CATCHING THE
NEXT GEN-AI TRAIN

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EXECUTIVE SUMMARY

AI's influence is on an upward trajectory. Forward-thinking organizations are channeling significant investments into AI-driven initiatives. However, there's an underlying sentiment of unease; despite the infusion of resources, a considerable number of enterprises feel unprepared to harness the full potential of AI. This hesitation can be attributed to two predominant challenges.

The first challenge involves pinpointing the exact sectors within the organization where AI can deliver added value or optimize efficiency. The second and perhaps more crucial challenge concerns the human element. There's a noticeable gap in employee capability regarding AI proficiency. This document intends to shed some light on both challenges.

We will delve into the AI tool landscape from the perspective of an IT organization. We begin with an overview of how we utilized an AI database for AI tool screening before we dive into five categories for AI tool usage. We introduce each category, discuss its purpose and tool range, and introduce standout representatives. We close with a conclusion and outlook.

GEN-AI ADOPTION

AI TOOL DATABASES
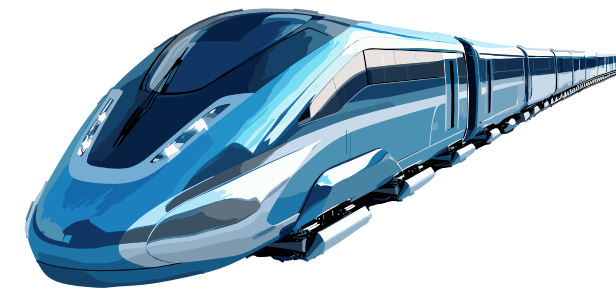
REVIEW APPROACH

5 CATEGORIES FOR AI TOOL USAGE IN IT

CONCLUSION & OUTLOOK

GEN-AI ADOPTION

On November 30, 2022, OpenAI discreetly launched ChatGPT (3.5) to the public [1]. According to UBS, it was the fastest-growing digital consumer service in history, reaching 100 million users in less than two months [2].

In April 2023, Morgan Stanley conducted a study involving 2,000 random participants. They discovered that the adoption of AI tools like ChatGPT would be surprisingly low. Only approximately 20% of respondents would regularly use ChatGPT [3]. That is 20% of a random sample in less than six months after launch.
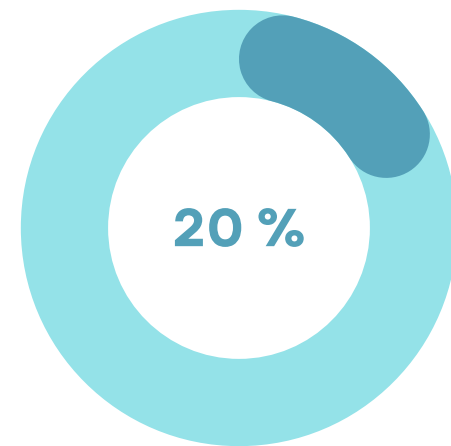
Also, in April 2023 [4], McKinsey conducted a study involving 1,684 employees from diverse organizations spanning various business areas and hierarchical levels. The study revealed that about 33% are using gen-AI regularly. Almost 25% of C-suite executives personally utilize gen-AI tools for work. About 40% of respondents indicated that their organizations would ramp up investments in AI. A significant 73% anticipate the need for reskilling initiatives within their organizations. Among the workforce's top challenges, AI models and tools stood out prominently.
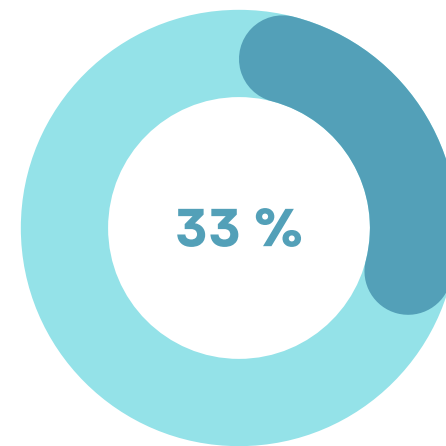
In May 2023 [5], AMD surveyed 2,500 IT leaders. Results revealed that 47% actively use AI, 50% of organizations feel ready for AI adoption, and 66% allocate budgets for AI. 70% expect efficiency boosts, especially in cybersecurity threat detection. 75% of IT leaders perceive more significant risk in not investing in AI than the potential pitfalls of investing. The survey highlights the challenge for organizations to match AI's rapid progress. Of those who already embrace AI, nearly 90% report improved workplace efficiency. The study further indicates that smaller organizations might be in a prime position to adapt swiftly.

20 %

Random Sample

33 %

Employees in General

47 %
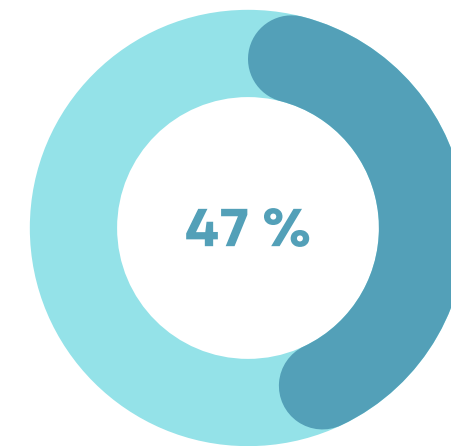
IT Leaders

are using Gen-AI.

[1] Techcrunch 2023: "ChatGPT: Everything you need to know about the AI-powered chatbot", https://techcrunch.com/2023/08/24/chatgpt-everything-you-need-to-know-about-the-open-ai-powered-chatbot/, last accessed: 31.08.2023

[2] Reuters 2023: "ChatGPT sets record for fastest-growing user base", https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/, last ccessed: 31.08.2023

[3] Morgan Stanley 2023: "There aren't actually THAT many people using ChatGPT", https://www.businessinsider.com/chatgpt-ai-adoption-slow-google-bard-morgan-stanley-2023-6, published in June 2023, last accessed: 31.08.2023

[4] McKinsey 2023: "The state of AI in 2023: Generative AI's breakout year", https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year, published in August 2023, last accessed: 27.08.2023
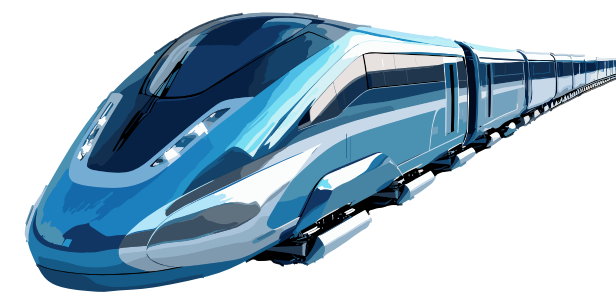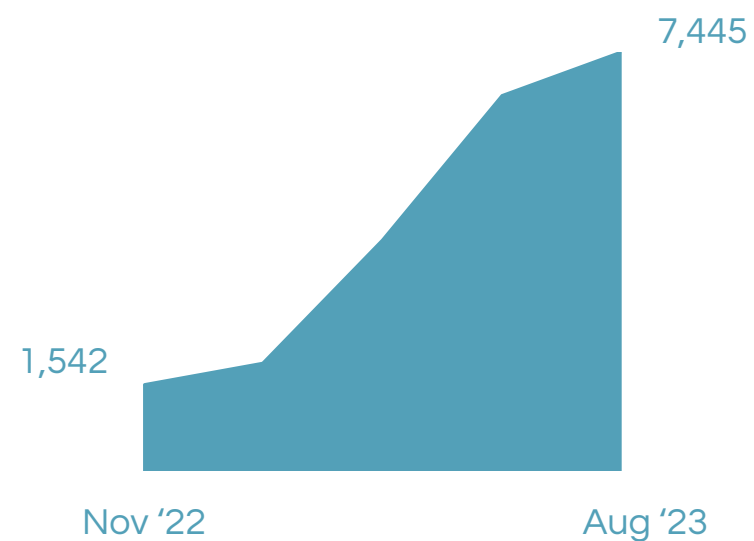
[5] AMD 2023: "AI Outlook: Are IT teams prepared for AI's mainstream moment?", https://www.amd.com/content/dam/amd/en/documents/solutions/ai/ai-outlook-are-it-teams-prepared.pdf, published in August 2023, last accessed: 31.08.2023

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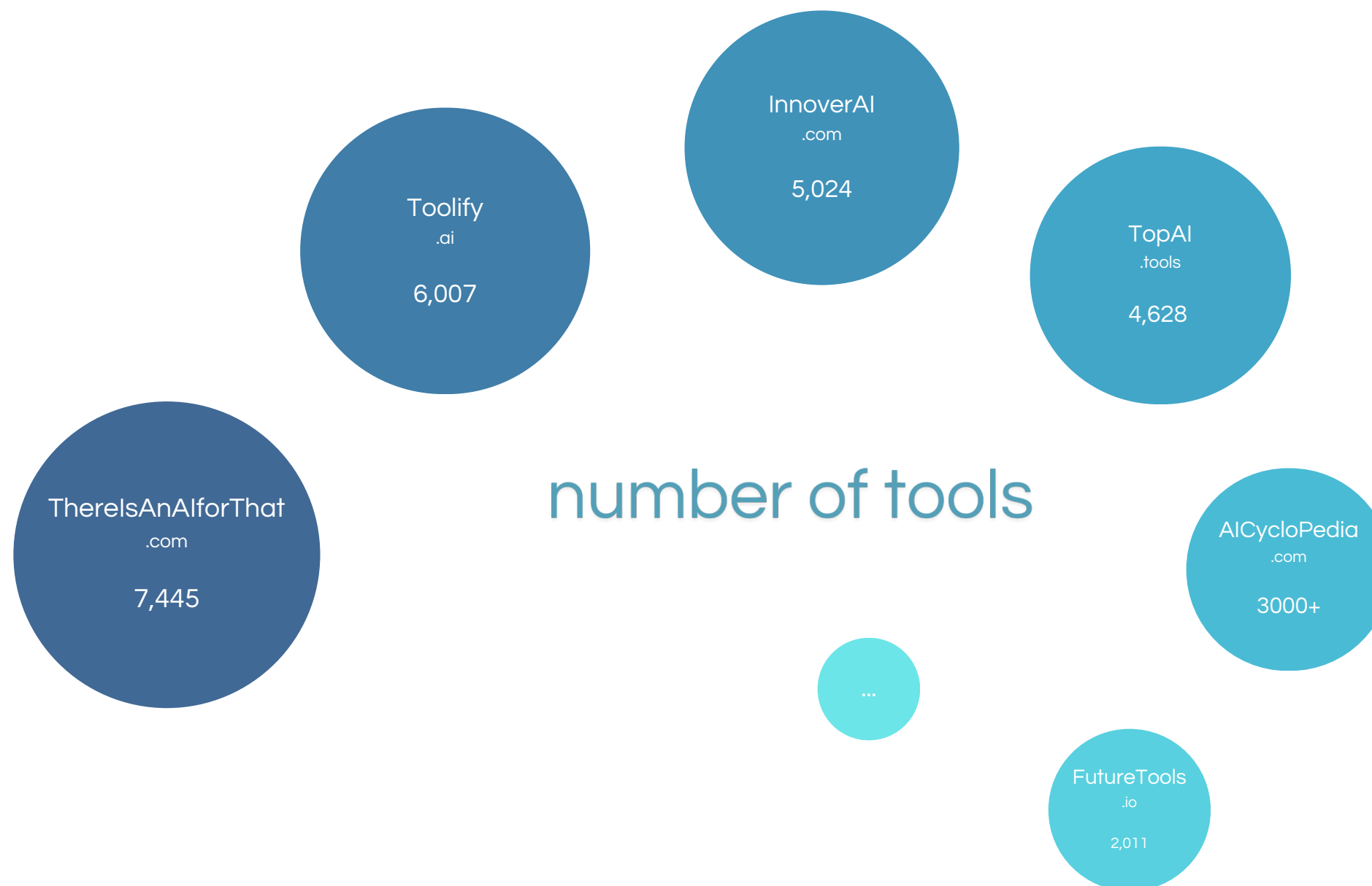
AI TOOL DATABASES

Even faster than the adoption of AI tools is their growth. We started with an overview of available AI tool databases. We chose ThereIsAnAIforThat.com for our review as it is the largest we could identify.

ThereIsAnAIForThat.com currently lists 7,445 AI tools [1]. With 383% in 9 months, the number of available tools has almost quadrupled since the launch of ChatGPT on November 30, 2022. In the following, we will see how we reviewed the database.

four times tool increase in 9 months
on thereisanaiforthat.com

7,445

1,542

Nov '22   Aug '23

InnoverAI
.com

5,024

Toolify
.ai

6,007

TopAI
.tools

4,628

ThereIsAnAIforThat
.com

7,445

number of tools

AICycloPedia
.com

3000+

...

FutureTools
.io

2,011

[1] ThereIsAnAIForThat 2023: "There's an AI for that – The largest AI aggregator", https://thereisanaiforthat.com/, last accessed: 31.08.2023
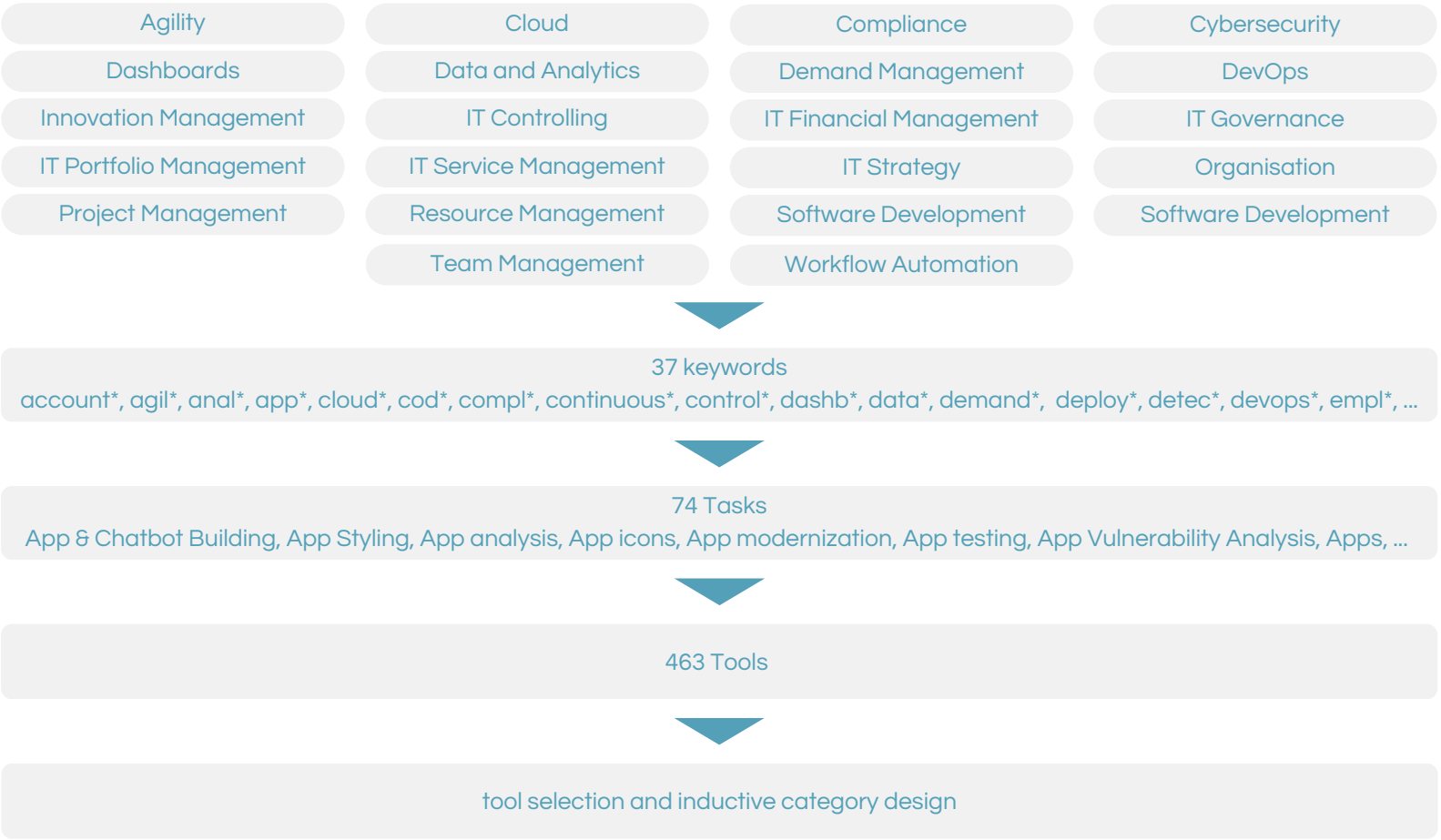
REVIEW APPROACH
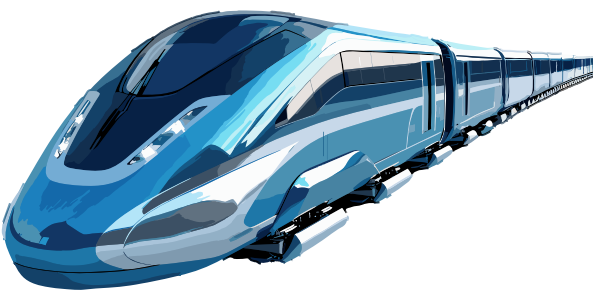
We applied a structured review process to counter tool proliferation, similar to a stage-gate process. Specifically, we identified 22 IT management notions, for instance, cybersecurity or resource management. These were expanded to synonyms and related terms, such as fraud or employee management. We then derived the stems of these terms, e.g., fraud* or empl*, resulting in 37 keywords for our queries.

The database returned so-called tasks, for instance, Data Security. Each task was linked to related AI tools. After iteratively reviewing and removing unsuitable tasks or tools due to thematic mismatches or unavailability, we narrowed our review down to 74 tasks and 463 tools for this review.

During our review, we noted significant variations in tool availability. We found approximately 250 tools for coding but only 9 for resource management-related matters. More generally speaking, we observed a gap between traditional IT management concepts and available AI tools. For instance, searches for tools related to strategy, project portfolio management, governance, compliance, service, operations, financial management, and controlling came up short.

This does not imply that these categories are less worth looking at. We formed five categories for AI tool use in IT to balance what is available and what might be increasingly relevant. In the following, we introduce these five categories.

Agility	Cloud	Compliance	Cybersecurity
Dashboards	Data and Analytics	Demand Management	DevOps
Innovation Management	IT Controlling	IT Financial Management	IT Governance
IT Portfolio Management	IT Service Management	IT Strategy	Organisation
Project Management	Resource Management	Software Development	Software Development
	Team Management	Workflow Automation	

37 keywords
account*, agil*, anal*, app*, cloud*, cod*, compl*, continuous*, control*, dashb*, data*, demand*, deploy*, detec*, devops*, empl*, …

74 Tasks
App & Chatbot Building, App Styling, App analysis, App icons, App modernization, App testing, App Vulnerability Analysis, Apps, …

463 Tools

tool selection and inductive category design

1 One-Click Project Management   **2** Virtual Employees   **3** Workflow Automation   **4** Conversational Coding and Analytics   **5** Generative Cybersecurity

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5 CATEGORIES FOR AI TOOL USE IN IT

1 One-Click
Project Management

2 Virtual
Employees

3 Workflow
Automation

4 Conversational
Coding and Analytics

5 Generative
Cybersecurity

One-Click Project Management tools automate project definition, task creation, scheduling, responsibility assignment, and communication support. Reality? Not quite yet, but it is worth a look.

Virtual Employees, trained with behavioral codices, assist in expert tasks and can act as consultants, extending capacities. Employee insight tools tap into the communication channels of employees, creating a virtual portrayal of employees to measure performance and suggest improvements. Other tools in this area emphasize well-being and engagement, and, eventually, some tools specialize in automated employee interviews, promised to be better than those done by humans. While most of these solutions are currently delivered by chatbots, advances in real-time video and voice generation indicate that this might change.

Workflow Automation ranges from free online tools that support generating single steps within a workflow to workflow automation engines that support workflow generation, team coordination, collaboration, and automation. Naturally, most workflow automation tools come with various integrations.

Conversational Coding and Analytics tools generate, debug, test, and increasingly begin to architect code for their users. On the interpretative side, AI analytics offer automated unstructured data intake, create visualizations, and recommendations for further insights generation based on your data.

Generative Security provides a safe umbrella by AI-powered helpers and intelligence platforms to detect and support fixing threats, vulnerabilities, or privacy issues.

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1 ONE-CLICK PROJECT MANAGEMENT

AI generates projects based on your natural language descriptions. It then automatically schedules the timeframes and assigns employees based on their skills and availability. Reality? Not quite yet, up to what we could observe, but gen-AI tools seem to push toward this direction.
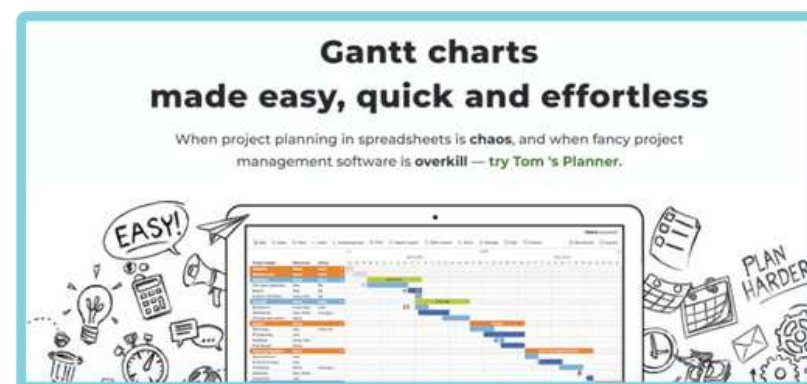
The tool offering was surprisingly sparse for a use case as common as project management. Filtering tools due to subject matter mismatch or unavailability yielded 5 out of 463 tools in this category.

Let's get a feeling for what was observable on the AI tool database and look at how Tom's Planner generates tasks and timelines and how the Height Co-Pilot empowers developers in structuring their project-related communication.
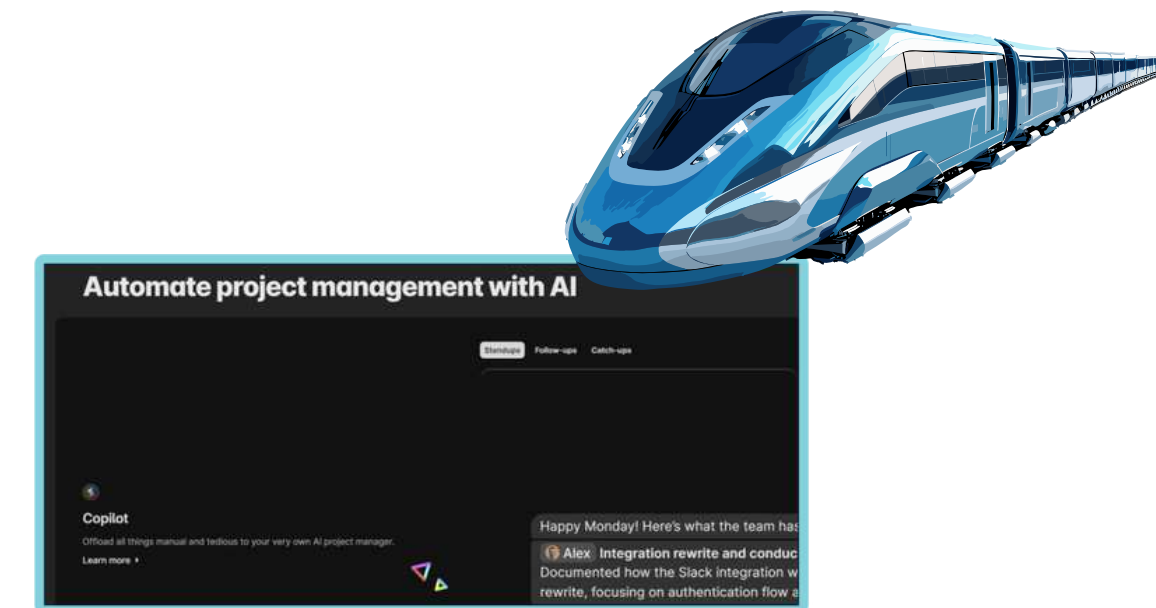
Tom's Planner [1] simplifies project management to its essentials. First released in 2009, it responded to the complexity of tools like Microsoft's Project. The planner offers Gantt-based time planning, dependency management, responsibility assignments, and progress tracking. The UX is sleek, responsive, and intuitive but reduced.

The planner features a conversational interface and offers end-to-end project generation with activity groups, tasks, and scheduling from a single prompt. Suggestions appear to be reasonable and heavily rely on the quality of the user's input. Tailoring results is straightforward.

Due to its simplicity and collaborative nature (also expressed in the licensing model), we deem it especially useful in early project stages, such as creating an initial project plan with key stakeholders.

Height Co-Pilot:
Structure unstructured project-related communication

Founded in 2018, the Height and its now available AI Copilot [2] target a more tech-savvy audience. It lets users plan projects and tasks in spreadsheets, Kanbans, Gantts, and calendars. Each task includes (i.a.) description, chat channels for communication, and responsibility assignments. Height offers project templates and task imports from Asana, GitHub, JIRA, monday.com, or via CSV, and connectors for integrating Slack, Figma, GitHub, or Notion, and a VSCode Extension.

The generative AI part focuses on automating team standups, task generation from feedback, conversation summaries, duplicate detection, and release notes generation. Other features include task generation from code (in VSCode) and automation that can be seen as small task status-based workflows.

Height completes the picture with time tracking functionality and a task form functionality that enables the generation of a structured intake that can be used in feature requests or IT support scenarios. The generated form can then be shared with clients or positioned on portals.

Tom's Planner:
The automated essence for project planning?

[1] https://www.tomsplanner.com/
[2] https://height.app/copilot/

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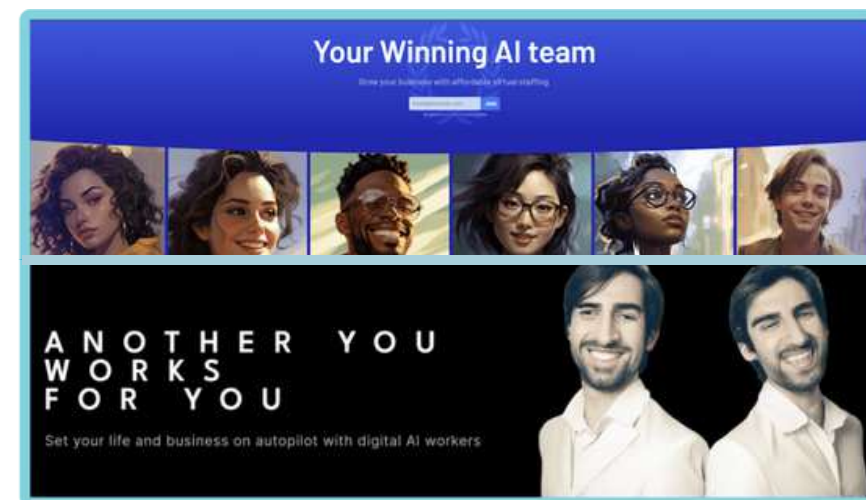
2 VIRTUAL EMPLOYEES

Virtual employees promise to provide both virtual capacities and a digital mirror of (human) employees in the form of employee insights. We argue that both are currently sub-trends that should be followed closely as technology advances rapidly, even though some features do not seem compatible with every work culture on this planet.

Tools range from free online services like RoleBot for generating expert documents over personal expert circles in Olympia and AphID to tool-fueled automation for engaging employees in Amber and Kaktus.ai. Tool availability indicates that this category is still waiting for its breakthrough. The results were few but novel. We were able to identify 9 out of 463 tools in this category.
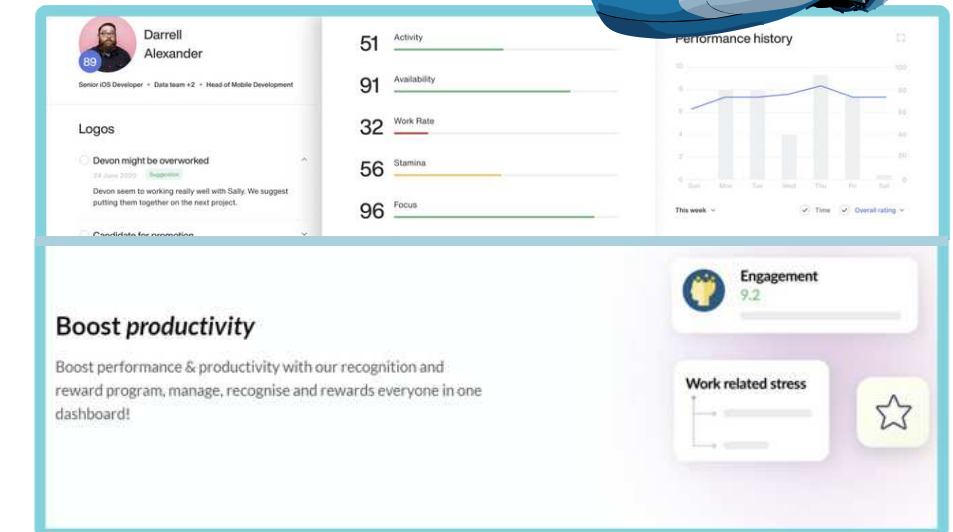
RoleBot [1] generates role-based expert documents for its users. This includes anything from financial management over marketing to "provide me a REST-based JSON API for GitLab," it will exactly do as you wish.

Olympia [2] tries to bring it one abstraction layer higher and provides you with a chat suite, including twelve experts. Each one is specifically trained for its field. While the idea is sound, the quality of the results varied.

"Cloning" platforms like AphID [3] have a different approach to quality; AphID offers a clone marketplace. Here, users offer their trained and specialized workers (models) to others and earn.

Intelogos & Kaktus.ai:
AI-powered employee engagement

Conversely, some tools shift the focus from generating human-like behavior toward interpreting and analyzing human behavior to generate employee insights.

AI-powered crawlers like Kaktus AI [4] analyze communication channels (e.g., Slack) for team engagement and communication patterns to identify stress, anxiety, and mental illness. InFeedo's Amber [5] and Intelogos [6] offer the automation of performance reviews and provide employee development plans.

Olympia & AphID:
Your virtual resource pool (to be?)

[1] https://rolebot.streamlit.app/
[2] https://olympia.chat/
[3] https://www.aphid.com/
[4] https://www.kaktus.ai/
[5] https://www.infeedo.ai/
[6] https://www.intelogos.com/

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3 WORKFLOW AUTOMATION

Workflow automation includes AI-supported workflow generation, identification of workflow steps with automation potential, and automation of repetitive tasks, such as data entry or coordination jobs. Tools in this category often come with extensive integration options as workflows are often designed across other tools.

We identified 12 out of 463 tools in this category. The tools often come with a specific focus. For instance, BlinkOps specializes in cybersecurity workflows, and Argil focuses on content creators. However, there are also generic tools. In the following, we introduce two generic tools that take a fundamentally different approach to workflow automation: one brings a top-down perspective in automating, and the other takes a bottom-up perspective.

Process Street [1] represents the first category. Process Street was 2020 featured in Forbes as a no-code workflow management startup. The tool supports the generation of workflows across several tools and data sources (2000+), employee coordination, collaboration, and automation, and empowers governance by supporting the generation of standard operating procedures. It further provides a big library with process templates, said to be used by well-established organizations.

Its built-in AI capabilities help its users in workflow generation based on natural language or document input. The process AI further recognizes patterns between workflows and considers this context when generating tasks within workflows.

Process Street:
A no-code workflow automation suite with AI capabilities
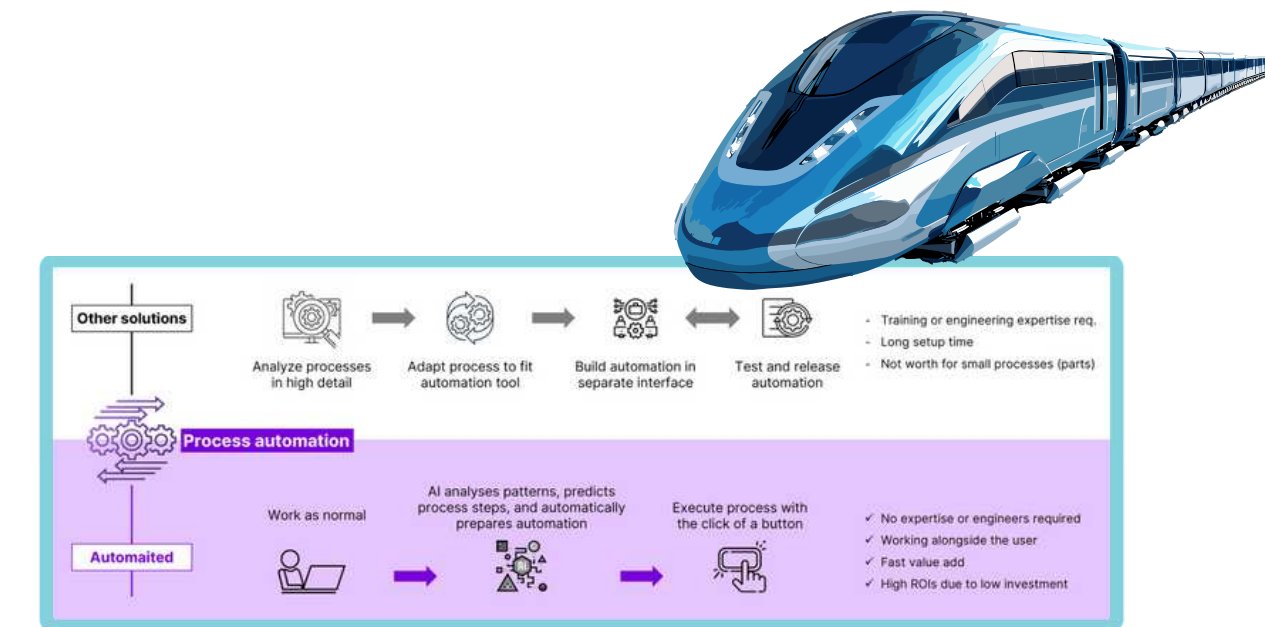
Automaited:
Automated bottom-up automation for repetitive tasks

Automaited [2] belongs to the second category. It blends process mining with generative AI and is operated in the background of an employee's PC. Here, it scans interactions within and across software contexts and proactively conversationally suggests automation for repetitive tasks, allowing easy adjustments. This bottom-up approach stands out for its potential to automatically drive the automation degree of an organization.

Automaited promises instant AI automation and works with 1,000+ tools. Reviewing exemplary use cases shows that the tool is suited explicitly for automating data entry jobs, automated e-mail writing, data comparison, and information retrieval across tools.

Unlike Process.st, Automaited aims to raise automation on a per-individual basis only. Would a combination of top-down and bottom-up workflow automation, i.e., Process Street and Automaited, work well or result in conflicting automation spaces?
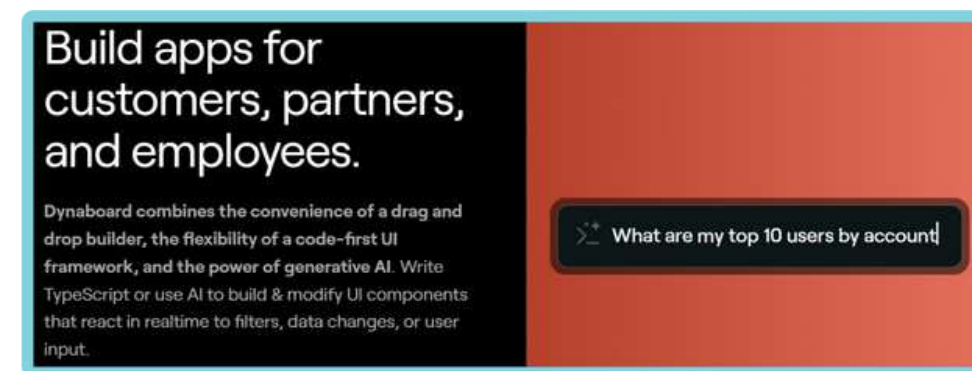
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4 CONVERSATIONAL CODING AND ANALYTICS

Conversational Coding and Analytics tools embrace your unstructured data intake and provide a structured output. Various code generators architect, generate, debug, and test code for their users. Gen-AI engines provide model training support functionalities, enabling users to create coding tools. On the more interpretative side, an extensive AI tool offering automates data intake from various sources. It facilitates the generation of insights by automating visualizations or highlighting opportunities for further discovery.

Being closest to GPT's capabilities, conversational coding and analytics are predominant in the tool landscape. The proliferation of tools results in a wide range of features and quality. The offering ranges from "small online helpers" focussed on coding or analyzing a specific language to AI-powered cloud IDEs and big data suites. This category includes 402 out of 463 tools, with 257 focussing on coding and 145 on analytics.

Smaller tools like DevGPT [1] provide a chat agent specialized in inquiring about relevant requirements and promise to deliver perfectly fitting code due to integrations. DevGPT structures answers in files. The integrations ensure files and code are automatically created in your chosen IDE. Codefy.ai [2] structures its AI-powered coding functionalities in various sub-tools, for instance, code writer, translator, optimizer, variable renamer, and many more (currently 20). The toolset covers multiple use cases, from analyzing and refactoring to delivering turnkey software. Codefy.ai plans to offer a tool-creation suite in the future. Dynaboard.ai [3] positions itself on the verge between code generation and data analysis. The suite describes itself as an "AI supercharged low-code IDE." Dynaboard emphasizes integrating various data sources and enables real-time collaboration in developing production-grade software. Everyday use cases include interpreting natural language queries, AI query generation, and AI provision of ready-to-use snippets.

LIDA Library:
Open source automated data exploration and visualization

AI-powered analytics tools predominantly differentiate by the subject matter field their users aim to analyze. This includes e-commerce analysis, financial data analysis, decision-making support, football match results prediction, biomarker discovery, legal data analysis, metaverse data analysis, SWOT analysis, persona-based analysis, and many more. From a more technical standpoint, the tool range is similarly broad; it encompasses data preparation and cleaning, generic data analysis, tools emphasizing data presentation, collaborative data structuring platforms, and big data analytics platforms. As the offering is particular to individual needs, we introduce a solution that cuts across.

Similarly to Dynaboard, the open-source library LIDA [4] is bridging the gap between code generation and data analysis. LIDA allows for automated data exploration, which is convenient when the user is unfamiliar with the data. It creates visualizations in various programming languages, and further supports the generation of infographics.

Dynaboard:
Collaborative low-coding

[1] https://www.devgpt.com/
[2] https://www.codefy.ai/
[3] https://dynaboard.com/
[4] https://microsoft.github.io/lida/

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5 GENERATIVE SECURITY

Generative security saves its users time while increasing precision and speed. More specifically, tools in this category help automate the gathering of cybersecurity intelligence, focussed communication of findings, threat and vulnerability detection, detection of privacy issues, and AI-powered hacking, among others. Other use cases include spam, scam, and fraud detectors.

This category includes small online tools for checking website privacy or code vulnerabilities, cybersecurity intelligence suites, AI-powered white hat hacking services, and services that monitor and block potentially harmful employee behavior. Overall, we found 19 out of 463 in this category.

The Security Bulldog [1] is a cybersecurity intelligence platform that promises to save security experts research time and speed up remediation. To achieve this, it enables its users to integrate their preferred news, podcasts, CVEs, and MITRE ATT&CK. This information is presented in coherent bundles, allowing easy navigation to the underlying sources. Security Bulldog further facilitates sharing the information to kick off remediation. It uses AI for data aggregation and personalized recommendations. This enables it to detect dependencies between content in different formats and, thus, to inform with focus. It further maps results against the user's stored IT environment and provides distilled lists for each technology. SecurityBulldog's integrations enable accessible communication, e.g., through Slack, X (Twitter), and LinkedIn.

The Security Bulldog:
Automated cybersecurity intelligence digestion and more
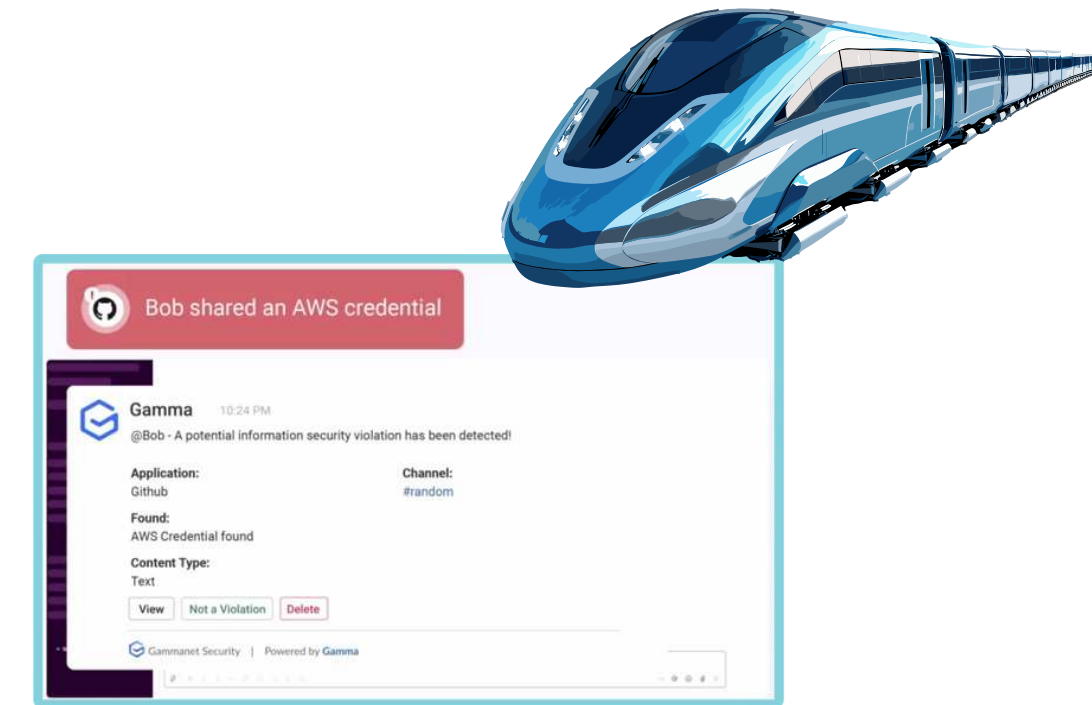
Gamma AI:
Strengthen the weakest link in cybersecurity

HackerAI [2] offers automated vulnerability detection through source code analysis. Zip your code, upload it, and it will be analyzed. User data is stored in encrypted containers and deleted after report generation. Examples of what the AI can detect include SQL Injection in Python, LFI in PHP, and RCE in Rust. The service supports Python, JavaScript, Go, C++, Bash, Rust, Ruby, C, TypeScript, OCami, PHP, Java, C#, and Swift.

Gamma [3] states that over 95% of data breaches involve human negligence. These breaches often occur at the private-professional border of employees. Gamma monitors employee behavior at this border, proactively avoids potential violations, and instantly notifies internal security. Gamma integrates with various tools prone to data breaches, including AWS, Box, Confluence, DropBox, GMail, Jira, Outlook, and many more to achieve this.

[1] https://securitybulldog.com/
[2] https://hacker-ai.ai/
[3] https://gamma.ai/

CONCLUSION & OUTLOOK

The momentum surrounding AI is hard to ignore. Tool availability surges but often is still in the beginning regarding their functionality. Various tools are currently marketed with a compelling offer: early access for those who join waiting lists. This strategy reminds us of tactics like "fake door testing" and, occasionally, the "vaporware" trend of the 1980s and '90s.

We could not identify tools specifically suitable for higher IT management functions, such as project portfolio or financial management. As the tool offering on the chosen (and visibly largest) database can be described as encompassing, we take this as an indicator that AI tool support in these areas is indeed sparse. We argue that AI capabilities will integrate into these areas in the (maybe not-to-distant) future.

The adoption and success of AI for (human) resource management might be culture-specific. Tools in this segment are pushing toward substituting human-HR communication with AI-HR communication through integration into the employees' channels. Some could see this as beneficial, and others could raise concerns about employee privacy. Moving from an HR management perspective to a skill and capacity perspective, we can observe how human-like AI assistants seem to chart their way. Future advances in real-time voice and character animation could lead to a scenario in which we will have video calls with our AI "colleagues" like we currently have with our human colleagues, including screen sharing and the AI explaining what it has recently done in which of your tools. However, tool availability indicates that this category is still waiting for its breakthrough.

Since our review is non-exhaustive, we are excited to follow new review approaches. Furthermore, we often were not able to evaluate tools in depth; many tools are not only limited in terms of free accessibility but require setting up role-model parts of organizations, simulating use-cases, or might even require live testing in secured environments for a more in-depth evaluation.

Another challenge we encountered is related to the management of AI costs. At first glimpse, this viewpoint seems to be mostly unrecognized by scholars and practitioners, especially when looking at the unique and prevailing attributes of AI-related costs, such as token-based pay-as-you-go pricing models and token-based contingents. Establishing an AI lab could provide answers to utilizing AI services and models and managing AI costs in organizations.

Zooming out, it becomes evident that AI's influence is on an upward trajectory. Forward-thinking organizations are channeling significant investments into AI-driven initiatives. However, there's an underlying sentiment of unease. Despite the infusion of resources, many enterprises need to prepare further to harness the full potential of AI. This hesitation can be attributed to two predominant challenges.

The first challenge involves pinpointing the exact sectors within the organization where AI can deliver added value or optimize efficiency. The second and perhaps more crucial challenge concerns the human element. There's a noticeable gap in employee capability regarding AI proficiency. This document intends to shed some light on both challenges.

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BEST DATA
PROJECT AWARD

07. und 08. November 2023
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