

WELCOME TO THE BREAKOUT SESSION

**AI IN SUPPLY CHAIN:
TOOLS TO IMPROVE SUPPLY
CHAIN OPERATIONS**

FLORENCE QIN
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Your facilitators today!



David Herrera

Associate Partner
DHL Consulting



Florence Qin

Senior Consultant
DHL Consulting



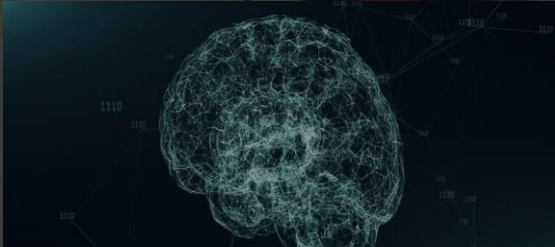
Vivek Vanapalli

Senior Supply Chain Consultant
DHL Consulting



Connect with us and
visit us at the DHL
Consulting booth!

What to expect in the AI in Supply Chain session today!

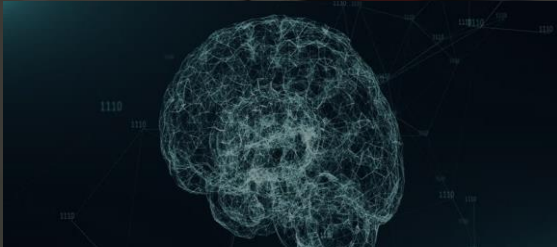


Understanding AI



Evaluating AI

What to expect in the AI in Supply Chain session today!

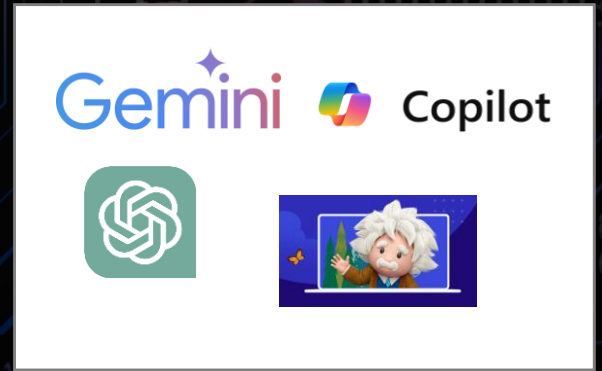
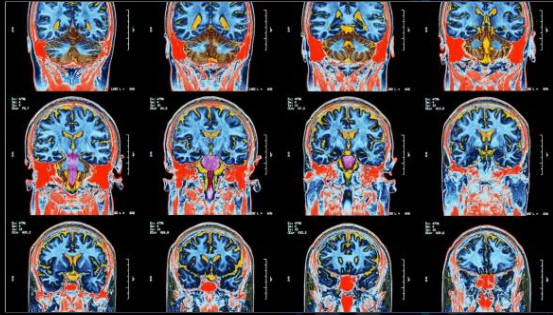


Understanding AI



Evaluating AI

Do you recognize these AI solutions?



Traditional AI and Machine Learning focus on prediction and classification of existing data, whereas GenAI primarily focuses on generating new data

(Traditional) Artificial Intelligence



Relies on explicitly programmed rules for **prediction/classification**, which are encoded by human experts (**rule-driven**) without adapting or learning from new data

Machine Learning



Learns patterns from data to improve performance on **specific prediction/classification tasks** without being explicitly programmed (**data-driven**)

Generative AI



Focus on **generating new data/content** rather than predicting/classifying existing ones. but can draw a **variety of inferences** from the data

How to assess which AI you need?

If you want to ...

Control & Automate



Traditional AI



Predict & Classify



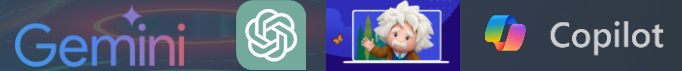
Machine Learning



Communicate & Create



Generative AI



DHL riding the wave of AI

EARLY AI **2010** MACHINE LEARNING **2015** DEEP-LEARNING **2023** GENERATIVE AI



Focus on research and knowledge discovery



Small AI Teams on selected topics



Lighthouse projects deployed across company-specific areas.



Company wide use of AI, cross divisional experts

Users



Niche



Experts

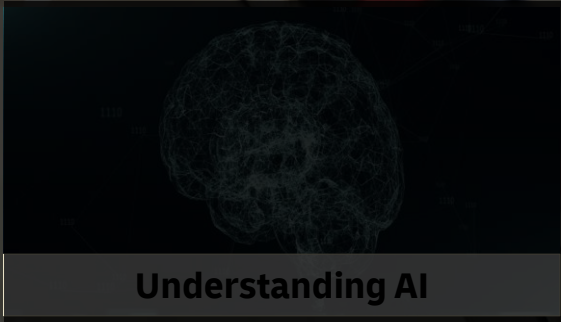


Experts and broader community



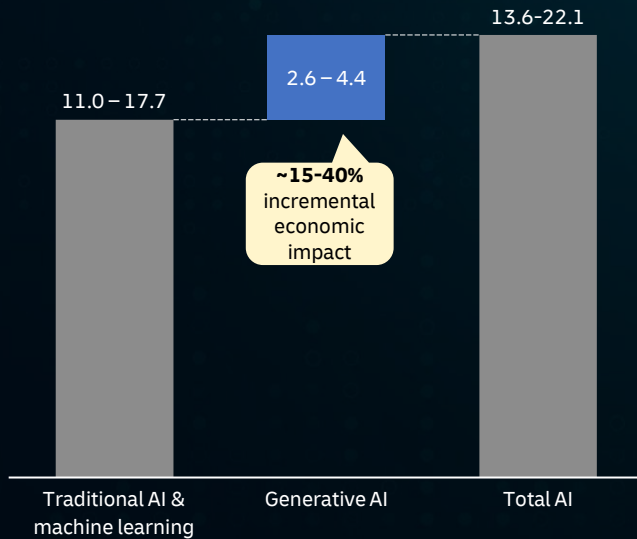
White-collar workforce

What to expect in the AI in Supply Chain session today!

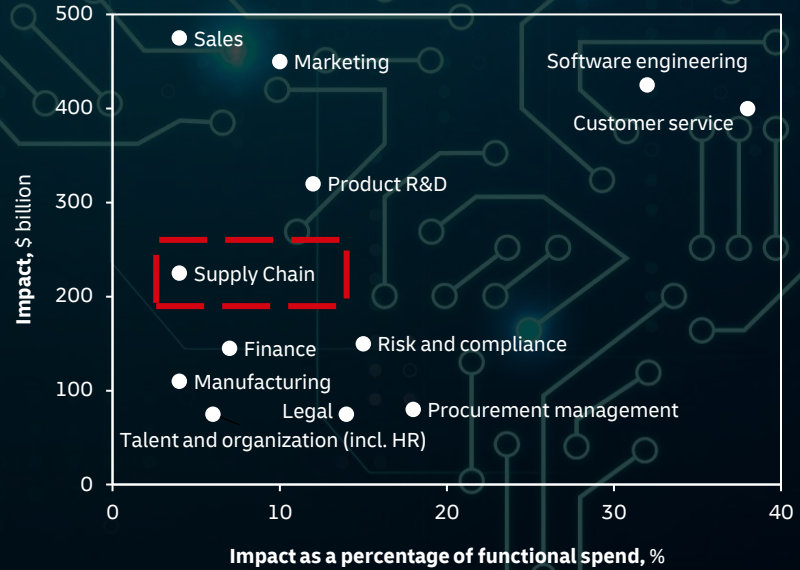


AI is set to drive a ~\$20 trillion global economic impact, with trad. AI/ML as the foundation and GenAI accelerating growth; Significant impact for Supply Chain

AI's potential impact on global economy (in trillion USD)



Generative AI's impact across functional use cases



Source: 1) "The economic potential of Generative AI: The next productivity frontier" – McKinsey (Published Jun 14, 2023)

AI can be used in all stages of supply chain

Supply Chain Stages

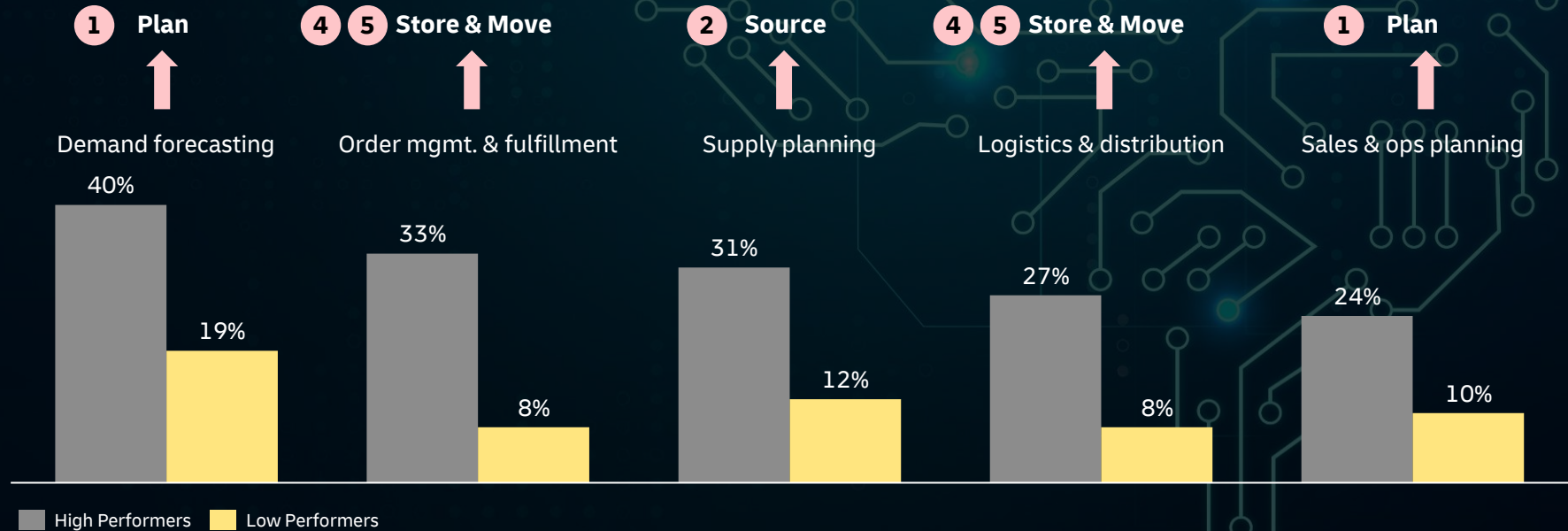


AI Use Cases



Industry leaders most commonly use AI in demand forecasting, order management & fulfillment, and supplier management

Rate of high vs. low performing companies using AI/ML in their top 5 supply chain processes¹⁾



Source: Gartner Feb 2024; High performers rated that they exceeded performance expectations in last 12 months whereas lower performers did not

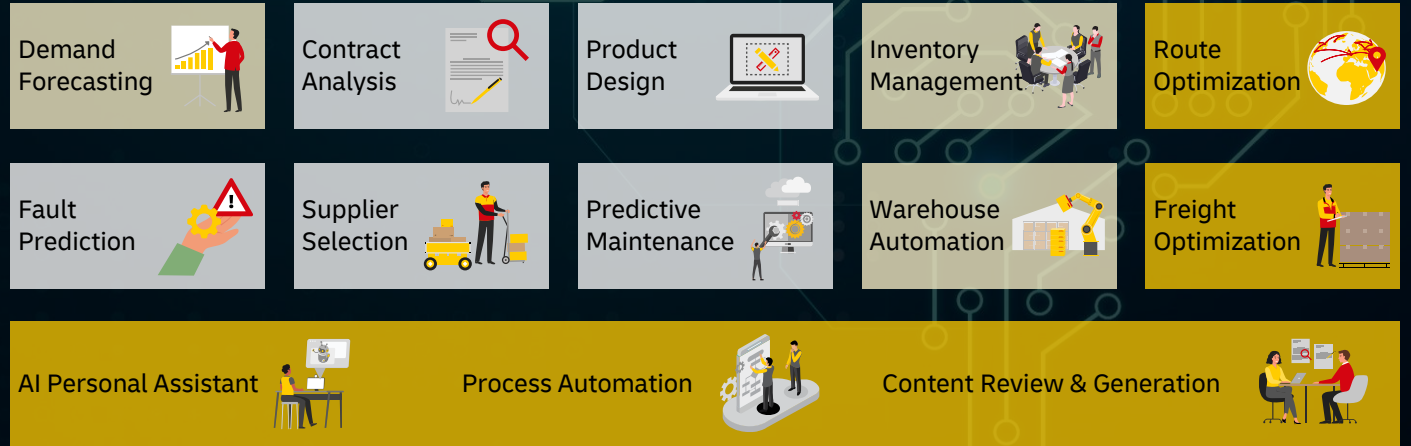
DHL Use Case Spotlight

- To be covered in other breakout sessions
- Deep dive in this session

Supply Chain Stages



AI Use Cases



DHL Use Case Spotlight



SOAR (Supply Chain Optimization & Analysis Recommendations)

Problem



- Lack of visibility on inventory levels and demand patterns
- Difficulty identifying root causes of inventory issues

Solution



AI powered dashboard for inventory and demand analytics

Impact



- Reduced storage cost
- Improved visibility on inventory and demand

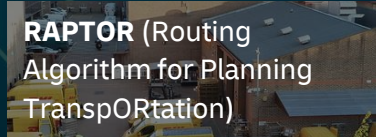


Accelerated Digitalization

- Labor shortages and process inefficiency
- High operational costs
- Errors in manual processes

AI-empowered warehouse automation assets such as Smart picking robot etc.

- 36% of revenue touched*
- 21% of each picking labor carried out by strategic robotic product*



RAPTOR (Routing Algorithm for Planning Transportation)

- Complicated and time-consuming dispatch process
- Many variables and costing options that is hard for manual calibration

AI algorithm that helps dispatchers assign large quantity of orders to delivery vehicles

- 8% CO² savings
- 4-6% cost savings
- Potential for 80% reduction of daily dispatching time



Custom Chatbot

- Extensive time spent (30%) for CS agent on **answering complex questions** that require **manual** data analysis

GenAI Chatbot that enables automated data analysis and visualization

- Currently going through piloting stage
- Potential for 30% productivity lift for customer service agents

*Data from Aug 2024

SOAR* is a modular, standardized supply chain analytics dashboard that offers visibility into inventory and demand patterns

Inventory Analytics modules help customers optimize and sustain inventory levels through data-driven assessments



Inventory Aging

Provides an overview of a company's inventory health, with a focus on aging and dead stock inventory.



Dead Stock Simulation

Helps to simulate different deadstock strategies and quantify the effort vs benefit in terms of value of goods and storage space/cost.



Inventory Profiling

Provides an overview of inventory levels for each SKU based on the defined Safety Stock Policy Level.



SKU Placement

Provides recommendations for rebalancing the inventory across the network and quantifies the impact.

Demand Analytics modules offer insights into demand and returns, improve forecasting, and detect anomalies



Demand Profiling

Provides a bird's eye view of demand trends with an emphasis on the quantity and orders handled, top customers, and warehouse locations.



Return Analysis

Provides an overview, trend of returns vs orders and highlights the top contributing factors such as top reasons for return, top SKUs etc.



Demand Forecasting

Predicts the upcoming demand to identify potential trends and provides access to a three-month demand forecast.



Anomaly Detection

Provides information on anomalies and flags them in demand / outbound data and helps gain visibility on the contributing factors.

MODULES

INVENTORY ANALYTICS

Inventory Aging

Dead Stock Simulation

Inventory Profiling

DEMAND ANALYTICS

Demand Profiling

Returns Analysis

Demand Forecasting

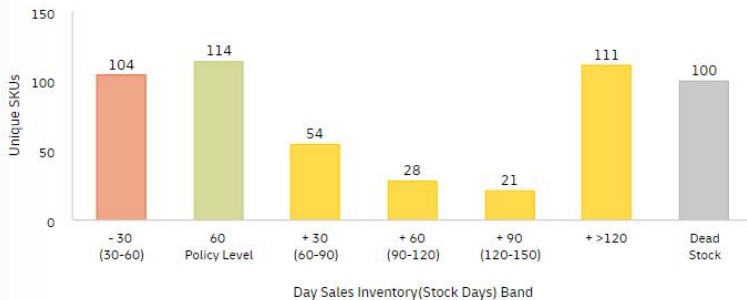
Anomaly Detection

ADMINISTRATION

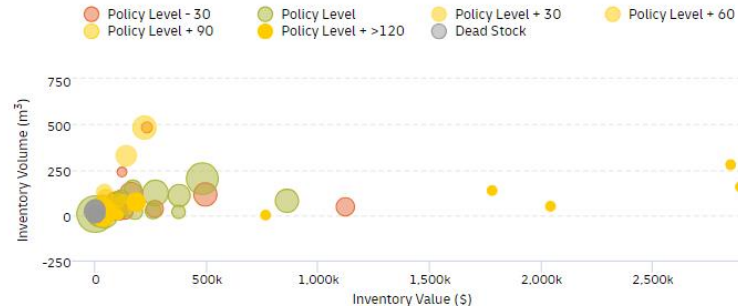
HELP CENTER

Region: ALL | Country: ALL | Warehouse: ALL | Product Category: ALL | SKU: ALL | Policy Level: 30-60 | Reset

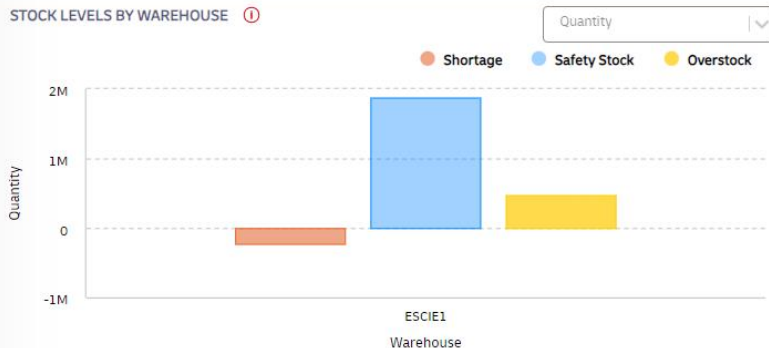
NUMBER OF UNIQUE SKUs



VALUE (\$) VS VOLUME BY SKU



STOCK LEVELS BY WAREHOUSE



RECOMMENDED MOVEMENT OF GOODS

From	To	SKU	Quantity	Reduction of Overstock	Improvement of Understock
There is no Recommended Movement of Goods between selected Warehouses					

Prev Page 1 of 1 5 rows Next

MODULES

INVENTORY ANALYTICS

Inventory Aging

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DEMAND ANALYTICS

Demand Profiling

Returns Analysis

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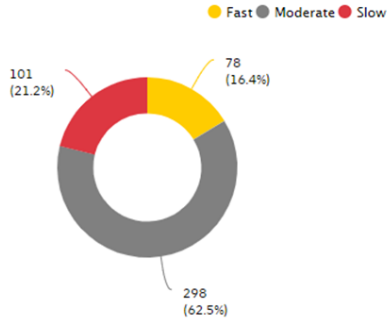
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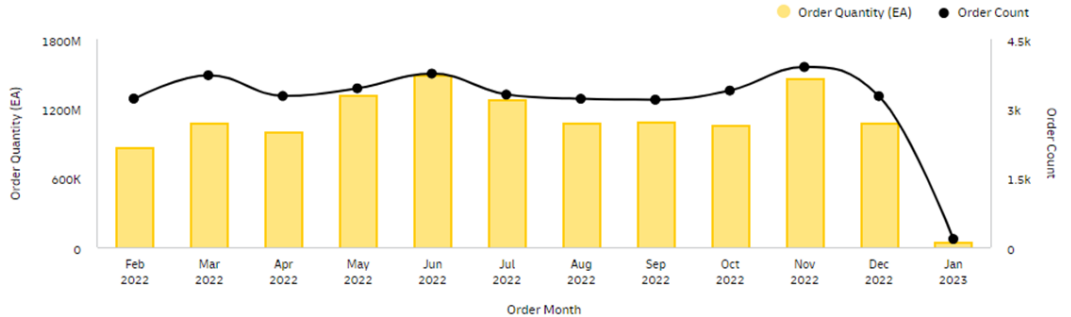
Region: ALL | Country: ALL | Location: ALL | Product Category: ALL | SKU: ALL | Period: 12 items selected

477 Total Unique SKUs | 12.8M Total Quantity | 37.8K Total Orders | 81.2M Total Value (\$) | 32.4K Total Volume (m³) | 0.71 Days Median Order Clearance Time

FAST VS SLOW MOVERS



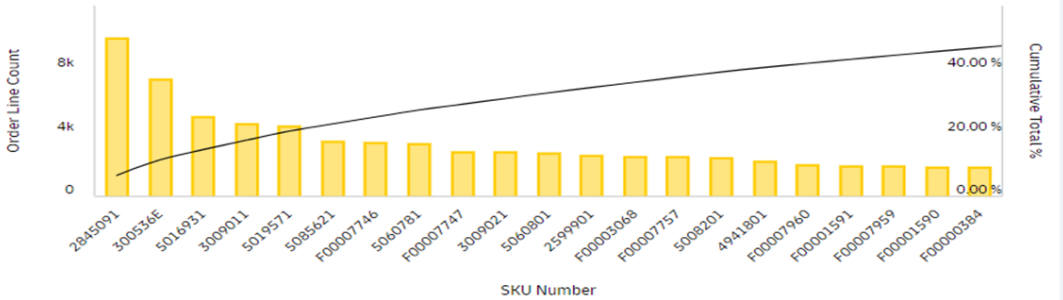
OUTBOUND QUANTITY AND ORDER COUNT TREND



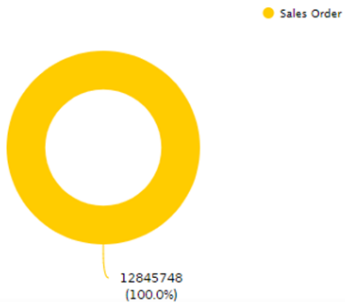
Outbound Quantity | Order Count

OUTBOUND PARETO ANALYSIS

74 (15.5%) SKU'S CONTRIBUTE TO 80% OF OUTBOUND ORDER LINE COUNT



OUTBOUND QUANTITY BY MOVEMENT TYPE



RAPTOR: 3D Load Pattern



Schedule/Route

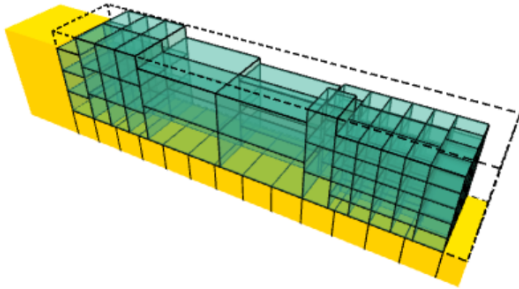
Loading

About

Index	Description	#Pickups	#Deliveries	Distance	Working Time	Costs	Ldm load
dir 0	Direct Tour // 13,00 LDM MEGA // 11000 KG // Bonn-Frankfurt-Stuttgart-Munich-Berlin-Luebeck	3	3	1209.03	35h 26m	1077.51	13

Weight Distribution:
 3m height (red): 2000 kg per Ldm.
 2m height (yellow): 1333 kg per Ldm.
 1m height (light blue): 667 kg per Ldm.

Enlarge



	TA ID	Ldm	Supplier	Start	BMW facility	Delivery	
<input checked="" type="checkbox"/>	Order 0	3.4	Posttower	Bonn	Holstentor	Luebeck	
		Length	Width	Hight	Amount	Weight	st
					21	4500	3
<input type="checkbox"/>		2.4	1	0.8	3	1000	3
<input type="checkbox"/>		1.2	0.8	1	18	3500	3
<input checked="" type="checkbox"/>	Order 1	6.4	Paulskirche	Frankfurt am Main	Brandenburger Tor	Berlin	
		Length	Width	Hight	Amount	Weight	st
					12	4500	3,
<input type="checkbox"/>		1.2	0.8	1	3	500	3
<input type="checkbox"/>		2.7	1.2	0.8	3	1000	3

RAPTOR*: Visualization of optimized truck routes



Schedule/Route

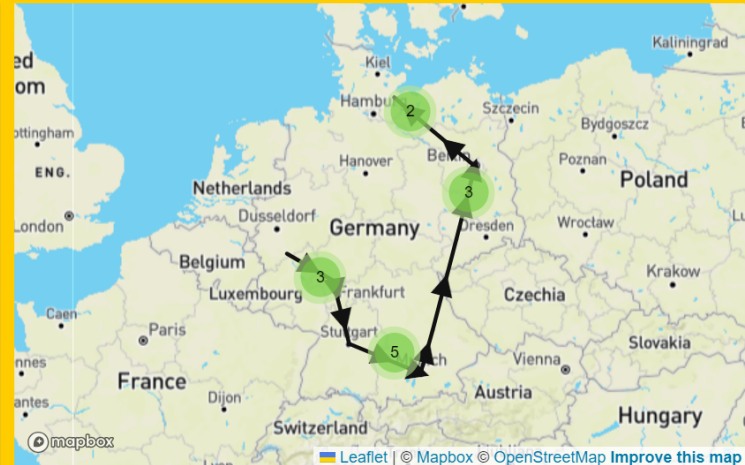
Loading

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Schedule/Route

Start Time	End Time	Duration	Event	
Thu, 25 May 2023 08:...	Thu, 25 May 2023 08:...	00h 47m	PickUp	
Location	City	Zipcode	Street	Orders
Posttower	Bonn	53113	Charles-de-Ga...	Order 0
Thu, 25 May 2023 08:...	Thu, 25 May 2023 12:...	03h 13m	Driving	
Kilometer				
128.88				
Thu, 25 May 2023 12:...	Thu, 25 May 2023 13:...	01h 02m	PickUp	
Location	City	Zipcode	Street	Orders
Paulskirche	Frankfurt am M...	60311	Paulsplatz	Order 1
Thu, 25 May 2023 13:...	Thu, 25 May 2023 14:...	00h 58m	Driving	



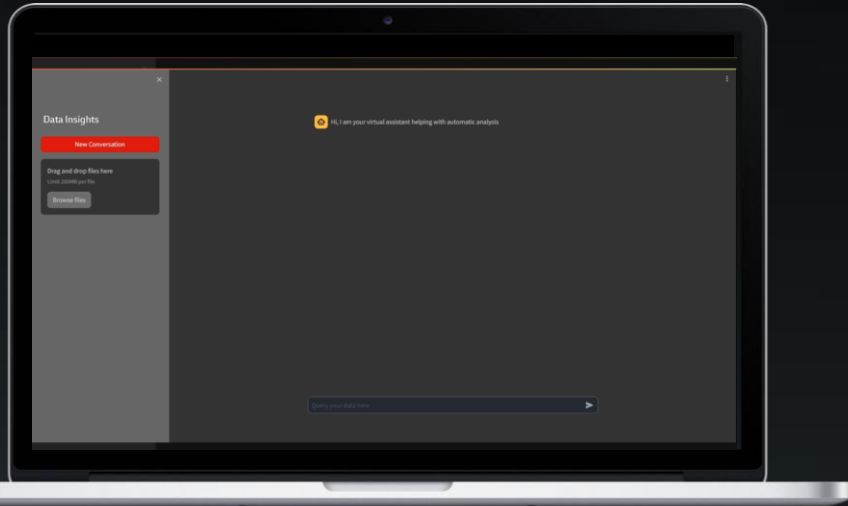
*Routing Algorithm for Planning TranspORTation

Data Science for everyone



Automated Data Analysis

Enabling complex data analysis, mathematical computations, and file processing without coding



Situation

With the widespread availability of data, we aim to utilize this asset to enhance our decision-making process

Challenge

Summarizing, analyzing, and visualizing data are complex tasks that require coding skills and expert knowledge which may not always be available

Solution

- ✓ Enables automated data analysis and visualization
- ✓ Python code is automatically generated and executed
- ✓ Data can be directly uploaded, and results downloaded



Data Insights

New Conversation

Drag and drop files here
Limit 200MB per file

Browse files



Hi, I am your virtual assistant helping with automatic analysis

Query your data here



Automated data analysis for Customs Customer Service Agents

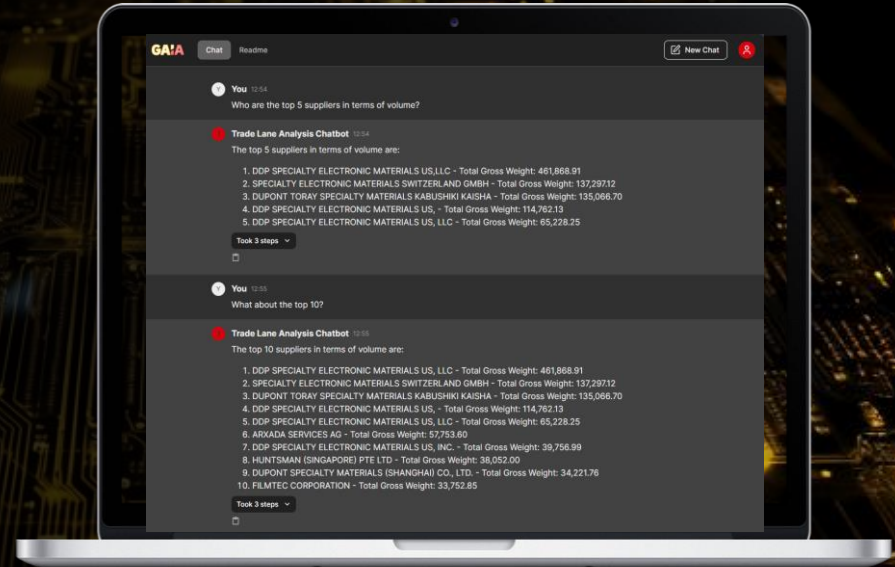
Customs Trade Lane Analysis Chatbot

Situation & Challenge

- CS agents spent 30% time on answering complex questions which require data analysis
- Analysis reports are currently generated individually and manually for each request

Benefits

- **Improved customer experience** by direct execution of query
- Providing **better transparency** over customers' import/export activities for better decisions and exploit opportunities
- **Reduce customer service** effort for DHL forwarding employees



THANK YOU



WHAT IS NEXT ON THE AGENDA?

12.00 – 1.30 pm

Networking Lunch & Exhibition

1.30 – 3.00 pm

Sustainability - How to decarbonize global supply chains?