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AI AND PROJECT MANAGEMENT— FROM HYPE TO PRACTICE

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DORIS WEßELS

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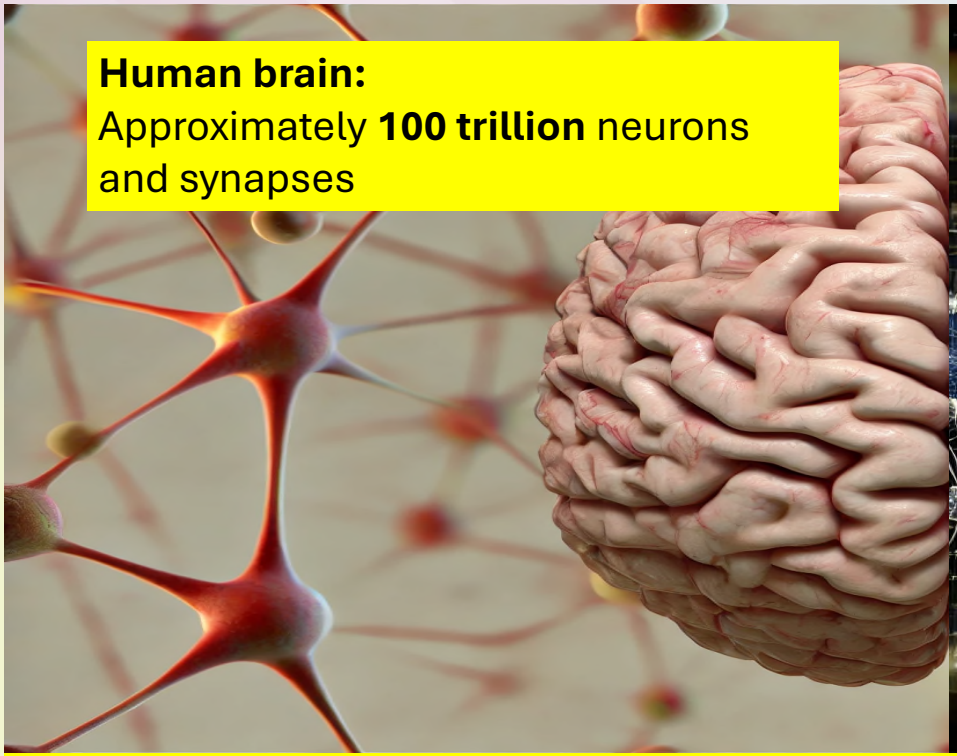
AGENDA

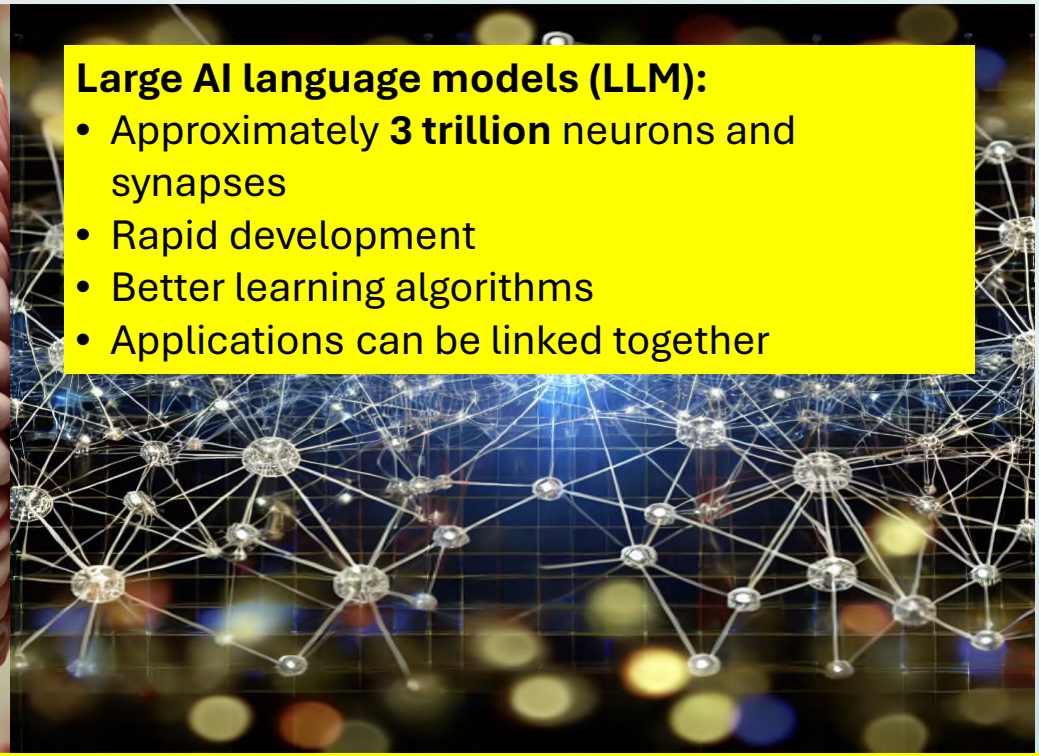
1. Where are we currently with the development of GenAI?
2. AI agent systems in project management: Positioning
3. Future skills (for project managers)
4. Humans versus machines: Who scores where?
5. My thesis: AI leadership as the key skill for the future

Where are we currently with the development of generative AI?

THE STARTING POINT: THE HUMAN BRAIN AS A BIOLOGICAL NEURAL NETWORK VERSUS ARTIFICIAL NEURAL NETWORKS AS SOFTWARE ARCHITECTURE FOR LARGE AI LANGUAGE MODELS



Human brain:
Approximately **100 trillion** neurons and synapses



Large AI language models (LLM):

- Approximately **3 trillion** neurons and synapses
- Rapid development
- Better learning algorithms
- Applications can be linked together

Artificial intelligence is the ability of a machine to imitate human abilities such as logical thinking, learning, planning, and creativity.

Image source: ChatGPT – DALL-E3, prompted by Doris Weßels on October 11, 2024, source of the definition of AI: https://www.europarl.europa.eu/topics/de/article/20200827STO85804/was-ist-kunstliche-intelligenz-und-wie-wird-sie-genutzt, accessed on September 25, 2024

STATE OF RESEARCH ON AI AGENT SYSTEMS: VERY COMPREHENSIVE PUBLICATION DATED MARCH 31, 2025, 264

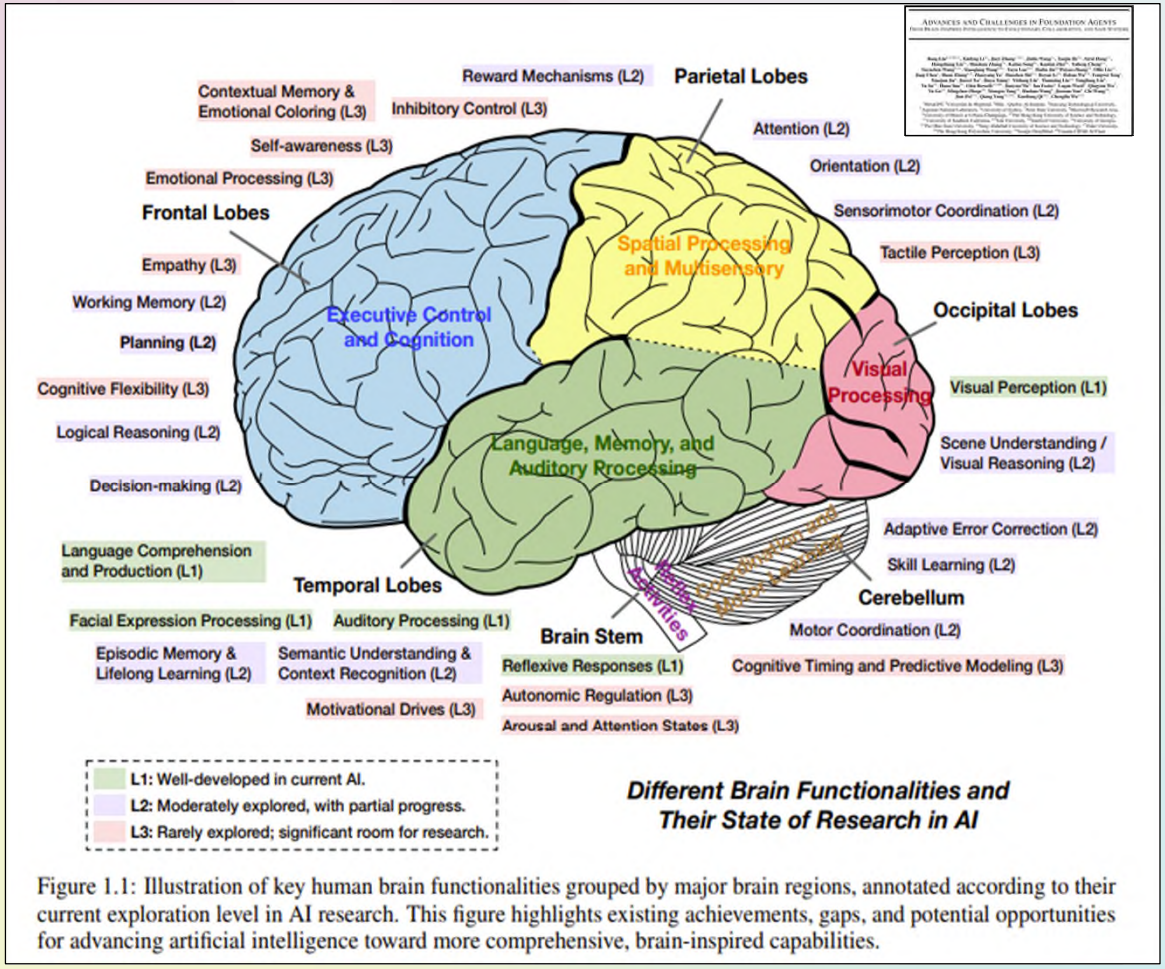


Figure 1.1: Illustration of key human brain functionalities grouped by major brain regions, annotated according to their current exploration level in AI research. This figure highlights existing achievements, gaps, and potential opportunities for advancing artificial intelligence toward more comprehensive, brain-inspired capabilities.

Key aspects:

1. Modular architecture: AI agents are organized into a modular structure similar to the human brain, comprising components such as memory, understanding of the world, reward systems, and emotion-like functions.

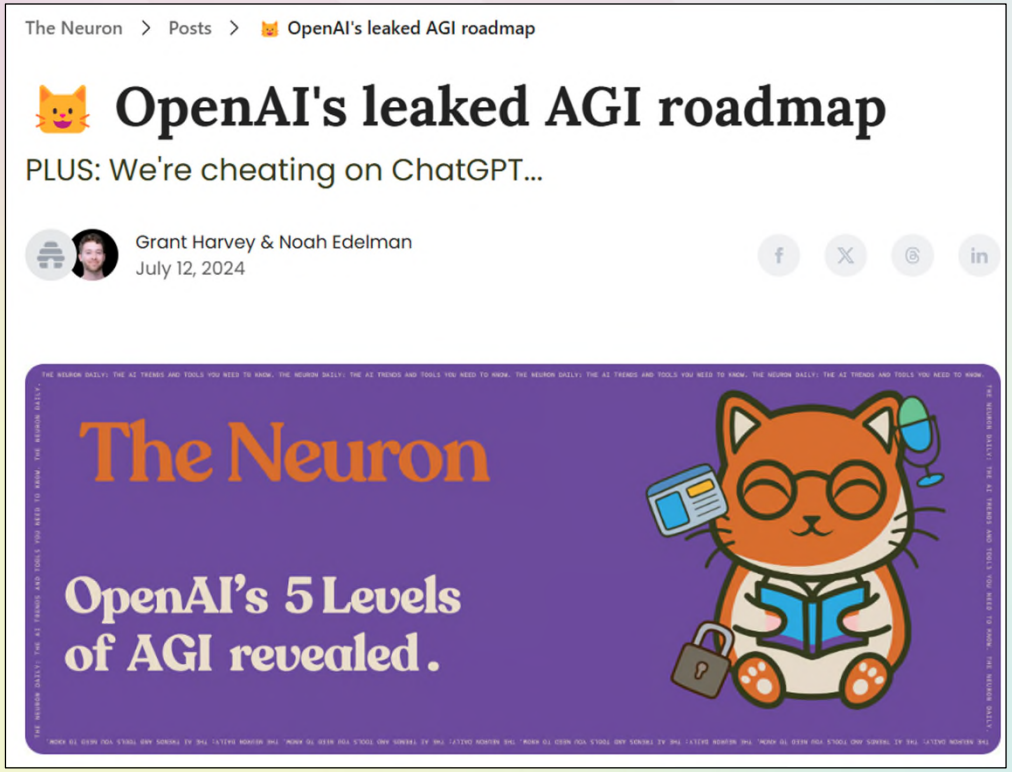
2.Self-improvement and adaptation:
AI agent systems can improve, adapt, and evolve independently.

3.Multi-agent systems: The collective intelligence that arises from the collaboration of multiple agents shows parallels to human social interaction.

4.Security and ethics – and many unanswered questions

https://arxiv.org/pdf/2504.01990 (The Future of AI: A Guide to the Future of Artificial Intelligence), fig. p. 15, accessed: April 7, 2025

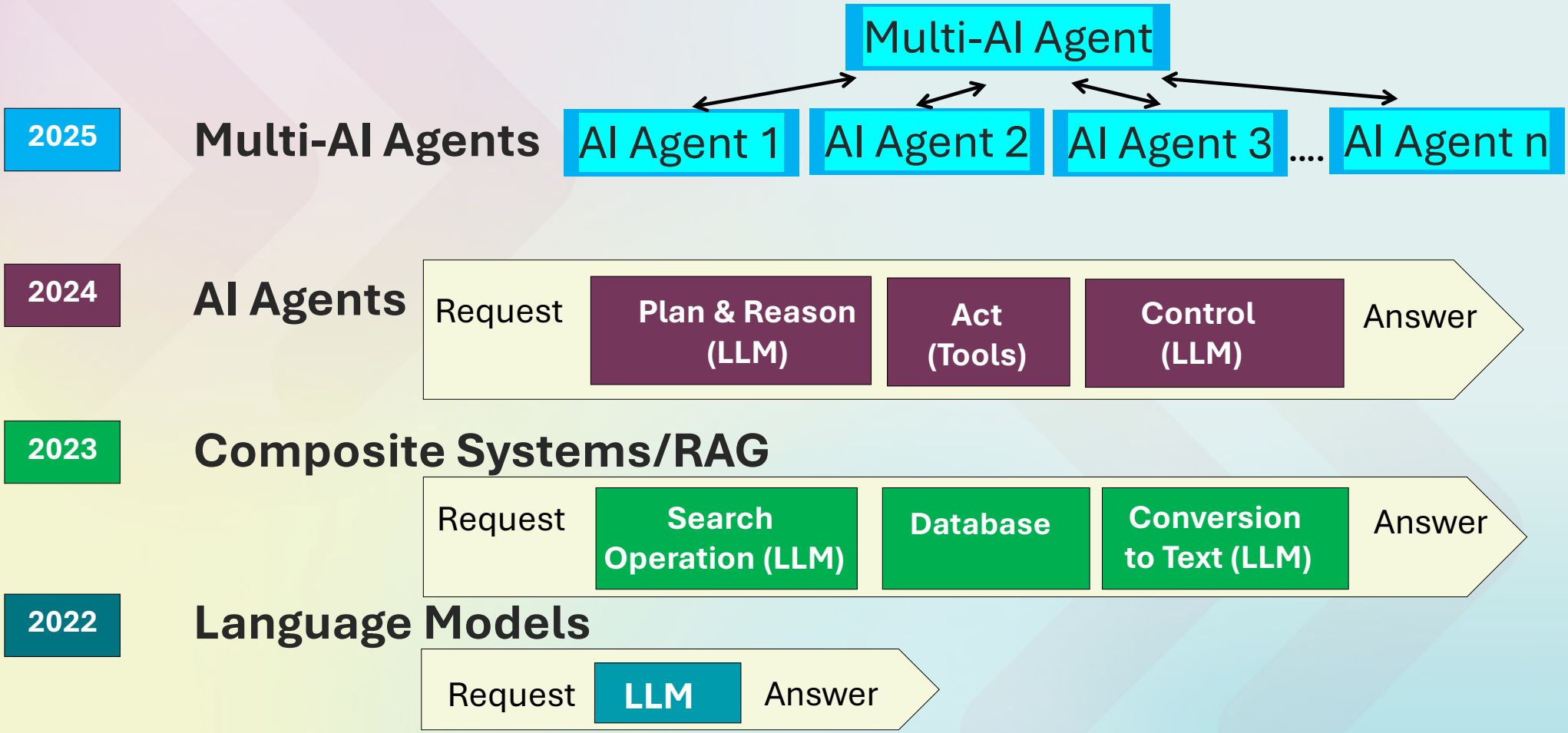
JULY 2024: OPENAI AND 5 STEPS TO AGI



1. **Level 1: Chatbots:** what we currently have.
2. **Level 2: Reasoners**: PhD-level problem solvers.
3. ***Level 3: Agents***: *AI systems that can spend days taking actions for you.*
4. **Level 4: Innovators**: your AI version of Thomas Edison.
5. **Level 5: Organizations**: a single AI doing the job of an entire company.

https://www.theneurondaily.com/p/openais-leaked-agi-roadmap (Artificial General Intelligence), published on July 12, 2024, accessed on December 14, 2024

THE PATH TO (MULTI-)AI AGENT SYSTEMS FROM 2022 T0 2025



According to Prof. Dr. Holger Schmidt | F.A.Z. Digitalwirtschaft | TU Darmstadt, September 2025

DEFINITION AND CHARACTERISTICS OF AI AGENT SYSTEMS

- **Autonomous AI agents are autonomous units that use the capabilities of large AI language models (LLMs) to simulate humans in order to perform tasks (independently).**
- **They consist of a modular architecture that enables them to take on specific roles, plan actions in advance, and interact with their environment.**

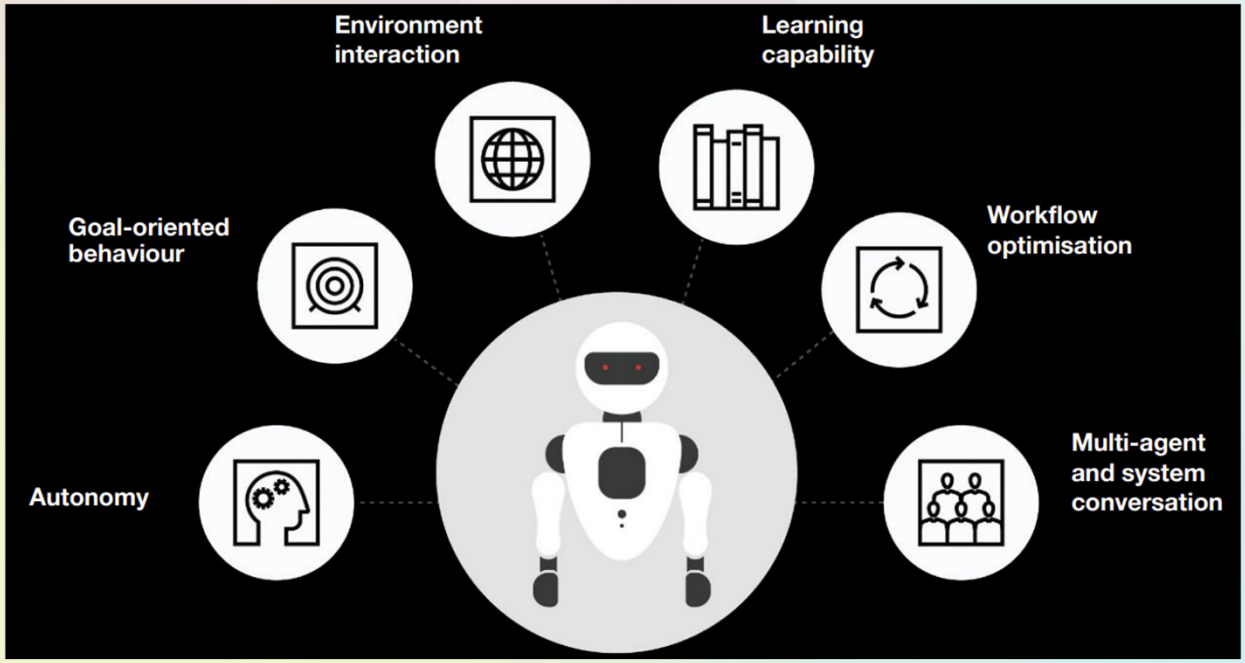
Characteristics:

- **Autonomous decision-making**: can assess situations and take appropriate action without human intervention
- **Multimodal processing**: ability to understand and work with text, images, audio, and code simultaneously
- **Chain-of-thought reasoning**: step-by-step logical thinking to solve complex problems
- **Memory and context awareness**: context is retained across conversations and tasks
- **Self-improvement**: learning from experience and feedback to improve performance

See: https://aiagentsdirectory.com/blog/what-is-an-ai-agent-a-2024-guide-to-understanding-the-future, accessed: November 3, 2024

AI AGENT SYSTEMS AND THE NEW DIVISION OF ROLES BETWEEN HUMANS AND AI (PWC PERSPECTIVE, 2024)

"Agentic AI generally refers to AI systems that have the ability **to make autonomous decisions and take actions to achieve specific goals with limited or no direct human intervention."**



"**Human oversight** will evolve and shift its focus to strategic planning and innovation rather than operational management."

https://www.pwc.com/m1/en/publications/documents/2024/agentic-ai-the-new-frontier-in-genai-an-executive-playbook.pdf, definition translated with DeepL: Accessed: February 17, 2025

MICROSOFT AND THE WORK TREND INDEX 2025 WITH "FRONTIER FIRMS" (APRIL 2025): HUMANS IN THE NEW LEADERSHIP ROLE OF "AGENT BOSS"

In a recent study, Microsoft introduces the concept of the "Frontier Firm" – a new organizational model in which humans and AI agents work closely together in hybrid teams to meet the growing demand for "on-demand intelligence." Frontier Firms are pioneering companies made up of human-agent teams in various stages of development, see graphic:

https://www.microsoft.com/en-us/worklab/work-trend-index/2025-the-year-the-frontier-firm-is-born (The future of work: The rise of the human-agent team), published on April 23, 2025, accessed on April 25, 2025

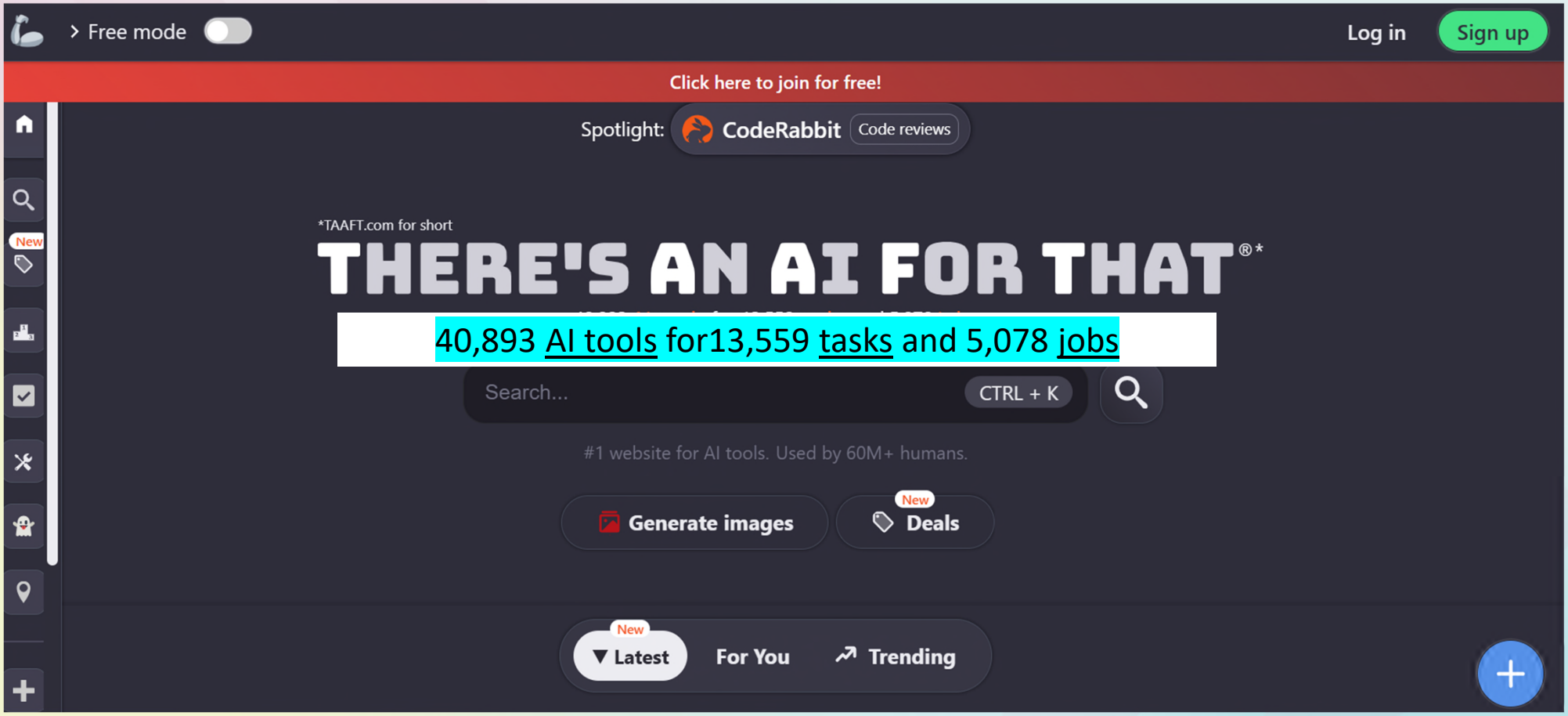
https://aisecret.us/the-rise-of-frontier-firms-ai-agents-and-the-future-of-work/ published and accessed on April 25, 2025

SERIOUS NEW QUESTIONS REGARDING THE USE OF AI AGENT SYSTEMS (ACCORDING TO ALLIE MILLER, ONLINE SESSION INTRODUCTION TO AI AGENTS, DECEMBER 17, 2024)

1. How much control do we give agents?
2. When will they be good enough for full autonomy?
3. Will AI agents be treated as employees? ("There is no doubt that we will have AI employees of all kinds" – Jensen Huang, CEO of Nvidia)
4. Will we have more AI agents than employees?
5. What rights/access will we give AI agents?
6. How will we understand the agent's "thinking process" and know that it is correct?
7. How will we prevent agents from doing negative things?

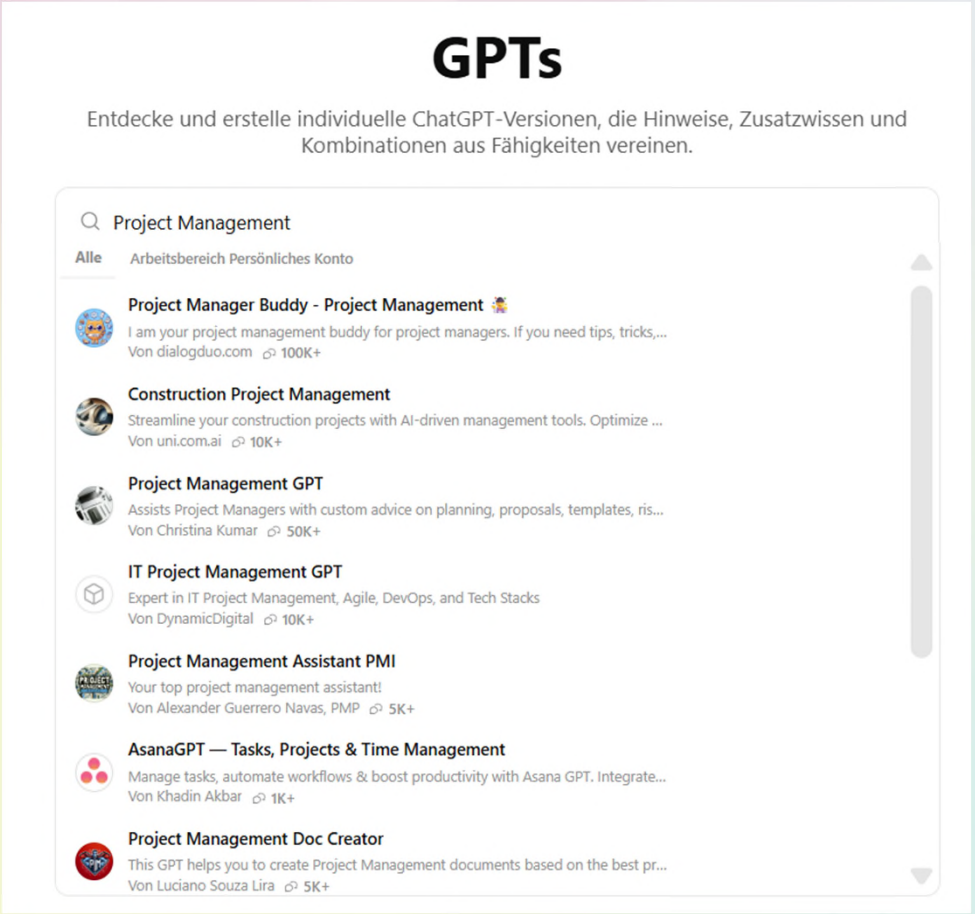
AI agent systems in project management: Positioning

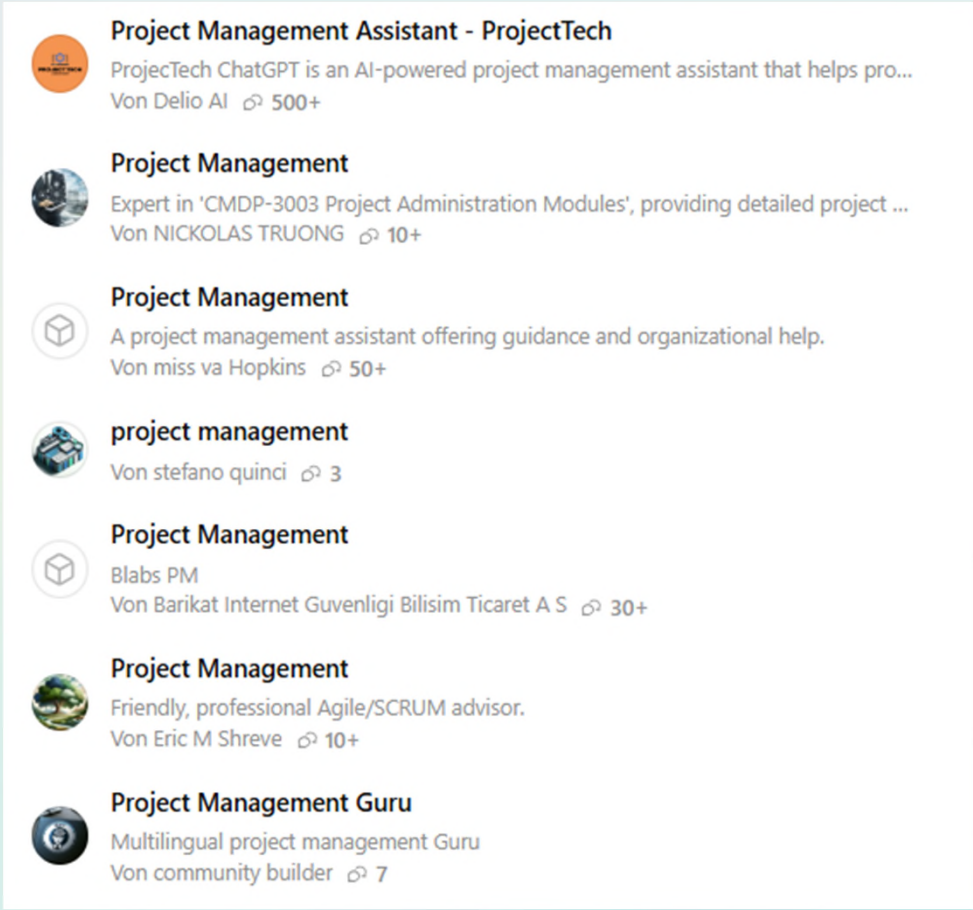
AI TOOLS EVERYWHERE - AND IT'S GETTING MORE AND MORE OVERWHELMING...



https://theresanaiforthat.com/, accessed on September 6, 2025

...AND ALSO MANY PM BOTS - HERE IS JUST A SMALL SELECTION FROM THE OPENAI GPT STORE





OpenAI GPT-Store, accessed on September 7, 2025

AI AGENT SYSTEMS IN PROJECT MANAGEMENT (ACCORDING TO JÖRG MEIER, GPM BLOG POST DATED JULY 15, 2025)

Use Case 1 – Simulation of team discussions:

- Different agents adopt typical communication styles (professional-cooperative; assertive-objective; assertive; confrontational; inaccessible-dominant).
- Implementation, e.g., with AutoGen Studio; discussions become reproducible, open-ended, and help to identify blind spots early on.

Use case 2 – Automated risk assessment:

- Role distribution: Researcher (collects information), Verifier (checks plausibility/relevance), Summarizer (condenses results).
- Example models: Perplexity (research), GPT-4o-mini (verification), Sonnet 3.7 (summary). Output as a structured report or Excel file for documenting risk factors.

Other areas of application:

- Automatic documentation (protocols, to-do lists),
- Information management (merging sources),
- Relief from routine tasks through modular agents.

Opportunities: Time savings, better information bases, scalable processes, well-founded preparation of decisions.

Limitations: No substitute for human judgment; quality depends on data sources, configuration, and interpretation within the team.

https://www.gpm-blog.de/ki-agenten-im-projektmanagement-so-unterstuetzen-digitale-rollen-den-projektalltag (German), accessed: September 6, 2025

OUR AI AGENT CHATGPT-5 IN "AGENT" MODE SEARCHING FOR BEST PRACTICES FOR THE USE OF AI AGENTS IN PROJECT MANAGEMENT

Our task: "Research the most successful AI agent systems used in project management worldwide and create an overview of the top 5 application examples."

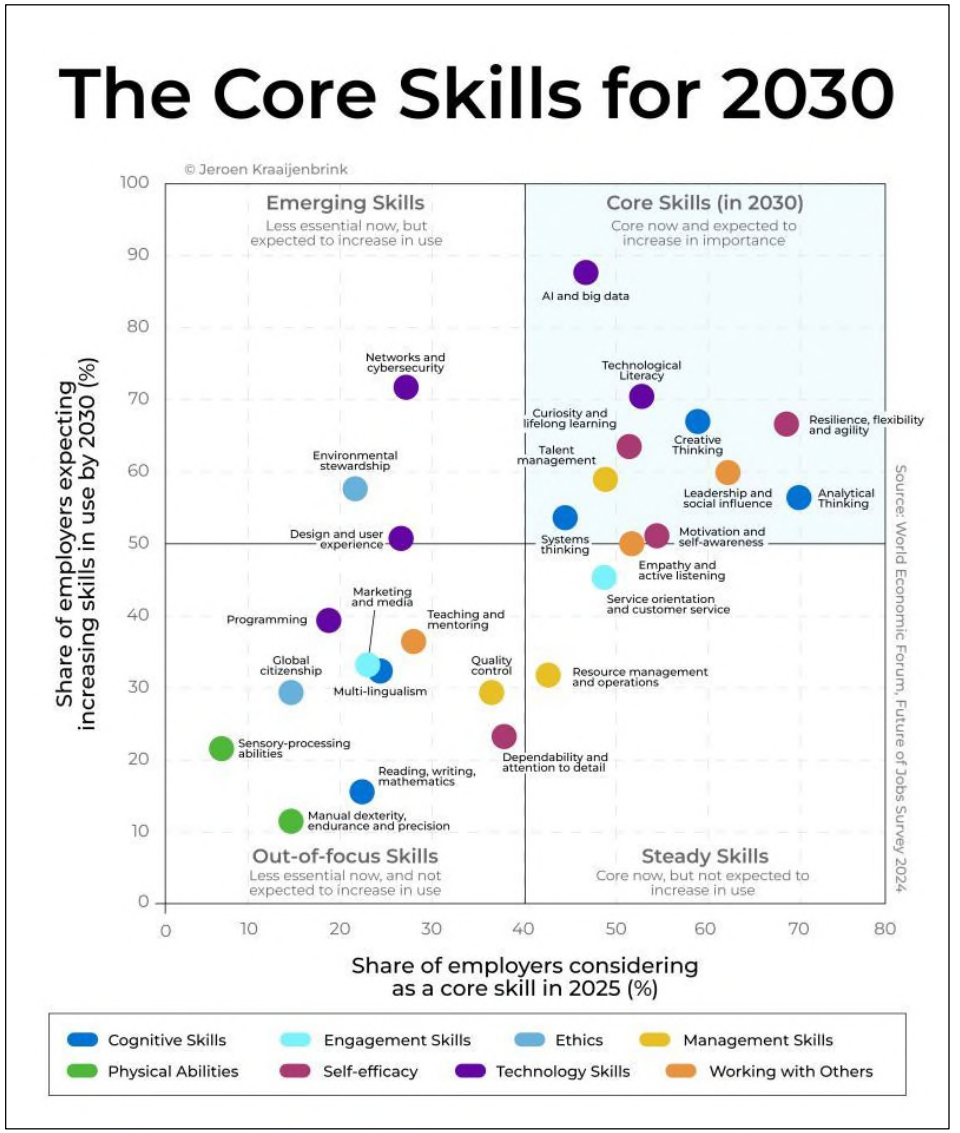
THE RESULT AS A TABLE: CHATGPT-5 "AGENT" IN SEARCH OF BEST PRACTICES FOR THE USE OF AI AGENTS IN PROJECT MANAGEMENT—BELIEVE OR CHECK?

System / Provider	Key functions	Measurable benefits / Example	Practical example
Asana AI (AI Studio) Provider: Asana	• Automated work intake, AI names tasks and creates summaries.• Centralizes roadmaps and prioritizes workflows.	• Savings of ~14,976 working hours and around $600,000 per year in the Morningstar research department.• Reduction of review times by two weeks.	Morningstar (financial services provider) centralized its teams with Asana AI and automated content and review workflows.
Microsoft 365 Copilot Provider: Microsoft	• Digital co-pilot in Office apps; generates summaries of chats/emails and extracts tasks.• Searches internal data for risk assessments.	• Up to 20% time savings in project management at KVL Group.• Improved data quality and fewer transmission errors.	KVL Group (construction consulting) uses Copilot as a digital assistant; pilot project 2024.
Wrike Work Intelligence Provider: Wrike	• Self-learning AI with task suggestions and content generation.• Error detection, translation, and risk prediction.• Summaries, mobile delegation, and action item identification.	• Used by >20,000 companies worldwide; AI detects risks early and automatically creates tasks/briefings.	Case studies show that Wrike AI supports teams in planning and delegating; universal use in everyday project work.
Atlassian Intelligence in Jira Provider: Atlassian	• Generative editor functions for user stories; automatic writing style and tone adjustment.• AI summaries and issue summaries; work breakdown creates subtask lists.• Natural language instead of JQL for automation.	• Reduces manual effort and improves developer communication; teams get faster responses.	OVO developers report that Atlassian Intelligence provides their answers and issue summaries, improving workflow.
Monday AI Blocks Provider: monday.com	• Automation of repetitive tasks (status updates, approvals, task assignment).• Early detection of risks and resource balancing.• Summaries of discussions and real-time reports.	• Saves time by automatically assigning reviewers and updating schedules; identifies risks before they cause delays.	Versatile in hybrid teams; the AI automatically assigns the next reviewer when milestones are reached and generates reports.

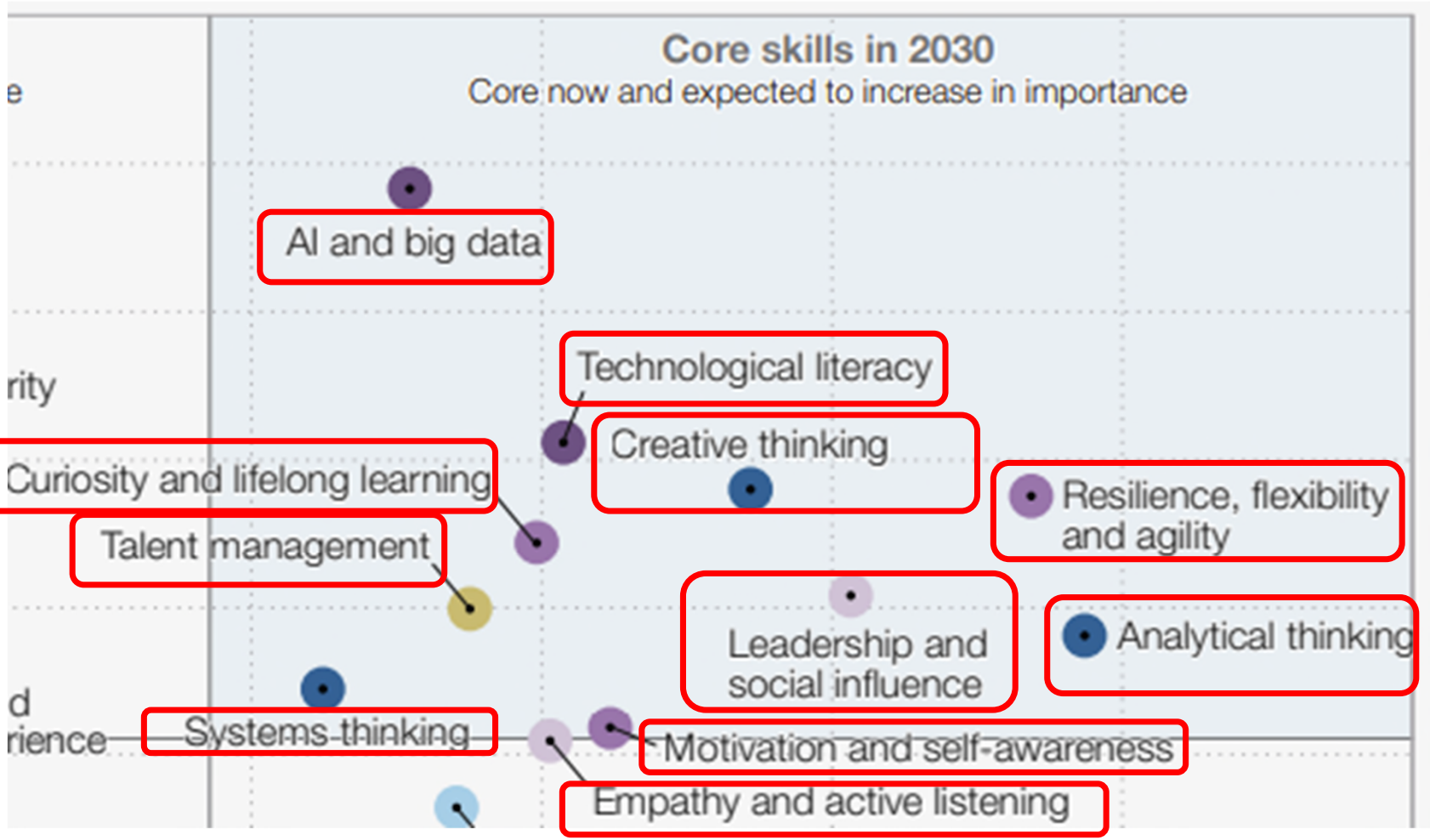
Future skills (for project managers)

FUTURE SKILLS: WORLD ECONOMIC FORUM 2025

The Future of Jobs Report 2025, https://www.weforum.org/publications/series/future-of-jobs/, published on January 8, 2025, accessed on June 26, 2025



CORE SKILLS 2030 IN DETAIL



https://reports.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf (The Future of Work). Figure 3.6, p. 41

Humans versus machines: Who scores where?

WHAT DISTINGUISHES US HUMANS FROM AI?

Feature	Humans	AI
Creativity	Uncorrelated, unpredictable creativity	Based on existing data, no spontaneous creativity
Empathy	Spontaneous empathy, ability to understand the emotional states of others	No emotional perception or empathy
Curiosity	Magical ability to be curious, ask questions to gain information	Only responds to requests, no curiosity or intrinsic interest of its own
Intuition	Gut feeling, often unconscious, based on experience and emotions	No intuition, only data-based decision-making processes
Emotions	Ability to feel and express emotions (e.g., capacity for suffering)	No real emotions, simulates emotions through programmed reactions
Morality & judgment	Moral values and the ability to make ethical decisions when judging Understanding of human weaknesses (including fear, the need for compassion, human fallibility, and complex social contexts)	No moral values, only algorithmic decision-making
Common sense	Understands common sense, recognizes anomalies in the environment (e.g., abnormal number of fingers)	Cannot recognize anomalies unless they are explicitly included in the data
Spatial/temporal reference	Understands physical and temporal relationships	Despite various advances, limited understanding
Consciousness	Phenomenal consciousness (qualia), subjective experience of sensory impressions (e.g., pain, colors)	No consciousness, no subjective experiences

See also Manuel Nappo Dirr MAS, Handelszeitung No. 14 dated April 6, 2023, p. 16, Neil Lawrence: The Atomic Human: Understanding Ourselves in the Age of AI, 2024

My thesis: AI leadership as the key skill for the future

THE CENTRAL QUESTION IN HUMAN-MACHINE INTERACTION: WHO CONTROLS WHOM? ARE WE, AS HUMANS, PILOTS, CO-PILOTS, OR JUST PASSENGERS?

Images generated with DALL-E 3, prompted by Lasse Bremer, April 5, 2024

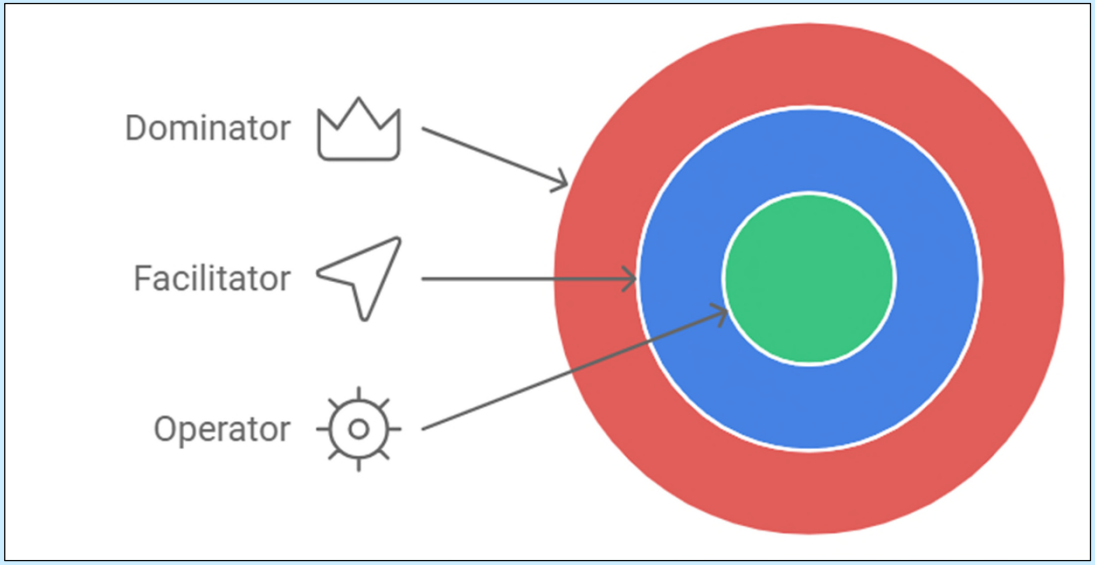
MY PERSPECTIVE FOR 2023: THREE ROLES AS GRADATIONS IN THE INTERACTION BETWEEN HUMANS AND AI – AND WHAT DO WE WANT/ALLOW?

AI in the role of:

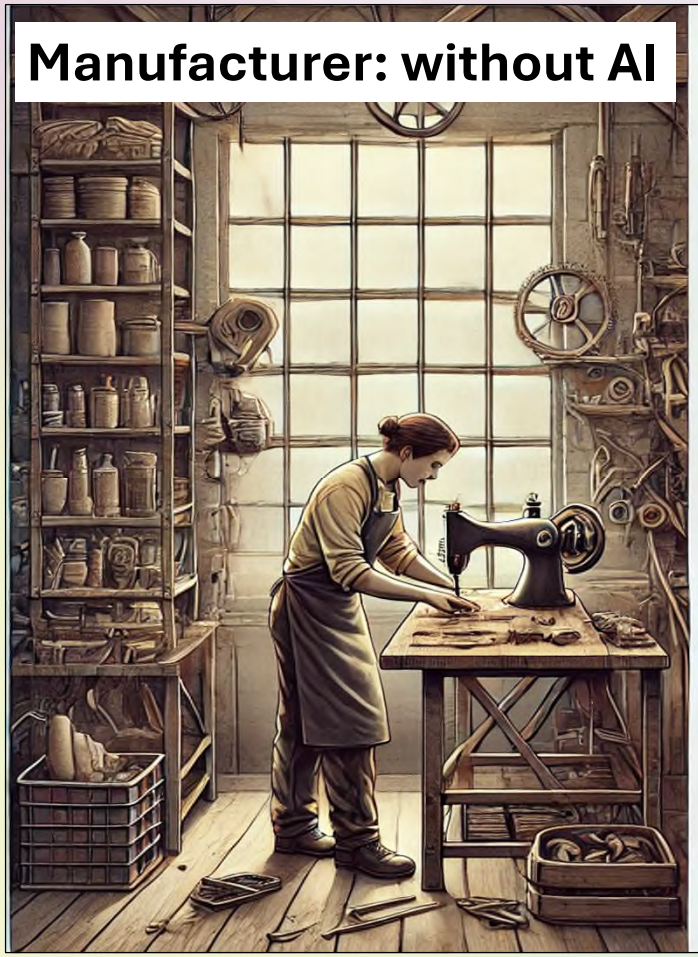
1. "Dominator"

2. "Facilitator"

3. "Operator"



AND NOW MULTI-AI AGENT SYSTEMS AND OUR EVOLUTION AS HUMANS IN INTERACTION WITH AI: MANUFACTURER -> MACHINIST -> MANAGER



IMPORTANT:
New forms of leadership and new skill profiles in the age of generative AI
AI leadership

Graphic: DALL-E 3 via ChatGPT, prompted by Doris Wessels, November 3, 2024

STEP-BY-STEP COMPETENCE DEVELOPMENT TO LEADERSHIP EXPERTISE IN HUMAN-MACHINE COLLABORATION IN THE AGE OF AGENTS

AI leadership competence
(AI leadership)

AI utilization competence
(strategic use)

AI application competence
(operational use)

AI LEADERSHIP IN THE AGE OF AGENCY: MY DEFINITION, MY UNDERSTANDING OF THE TERM, AND MY THESIS ON THE NEW COMPETENCY OF THE FUTURE

- **"AI leadership"** refers to the competency **of managing** the use of AI systems within a **value-oriented, transparent, and reflective framework without relinquishing decision-making authority to the AI technologies employed.**
- In a university context, this skill encompasses **strategic goal orientation, technical judgment, and ethical and legal sensitivity for the responsible use of AI systems while maintaining "good scientific practices"** – (equally) by teachers and learners.
- The term is thus closely related to established concepts such as *digital literacy*, *data literacy*, and *AI literacy*, but expands on them to include the dimension of **active leadership and management competence**.
- AI leadership can thus be assessed as **the central future competence** in the agentic age when using (multi-)AI agent systems.

Graphic: DALL-E 3 via ChatGPT, prompted by Doris Weßels, November 3, 2024

See also our earlier publication: Buck, Isabella/Weßels, Doris: "Well led = well written? 'AI leadership' as a relevant skill in collaboration with AI tools," in: Brägger, Gerold/Rolff, Hans-Günter (eds.): Handbook "Learning with Digital Media," 3rd edition, 2025

Thank you very much for your attention!
I look forward to your questions and perspectives.