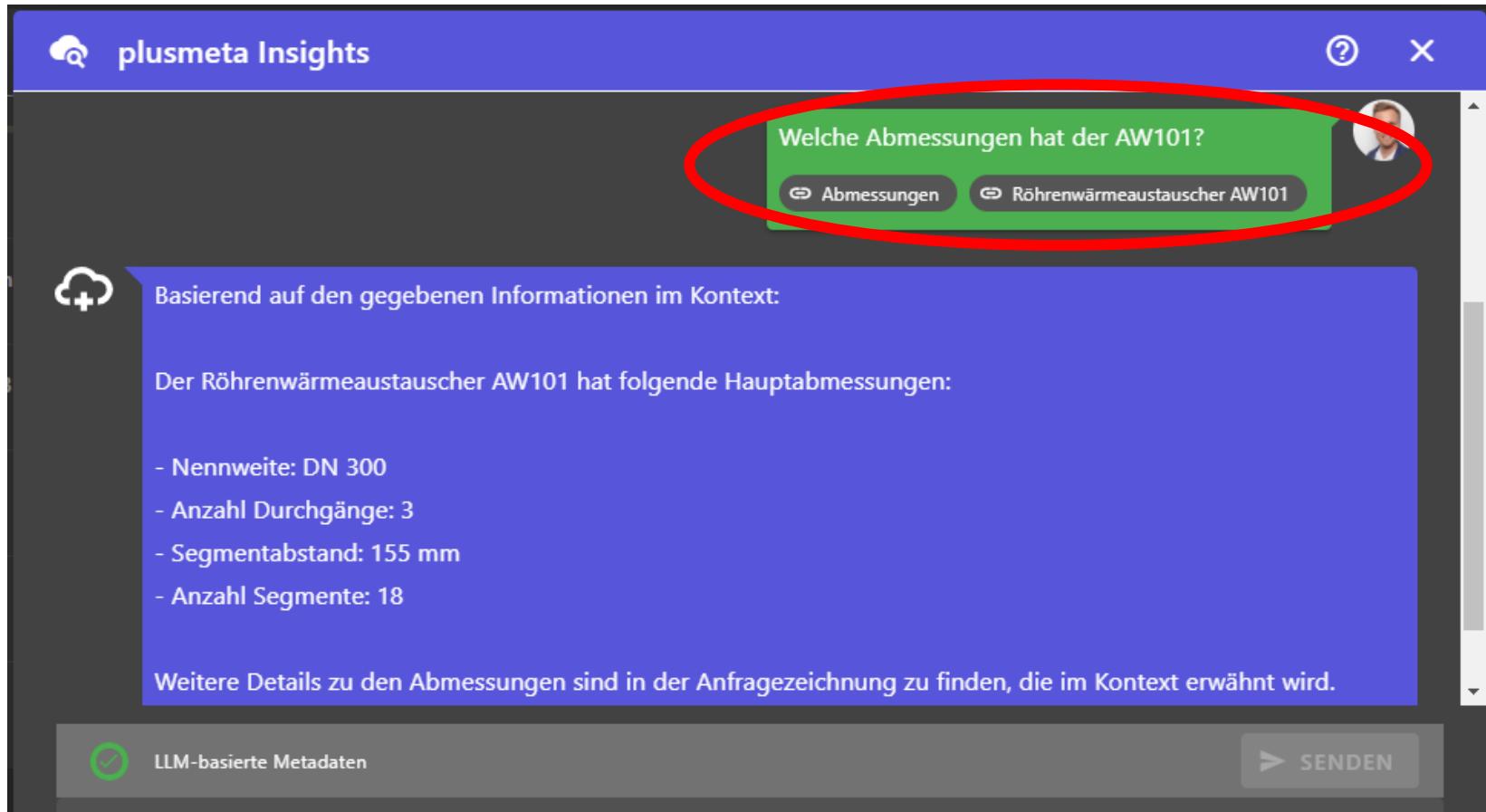
- **Structure** helps chatbots understand content more easily.
- **Metadata** enables precise differentiation (technical data, product variants, etc.).
- **Semantic tagging** assigns additional meaning.



Advantages of iiRDS

- Structure & Standardization
 - iiRDS offers a **uniform, machine-readable structure** for technical content.
 - **Interoperable** across systems and manufacturers – ideal for heterogeneous data sources.
- Basis for RAG Architectures
 - iiRDS packages form **structured knowledge sources** for the retrieval part
 - Reduces **hallucinations** through verified content sources
- Metadata
 - Metadata provides **precise thematic and functional context**
 - **Better relevance assessment** of content in the retrieval process
- Future-proofing & reuse
 - Already **established industry standard**
 - Promotes **content reuse** in a wide variety of use cases (portal, service, chatbot)
 - Investment in iiRDS pays off **across multiple use cases**

Role of Metadata & Whiteboxing of Answers



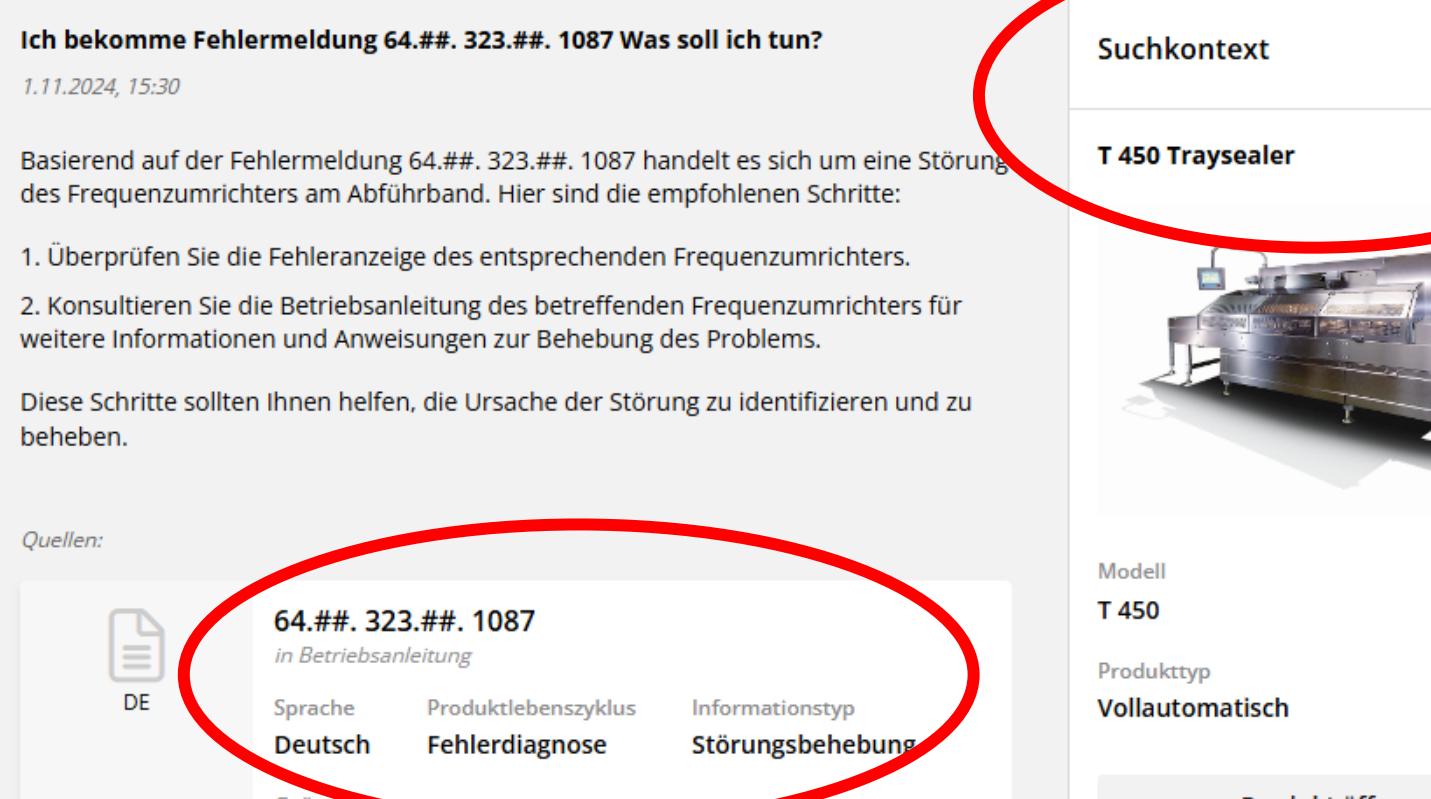
The screenshot shows the plusmeta Insights interface. At the top, there is a blue header bar with the plusmeta logo and the text "plusmeta Insights". Below the header, a question is displayed in a green box: "Welche Abmessungen hat der AW101?". A red circle highlights this question box. Below the question, there are two buttons: "Abmessungen" and "Röhrenwärmeaustauscher AW101". To the right of the question box is a small profile picture of a person. The main content area is titled "Basierend auf den gegebenen Informationen im Kontext:" and contains the text: "Der Röhrenwärmeaustauscher AW101 hat folgende Hauptabmessungen:". Below this, a list of four items is provided: "- Nennweite: DN 300", "- Anzahl Durchgänge: 3", "- Segmentabstand: 155 mm", and "- Anzahl Segmente: 18". At the bottom of the main content area, there is a note: "Weitere Details zu den Abmessungen sind in der Anfragezeichnung zu finden, die im Kontext erwähnt wird." At the very bottom of the interface, there is a footer bar with the text "LLM-basierte Metadaten" and a "SENDEN" button.

Role of Metadata & Structure: Examples

Quanos AI Assistant Suchen DE Ändern

Suchkontext

T 450 Traysealer



Suchkontext

T 450 Traysealer



Modell
T 450

Produktyp
Vollautomatisch

Quellen:

64.##. 323.##. 1087
in Betriebsanleitung

Sprache	Produktlebenszyklus	Informationstyp
Deutsch	Fehlerdiagnose	Störungsbehebung

Geändert
11.10.2024, 08:57:53

Produkt öffnen

Initial Results

Initial Results

iiRDS creates mapping (without metadata)

The screenshot shows the ASK.me chat interface. At the top, there is a navigation bar with a grid icon, the ASK.me logo, and a dropdown menu set to "Doku_Test". On the left, a sidebar titled "Agents" shows a single entry for "manuals" with a document icon. The main chat area has a green header bar with a "New Chat" button. The conversation is timestamped "Today" at "10:58 AM". The user asks "Welche Schläuche sind in der HF3500 verbaut?". The "manuals" agent responds with a message box stating: "Es konnten keine Informationen zu den in der HF3500 verbauten Schläuchen gefunden werden. Bitte überprüfen Sie die Dokumentation oder wenden Sie sich an den zuständigen HELLER-Service." Below the main chat, a search bar with "Alt+C" and a magnifying glass icon is visible. At the bottom, a "Chats" section shows a list of messages, with the first message being the user's inquiry about the HF3500 hoses.

Today

You 10:58 AM

Welche Schläuche sind in der HF3500 verbaut?

ASK.me — manuals 10:58 AM

Es konnten keine Informationen zu den in der HF3500 verbauten Schläuchen gefunden werden. Bitte überprüfen Sie die Dokumentation oder wenden Sie sich an den zuständigen HELLER-Service.

Agents

manuals

Chats

Alt+C

Today

Welche Schläuche sind in der HF350...

Initial Results

iiRDS creates mapping (without metadata)

The screenshot shows the ASK.me AI interface. At the top, there is a navigation bar with icons for 'Agents', 'Chats', and 'Settings', and a dropdown menu for 'EMO_2025'. A green 'New Chat' button is visible on the left. The main area is a chat window with a message from 'You' at 4:48 PM: 'Welche Schläuche sind in der HF3500 verbaut?'. The AI agent 'manuals' responds at 4:48 PM with a detailed answer:

Die HF3500 Maschine verwendet eine Vielzahl von Schläuchen, die für hydraulische Anwendungen konzipiert sind und den Normen DIN 20066 und EN857 entsprechen. Hier sind die relevanten Informationen:

- **Schlauchtypen und Spezifikationen:**
 - DIN 20066 2SC-10-[EN857]-NN-2530-P Parker D462CAC12126-2530 [1-Page 47-51](#)
 - DIN 20066 2SC-10-[EN857]-NN-2570-P Parker D462CAC12126-2570 [1-Page 47-51](#)
 - DIN 20066 2SC-8-[EN857]-NN-2530-P Parker D462CAC10105-2530 [1-Page 47-51](#)
 - DIN 20066 2SC-8-[EN857]-NN-2570-P Parker D462CAC10105-2570 [1-Page 47-51](#)
 - DIN 20066 2SC-19-[EN857]-NN-1150-P Parker D462CACF222212-1150 [1-Page 51-55](#)
 - DIN 20066 2SC-10-[EN857]-NN-700-P Parker D462CAC12126-700 [1-Page 51-55](#)
 - DIN 20066 2SC-16-[EN857]-NN-1100-P Parker D462CAC181810-1100 [1-Page 51-55](#)
- **Materialien und Hersteller:**
 - Die Schläuche stammen hauptsächlich von Parker und Hydac, zwei bekannten Herstellern von Hydraulikkomponenten [1-Page 47-51](#), [1-Page 51-55](#)

Falls weitere Details zu spezifischen Schlauchtypen oder deren Einsatz in der HF3500 benötigt werden, lassen Sie es mich wissen.

At the bottom, there is a message input field: 'Send a message to ASK.me...' and a green 'Send' button. A note at the bottom states: 'AI-generated content may be inaccurate.'

Initial Results

iiRDS creates clarity (ohne Metadaten)

Show me the instructions for the planetary gearbox for the machine M59403

ASK.me — manuals 11:49 AM



I couldn't find any relevant information regarding the planetary gearbox for the machine M59403. If you have additional details or can clarify your query, I will gladly assist further.

You 11:54 AM

Show me the instructions for the planetary gearbox

ASK.me — manuals 11:54 AM

Instructions for Planetary Gearbox

Below are the summarized instructions for the installation, operation, and maintenance of planetary gearboxes, along with relevant illustrations:

Safety Precautions

Customer references:

1 - ZI.005963-DE-000-00 ZID Spielarmes Kleinplanetengetriebe Vogel_1_1 (Pages: 1-3)

2 - ZI.005963-EN-000-00 ZID Low Backlash Planetary Gearbox Vogel_1_1 (Pages: 1-3)

3 - ZI.032747-DE-000-00 ZID Getriebe Wittenstein alpha_1_1 (Pages: 1-3, 15-19)

Initial Results

iiRDS creates clarity (mit Metadaten)

ASK.me — manuals 11:43 AM

Show me the instructions for the planetary gearbox for the machine M59403

Instructions for the Planetary Gearbox for Machine M59403

Mounting Instructions:

- 1. General Guidelines:**
 - Center the gearbox in the machine bed, ensuring the identification plate remains readable.
 - Apply threadlocker (e.g., Loctite® 243) to fastening screws.
 - Use specified screw sizes and tightening torques as outlined in the manual.
- 2. Mounting with Through-Holes:**
 - For reverse centering on the motor side, refer to the manual "Reverse centering device for motor-side installation" [doc. no. 2022-0063062].
 - Avoid washers; fasten the gearbox using screws through the through-holes.
- 3. Mounting with Slotted Holes:**
 - Use only washers included with the delivery.
 - Adjust the gearing backlash using slotted holes and lateral guides. Refer to the "alpha rack pinion system" manual [doc. no. 2022-0001333] for details.
- 4. Components Mounted to the Output Side:**
 - Avoid force or hammering when mounting parts onto the output shaft or flange.
 - Ensure axial forces on the output bearing do not exceed permissible limits.

Operating Instructions:

- 1. Operating Without a Motor:**
 - Use a hand wheel to set and align the output pinion on the toothed rack. Avoid tilting or bending the clamping hub.
- 2. Safety Precautions:**
 - Avoid forceful assembly to prevent damage.
 - Follow safety instructions for threadlocker during installation.
- 3. Optional Features:**
 - For liquid-cooled adapter plates, refer to the manual "Cooled adapter plate" [doc. no. 2022-0063351].
 - Use cylinder pins for pinning the gearbox to the machine.

Additional Notes:

- Images provided illustrate key aspects such as mounting the gearbox, aligning the output pinion, and safety precautions. These visuals complement the instructions for proper installation and operation.

For further details, refer to the manuals mentioned in the instructions.

Heller references:

1 - ZI.032747-EN-000-00 ZI0 Gear unit Wittenstein alpha_1_1.pdf [Pages: 16-18]

Outlook & Vision

Outlook and Vision

Current findings

1. It is very time-consuming and also cost-intensive.

- Testing different RAG chunking strategies for different document types is very time-consuming.
- Integrating customer-specific documents poses a further challenge.
- Ingesting customer documentation currently costs around €40.

2. It is a legal challenge.

- How binding must the applications be?
- To what extent must the application be tested internally before it is released to the customer?
- Review and consideration of possible legal consequences, including for the US market.

3. It is the future and there is no way around it.

- Very high interest and demand on the part of customers
- Information consumption is developing in this direction
- Metadata plays a central role
- iiRDS as a standardized metadata model provides the perfect foundation

Outlook and Vision

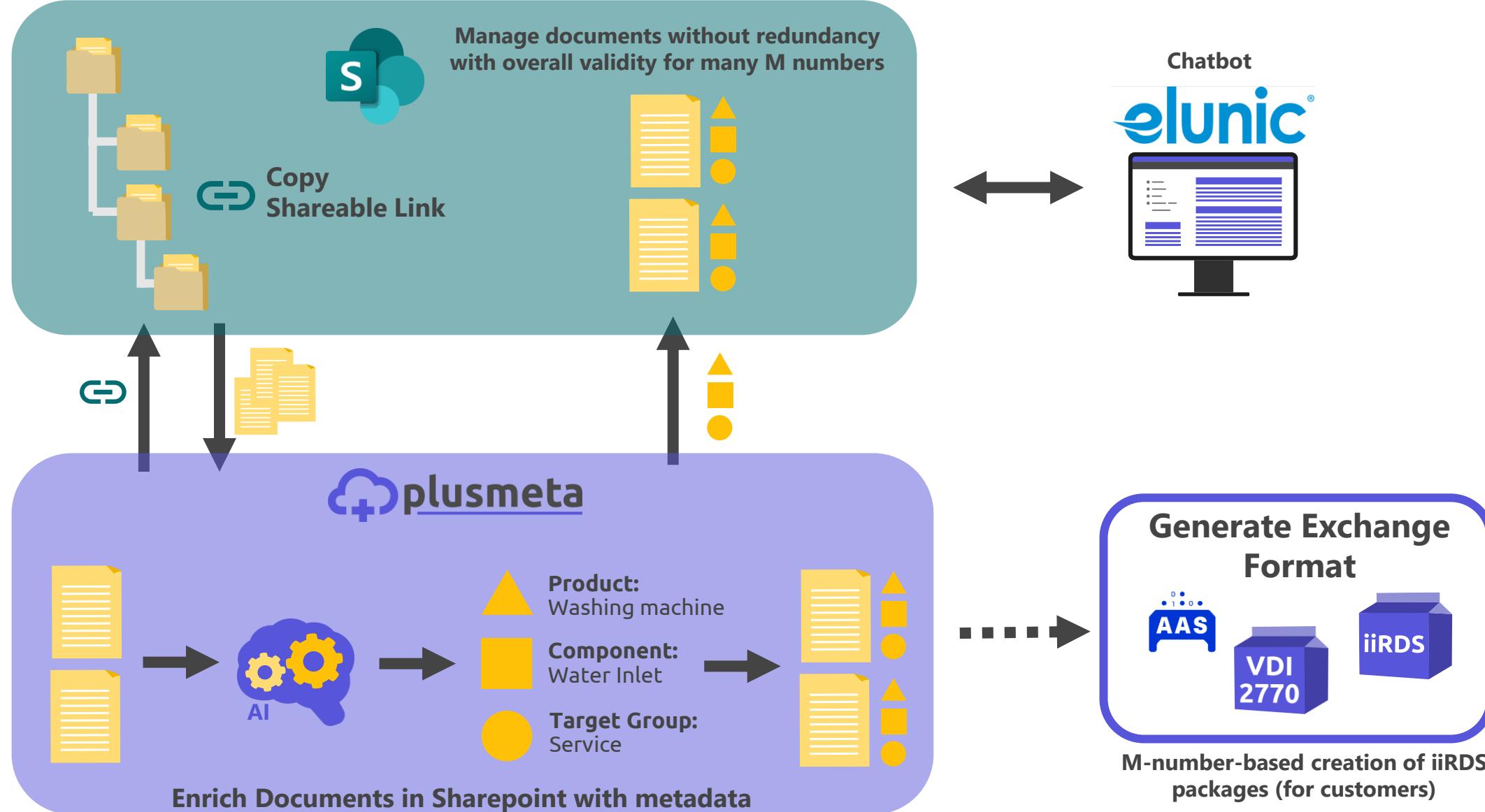
To-dos and still to be resolved...

- _ Documents should only be ingested once (no redundant data storage, reduction of costs)
- _ Assignment/enrichment/updating of metadata should be carried out centrally, e.g. via Sharepoint
- _ Transfer of the specified metadata from the source language to other languages
- _ Receive documents from suppliers in iiRDS format
- _ Visualization of the knowledge network, use of additional software?
- _ Integration of customer documents without metadata on the platform

Optimization in data preparation, packaging, connection

- Optimization of metadata recognition based on rules, AI, and mapping of existing metadata
- PoC: Semi-automated package creation with manual data upload and download for pilot customers
 - Documents are manually uploaded to plusmeta
 - Metadata is assigned based on AI and iiRDS packages are generated semi-automatically
 - iiRDS packages are manually exported from plusmeta and transferred directly to Elunic via a programmed import route
- Expansion stage 1: Interface between SAP and plusmeta (-> transfer of documents + metadata from SAP to plusmeta)
- Expansion stage 2: Connection to the target system: iiRDS packages transferred directly to Elunic via interface
- Expansion stage 3: Full automation of the entire process

SharePoint Integration + Compiling Documentation at Heller





Q&A
Do you have any questions?

HELLER Lösungen: Wissen, wie es geht.