



GENAI-POWERED TERMINAL INTELLIGENCE: AUTOMATING VESSEL CALL DATA & AIS INTEGRATION FOR NEXT-LEVEL EFFICIENCY

Dr. Daniel Beck | Data Intelligence




45+ Years of Excellence – what we have achieved

Anchored in operations

1,800+
Projects in
130 COUNTRIES



FOCUS on
Automation, AI
Digitalization (PCS,MSW)
Backed up by
operations and
commercial services




1976
Founded as subsidiary
of HHLA

180+
PORTS

And terminals
planned and
optimised

1st
FULLY
AUTOMATED

Participated in the
development of CTA,
doubled capacity on the
same footprint



ENTHUSIASTS



With background
from port and terminal
operations and AI, IT,
software, economists

GREEN
TRANSITION

Alternative
energies &
sustainability
activities

140+
projects



Hinterland connectivity

120+ projects implemented for intermodal rail terminals,
inland ports and warehouse logistics



Developed *HPC Ukraina* (now HHLA CTO) as terminal operator in Odessa

A Trusted Partner

Specialised in strategical services and actionable solutions for the asset lifecycle



Port

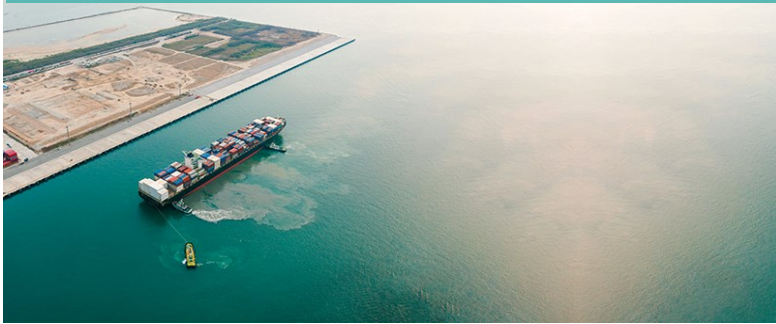


Terminal



Hinterland

INVEST



MANAGE



OPTIMISE



Empowering sustainable growth and excellence

We deliver excellence in the areas of

Operations

Digitalization

Data Intelligence

Commercial

01

Basis to start

Identification of GenAI Use Case

Challenge. Identifying AI potential

Focus on optimization and efficiency improvements

More than 50+ interviews, workshops and data analysis needed / year

4-Eyes Painpoint Talks



Workshop



Workshop

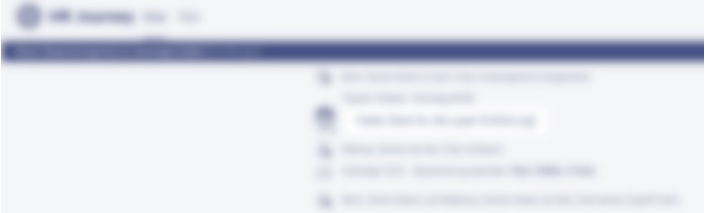
150+ AI use cases identified / year



Internal Conferences



On-site Walks



Internal Communities

Structure your AI-Use-Cases

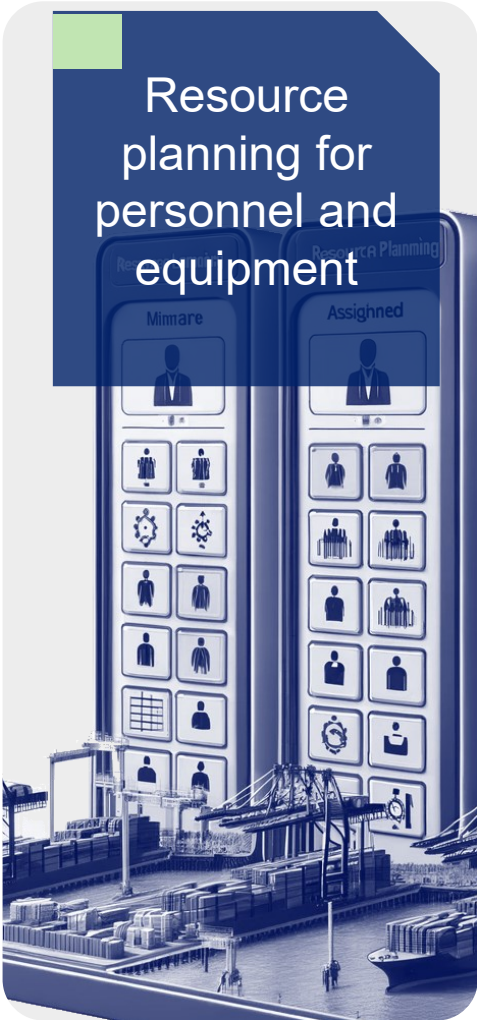
Examples of Clusters

150+ AI applications Identified in all areas of our customers / year

**Selection & Preparation
Implementation of AI Use Cases**



AI1: Check-Truck & Halteplatz-Reservierung	AI2: Prognose	AI3: Container-Planung	AI4: Prognose (Kontainer- und Verladung)	AI5: Prognose (Ladung-Definition)	AI6: Administration (Management-CA)	AI7: Administration (Management-CA)	AI8: Administration (Management-CA)	AI9: Administration (Management-CA)	AI10: Administration (Management-CA)	AI11: Administration (Management-CA)	AI12: Administration (Management-CA)	AI13: Administration (Management-CA)	AI14: Administration (Management-CA)	AI15: Administration (Management-CA)	AI16: Administration (Management-CA)	AI17: Administration (Management-CA)	AI18: Administration (Management-CA)	AI19: Administration (Management-CA)	AI20: Administration (Management-CA)	AI21: Administration (Management-CA)	AI22: Administration (Management-CA)	AI23: Administration (Management-CA)	AI24: Administration (Management-CA)	AI25: Administration (Management-CA)	AI26: Administration (Management-CA)	AI27: Administration (Management-CA)	AI28: Administration (Management-CA)	AI29: Administration (Management-CA)	AI30: Administration (Management-CA)	AI31: Administration (Management-CA)	AI32: Administration (Management-CA)	AI33: Administration (Management-CA)	AI34: Administration (Management-CA)	AI35: Administration (Management-CA)	AI36: Administration (Management-CA)	AI37: Administration (Management-CA)	AI38: Administration (Management-CA)	AI39: Administration (Management-CA)	AI40: Administration (Management-CA)	AI41: Administration (Management-CA)	AI42: Administration (Management-CA)	AI43: Administration (Management-CA)	AI44: Administration (Management-CA)	AI45: Administration (Management-CA)	AI46: Administration (Management-CA)	AI47: Administration (Management-CA)	AI48: Administration (Management-CA)	AI49: Administration (Management-CA)	AI50: Administration (Management-CA)	AI51: Administration (Management-CA)	AI52: Administration (Management-CA)	AI53: Administration (Management-CA)	AI54: Administration (Management-CA)	AI55: Administration (Management-CA)	AI56: Administration (Management-CA)	AI57: Administration (Management-CA)	AI58: Administration (Management-CA)	AI59: Administration (Management-CA)	AI60: Administration (Management-CA)	AI61: Administration (Management-CA)	AI62: Administration (Management-CA)	AI63: Administration (Management-CA)	AI64: Administration (Management-CA)	AI65: Administration (Management-CA)	AI66: Administration (Management-CA)	AI67: Administration (Management-CA)	AI68: Administration (Management-CA)	AI69: Administration (Management-CA)	AI70: Administration (Management-CA)	AI71: Administration (Management-CA)	AI72: Administration (Management-CA)	AI73: Administration (Management-CA)	AI74: Administration (Management-CA)	AI75: Administration (Management-CA)	AI76: Administration (Management-CA)	AI77: Administration (Management-CA)	AI78: Administration (Management-CA)	AI79: Administration (Management-CA)	AI80: Administration (Management-CA)	AI81: Administration (Management-CA)	AI82: Administration (Management-CA)	AI83: Administration (Management-CA)	AI84: Administration (Management-CA)	AI85: Administration (Management-CA)	AI86: Administration (Management-CA)	AI87: Administration (Management-CA)	AI88: Administration (Management-CA)	AI89: Administration (Management-CA)	AI90: Administration (Management-CA)	AI91: Administration (Management-CA)	AI92: Administration (Management-CA)	AI93: Administration (Management-CA)	AI94: Administration (Management-CA)	AI95: Administration (Management-CA)	AI96: Administration (Management-CA)	AI97: Administration (Management-CA)	AI98: Administration (Management-CA)	AI99: Administration (Management-CA)	AI100: Administration (Management-CA)
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02

GenAI Use Case

Generative AI / Large Language Models

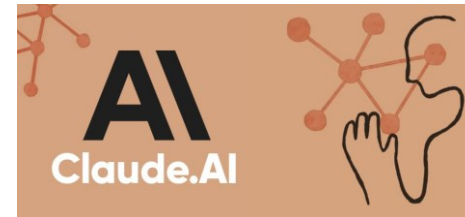
Overview



perplexity



LLaMA
by  Meta




Gemini



Generative AI / Large Language Models

Overview



Open Source



GenAI Intermodal Use Case

Order processing with GenAI

Today

Manual effort

Next to EDI Customers still send orders by Mail. Human read this unstructured data and attachments and enter it into an ERP system.



Orders



Tomorrow

Automated processes

Automation and prioritization by AI agents (language and decision models) for automated interpretation, decision-making, delivery commitment, ordering, and response.



GenAI Automation Voyage Number for Vessel Arrivals

Read Mail Information from Vessel-/Line Operators

Today

Manual effort

IDM takes care of the assignment of the trip number in the ERP to jew. Ship arrival with data collection, email processing, and manual ship planning with limited automation support



Voyage Number Assignment



Tomorrow

Automated processes

AI and automation take over this process to enable faster, more accurate and more efficient processes with automated email processing.



Standards! DCSA - Digital Container Shipping Association

Standard as basis for human and agent-based communication

Challenges

- All Players need to participate
- Alignment of Internal Numbering Systems
- Integration with Existing IT Systems
- Stakeholder Education and Engagement
- Period of time

The image shows a GitHub repository for 'dcsaorg / DCSA-Sample-Data' and an API Hub design interface. The GitHub interface displays a file tree with folders like 'samples.d' and 'referencedata.d', and a list of files such as 'README.md', 'carriers.csv', and 'portcallstatuscodes.csv'. The API Hub interface shows a design for 'DCSA Operational Vessel Schedules (OVS) Event Hub' with a 'subscriptionBodyWithSecret' schema.

```
subscriptionBodyWithSecret > {
  subscriptionID > [...]
  callbackURL > [...]
  eventType > [...]
  transportEventTypeCode > [...]
  vesselCallID > [...]
  vesselIMONumber > [...]
  carrierVoyageNumber > [...]
  carrierServiceCode > [...]
  operationEventCode > [...]
}
```

PortCall Status Code	Name	Description
OMIT	Omit	When a ship does not call at a port included in the Long Term Schedule that was planned at the start of the voyage.
BLNK	Blank	When an already announced voyage is cancelled. In this case the voyage number is retained and planned port calls are blanked.
ADHO	Ad Hoc	An additional port call made on a specific voyage that was not originally included in the Long Term Schedule.
PHOT	Phase Out	When a vessel moves out of a service at a given port from the latest issued schedule with vessel partners.
PHIN	Phase In	When a vessel moves into a service at a given port from the latest issued schedule with vessel partners.
ROTC	Rotation Change	When the sequence of port calls is changed compared to the proforma.
SLID	Sliding	When a vessel takes another position than planned in a service (i.e. due to relevant delay) resulting in one or more voyages to be cancelled or blanked.

Standards! DCSA - Digital Container Shipping Association

Standard as basis for human **and** agent-based communication

Challenges

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- Stakeholder Education and Engagement

**AGENTS
WILL NEGOTIATE STANDARDS
in the FUTURE**

BUT

**Human made Standards will make Agent based
Communication cheaper and better to control!**

The screenshot shows the GitHub repository for 'dcsaorg / DCSA-Sample-Data'. The file browser on the left lists various CSV files, including 'portcallstatuscodes.csv'. The main area shows a preview of this file, which is a table with columns for 'PortCall Status Code', 'Name', and 'Description'. The table contains 8 rows of data.

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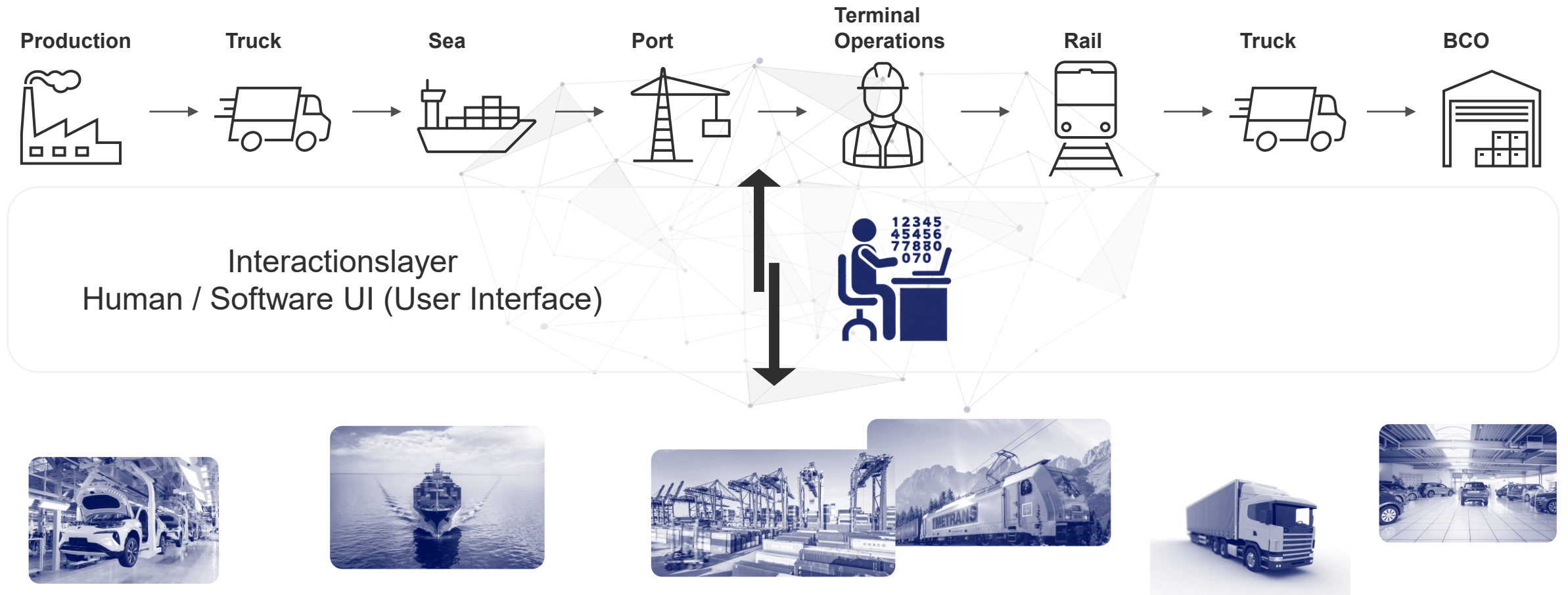
03

Transformation to an agent-based world of the future

Communication Voyage Number vs AIS Agent

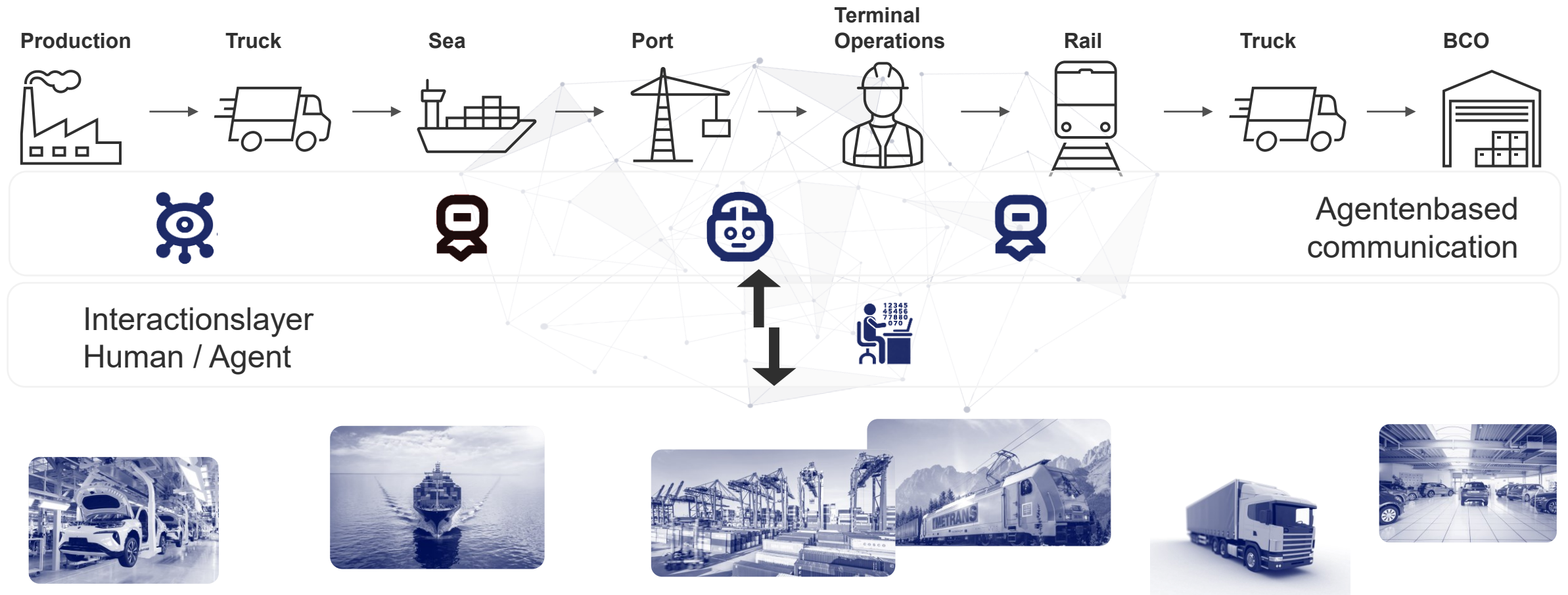
Transformation of activities and roles

Fundamental change



Transformation of activities and roles

Fundamental change



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A network diagram consisting of blue lines connecting various nodes, some of which are solid blue circles. A prominent red circle is overlaid on the right side of the diagram.

Company
of the
HHLA Network