### ECG Spring Congress 23.05.2025 | Cascais, Portugal

# Al in Logistics



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Fraunhofer-Institut für Materialfluss und Logistik IML



Dortmund is not only known for great soccer.

ource: dpa/Guido Kirchner, https://service.bvb.de/docs/h



# 100% Logistics at Fraunhofer IML in Dortmund







~ 32.000 employees

76 institutes

and research institutions

3.4 billion



Fraunhofer IML, Dortmund

#### ~ 400

employees

~ 300

graduate students and student assistants

~ 55 million

turnover, 30% of which is made with industrial partners





We do research... in-house and industrial contract research



We support... companies of all sizes and from all industries

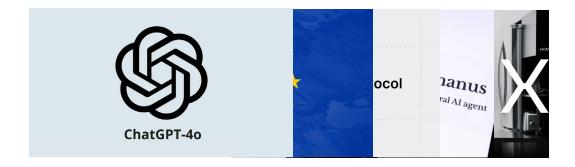


We develop... e.g. the FCC accelerator at CERN, Geneva





### Milestones in 2024 and 2025





### May 2024: OpenAI's multimodal model GPT4o





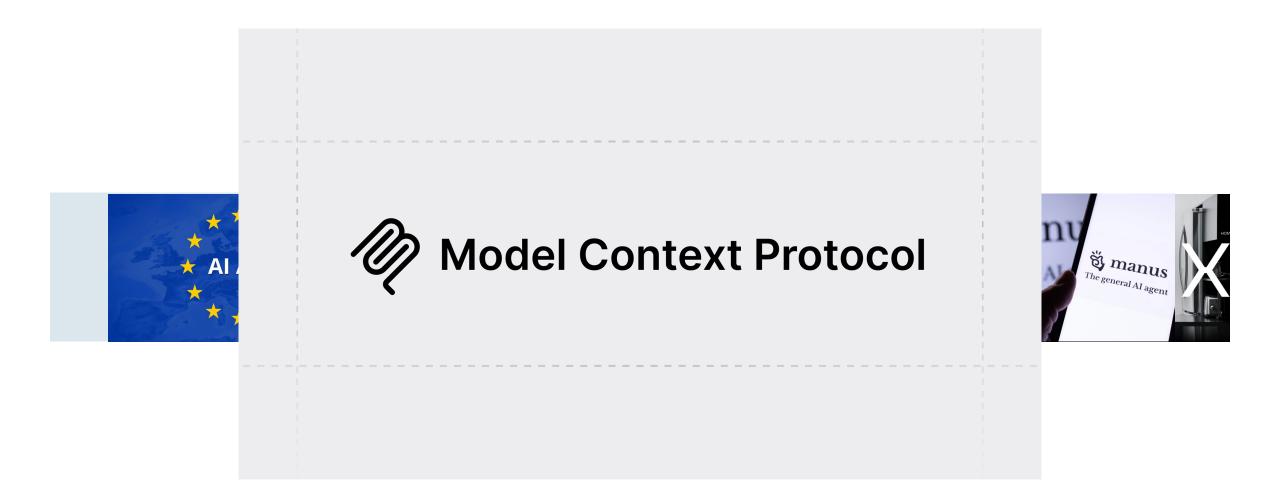
Source: https://www.youtube.com/@Bernards\_AI\_Soltions

### August 2024: EU-AI Act



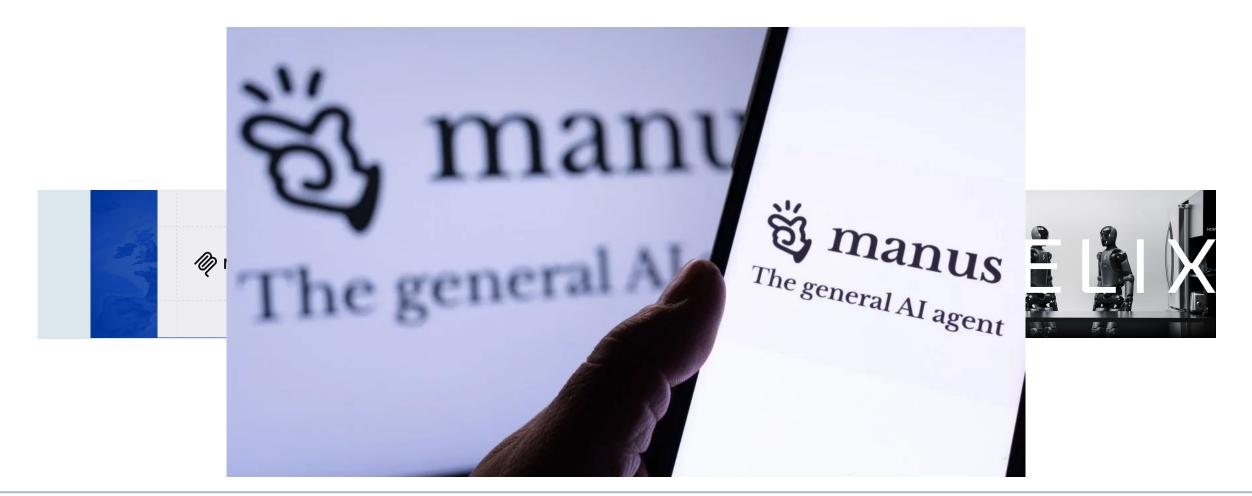


### November 2024: Anthropic releases MCP



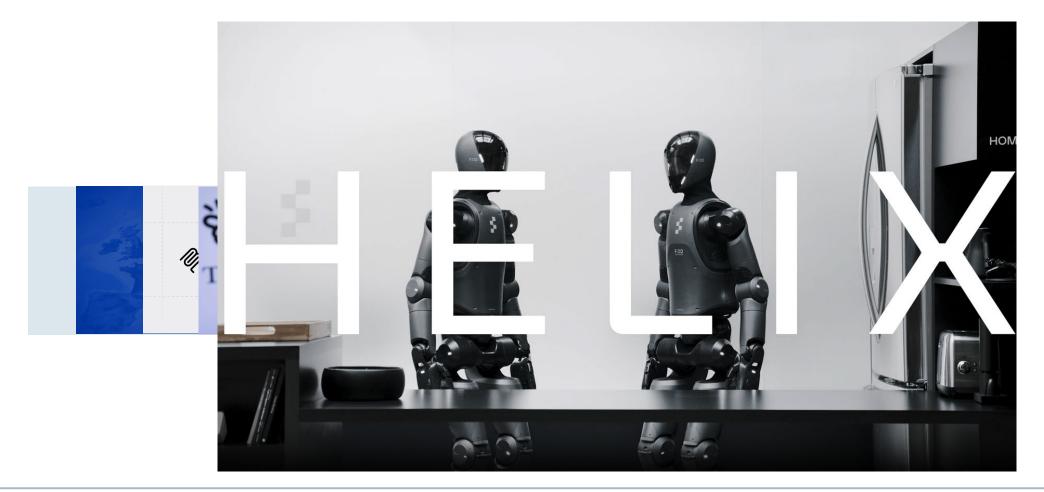


### March 2025: "The Age of Agentic AI is here"





### Planned for 2025: Humanoid robots in the home





### Logistics systems are still often characterized by manual, time-consuming activities

Action in the second

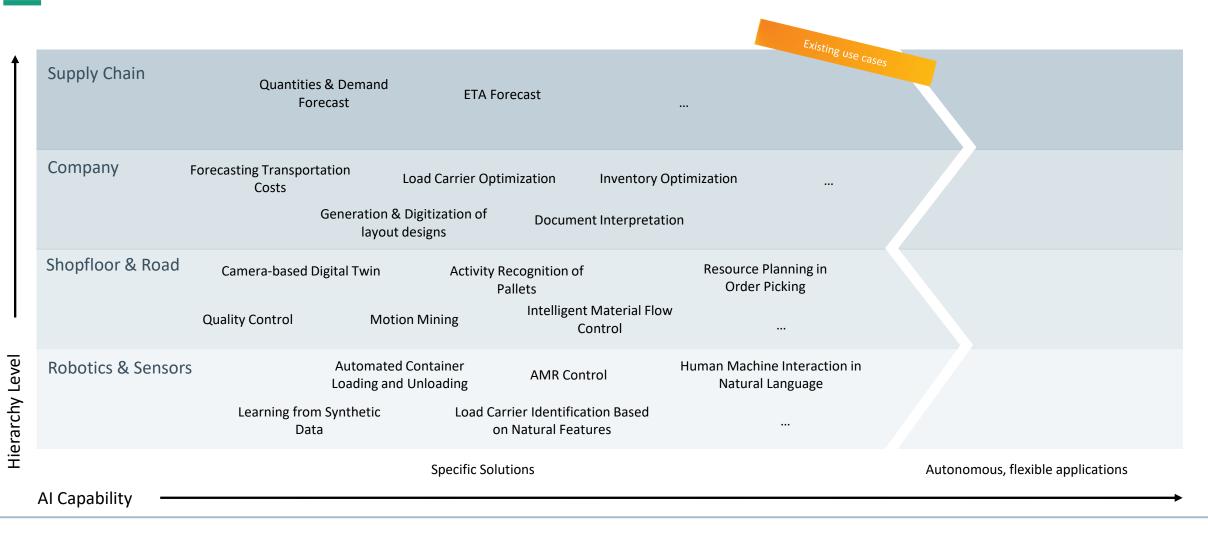
Source: https://crossdocksandstorage.com/wp-content/uploads/2024/01/warehouse-safety-standards.wel

#### Today, supply chains are dominated by specific AI solutions to solve a specific challenge

Hierarchy Level	Supply Chain		
	Company		
	Shopfloor & Road		
	Robotics & Sensors		
	Al Capability	Specific Solutions	Autonomous, flexible applications



#### Today, supply chains are dominated by specific AI solutions to solve a specific challenge







New Chat	Select domains		
Last 7 Days	Verkehrslogistik Confluence	*	
VA07 Zusammenfassung	@ Chatbot		Ū
Last 30 Days		Fasse mir die VA07 zusammen	
Greetings and Insights		[	
AIAMO Project Leader Inquiry	Die VA07 betrifft die Anlage von Kundennummern für Sender- und Empfä	ngeradressen in der	
GPU Performance Comparison	Speditionssoftware Sie hat den Zweck, eine einfache Belegfas Kundendaten automatisch hinterlegt werden können, sodass sie nicht be		
	eingegeben werden müssen. Zudem erleichtern feste Kundennummern statistische Auswertungen.		
DISMOD Locate Overview	Die VA07 gilt für Mitarbeiter der <b>Gebeurgen der bei der</b>		
Chat with a Bot	Der Ablauf zur Anlage von Kunden ist wie folgt:		
	<ol> <li>In Andre La Village for Randerist we folg.</li> <li>In Andre Such auf die Suchfunktion die Einne bereite in des Suctem sindetreden wurde.</li> </ol>	n (F3) geklickt, um zu prüfen, ob	<b>~</b>
	Question	Submit	3
		Delete Chat	

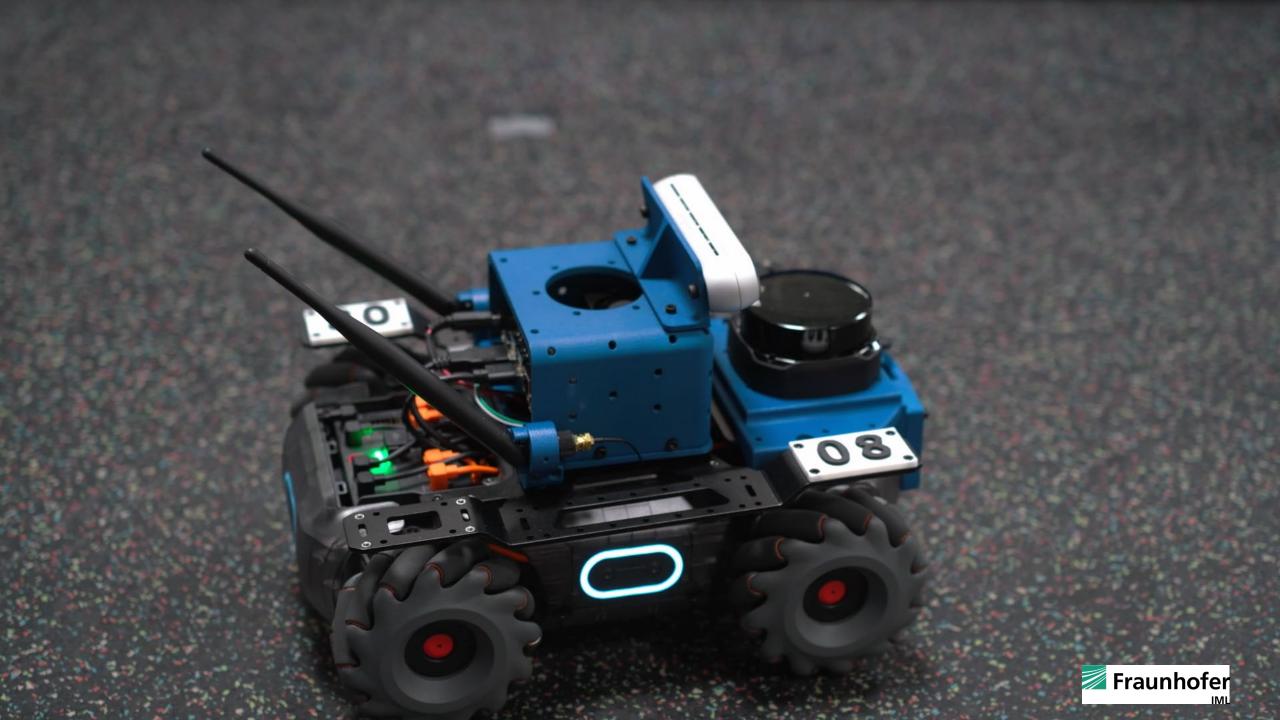


#### 

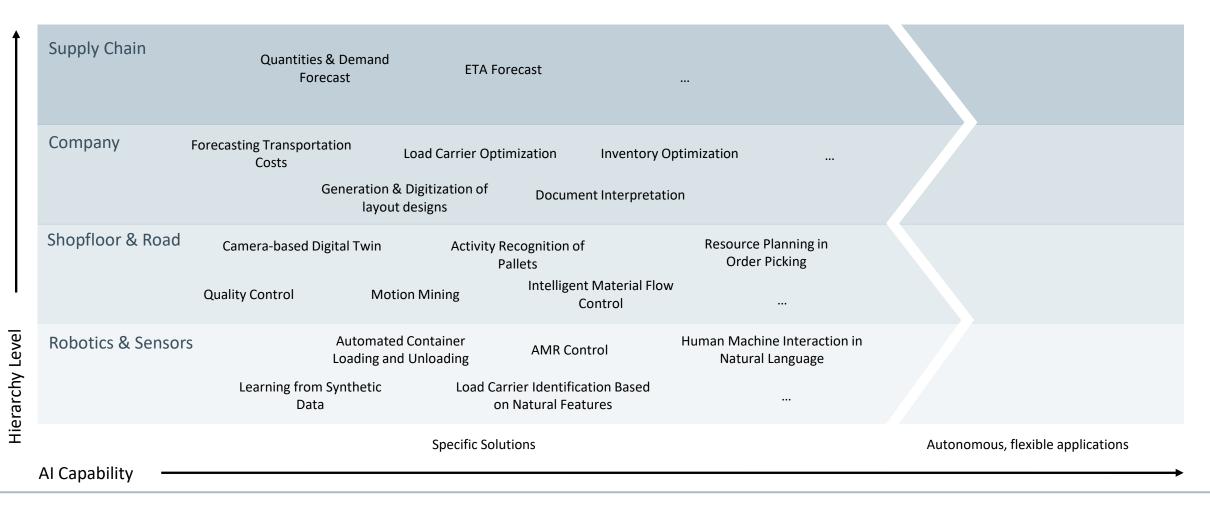
LAGERPLATZ	344-346
LÄNGE HÖHE	120CM 114CM
BREITE	80CM





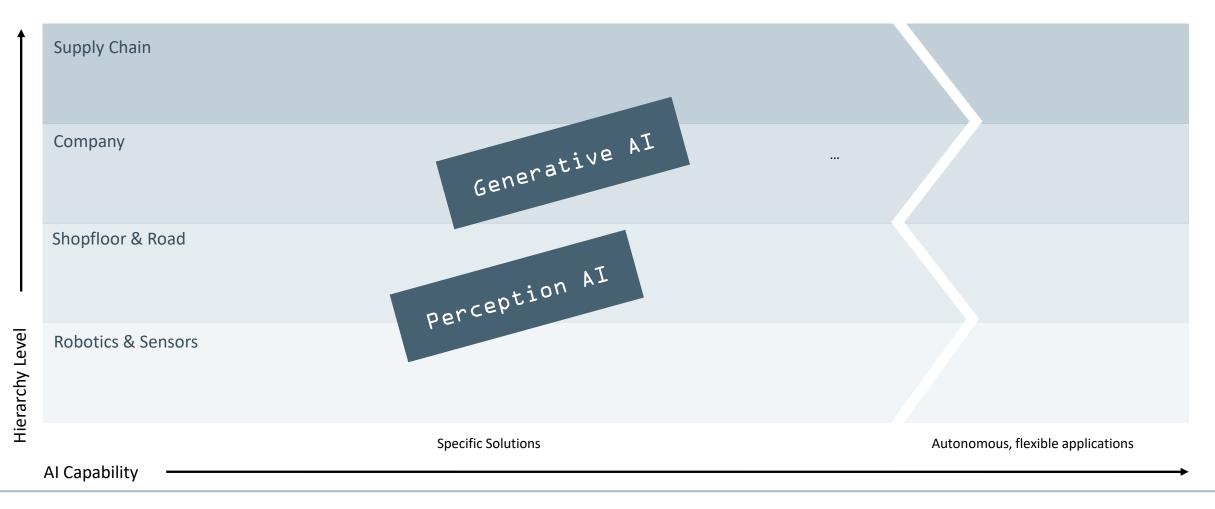


#### Today, supply chains are dominated by specific AI solutions to solve a specific challenge





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#### Hello Peak. What can I do for you?

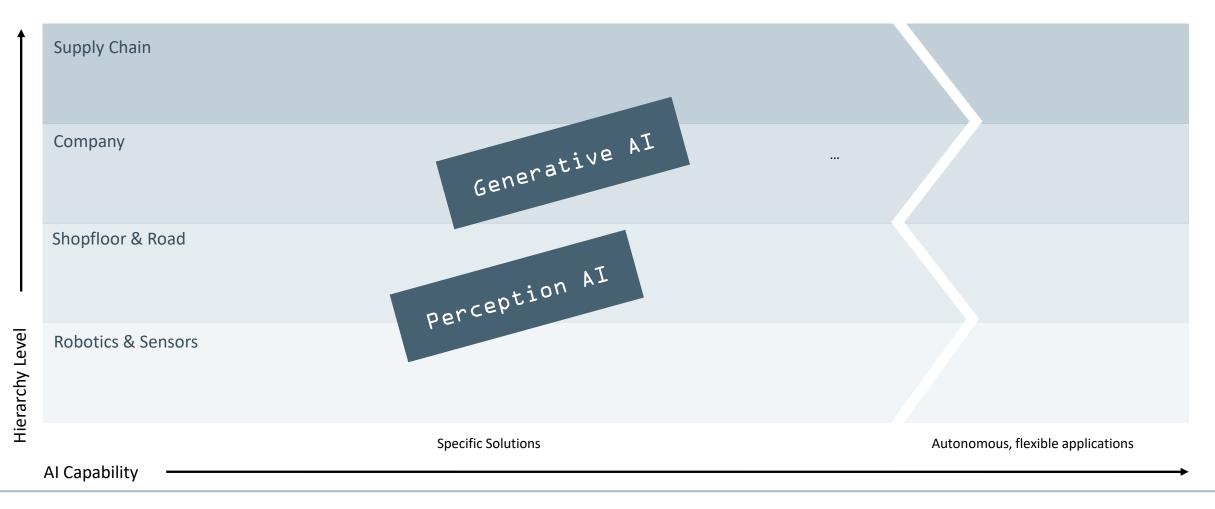
I'm looking to purchase a property in New York in a safe neighborhood with a low crime rate. I have two children - one in middle school and one in kindergarten - so access to quality schools is a priority for us. My wife and I have a combined monthly income of \$50,000. Please help me identify suitable properties that meet these criteria, provide comparative analysis of their listings.

 $(\uparrow)$ 

🖉 🕺 Standard 🗸

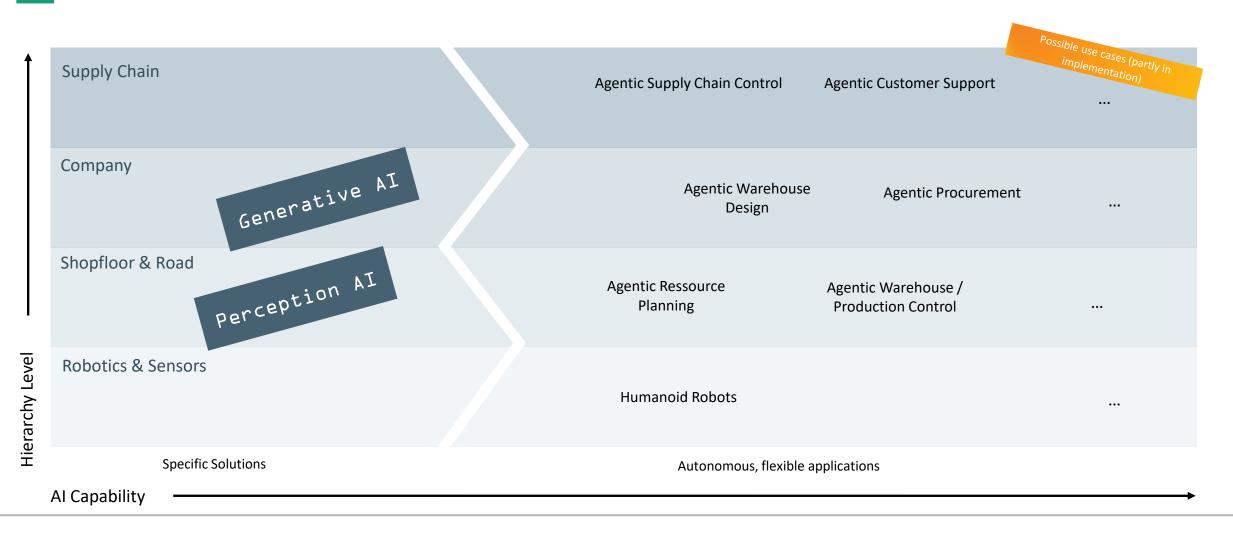
<sup>2</sup>The this example we'll have Manus conduct some research

#### Today, supply chains are dominated by specific AI solutions to solve a specific challenge

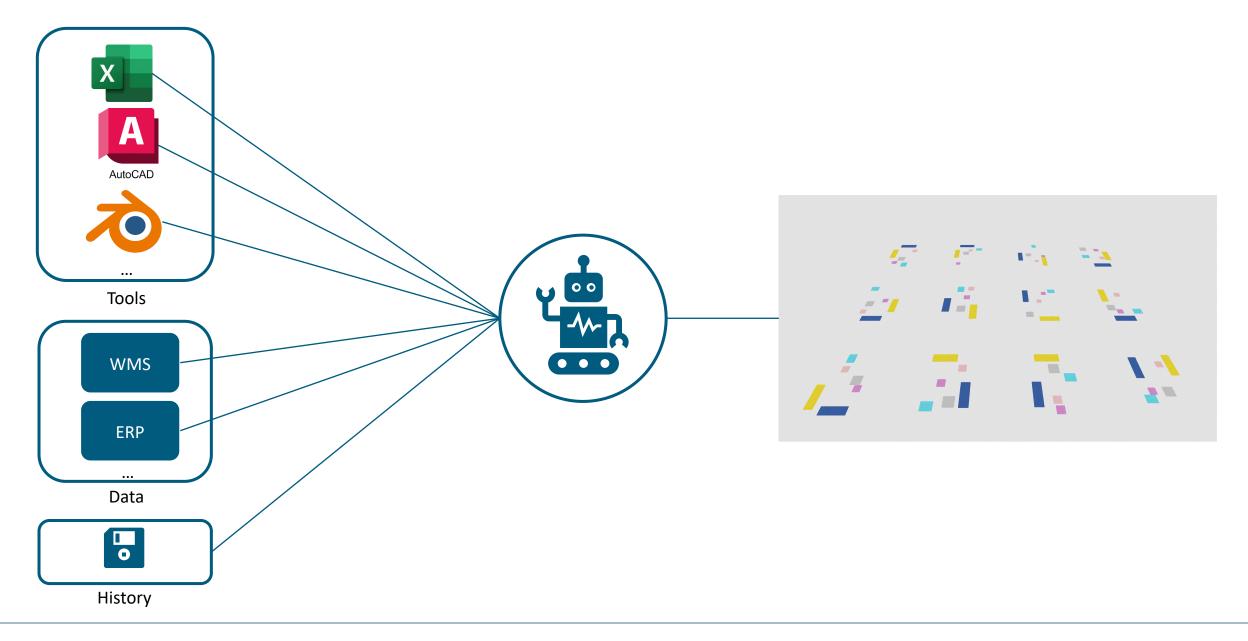




#### The trend is moving from specific solutions to autonomous, flexible applications

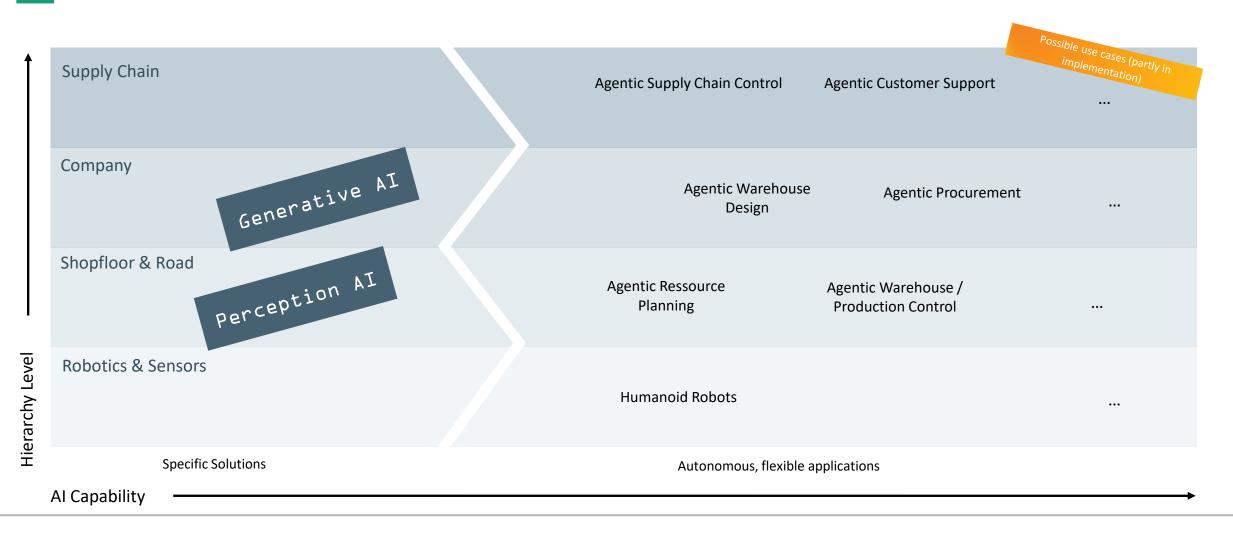






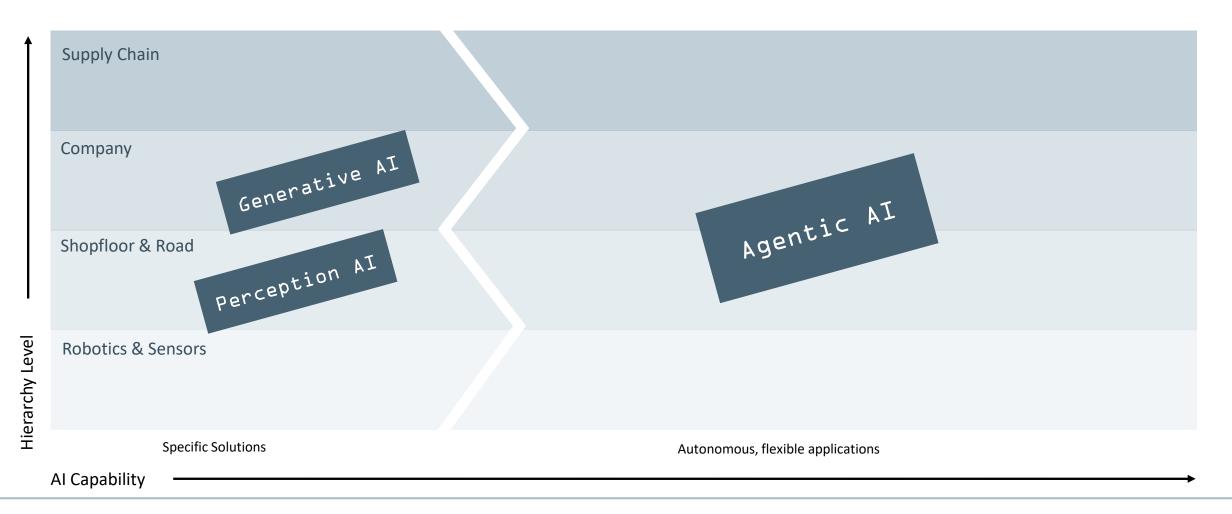


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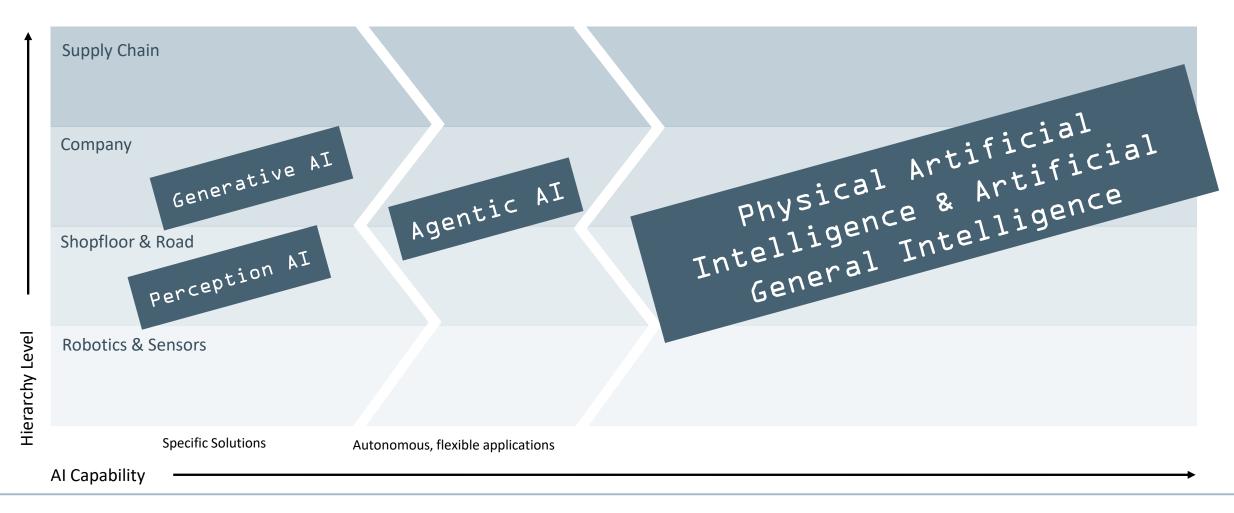


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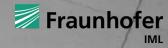


## After Perception AI, Generative AI and Agentic AI comes Physical AI. The fusion of digital intelligence and the ability to act in the real world





"The next wave of Al is physical Al [...]"





### The added value is where:

Applications only become possible due to Al

Al and humans are not competitors; where humans are freed up to perform higher dimensional tasks

Source: https://www.jstor.org/stable/resrep22492.5?seq=1





### You never walk alone!

rchner. https://

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