ADVANCING WITH ARTIFICIAL INTELLIGENCE
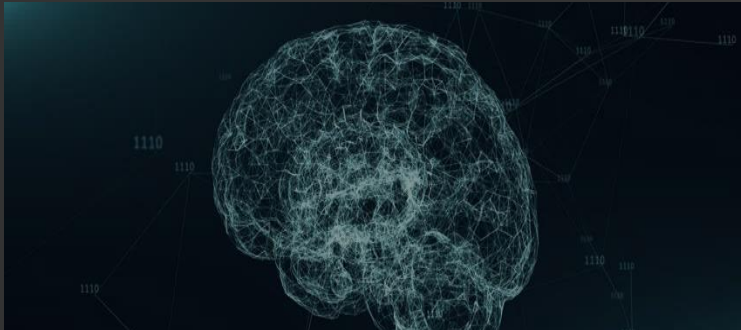
Eric Walters

VP, Analytics & Performance Management

DHL Supply Chain North America

DHL
Supply Chain

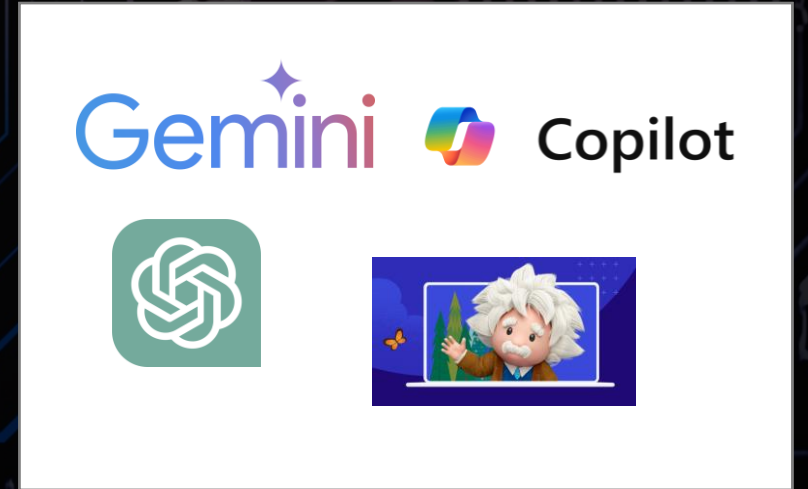# Topics for Today's Discussion
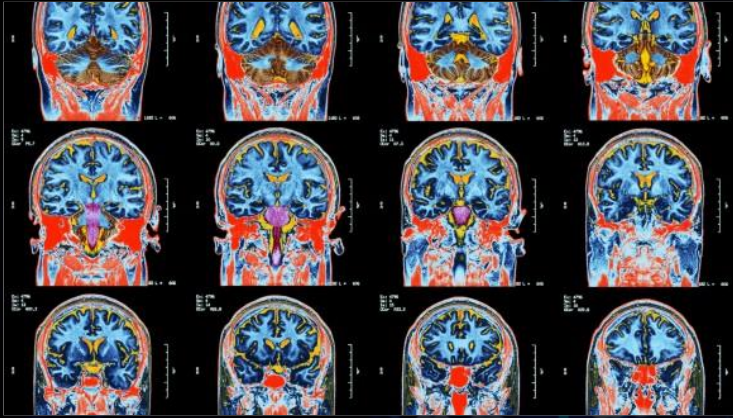

Understanding AI

Evaluating AI

Getting Ready for AI

Do you recognize these AI solutions?

AI can be used in all stages of supply chain

Supply Chain Stages

1. Plan
2. Source
3. Make
4. Store
5. Move

AI Use Cases

	Plan	Source	Make	Store	Move
	Demand forecasting	Contract analysis	Product design	Layout optimization	Route optimization
	Risk mgmt.	Supplier mgmt.	Predictive maintenance	Warehouse & Transport Automation	Order mgmt.

AI personal assistant   Process Automation   Content Review & Generation

Categories of Artifical Intelligence

Category

- Expert Systems
- Computer Vision
- Speech
- Robotics

Artificial Intelligence

Category

- Machine Learning
- Planning & Optimization
- Natural Language Processing
- Generative A.I.

Robotics, Vision, & Speech are categories of AI used throughout DHL. DHL is the consumer of AI in these categories.
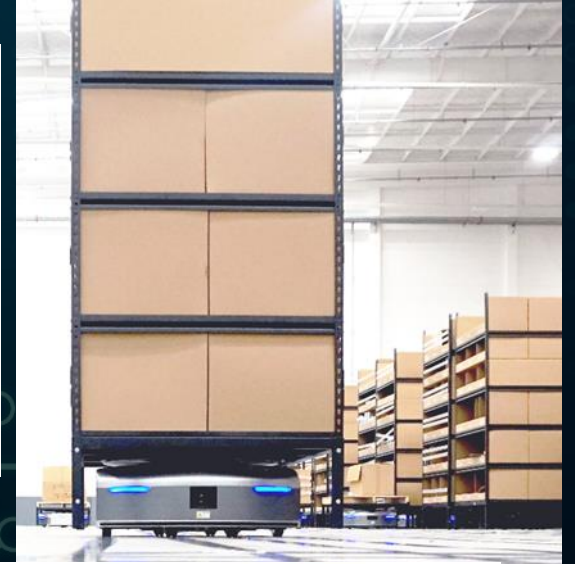
DHL is a producer of AI in Analytics.

Power BI

SQL

R

python™

ARTIFICIAL INTELLIGENCE (AI)

MACHINE LEARNING (ML)

DEEP LEARNING (DL)

CONVERSATIONAL AI

LLM

NATURAL LANGUAGE PROCESSING (NLP)
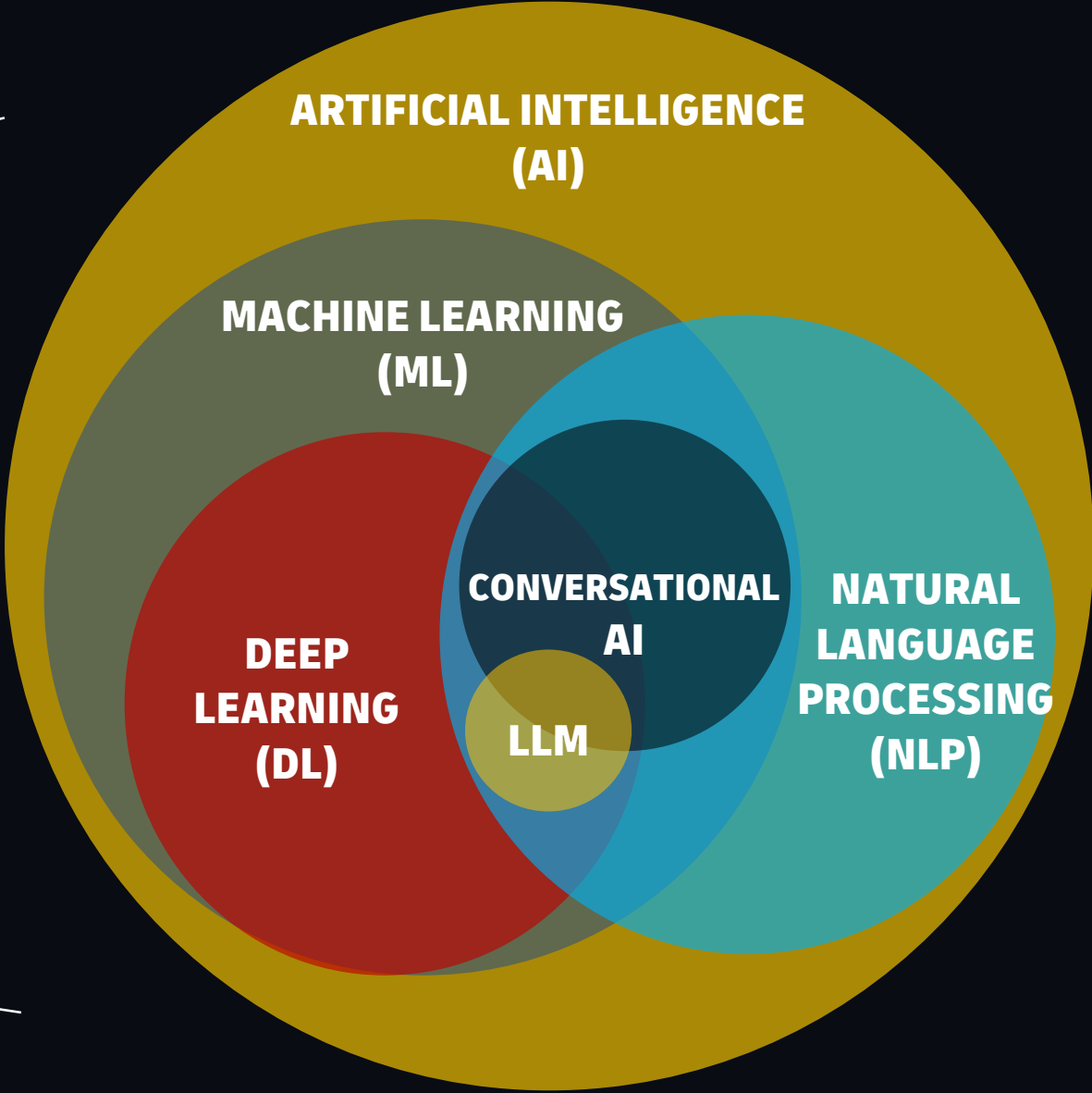
Basic Analytics
Understanding the data

Advanced Analytics
Automating Decisions

Did You Know?

1. That 90% of the world's data has been created in just the last two years.

2. That only about 1% of the data we generate is ever analyzed or used.

3. If someone did nothing but read 24 hours a day for their entire life, they'd consume about eight billion words. But today, the most advanced AIs consume more than eight trillion words in a single month of training. [1]

Since humans can't process that amount of data, the key to success is to...

➜ Connect people to AI insights ←

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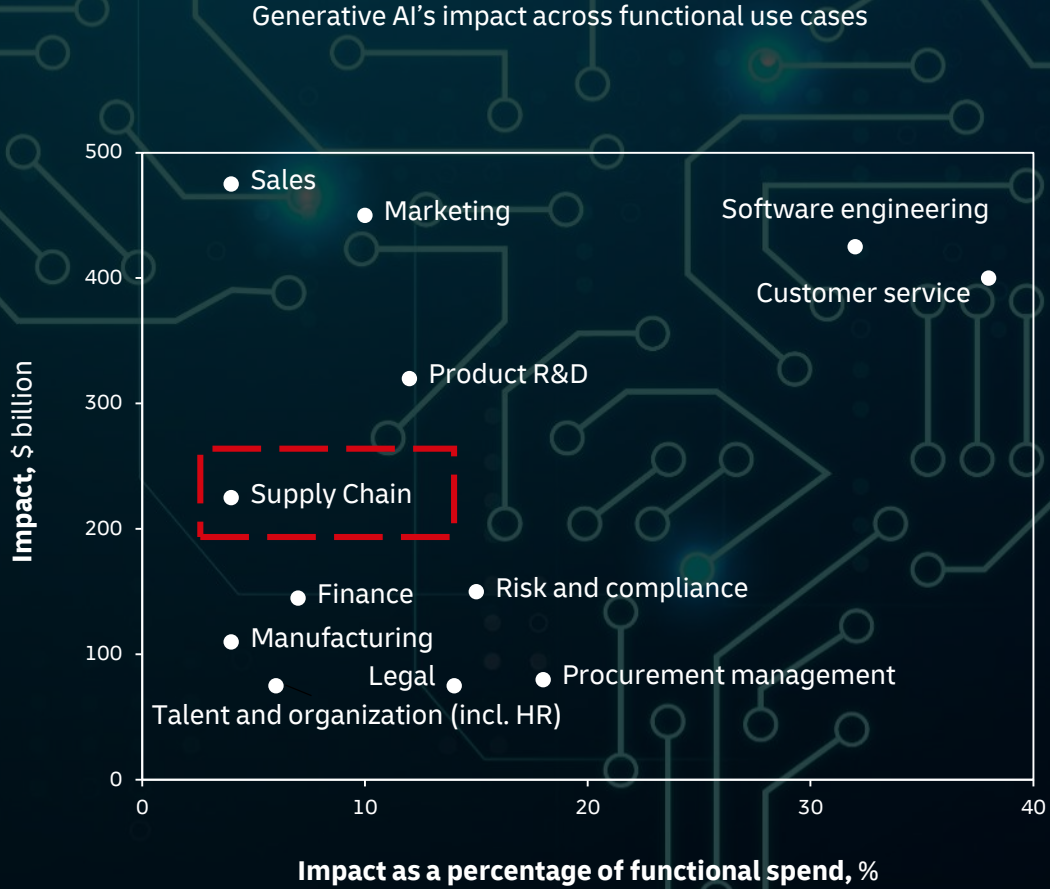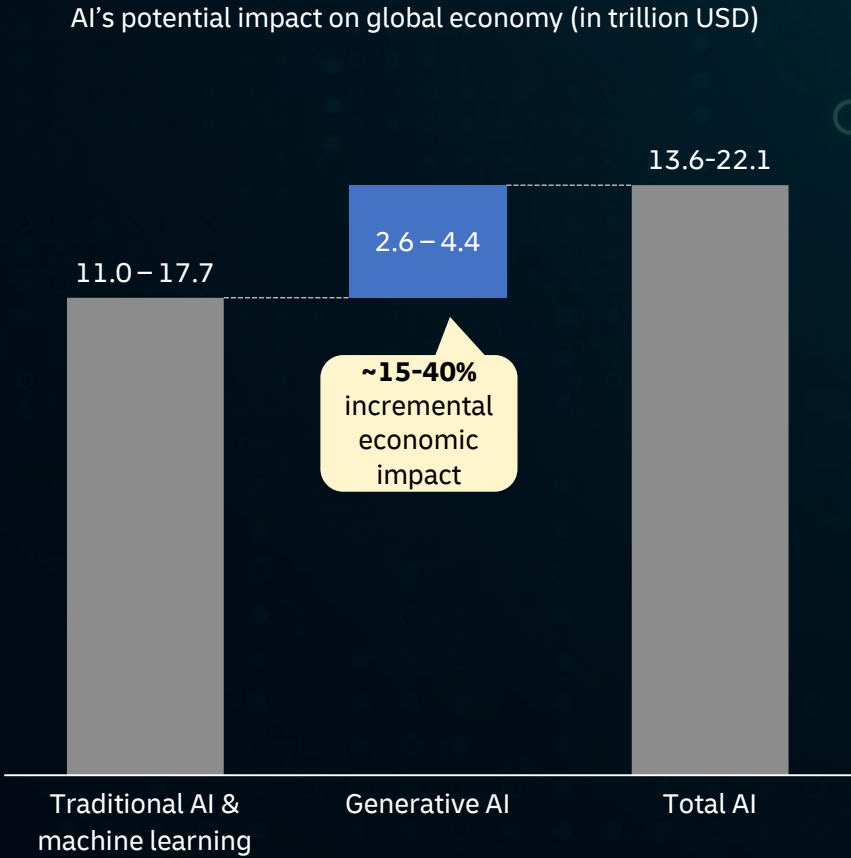
AI's potential impact on global economy (in trillion USD)

Generative AI's impact across functional use cases

Bar chart showing:
- Traditional AI & machine learning: 11.0 – 17.7
- Generative AI: 2.6 – 4.4 (with callout "~15-40% incremental economic impact")
- Total AI: 13.6-22.1

Scatter plot — Impact, $ billion (y-axis) vs Impact as a percentage of functional spend, % (x-axis):
- Sales
- Marketing
- Software engineering
- Customer service
- Product R&D
- Supply Chain (highlighted in red dashed box)
- Finance
- Risk and compliance
- Manufacturing
- Legal
- Procurement management
- Talent and organization (incl. HR)

Topics for Today's Discussion

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Evaluating AI

Getting Ready for AI

How to evaluate which AI you need?

If you want to ...

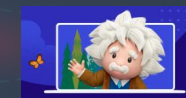|	
Control & Automate	**Traditional AI**
Predict & Classify	**Machine Learning**
Communicate & Create	**Generative AI**
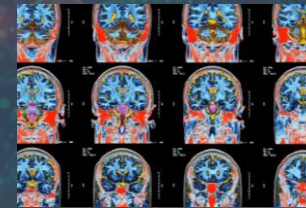
Source: Harvard Business Review

OUR VISION:
To optimize supply chains end-to-end, using best-in-class robotic solutions and actionable data

Data collection point ●━━●

Receiving/ Put-away	Storage	Picking	Packing & Value-added Services	Dispatch/ Delivery

Data Analytics

of **Tasks**	of **Resources**	of **Inventory**	of **Transport**
How can I optimally prioritize and group tasks?	How can I utilize my resources most efficiently?	How can I continuously optimize my inventory?	operations
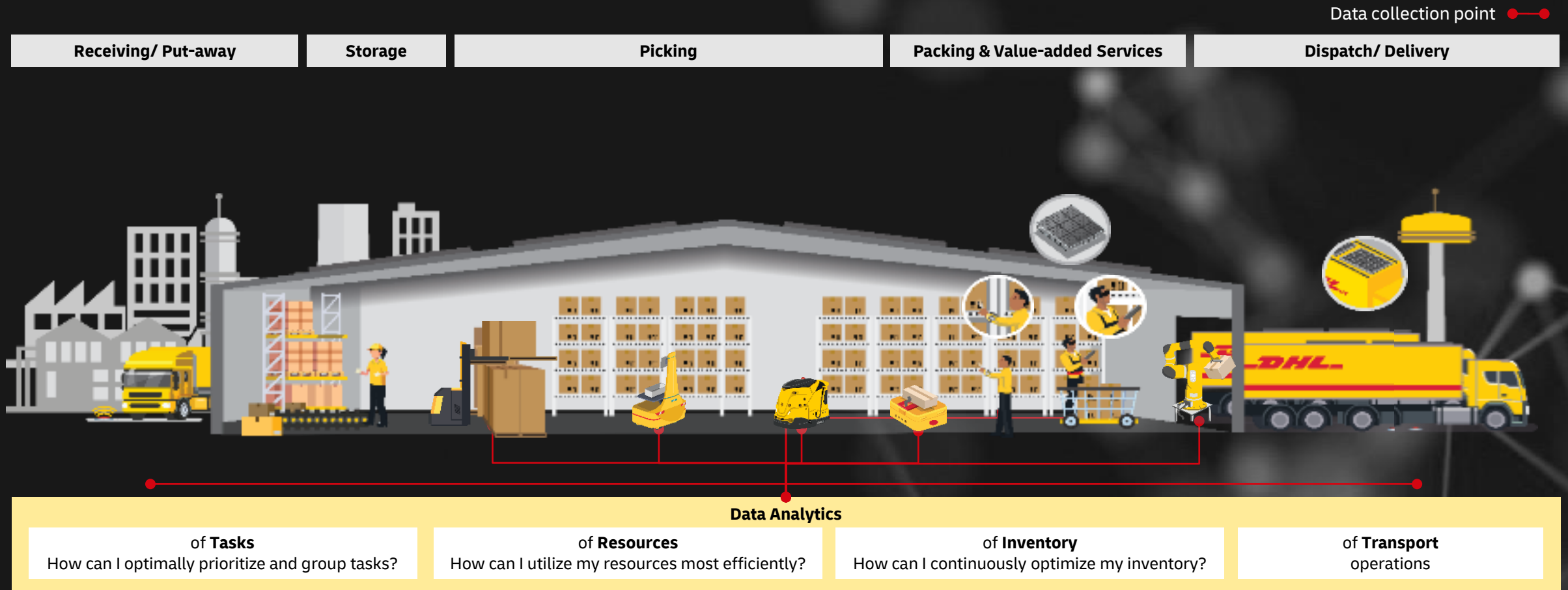
We have visibility on where we spend how much of our human labor. We utilize this information to select our focus technologies and innovation areas

Visibility on labor hours per operational activity

Activity	%
Put-away, replenishment, pallet run	25%
Picking	35%
Packing	10%
(un)loading & Receiving	17%
Admin and communications	8%
Others	5%

AD Technology Portfolio

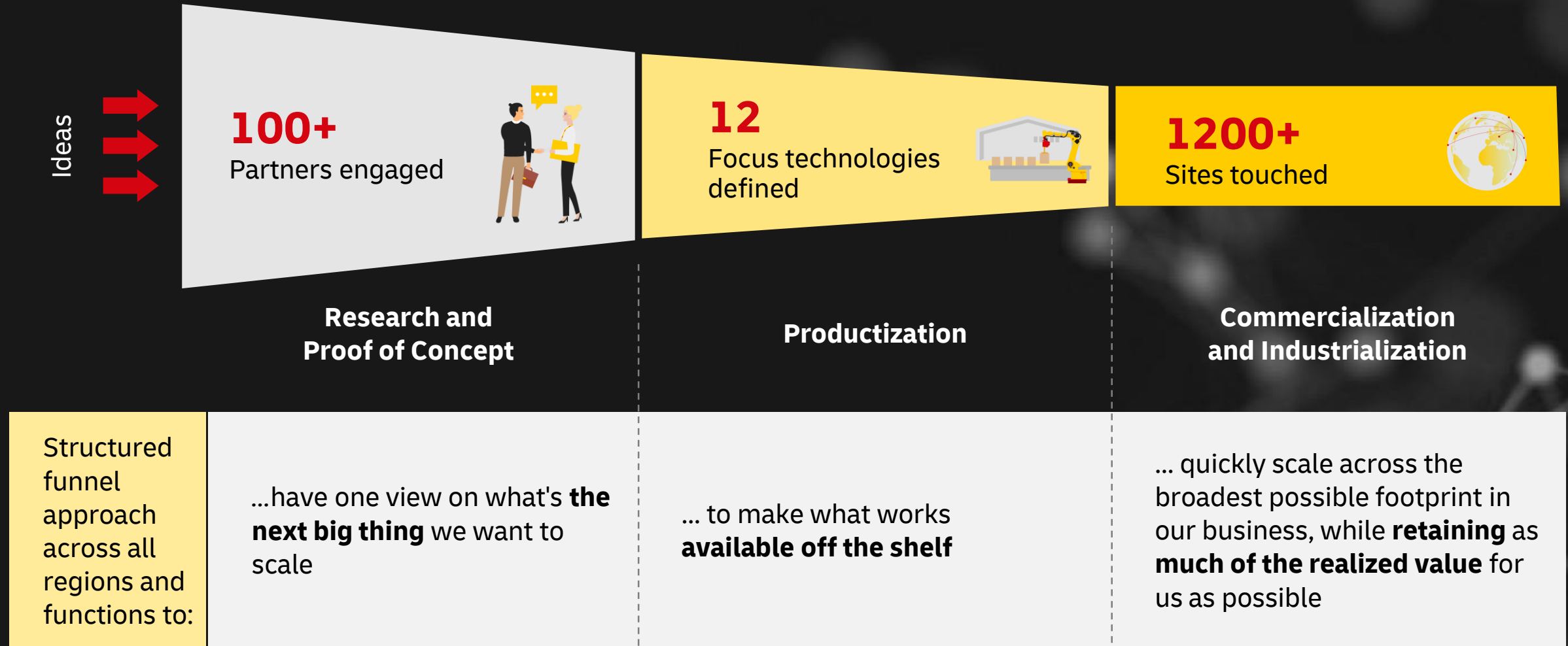|		
Assisted Picking Robots	(un)Loading Robots	Intelligent Process Automation
Goods-to-Person Robots	AI & Data Analytics	Sortation Robots
Packing Robots	Smart Operations	Supporting Robots
Indoor Robotic Transport	Wearable Devices	Asset Tracking & Monitoring

Our Accelerated Digitalization and Automation (AD&A) journey started years ago, and it is far advanced and industry-leading

Ideas

100+
Partners engaged

12
Focus technologies
defined

1200+
Sites touched

**Research and
Proof of Concept**

Productization

**Commercialization
and Industrialization**

Structured funnel approach across all regions and functions to:

...have one view on what's **the next big thing** we want to scale

... to make what works **available off the shelf**

... quickly scale across the broadest possible footprint in our business, while **retaining** as **much of the realized value** for us as possible

We work with focus and consistence across all regions – to rapidly identify and replicate best practices...
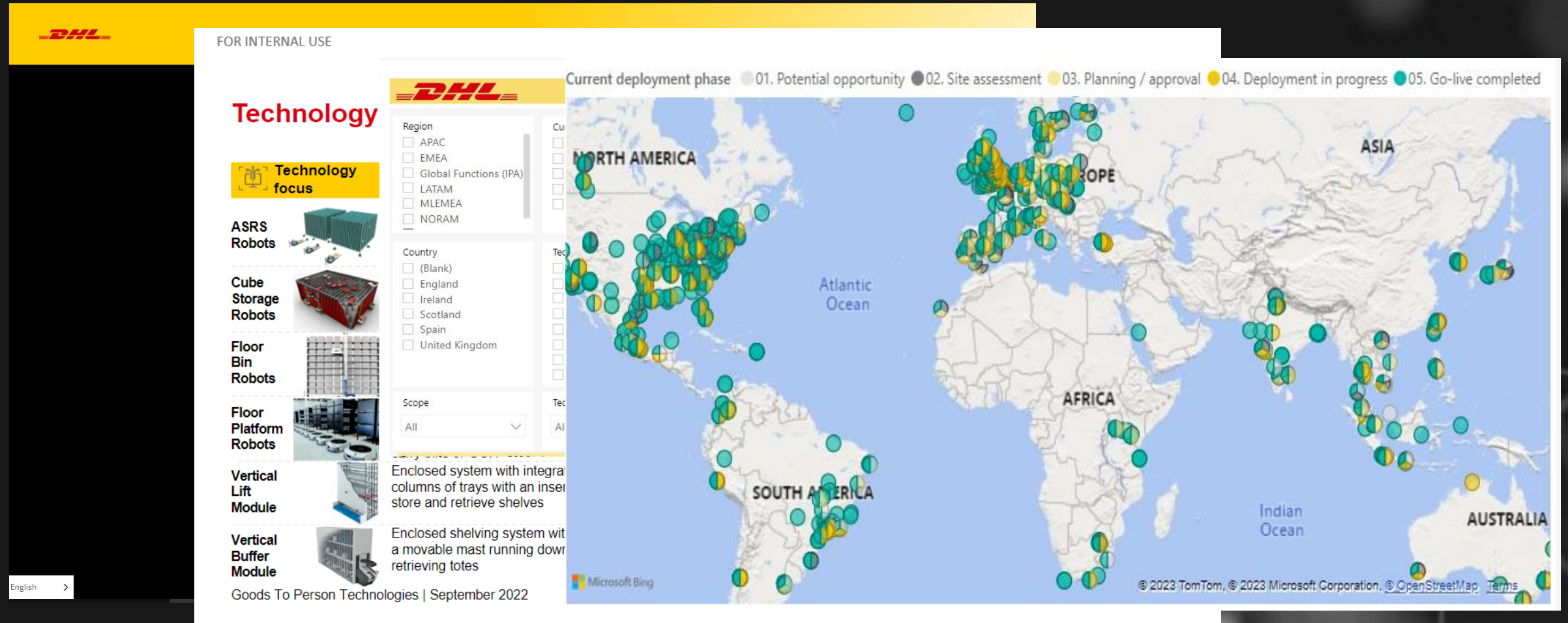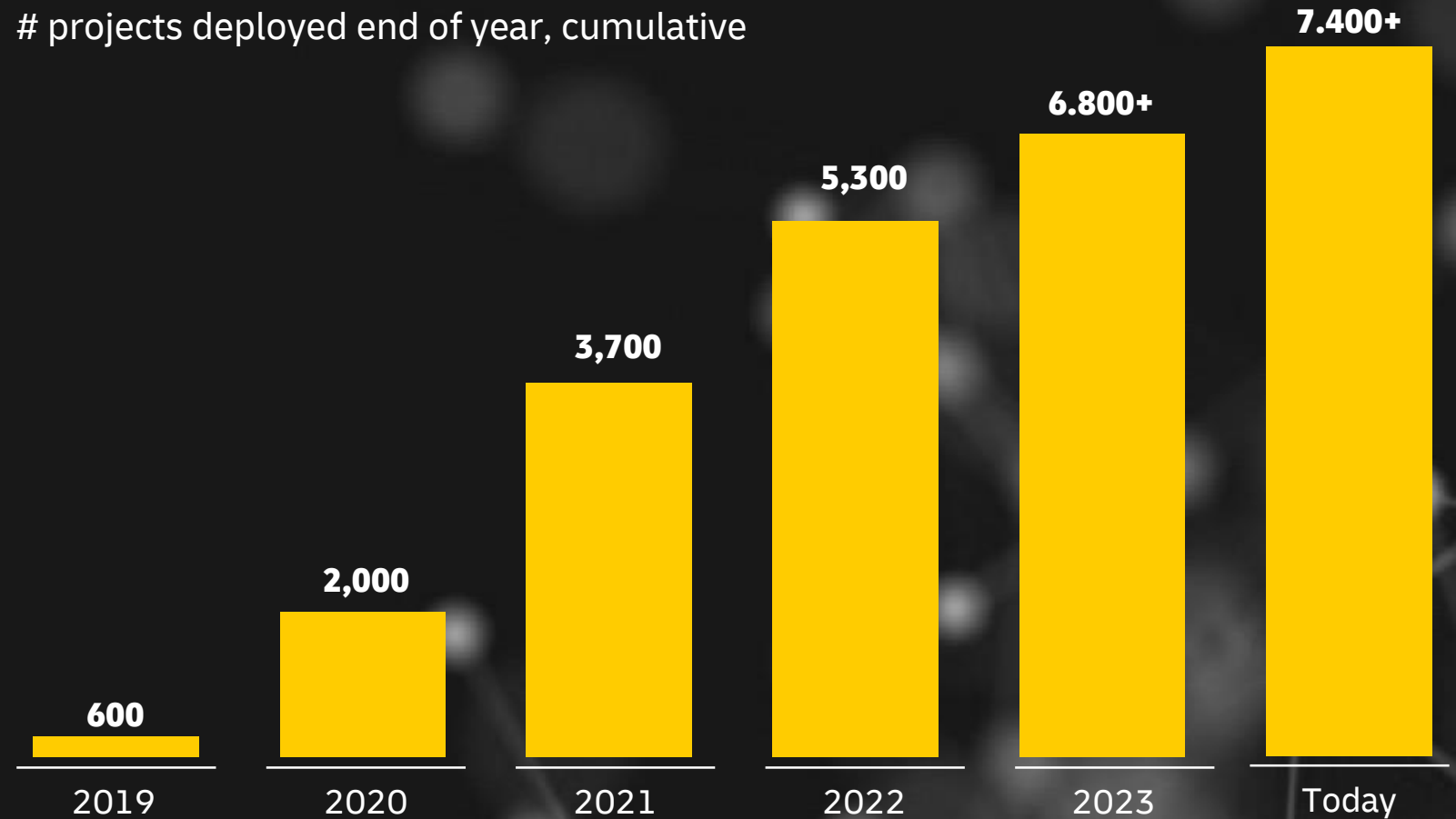
... and truly scale effective operational technology broadly across our business

Real innovation is when you implement at large scale...

... otherwise, it's just a nice idea.
-Oscar De Bok, DSC CEO

projects deployed end of year, cumulative

600	2,000	3,700	5,300	6.800+	7.400+
2019	2020	2021	2022	2023	Today

AI with data analytics, delivering clear value to customers, operations and employees with insights to improve decision making

Selected examples:

Forecasting	**Optimization of picking**
Cycle count optimization	**Associate Retention**
Optimization of slotting	**Site Profiling**

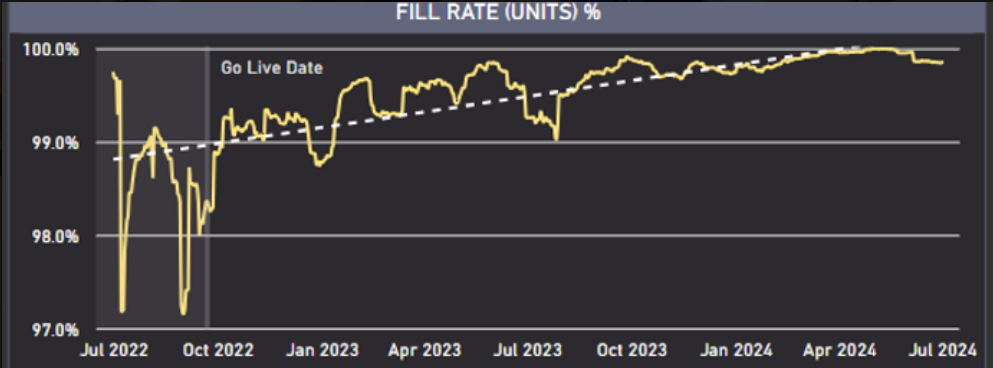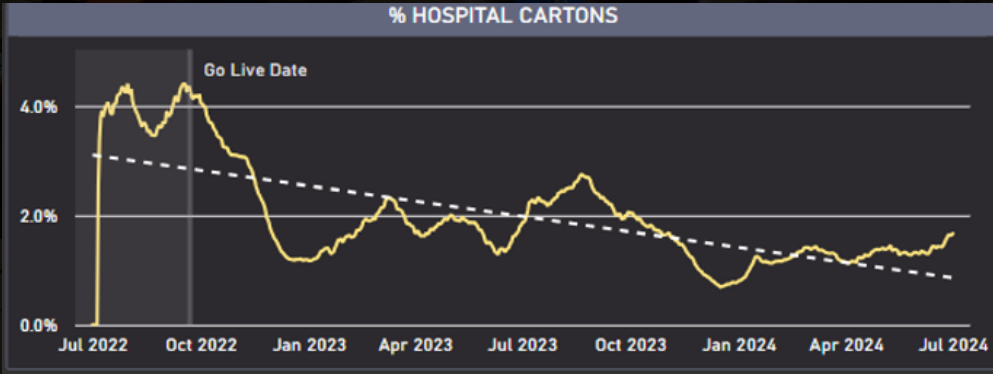# AI CYCLE COUNTING - MACHINE LEARNING CYCLE COUNT (MLCC)
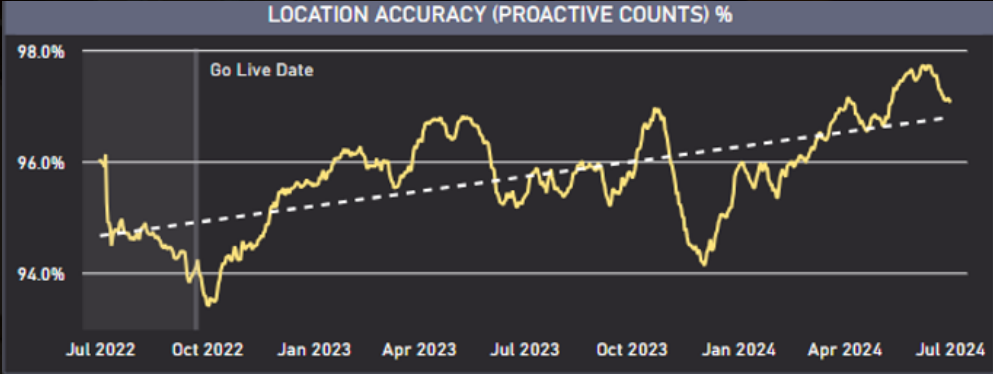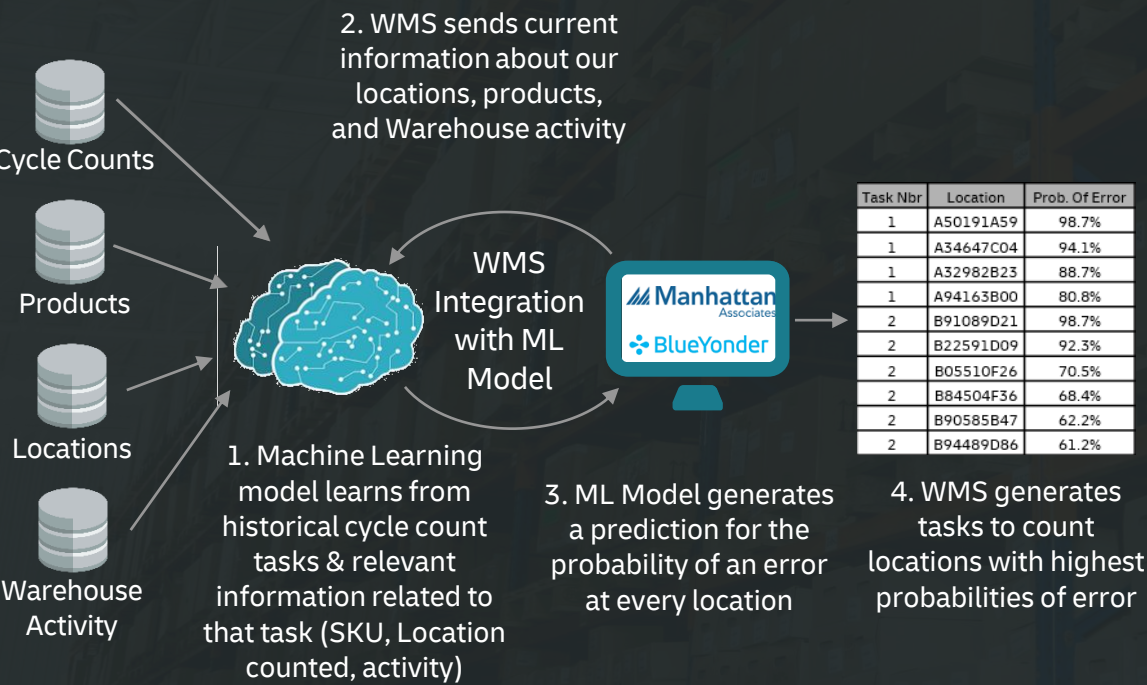
DATA ANALYTICS

Business Opportunity

Inventory errors cause many issues within the warehouse and for the customer

- Service Level Impacts
- Labor Costs
- Shrinkage Costs
- Customer Service Impacts
- Reduction in Sales

HOW IT WORKS

Cycle Counts

Products

Locations

Warehouse Activity

2. WMS sends current information about our locations, products, and Warehouse activity

WMS Integration with ML Model

Manhattan Associates

BlueYonder

Task Nbr	Location	Prob. Of Error
1	A50191A59	98.7%
1	A34647C04	94.1%
1	A32982B23	88.7%
1	A94163B00	80.8%
2	B91089D21	98.7%
2	B22591D09	92.3%
2	B05510F26	70.5%
2	B84504F36	68.4%
2	B90585B47	62.2%
2	B94489D86	61.2%

1. Machine Learning model learns from historical cycle count tasks & relevant information related to that task (SKU, Location counted, activity)

3. ML Model generates a prediction for the probability of an error at every location

4. WMS generates tasks to count locations with highest probabilities of error

LOCATION ACCURACY (PROACTIVE COUNTS) %

Go Live Date

% HOSPITAL CARTONS

Go Live Date

FILL RATE (UNITS) %

Go Live Date

Results from Carhartt DC3 & DC4. Status: Product (22 deployments by EOY 2024)

Improve Warehouse Productivity – AI Slotting with SOLVE
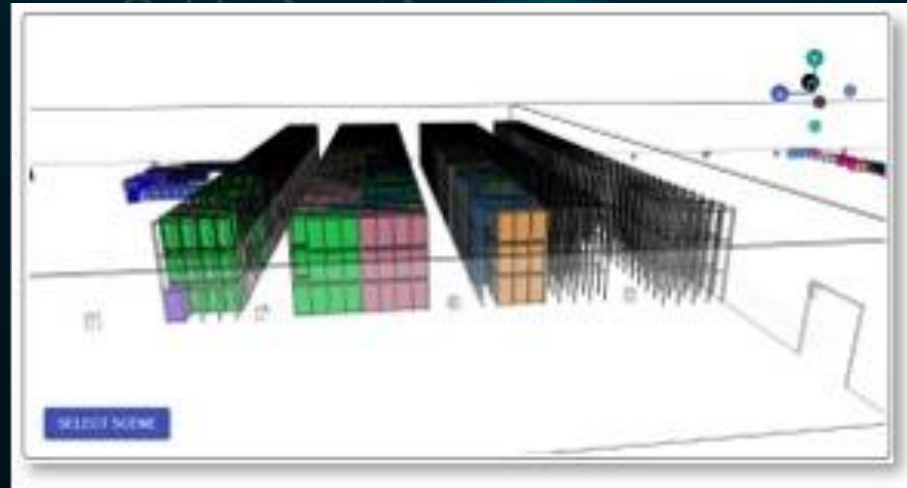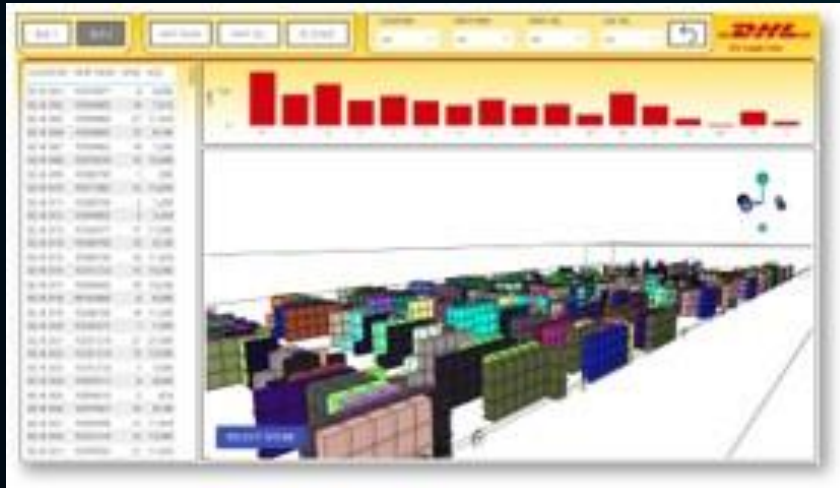
6-8%
Location Availability

8-10%
Pick Productivity

3-4%
Labor cost

Using AI for Inventory and Demand Analytics

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

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

Inventory Aging

Demand Profiling

Dead Stock Simulation

Return Analysis

Inventory Profiling

Demand Forecasting

SKU Placement

Anomaly Detection

Improve Associate Retention

- Use machine learning to identify associates at high-risk for turnover.

- Using HR and attendance data - 12 data attributes are predictive.

- Proactive supervisor discussions can reduce turnover.

- Pilot results: 27% reduction in turnover among high-risk associates.

GenAI will become part of the 'way of working' – embedded in different technology layers it will increase the productivity

Layers of making use of GenAI for users

External apps (buy)

Examples:

- Office assistants
- Translation support
- Code assistants
- Embedded in core systems
- Etc.

Central platform (leverage)

https://chat.dhl.com/

Available features of GenAI Hub 2.0

1. Prompt input (text &/or file)
2. Model selector – available models: OpenAI's GPT-3.5 Turbo + GPT-4o
3. Prompt samples
4. Personalised Prompt library
5. Chat History
6. Document Upload
7. Further information & support

Custom Applications (several in development)

BD/SD use case
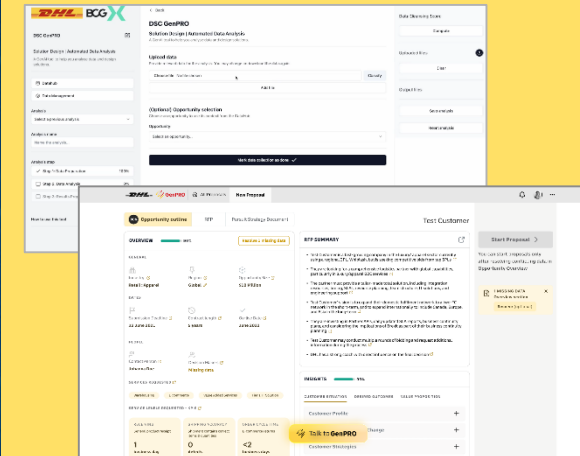
Automation of business processes

Development effort

Low ——————————————— High

DSC continues to be among leading corporates in the advancement of GenAI solutions

How is DSC comparing to other corporates on GenAI advancements?

What stage of GenAI best describes your company today

Defining	Exploring	Deploying	Scaling	Total
25%	36%	28%	11%	100%
And strategizing GenAI vision and goals	GenAI use cases after defining strategy	GenAI applications in siloes	GenAI applications throughout the org	
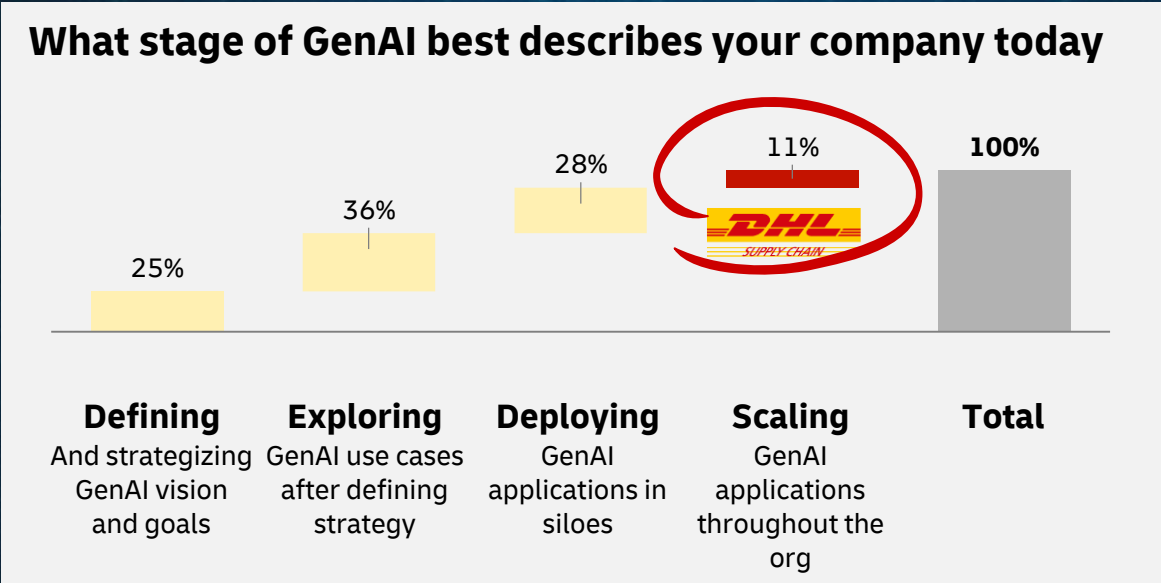
Source: BCG, 05/2024 (N=416 worldwide executives)

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DHL GROUP STRATEGY 2030

Strategy 2030
Accelerate sustainable growth

Global Trade   E-commerce   Climate Change   Digitalization   Evolving Workforce

Strong Foundation

Our Purpose
Connecting People.
Improving Lives.

Our Values
Respect & Results

Our Customer Promise
Excellence. Simply delivered.

Employer of Choice
Provider of Choice
Green Logistics of Choice
Investment of Choice

Ready for more

Mindset for Quality and Growth
Continuous improvement and the will to win

Double Down on Structural Tailwinds
Invest into fast-growing sectors and geographies

Setup for Success
Lean, divisional structure, best-in-class functional processes and digital by default

Express   Global Forwarding, Freight   Supply Chain   eCommerce   Post & Parcel Germany

How to get your organization AI ready?

Nonetheless, regardless of the AI technology you choose, three key areas must be addressed to ensure successful implementation of AI initiatives

1 **Get Your Data Straight**
- Prioritize clean, structured, and accessible data
- Ensure data integrity for optimal AI performance
- Enhance decision-making with valuable insights from AI

2 **Get Your Team Prepared**
- Develop a robust change management strategy.
- Foster a culture that embraces AI technologies.
- Engage cross-departmental collaboration for broader buy-in
- Provide training to empower employees in new processes

3 **Get Your Processes Aligned**
- Identify tasks requiring irreplaceable human expertise (e.g., emotional intelligence, complex decisions)
- Focus on standardizing and automating workflows for AI impact
- Streamline actions, decisions, and interactions to enhance efficiency

Organizational Structure

- We **decentralize** as many functional roles as possible, to develop strong business acumen

- We **connect** our analysts through our Data Analytics Community

- We **upskill** our analysts whenever possible creating a community of citizen data scientists

- We can **deliver value quickly and efficiently**

Responsible AI

- **Transparency** enables stakeholders to understand how decisions are made and how outcomes are achieved.

- **Accountability** ensures that stakeholders are responsible for their actions and decisions

- **Privacy,** secure to protect the privacy of individuals.

- **Bias Protection,** AI solutions can be biased due to the data they are trained on. It is important to ensure that AI solutions are fair and unbiased to avoid discrimination.

- **Human** in the Loop

Take Aways:

➢ AI is accelerating regardless of industry

➢ Supply chain is seeing great value in terms of cutting time intensive manual task time.

➢ Strategic prioritization and organizational readiness is the key to getting started.

➢Celebrate progress and successes

THANK YOU!