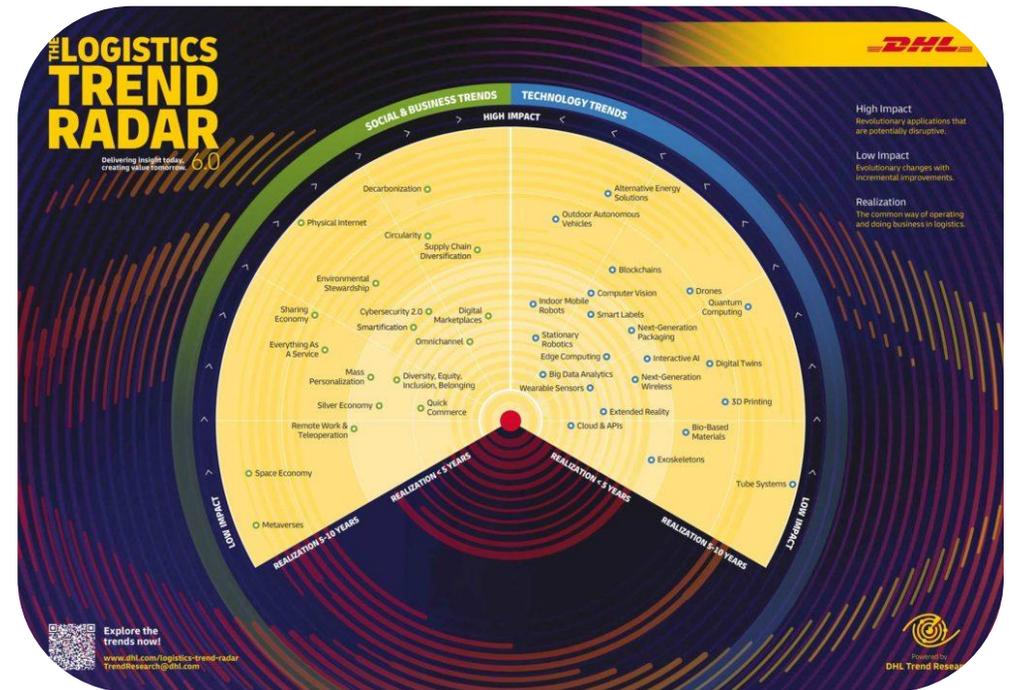# WELCOME

Trends impacting working capital in service logistics

Program

13:45   The Logistics Trend Radar | Julian Selders and Emily Pitcher

14:30   Break

15:00   Tour Smart Industry Inspiration Center | Technische Unie

15:45   Trend Radar Game

16:45   Closing

16:55   Drinks

THE LOGISTICS TREND RADAR 7.0

Emily Pitcher, Senior Innovation Manager
Julian Selders, Innovation Manager

DHL CSI – Excellence Simply delivered

OUR FOUR INNOVATION CENTERS

AMERICAS INNOVATION CENTER
CHICAGO, USA

EUROPE INNOVATION CENTER
TROISDORF, GERMANY

MIDDLE EAST & AFRICA INNOVATION CENTER
DUBAI, UAE

ASIA PACIFIC INNOVATION CENTER
SINGAPORE
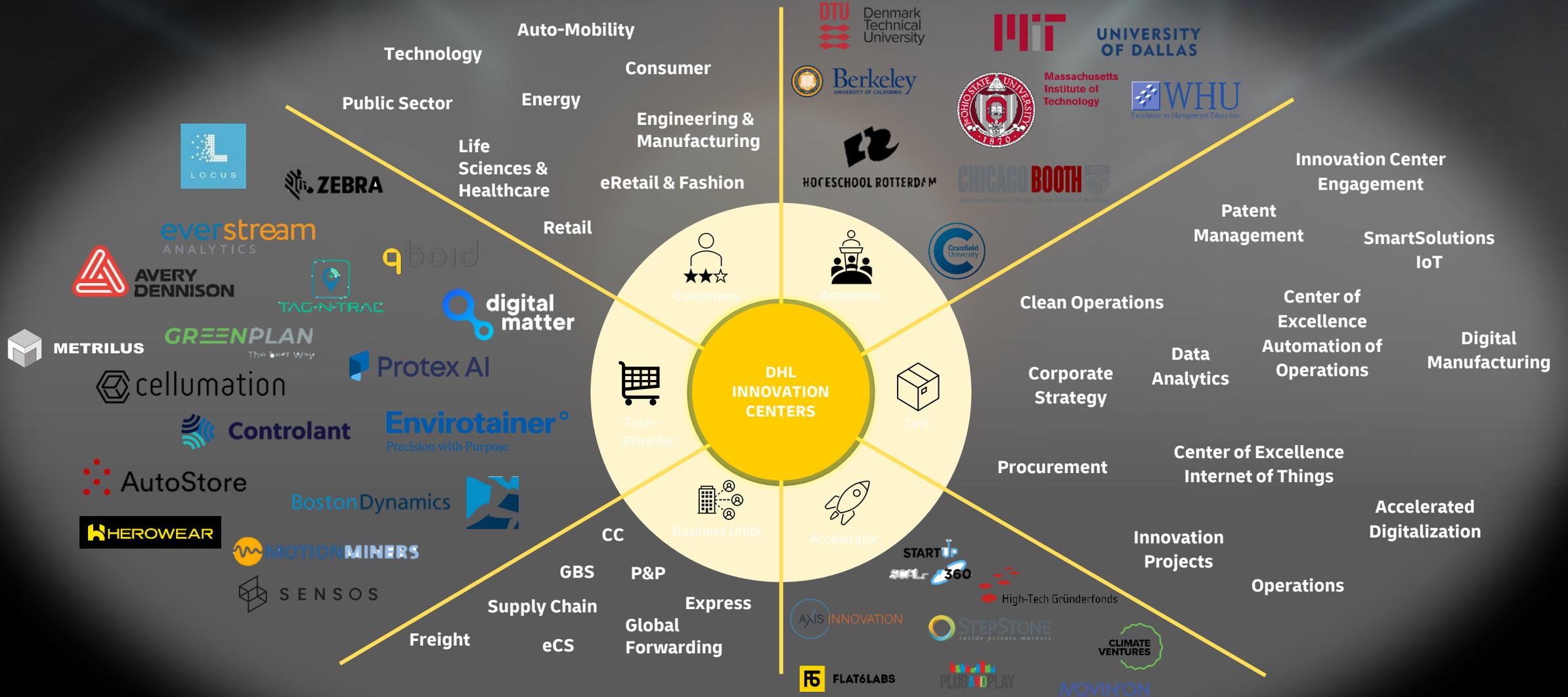
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CENTER

WHAT WE BELIEVE IN...

CLOSE TO CUSTOMERS

CLOSE TO TECHNOLOGY

CLOSE TO OPERATIONS

LTR Dimensions

1. Dimension
Social & Business Trends and
Technology Trends

Social & Business Trends are reflecting the direction of business strategies, new ways of working, and maturing societal values often brought about by technological advancements.

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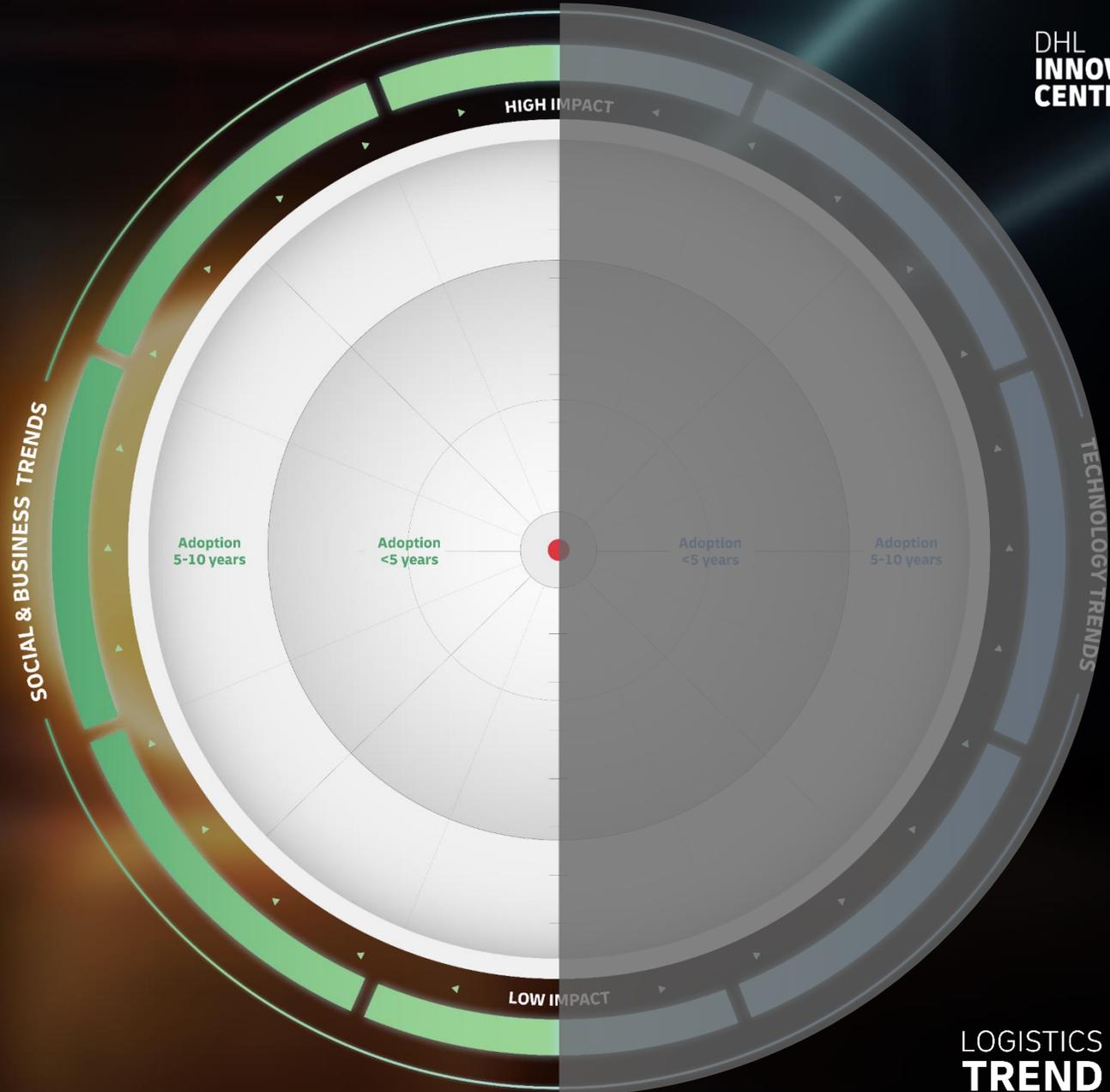
LOGISTICS TREND RADAR 7.0
Insights. Shaping Tomorrow.

LOGISTICS
TREND RADAR 7.0
Insights. Shaping Tomorrow.
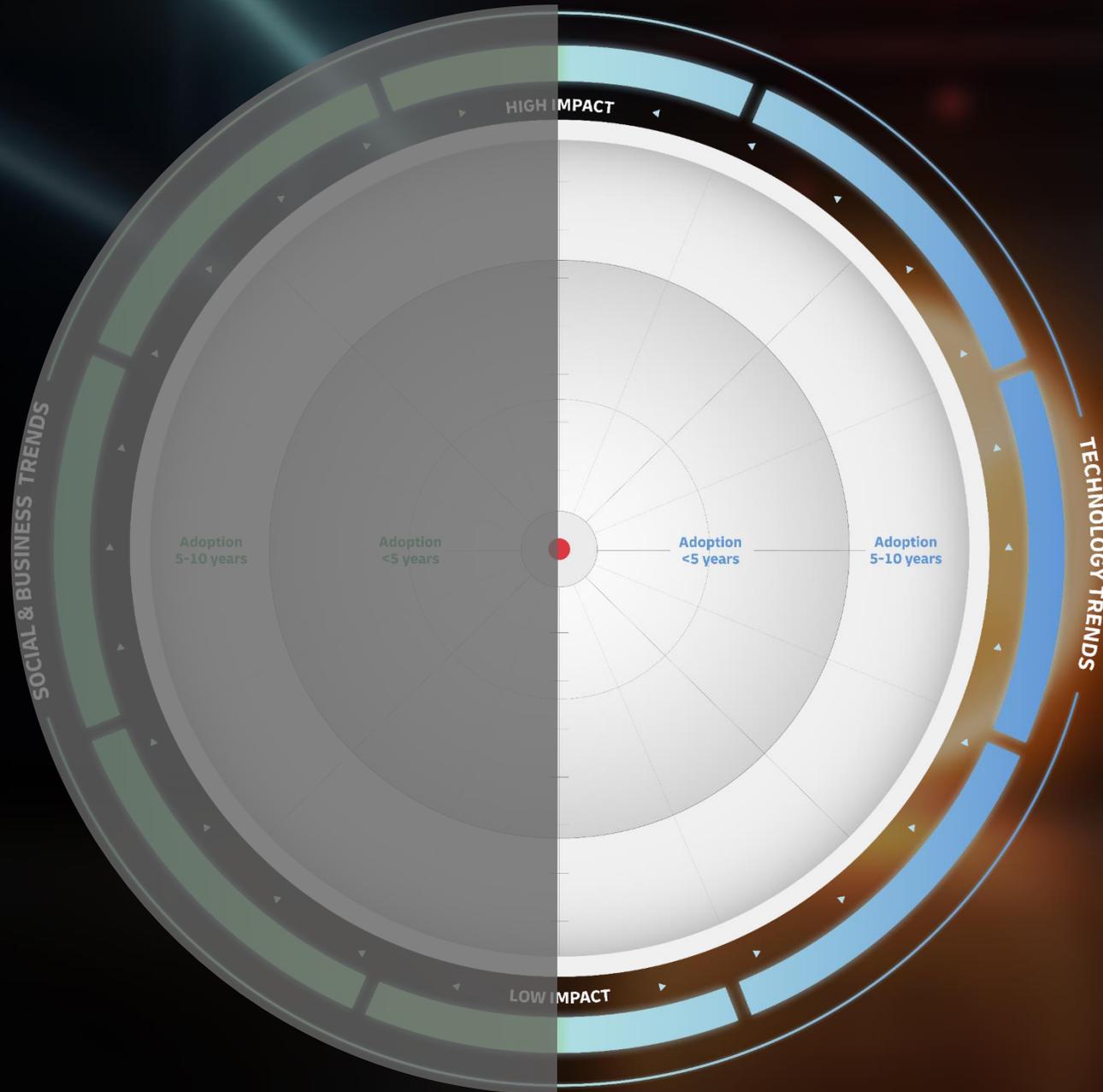
LTR Dimensions

1. Dimension
Social & Business Trends and
Technology Trends

Technology Trends are responding to the more pressing needs of organizations and societies and are often shaped and accelerated by them.
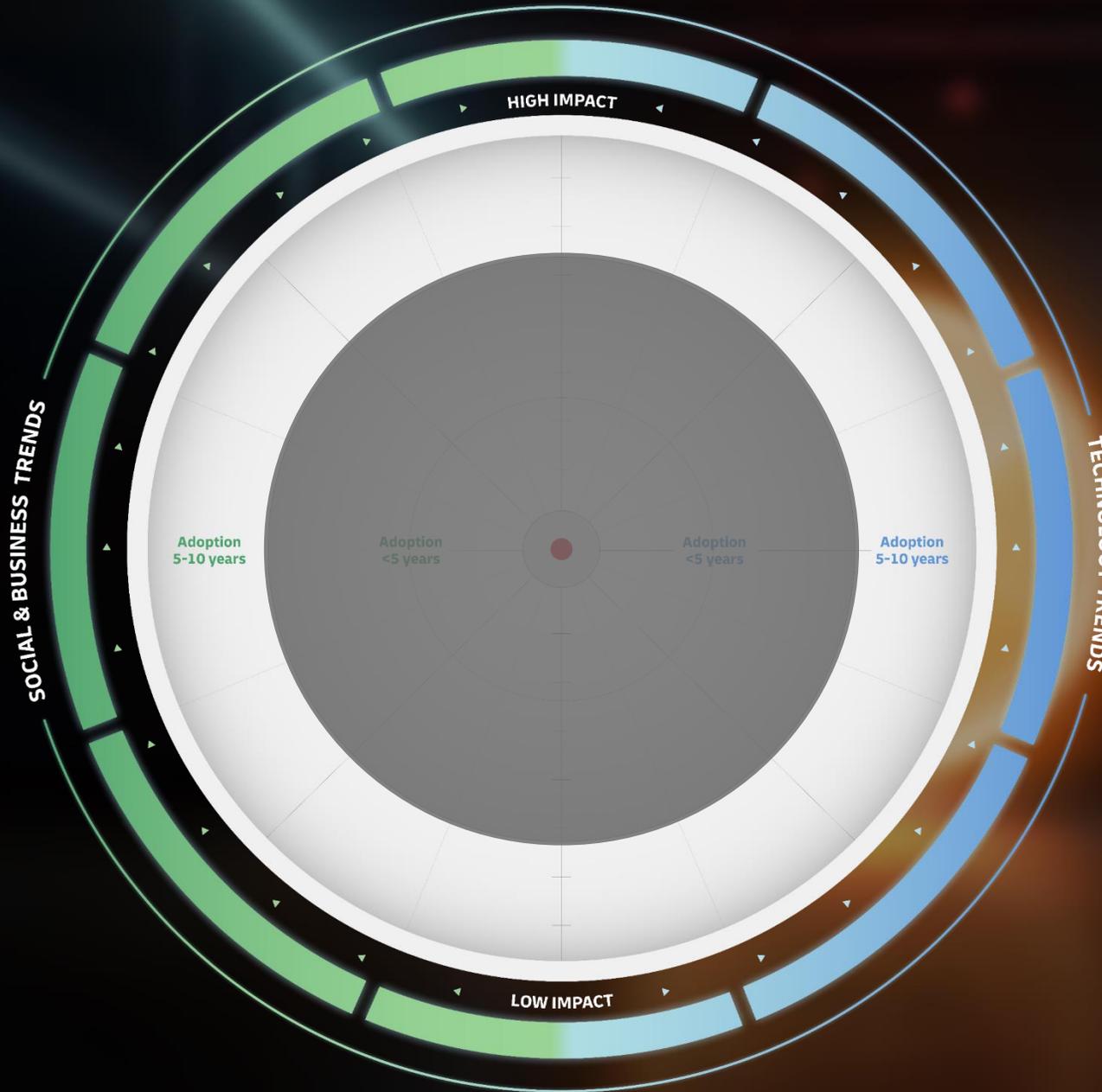
LTR Dimensions

2. Dimension
Adoption Timeline 5-10 years

The red center dot represents the logistics industry as a whole today. The Adoption timeline signifies when a trend is anticipated to become a non-trend, or the standard way of operating, within a 10-year span.

LTR Dimensions

2. Dimension
Adoption Timeline <5 years

The red center dot represents the logistics industry as a whole today. The Adoption timeline signifies when a trend is anticipated to become a non-trend, or the standard way of operating, within a 10-year span.
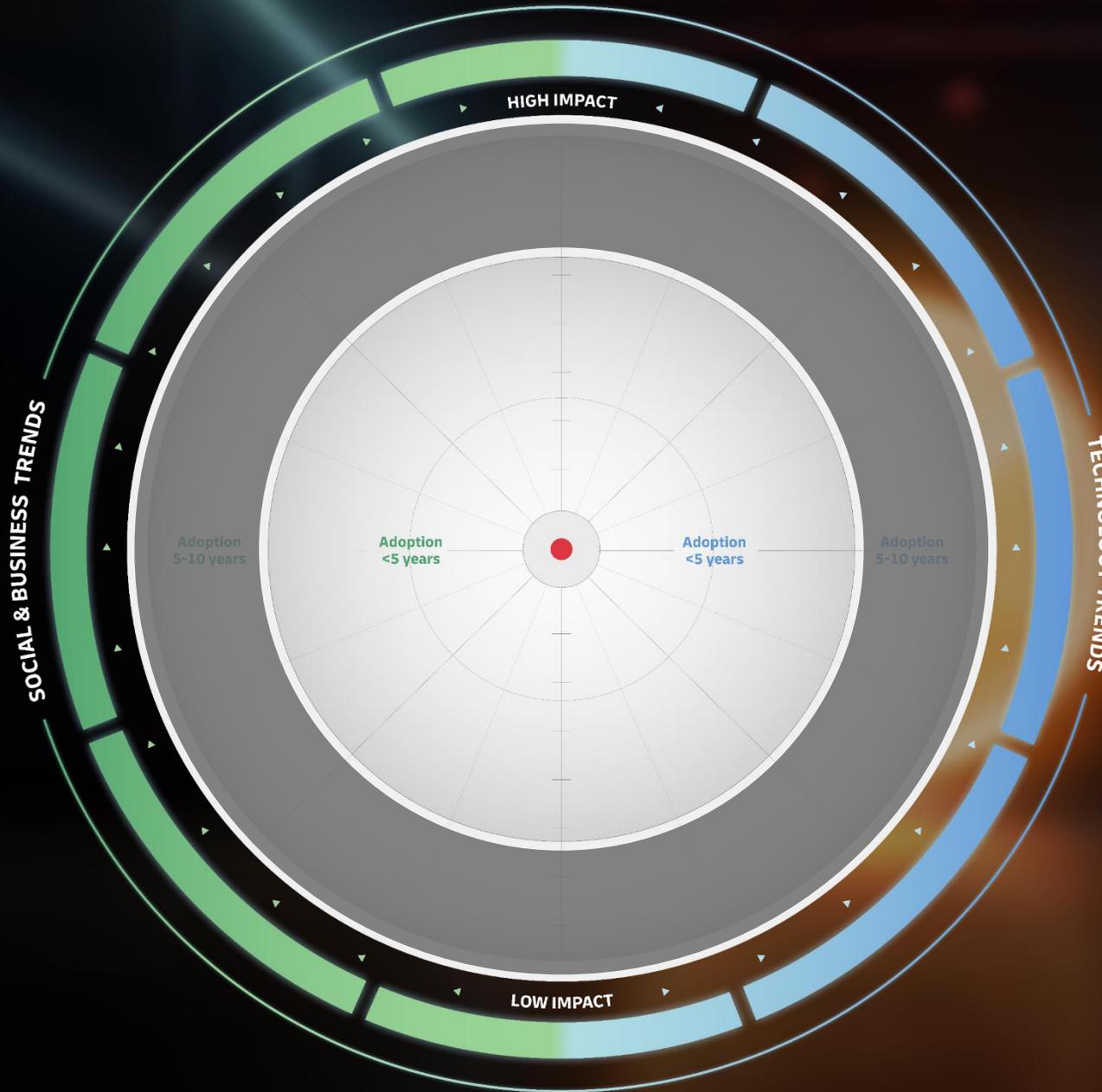
LOGISTICS
TREND RADAR 7.0
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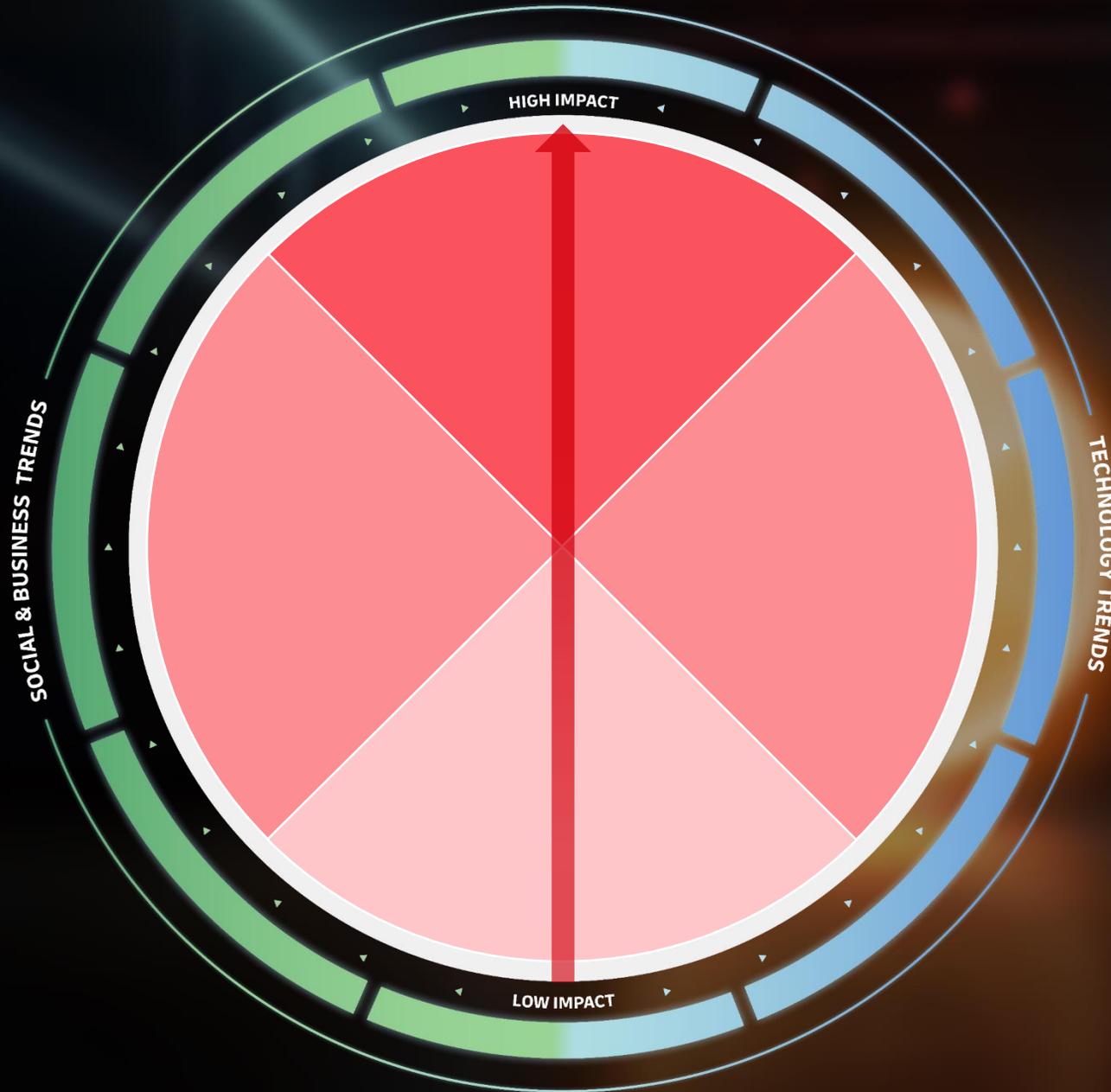
LTR Dimensions

3. Dimension
Impact Scale

The Impact scale starts from bottom end (low impact) of the Logistics Trend Radar and spans to the top end (high impact). It reflects how much a trend will change both the inner workings and face of supply chains for management, workers, and customer.

HIGH IMPACT

SOCIAL & BUSINESS TRENDS

TECHNOLOGY TRENDS

LOW IMPACT

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LOGISTICS TREND RADAR
PERSPECTIVES & LENSES

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Focus Areas

- Automation & Efficiency
- Customer Experience
- Health, Safety & Future of Work
- Physical & Digital Security
- Sustainability
- Visibility & Resilience

Trend Clusters

- Artificial Intelligence
- Bionic Enhancements
- Digital Backbone
- Internet of Things
- Packaging & Containers
- Robotics

Sectors

- Auto-Mobility
- Energy
- Engineering & Manufacturing
- E-Retail & Fashion
- Life Science & Healthcare
- Technology

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HIGH IMPACT

SOCIAL & BUSINESS TRENDS

TECHNOLOGY TRENDS

Adoption 5-10 years

Adoption <5 years

Adoption <5 years

Adoption 5-10 years

LOW IMPACT

Renewable Energy Infrastructure
Outdoor Autonomous Vehicles
Circularity
Supply Chain Diversification
Cybersecurity 2.0
Sustainable Fuels
Advanced Analytics
Vehicle Electrification
Decarbonization
Stationary Robotics
Smart Printables
ESG Advocacy
AI Ethics
GenAI
Workforce Focus
Digital Marketplaces
Computer Vision
Smartification
Indoor Mobile Robots
Drones
Edge Computing
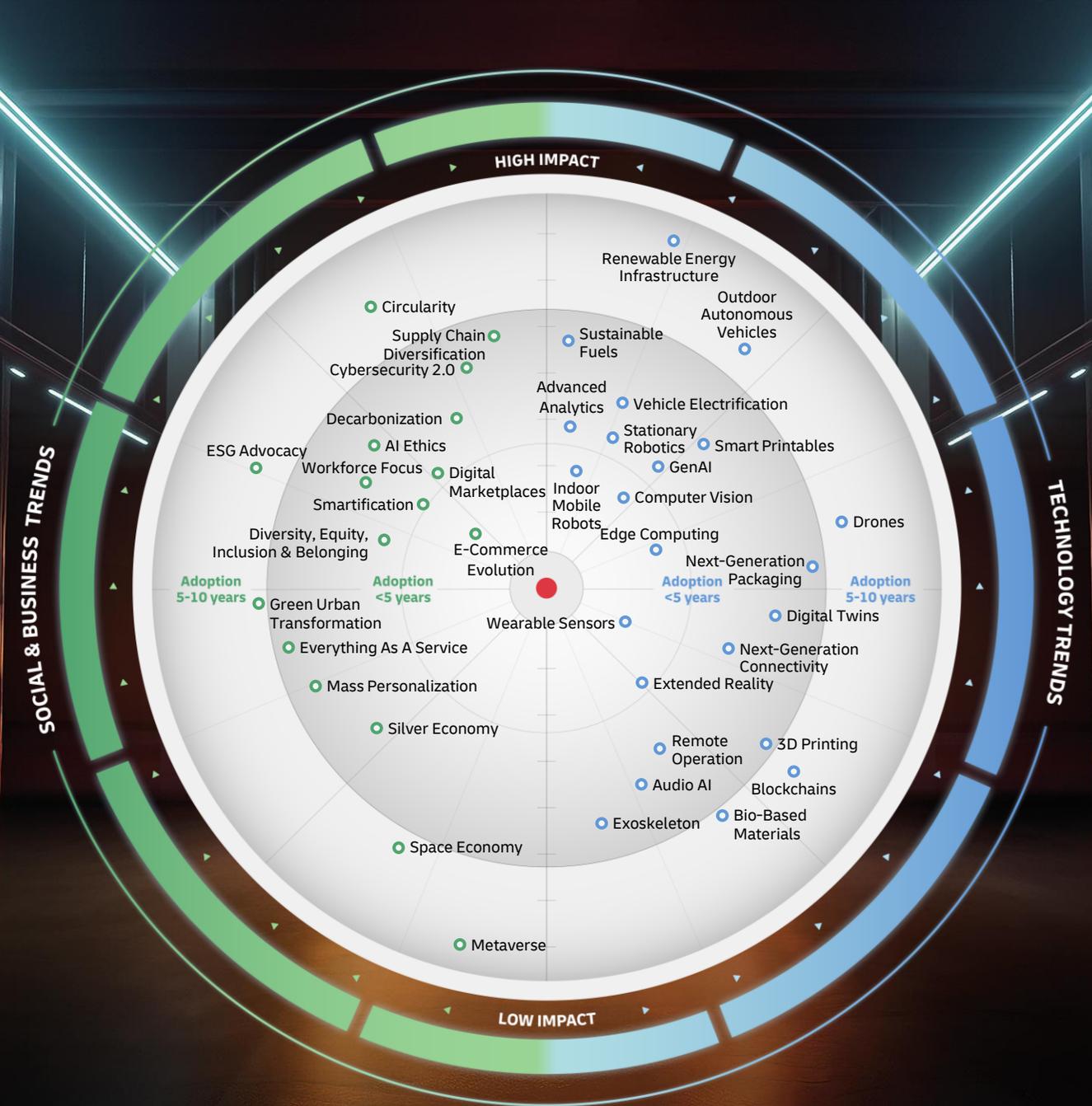Diversity, Equity, Inclusion & Belonging
E-Commerce Evolution
Next-Generation Packaging
Green Urban Transformation
Wearable Sensors
Digital Twins
Everything As A Service
Next-Generation Connectivity
Mass Personalization
Extended Reality
Silver Economy
Remote Operation
3D Printing
Audio AI
Blockchains
Exoskeleton
Bio-Based Materials
Space Economy
Metaverse

OUR INNOVATION FUNNEL DRIVES INNOVATION FROM THEORY TO PRACTICE

Thought leadership

Exhibits and customer engagement

Proof of concept and pilot projects

Productize and scale

Ideas & Expertise

CLOSE TO CUSTOMERS
CLOSE TO TECHNOLOGY
CLOSE TO OPERATIONS
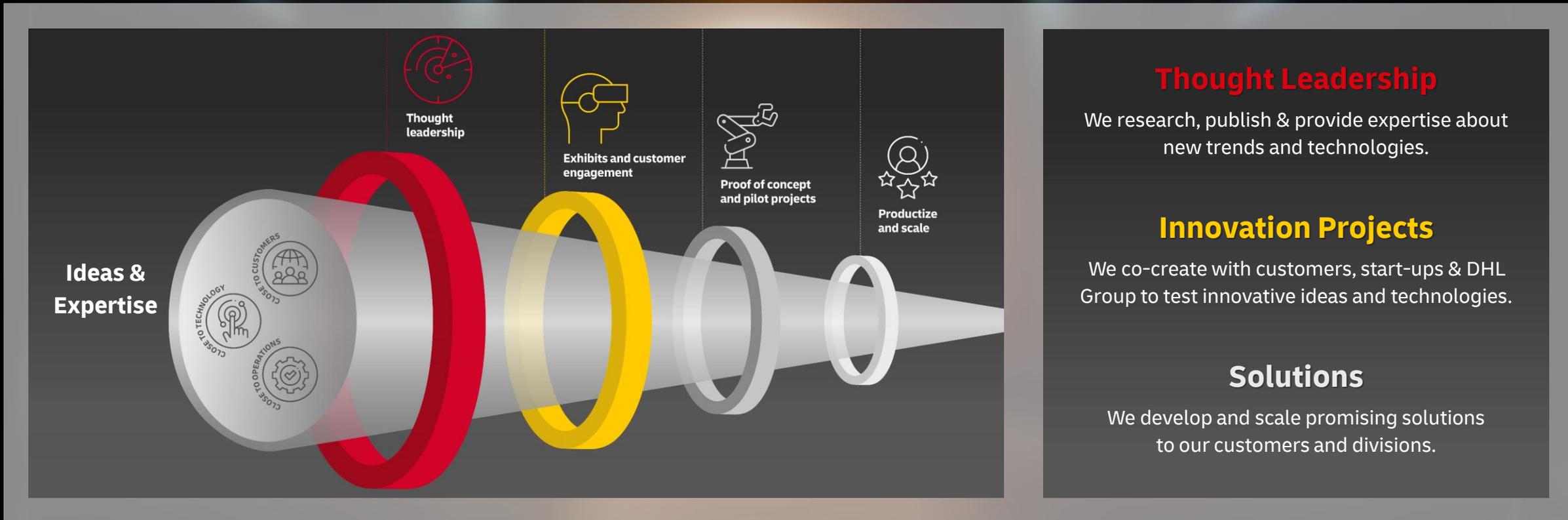
Thought Leadership

We research, publish & provide expertise about new trends and technologies.

Innovation Projects

We co-create with customers, start-ups & DHL Group to test innovative ideas and technologies.

Solutions

We develop and scale promising solutions to our customers and divisions.

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Startup Engagement Formats

01 Outside In Session

› Platform for potential **new tech partners** to pitch to DHL audience

› Showcase of 3 innovative companies, each presenting their solutions in concise 5-minute pitches

› Further opportunity to learn about the solutions in-depth and continue towards PoC
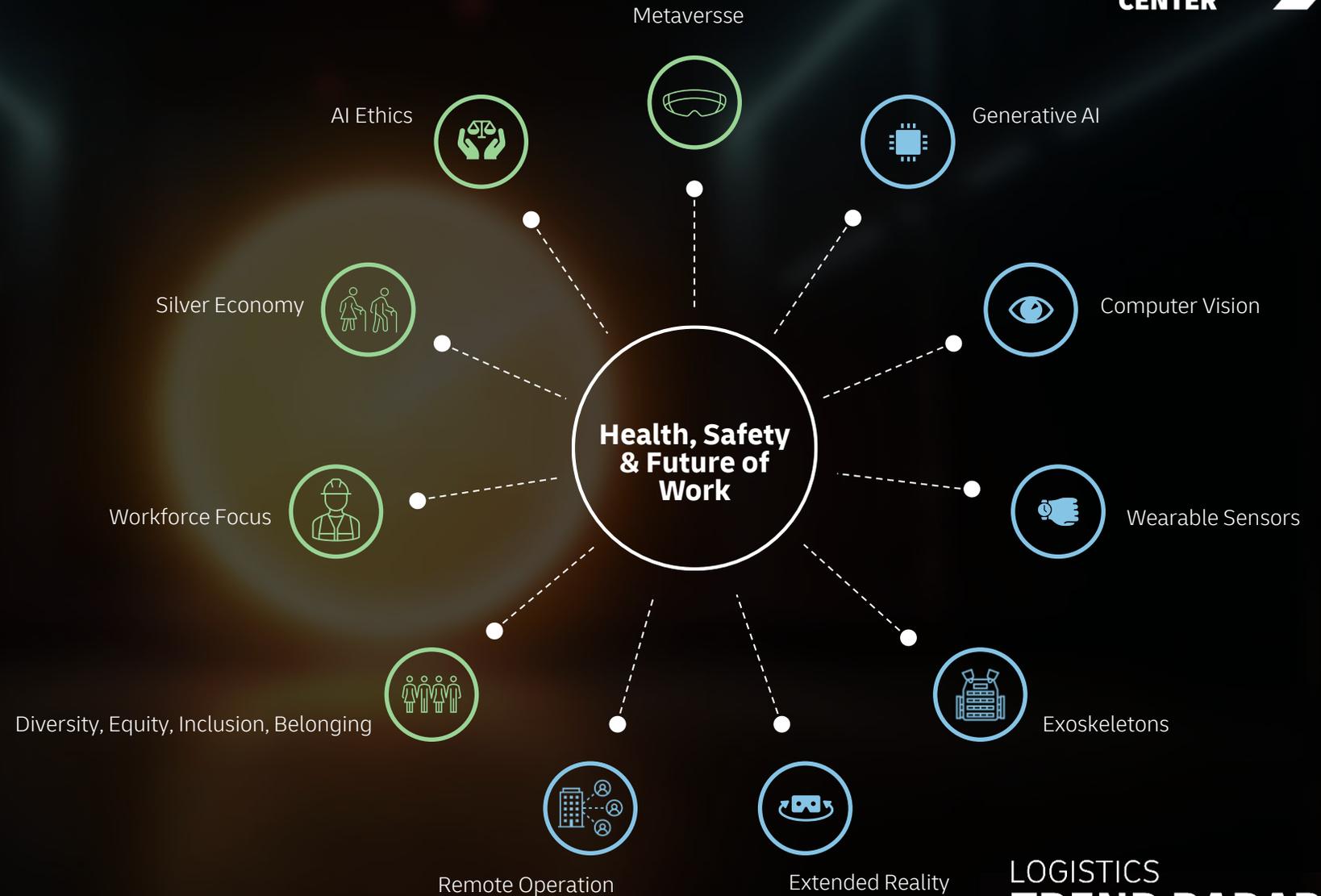
02 Startup Pitches

› **½ day session** with startup pitches

› Selected startups tackling a **business challenge of customers or DHL**

› **Outcome:** Access to DHL startup ecosystem with potential support on POCs
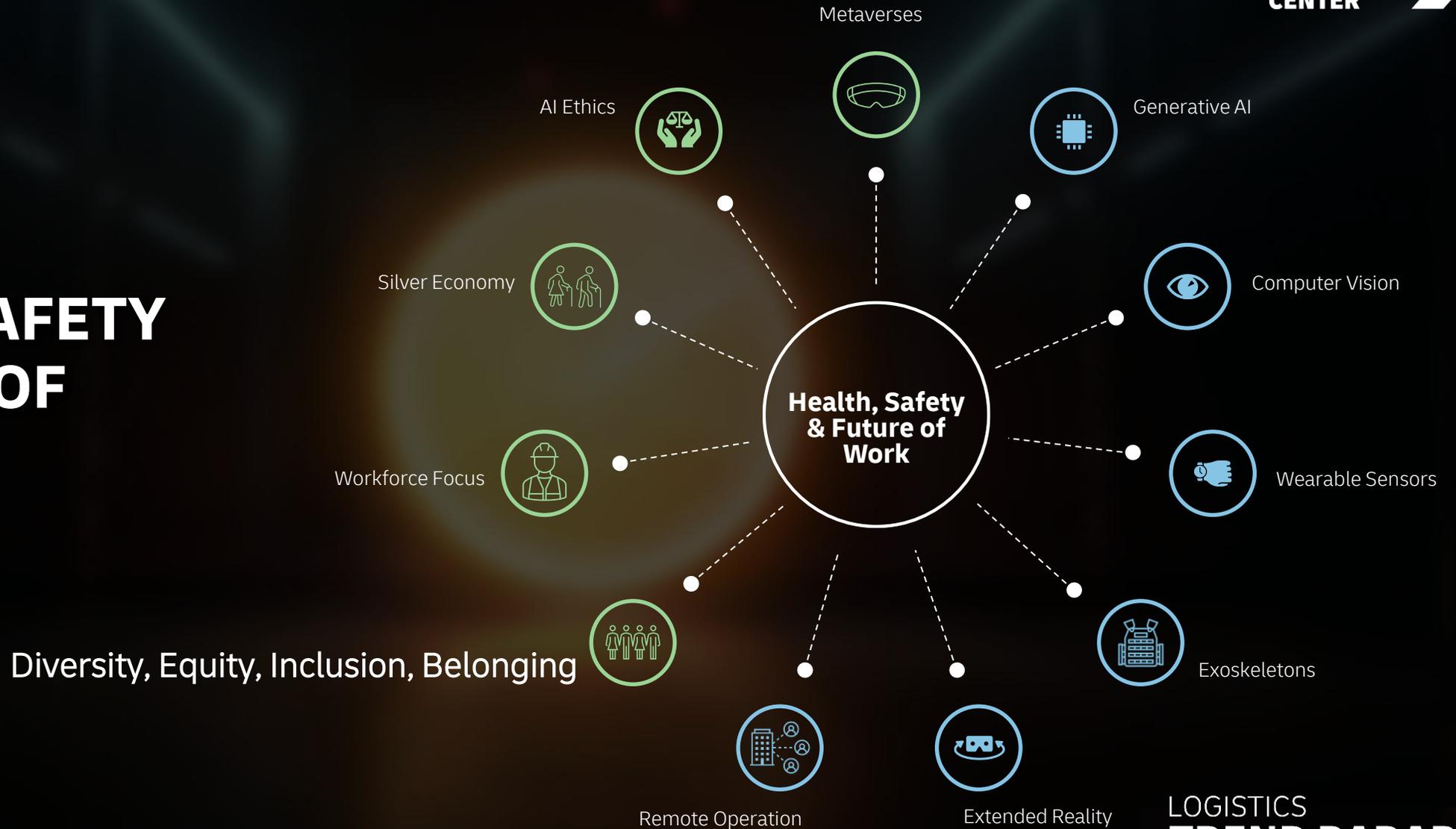
03 Fast Forward Challenge

› The FFC aims to highlight the most **promising innovative sustainability and clean tech solutions** focused on navigating and overcoming sustainable issues.

FAST FORWARD CHALLENGE

HEALTH, SAFETY & FUTURE OF WORK

Metaverses

AI Ethics

Generative AI

Silver Economy

Computer Vision

Health, Safety & Future of Work

Workforce Focus

Wearable Sensors

Diversity, Equity, Inclusion, Belonging

Exoskeletons

Remote Operation

Extended Reality

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Diversity, Equity, Inclusion & Belonging at DHL Group

34.3%

women in the global workforce

27.2%

Share of women in upper and middle management

Average age **41** years

5 Generations in the global workforce

179 Nationalities, represented across our workforce in Germany

Employing **14,014** persons with disabilities at Deutsche Post AG in Germany

30%

Group-wide Target
At least 30% women in middle and upper management by 2025

Employee Opinion Survey
Employee Engagement 83%

Around **4,800** trainees globally

CODE OF CONDUCT

Our commitment to DEIB is rooted in our Code of Conduct in languages **25**

Source: DHL Group ESG Statbook 2023, DHL Group Annual Report 2023

DHL Group | DEIB Customer Presentation | March 2024

Audio AI

Audio AI refers to the branch of artificial intelligence (AI) focused on the analysis, synthesis, and understanding of audio signals, enabling machines to perceive, process, and interpret sound in a manner similar to human auditory systems. It encompasses techniques such as speech recognition, sound classification, and environmental noise detection to enhance human-computer interaction.

Outlook

This trend should be **PASSIVELY monitored,** with **developments and use cases on the horizon.**

LOGISTICS
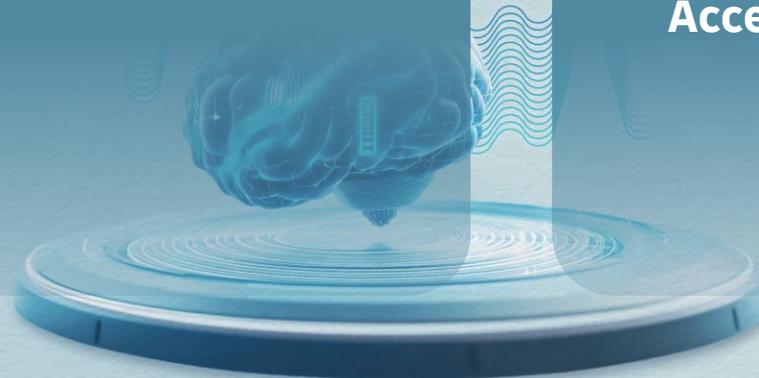**TREND RADAR** 7.0
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AUDIO AI

Language Translation

Predictive Maintenance

Predictive Fatigue Detection

Voice Sentiment Classification & Access Control

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New Tool for
Preventive Maintenance for Conveyor Systems

TinMan Systems

Mobile Conveyor Inspection System
- now with Smart 3-Way Lighting

Systems Available Now
More Info at End of Video

Artificial Intelligence Predictive Maintenance

- Prediction of mechanical failure-based sorter outages

- AI-enabled noise sensors identified to provide best correlation to maintenance needs

- Objectives: increase asset availability & reduce maintenance efforts

WOMBATT

Worldwide Online Monitoring By Alerting Tired Travellers

LAST QUESTIONS AND VOICE RESULTS

OBIE GEORGE

BEDTIME:	10/09/2024 12:20
WAKEUP TIME:	10/09/2024 23:40
QUESTIONS:	2024-10-10 11:33:33
SHIFT TYPE:	DAY SHIFT
SHIFT START:	10/10/2024 10:00
SHIFT END:	2024-10-10 17:40:00

RECORDED	QUALITY	RESULT
10/10 11:33	N/A	⊘

Do you want to record a new voice sample or take a new questionnaire?

| VOICE ONLY | NEW | CANCEL |

Computer Vision

The trend of Computer Vision utilizes cameras to capture photos or videos and applies artificial intelligence (AI) algorithms to analyze data extracted from this digital imagery. Rudimentary visual AI systems are trained to simply differentiate objects from each other, while more advanced – increasingly AI-enabled – versions can track objects across viewpoints and learn on their own and, in recent developments, enable prediction through pattern recognition.
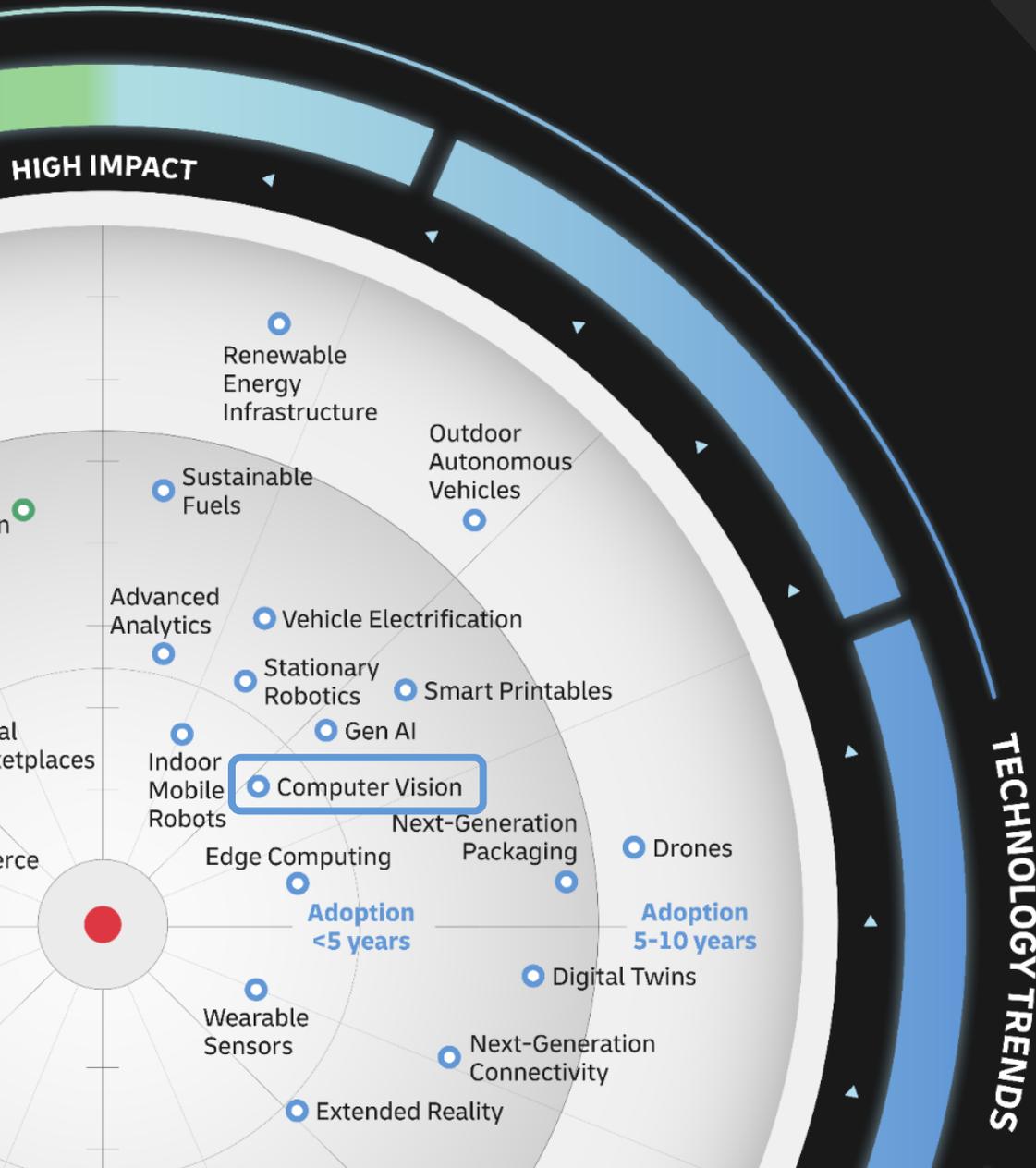
Outlook

This trend should be **ACTIVELY monitored,** with **implementations available for many use cases today**.

HIGH IMPACT

Renewable Energy Infrastructure

Outdoor Autonomous Vehicles

Sustainable Fuels

Advanced Analytics

Vehicle Electrification

Stationary Robotics

Smart Printables

Gen AI

Indoor Mobile Robots

Computer Vision

Next-Generation Packaging

Edge Computing

Drones

Adoption <5 years

Adoption 5-10 years

Digital Twins

Wearable Sensors

Next-Generation Connectivity

Extended Reality

TECHNOLOGY TRENDS

Computer Vision

People: Operations, Health & Safety

Shipments: Measurement, Identification & Inspection

Assets

Use Case

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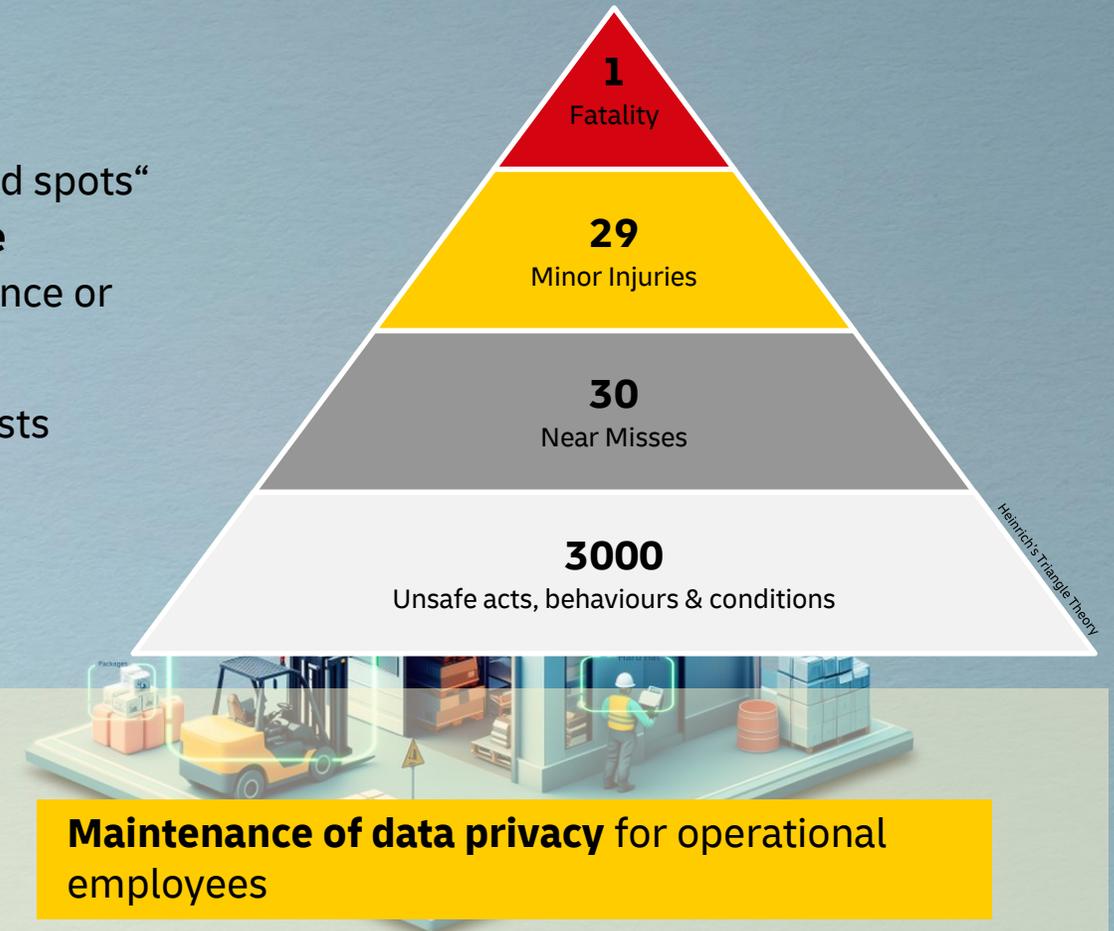
Problem Statement:

- Outdated workflows in busy warehouse operations cause „blind spots" in current ways of managing safety. This can lead to **workplace injuries** where safety rules are not adhered to through negligence or falling into **behavioral patterns and routines**.

- This can lead to high insurance and other downtime related costs

- DHL would like to test Computer Vision technology to reassess operational workflows to **increase efficiency while keeping employees safe**.

1
Fatality

29
Minor Injuries

30
Near Misses

3000
Unsafe acts, behaviours & conditions

Heinrich's Triangle Theory

EXPECTED BENEFITS

Reduced workplace injuries caused by outdated workflows

Increased visibility for management through **bespoke** dashboard

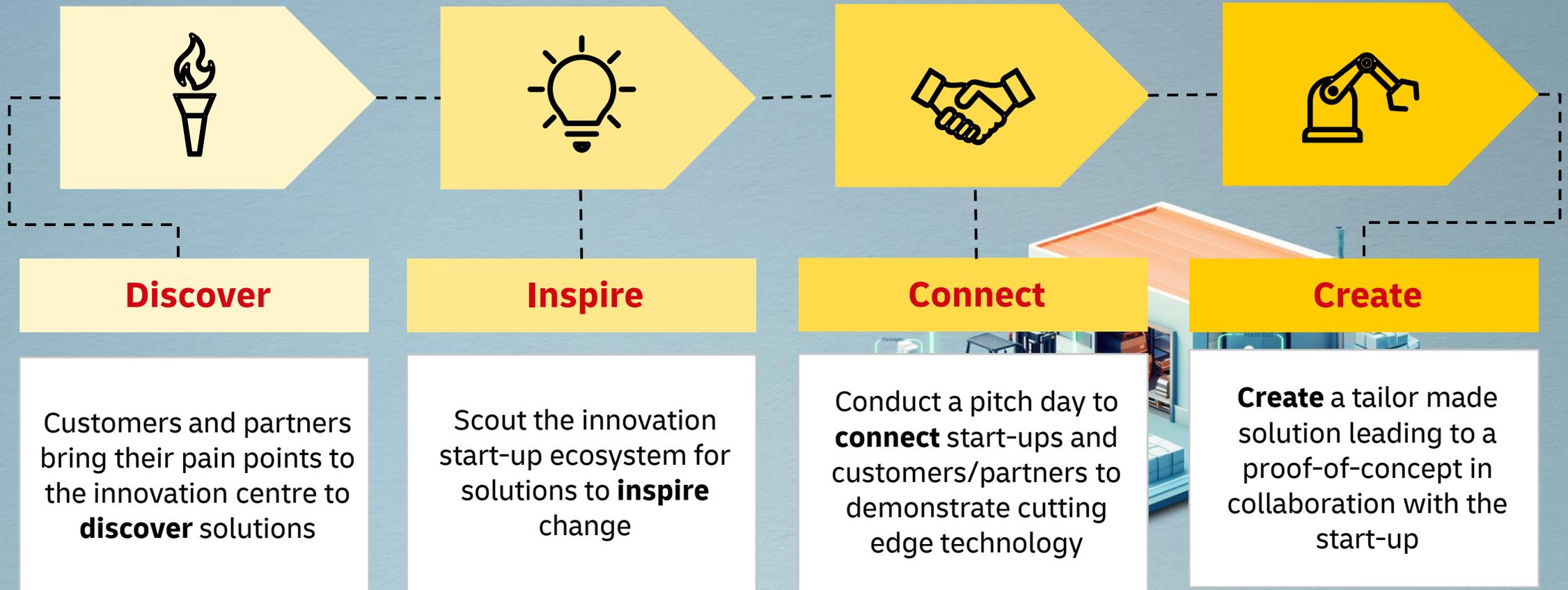**Maintenance of data privacy** for operational employees

Integration into **MS Teams** and H&S platform

Pitch Day Example

DHL INNOVATION CENTER

Discover

Customers and partners bring their pain points to the innovation centre to **discover** solutions

Inspire

Scout the innovation start-up ecosystem for solutions to **inspire** change

Connect

Conduct a pitch day to **connect** start-ups and customers/partners to demonstrate cutting edge technology

Create

Create a tailor made solution leading to a proof-of-concept in collaboration with the start-up

Use Case

Problem Statement:

- DGF is responsible for managing the operation for a large manufacturer , specifically the air transport and trailer loading of aircraft engines, which requires **strict adherence to safety protocols for tie-downs and truck suspension**.

- The current approval process relies on **manual image review** by the UK team ensuring the **correct tie-down** of the aircraft engines on the truck, resulting in inefficiencies and potential delays in the operation.

- Errors in the assessment necessitate a reinspection process for the aircraft engine, causing additional downtime and impacting overall efficiency.

Computer Vision solution

- **Key Need:** A computer vision solution to automate this process, ensuring **consistency** and **real-time** decisions.

- Computer vision solution that can distinguish between correct tie-down, incorrect tie down and provide confirmation to proceed.

- The CV model will be trained with existing labelled data of correct and incorrect tie-down images.

Use case images
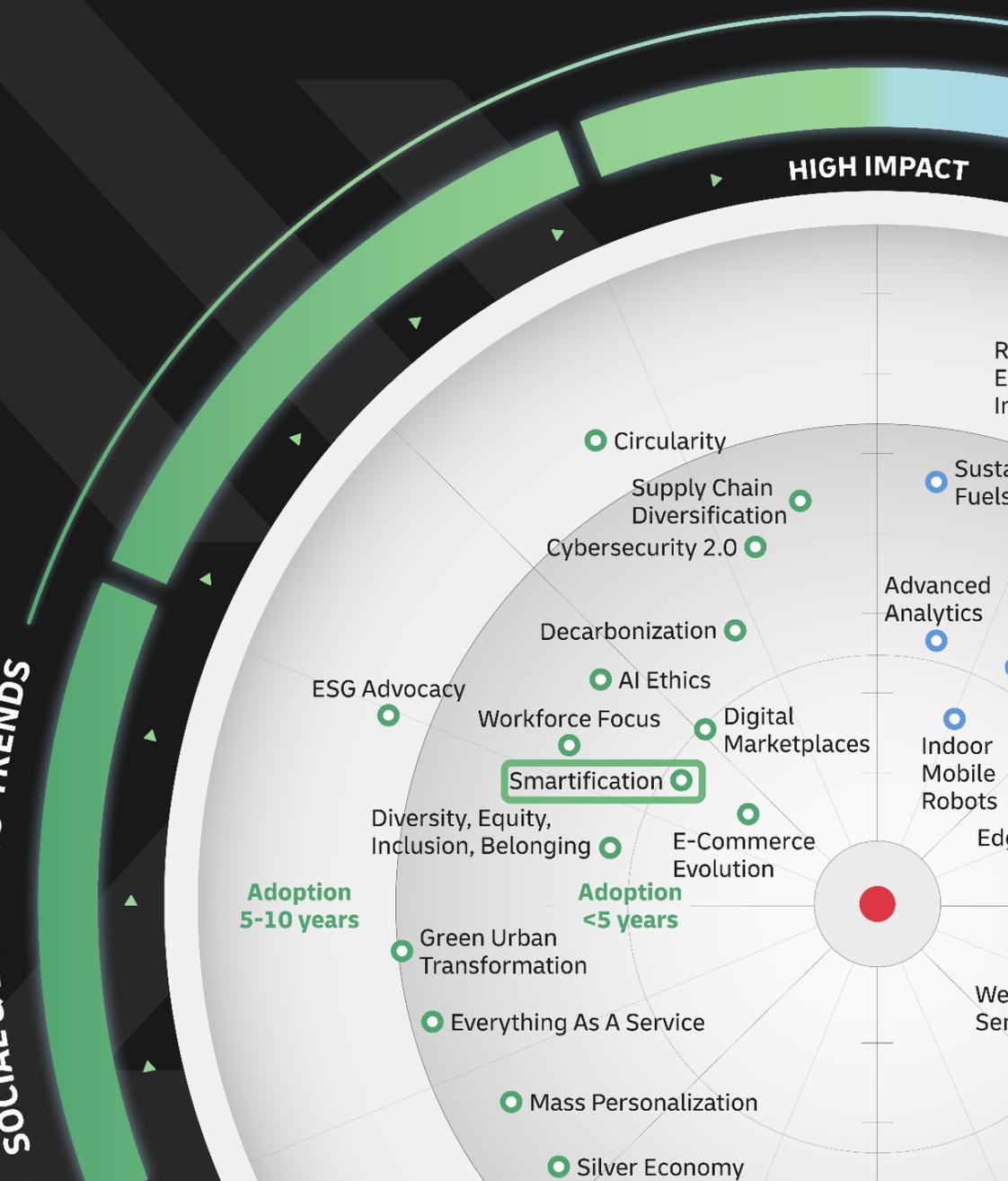
Incorrect tie-down

Correct Tie-Down

Smartification

The trend of Smartification refers to the process of retrofitting or producing previously disconnected analog assets with sensor and wireless technologies, making them 'smart' and connected, bridging the analog-digital divide.
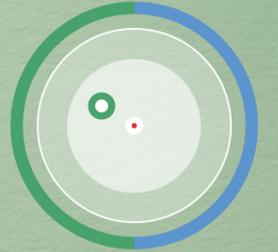
Outlook

This trend should be **CAREFULLY** monitored, with use cases in some applications that **can already be addressed today**.

SOCIAL & BUSINESS TRENDS

HIGH IMPACT

Circularity

Supply Chain Diversification

Cybersecurity 2.0

Sustainable Fuels

Advanced Analytics

Decarbonization

ESG Advocacy

AI Ethics

Workforce Focus

Digital Marketplaces

Smartification

Indoor Mobile Robots

Diversity, Equity, Inclusion, Belonging

E-Commerce Evolution

Adoption 5-10 years

Adoption <5 years

Green Urban Transformation

Everything As A Service

Mass Personalization

Silver Economy

Smartification

Predictive Maintenance

Asset Tracking

Facility Monitoring

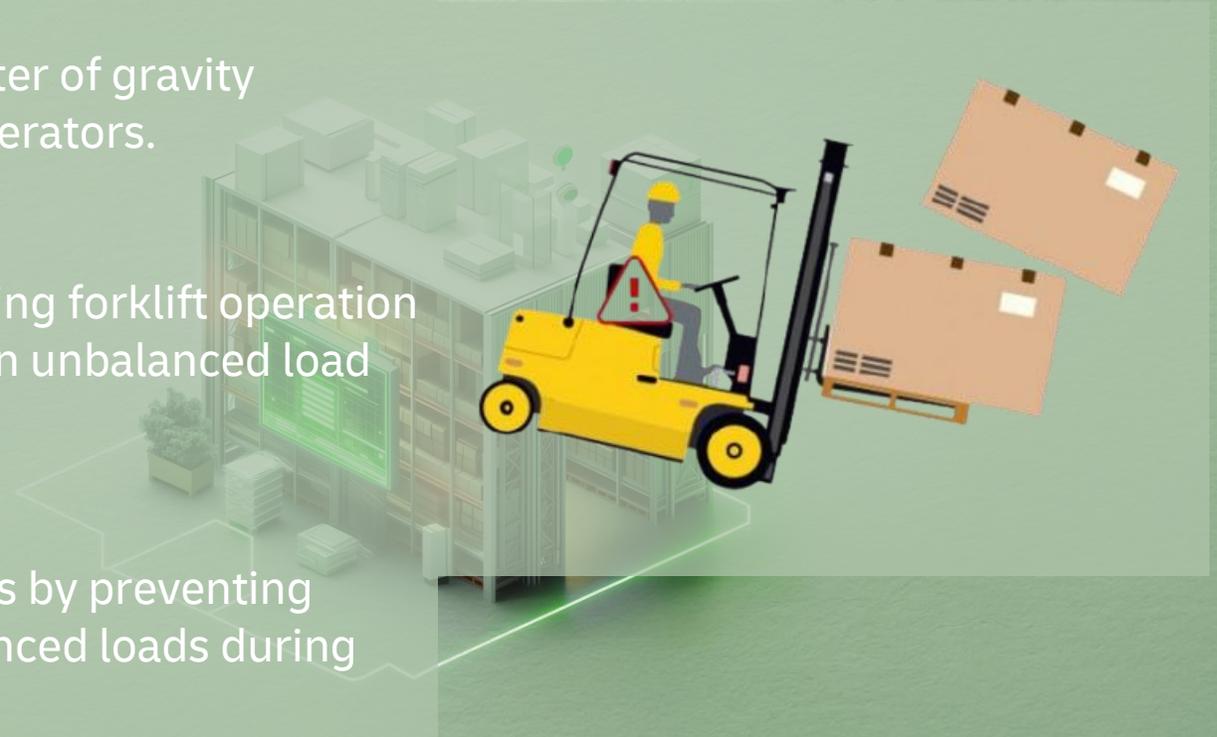# Use Case – Health & Safety – Smart Forks

Problem:
- Reachtruck accidents frequently occur due to unbalanced loads, leading to tipping-over incidents and mishandling during material handling processes.
- The absence of real-time awareness of the load's center of gravity compromises safety and operational efficiency for operators.

Objective:
- Mitigating accidents caused by unbalanced loads during forklift operation
- Using a solution that enables the operator to detect an unbalanced load early on before it tips over

Health & Safety Enhancement:
- DHL aims to enhance Health & Safety (H&S) measures by preventing tipping incidents through the identification of unbalanced loads during forklift operations.

Solution – Health & Safety – Smart Forks

Smart Sensor Forks:
Equipped with strain gauge sensors, side cameras, and a display to provide real-time information on the load's center of gravity, enhancing load handling safety and accuracy.

Visual Indicators:
Optical lights communicate load stability to operators, while LED strips in the reachtruck cabin indicate weight distribution.
A red button allows operators to report near tipping incidents, promoting proactive safety measures and tags the data that is continuously captured

Data Management:
Load data is captured and sent to cloud storage via a local SIM card, accessible only to the project team during the project phase.
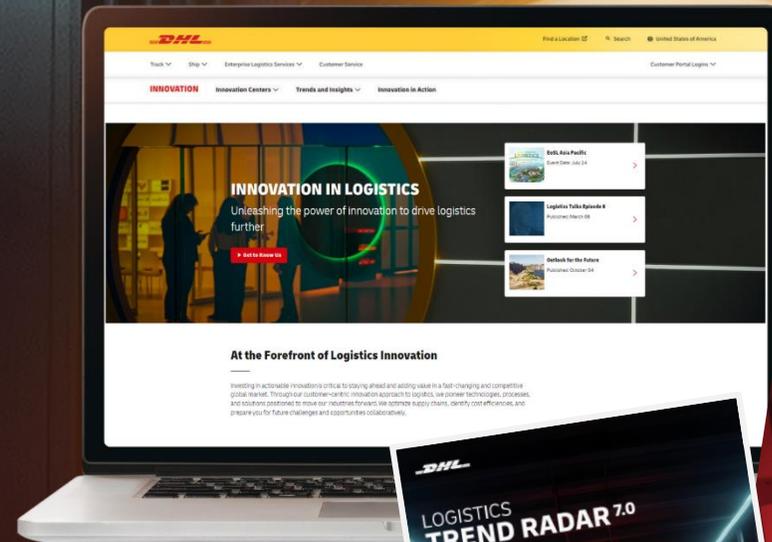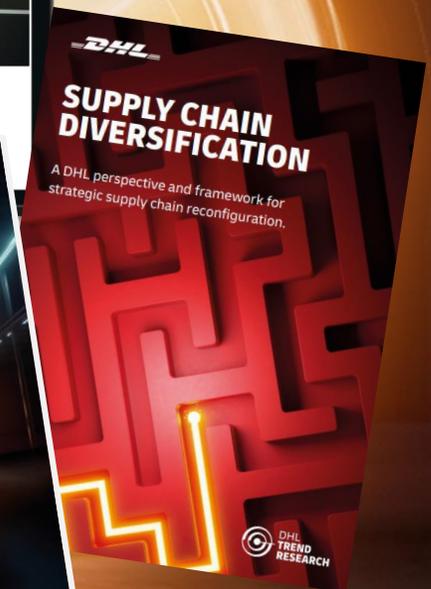

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THANK YOU!

For more:

https://www.dhl.com/innovation

✓ **Thought Leadership Publications**

✓ **Innovation Newsletters**

✓ **Use Cases**

✓ **Access to DHL Innovation Centers**

Explore Now!

CREATING YOUR OWN LOGISTICS TREND RADAR: HEALTH, SAFETY & FUTURE OF WORK IN FOCUS

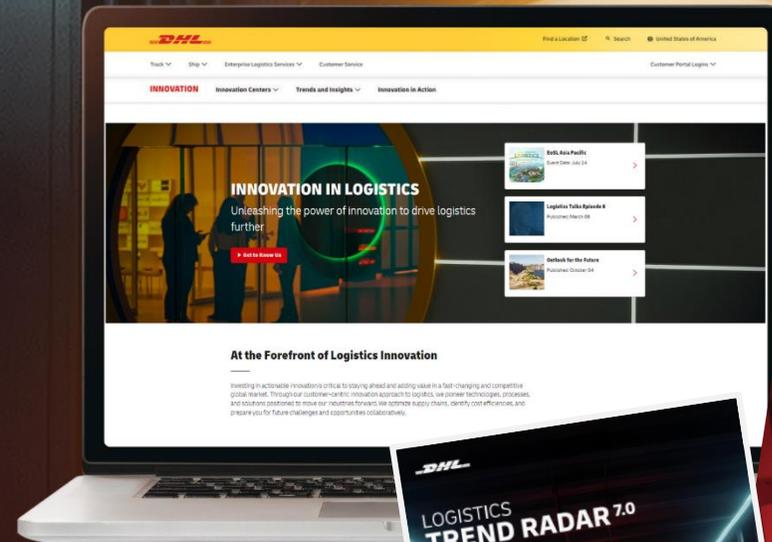| Topic	Details	Duration

1. **Review & Prioritize Trends**	• Review LTR Trends – take your time to read the trends
	• Each person pick 1 Trend:
	   • You consider highly relevant in regards to Health, Safety & Future of Work
	   • Share your thought about the trend in the group & discuss
		20 min

2. **Set up the Trend Radar**	• Position the trends jointly on the radar according to the dimensions (Impact & Adoption)	10 min
3. **Outline relevant use cases**	• Start with the most impactful trend • Put sticky notes with specific use cases next to each trend	15 min
4. **Presentation of radar**	• Present your radar back to the other groups	5 mins per team

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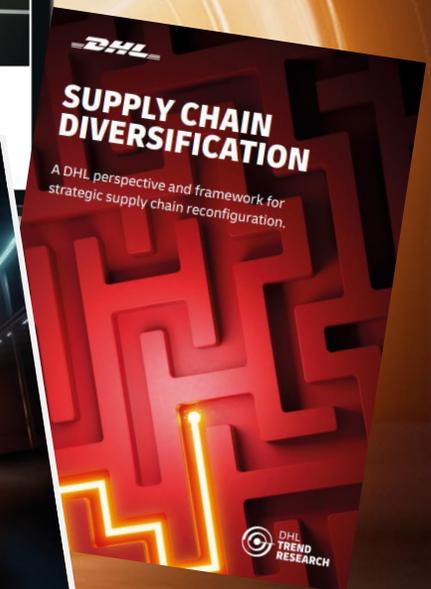INNOVATION
CENTER

THANK YOU!

For more:

https://www.dhl.com/innovation

- ✓ Thought Leadership Publications
- ✓ Innovation Newsletters
- ✓ Use Cases
- ✓ Access to DHL Innovation Centers

Explore Now!

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LOGISTICS TREND RADAR 7.0

Insights. Shaping Tomorrow.
Your guide to innovation in logistics.
AI & Sustainability in focus.

SUPPLY CHAIN DIVERSIFICATION

A DHL perspective and framework for strategic supply chain reconfiguration.

DHL TREND RESEARCH

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THANK YOU

Next SLF event:

"Op de koffie bij"... InnoTractor

Second half of May | Tilburg