Optimizing Supply Chain Analysis with KNIME:

Geo Data Enrichment and Distance Calculation

Elena Schiefer

BI & DATA SCIENCE

Speaker

About me

- Joined VW GS in 2017
- Worked with several BI tools like QlikView, QlikSense, MicroStrategy, Tableau and PowerBI
- KNIME enthusiast and creative messenger
- Horror movie lover ☺

Contact

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Agenda

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Key facts Volkswagen Group Services GmbH	Problem handling and solving with KNIME	Benefits and impacts	Other cases

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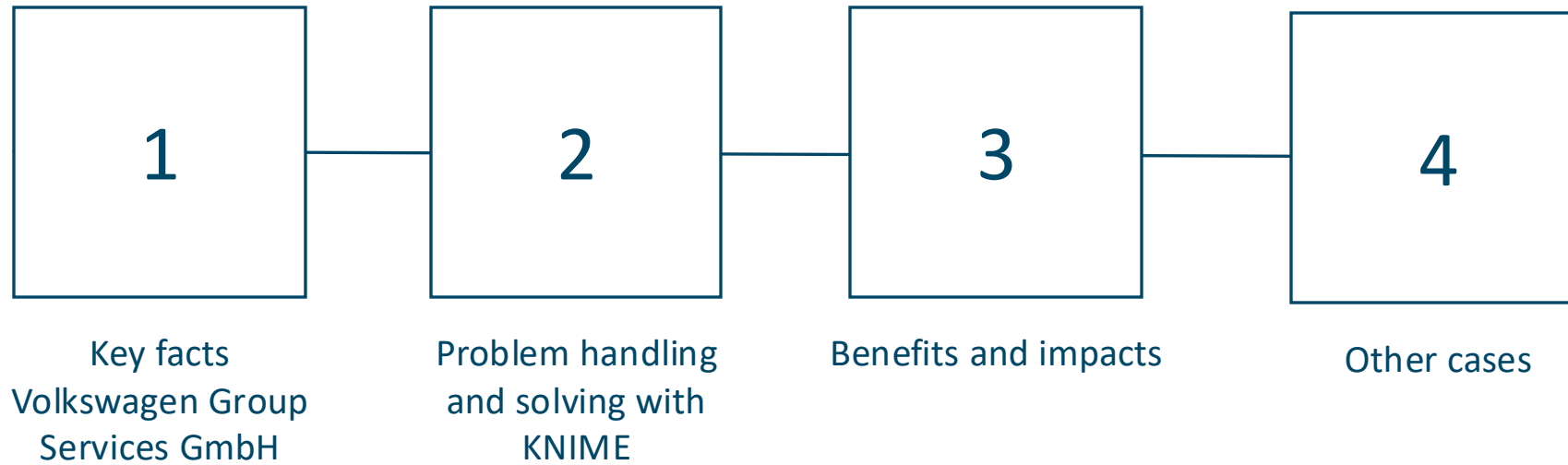
Key facts Volkswagen Group Services GmbH

The service provider in the Group – key facts

VOLKSWAGEN
GROUP SERVICES

CEOs

Hartmut Rickel
(Spokesperson)

Dr. Alexandra Baum-Ceisig

Dr. Hagen Repke

LEGAL

GmbH

REGISTERED OFFICE IN

Wolfsburg

Wolfsburg

GERMANY

9.964

employees[1]

EUROPE

3.545

employees[2]

SITES

12

national

8

international

Always close to you – 12 locations in Germany

VOLKSWAGEN GROUP SERVICES

IT Operations

Procurement & business services

Production & Automation Technology

Infrastructure management

Customer care center

Automotive transhipment

Development logistics

Development data management

Logistics planning & industrial engineering

Development of battery systems

Plant engineering

Logistics center

Consulting

New Business Developement

Automotive transhipment

Axle production

Vehicle start-ups

Flashing & rework

FoilDesignCenter

Emden

Hannover

Wolfsburg

Braunschweig

Osnabrück

Salzgitter

Assembly/body planning

California production

Special vehicle construction

Axle production ID.Buzz

Kassel

Dresden

Zwickau   Chemnitz

Test field support

Factory logistics

Vehicle development

Calculation & simulation

Axle production

Logistics planning/construction planning

Axle production, Meerane

Cementing/laser welding

Catalytic converter recycling

Technical development

Ingolstadt

Munich

IT Services and Development

Control center

Enterprise AMS Plus

Web center services
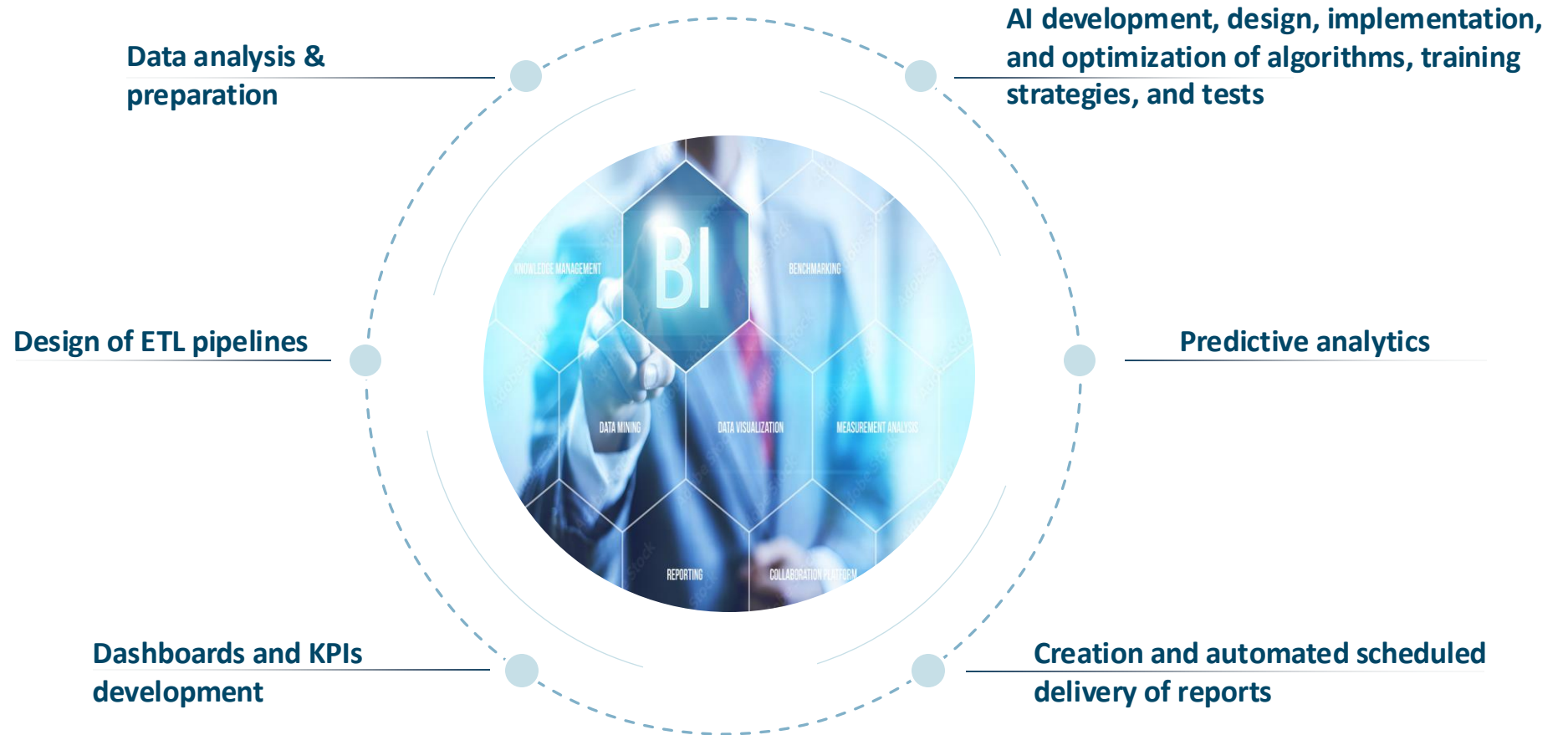
Consulting

BI & Data Science

Years of experience in the field of data integration, data quality, analysis & provision of data

We use tools such as Qlik Sense, Power BI, KNIME & Informatica PowerCenter to meet the requirements of our customers effectively and with the highest quality.

Data analysis & preparation

AI development, design, implementation, and optimization of algorithms, training strategies, and tests

Design of ETL pipelines

Predictive analytics

Dashboards and KPIs development

Creation and automated scheduled delivery of reports

Procurement Numbers

59.000
suppliers around the world[1]

90+
countries[1]

9,31 Mio
vehicles produced in 2023[2]

1: Supply Chain and Human Rights | Volkswagen Group page 106 | 2: Volkswagen Group's truck & car production 2023 | Statista

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Challenges: Key Questions from Management during the Crisis

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The pandemic's impact on customers' suppliers

» **How many suppliers** do we have in **critical regions** in **Italy**?

» **How big** is the **impact on production** for the **Volkswagen Group**?

» **What are** the **alternatives**?

Initial state

Data limitations

Management questions could not be answered with **available data!**

Data for regions, countries and departments was **available for Germany ONLY!**
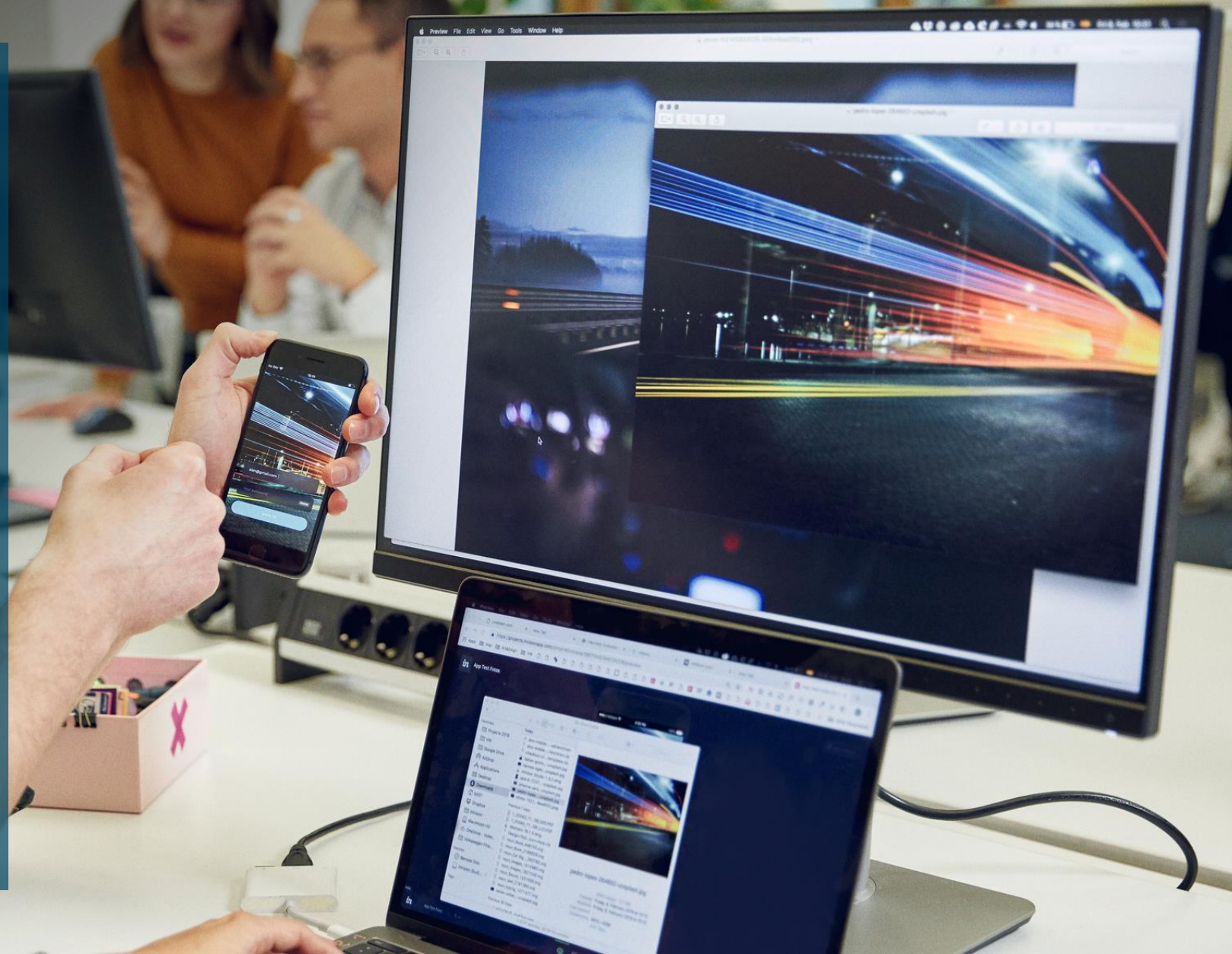
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Problem handling and solution with KNIME

Problem handling

Searching for solutions

Analyzing alternatives:

- Buy data from external providers

- Let employees fill in the data manually

- Use external resources, e.g. OMS

- Use internal resources

Problem solving with KNIME

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Devoloped
a workflow accessing an internal GeoServer

Workflow
enriched supplier data by adding attributes like state, coordinates, capital city, etc., through a POST request to the GeoServer

Leveraging GeoServer
for Comprehensive Data Enrichment and Analysis

Existing GeoServer
was previously used only for map analyses in BI tools

Enhanced data enabeld
answering management's questions and more, such as calculating logistics costs, correcting wrong address data or determining optimal production locations

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Benefits and impacts

Benefits and Impact

Cost savings, improved data quality and enhanced efficiency

- **Saved costs** by utilizing an existing resource (GeoServer)

- Eliminated manual data entry for state information for more than **30.000 records**

- Estimated manual work: Approximately **500 hours** (assuming 1 minute per record)

- Increased data quality: German suppliers: **~15% improvement**[3]

- Other countries: **Significant data quality improvement** by adding regional data for **34 countries**

- Impact on Procurement Department**: 6.000 employees** benefited from enhanced data quality, leading to more efficient operations[4]

3: estimated | 4: Procurement | Volkswagen careers (volkswagen-karriere.de)

Think Further, Think Big!

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| 1 | 2 | 3 | 4 |

Look
around with a neutral perspective

Discover
new potentials

Utilize
existing resources and create greatness (clay house)

Tools
are a complement, NOT a replacement

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Other cases

KNIME uses cases

Streamlining internal processes and ensuring data integrity

Internal Department:

- **Developed a workflow** that extracts user IDs from a QlikView meta-file and writes them to an Excel file, replacing manual maintenance

Human Resources:

- **Automated data checks** for Excel files received from other departments
- **Verified correct file names and locations**, preventing QlikView load failures
- **Checked for file changes** since last access, reducing manual checks
- **Performed logical data validations** and wrote correct data to the database, ensuring clean data for QlikView
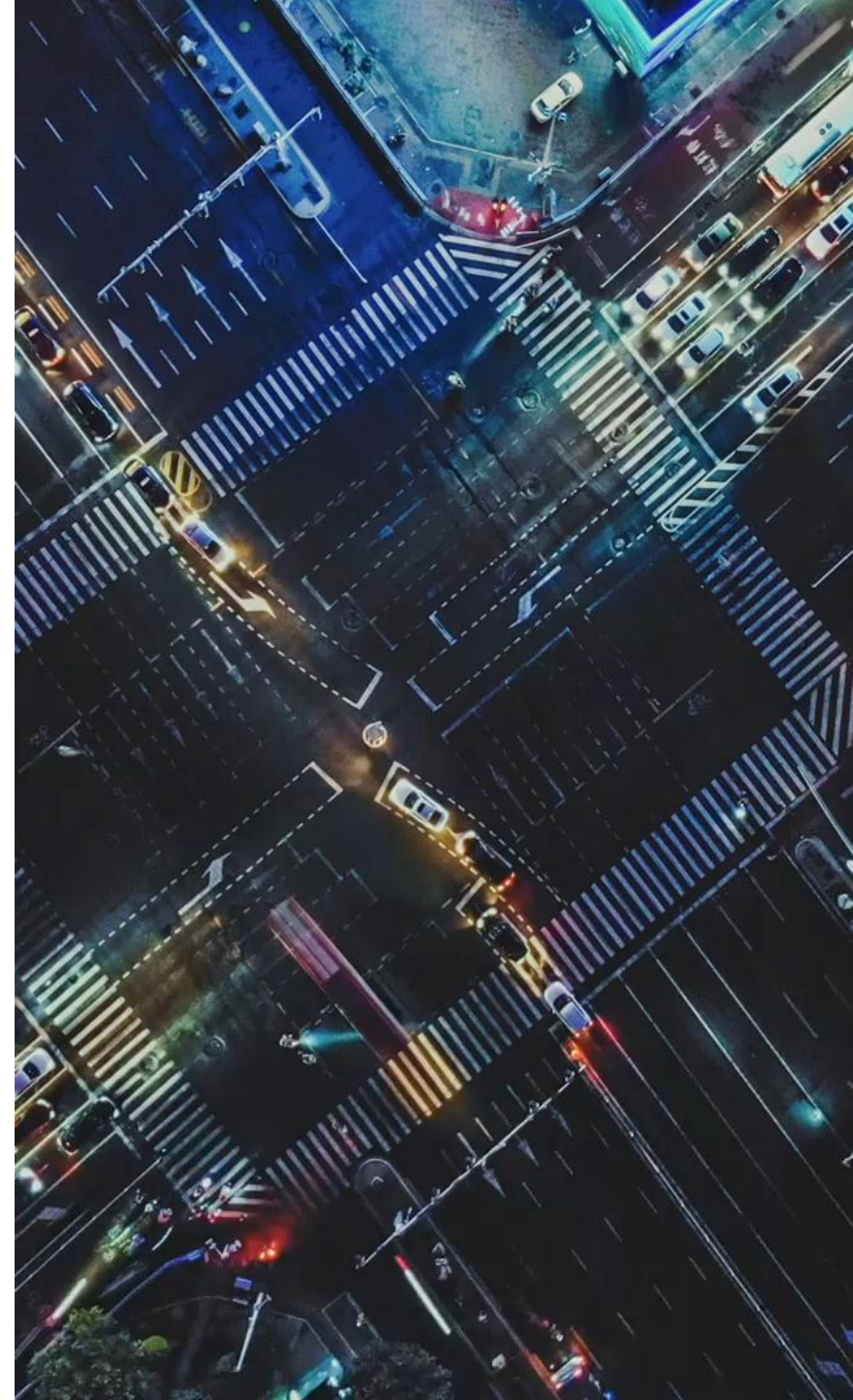
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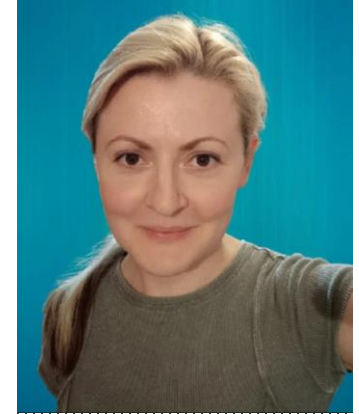
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