



# **2025 HR Leadership Conference**

## **Session 4B: Practical Applications of AI**

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## Experience

Partner

**Technology and Innovation**  
**EFCG**

Chief Executive Officer  
**EcoLucid**

Founder and Chief Executive Officer, Board Member  
**OptiRTC, Inc.**

Principal, Board Member (2011-2012)  
**Geosyntec Consultants**

**Woodward Clyde / URS / AECOM**

## Education

M.S., Civil Engineering  
**Oregon State University**

B.S., Engineering & Environmental Science  
**University of Notre Dame**

## EFCG Technology Practice

### Technology Advisory

Tech Investment Benchmarking and Strategy  
Market Analysis and Technical Due Diligence  
Innovative Business Model Partner  
Knowledge Management and IP  
Technology Organization Design  
AI Workforce Resilience

### Advanced Analytics

Custom Analytics Advisory  
Innovation Network Analysis  
Forecasting and Predictive Analytics  
Market and Competition Monitoring

**Quantitative Integration Analysis (QIA)** –  
Monitor Integration Velocity for Post M&A and  
Org Redesigns

# Today's Agenda

01

## Where and How are AEC Firms Using Generative AI?

Common use cases and methods in AEC

02

## Generalist Models

Example use cases using Microsoft Copilot and ChatGPT

03

## For-Purpose Chatbots

Common chatbot descriptions and sample prompts

04

## Commercial Off-The-Shelf Solutions

Market solutions available for identified AEC use cases

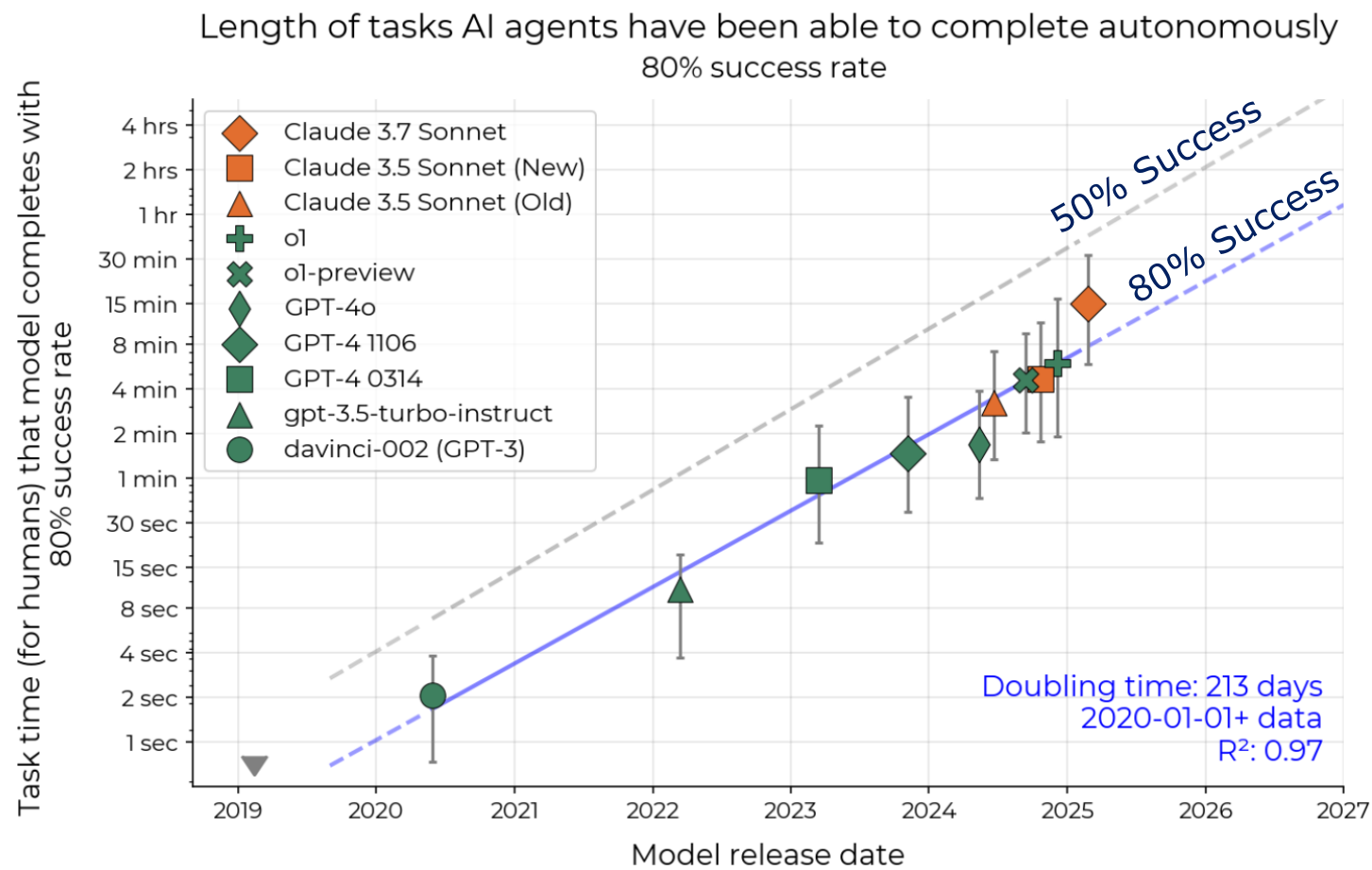
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## Key Takeaways

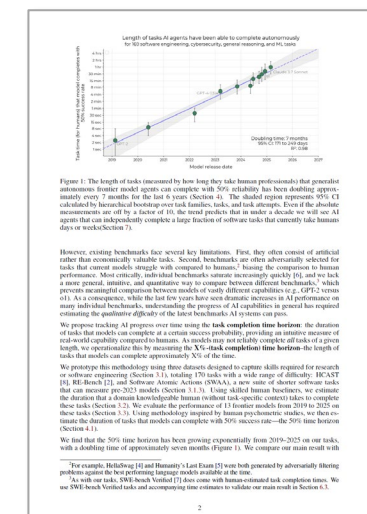


# Generative AI is Progressing Quickly How Rapid is the Pace of Change?

As models get more sophisticated the length of tasks that can be automated doubles every 213-days.

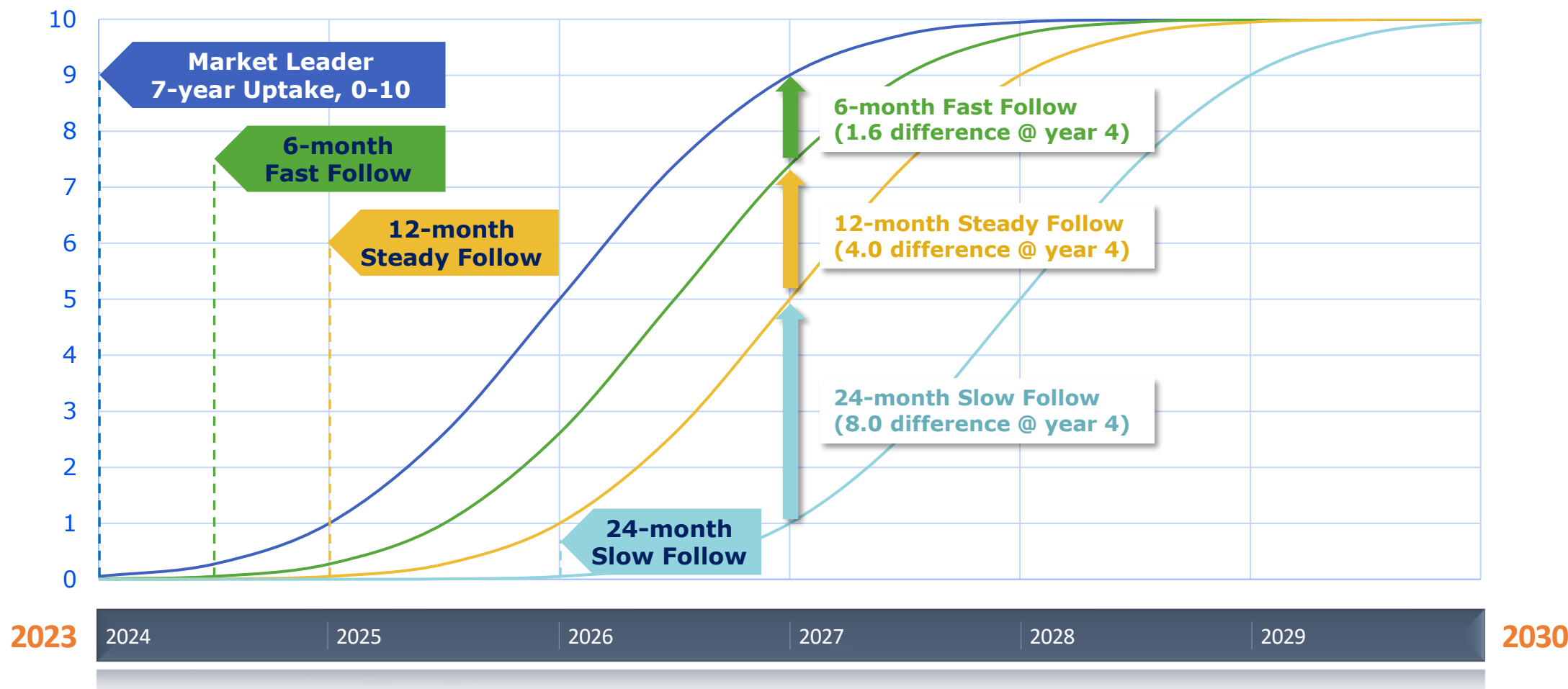


"...within 5 years, AI systems will be capable of automating many software tasks that currently take humans a month."







<https://doi.org/10.48550/arXiv.2503.14499>

# The Next 18-24 Months Are Critical for Gen AI Adoption



**The inflection point for uptake of Generative AI is soon – now is the time to stay within ~6 months of early movers, or else the adoption curve gets very steep, very quickly!**

# Where Are Firms Actively Using Generative AI Today?

				
	Proposals, Marketing & Business Development	Project Management & Resource Planning	Technical Analysis & Deliverable Production	Coding & Workflow Optimization
Creating Value	<ul style="list-style-type: none"> <li>Improving pricing strategies and profitability analysis for proposals</li> <li>Enhancing precision and consistency of financial terms in contracts</li> </ul>	<ul style="list-style-type: none"> <li>Forecasting project financial performance and identifying profitability risks early</li> <li>Optimizing resource allocation and project budgets proactively</li> </ul>	<ul style="list-style-type: none"> <li>Structuring financial and operational data for actionable insights</li> <li>Accelerating scenario modeling for investment decisions</li> </ul>	<ul style="list-style-type: none"> <li>Rapid development of custom financial analytics and dashboards</li> <li>Improving accuracy of financial models through automated testing and QA</li> </ul>
Driving Efficiency	<ul style="list-style-type: none"> <li>Automating routine financial content for RFP responses</li> <li>Streamlining competitor financial analysis and market benchmarking</li> </ul>	<ul style="list-style-type: none"> <li>Automating transcription and summarization of financial meetings and budget reviews</li> <li>Simplifying project time tracking and billing reconciliation processes</li> </ul>	<ul style="list-style-type: none"> <li>Automating repetitive finance tasks (AR/AP processes, expense categorization)</li> <li>Generating draft financial reports for faster review and approvals</li> </ul>	<ul style="list-style-type: none"> <li>Reducing manual financial data entry and error corrections</li> <li>Streamlining integration of financial data with ERP and accounting systems</li> </ul>

**Firms are realizing significant value by using generalist AI models and their existing financial and operational data, rather than investing heavily in custom-built solutions. Firms are also increasingly adopting proven Commercial Off-The-Shelf (COTS) solutions to accelerate efficiencies and strengthen decision-making.**

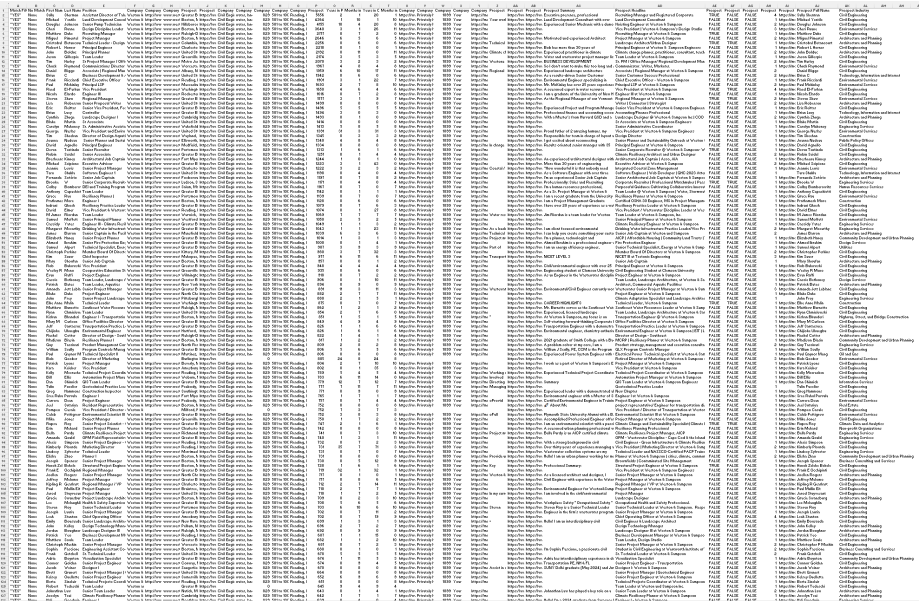


# How Are Firms Actively Using Generative AI Today?

	Generalist Models	For-Purpose Chatbots	Commercial Off-The-Shelf (COTS)
Overview	<b>Broad, publicly available AI models (e.g., ChatGPT)</b> with extensive training on a wide variety of text and data.	<b>Customized chatbots tailored for a firm's specific domain</b> , often requiring in-house development and training on proprietary data.	<b>Pre-built solutions from external vendors</b> that can be quickly deployed and integrated.
Advantages	<ul style="list-style-type: none"><li>• <b>Broad applicability</b></li><li>• <b>Fast onboarding</b></li><li>• <b>Low initial cost</b></li><li>• <b>Community support</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Tailored to business needs</b></li><li>• <b>Control over data and IP</b></li><li>• <b>Potential competitive edge</b></li><li>• <b>Brand alignment</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Rapid deployment</b></li><li>• <b>Proven technology</b></li><li>• <b>Lower in-house overhead</b></li><li>• <b>Vendor support</b></li></ul>
Drawbacks	<ul style="list-style-type: none"><li>• <b>Limited domain specificity</b></li><li>• <b>Potential data/privacy concerns</b></li><li>• <b>Less control</b></li><li>• <b>Risk of incorrect or generic outputs</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Higher investment</b></li><li>• <b>Longer development cycles</b></li><li>• <b>Scalability challenges</b></li><li>• <b>Need for robust data</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Licensing costs</b></li><li>• <b>Vendor lock-in</b></li><li>• <b>Limited customization</b></li><li>• <b>Data security concerns</b></li></ul>
	<i><b>Everyone should learn how to do this!</b></i>	<i><b>An area that larger firms may want to investigate and invest in in-house capabilities.</b></i>	<i><b>Accelerate quickly by leveraging someone else's capital.</b></i>

# Generalist Model: Identifying Skills and Gaps from LinkedIn Data

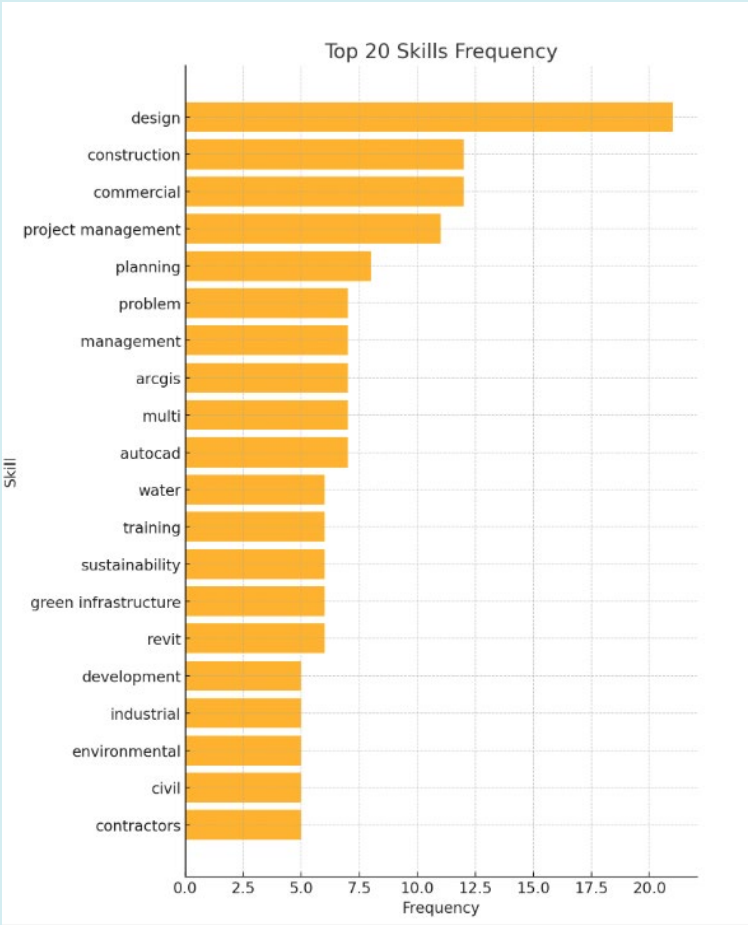
**Prompt:** Can you determine what skills are mentioned in the "Profile Summary" column and summarize their frequency.



Skill Frequency (Top 50)		
	Skill	Frequency
1	design	21
2	construction	12
3	commercial	12
4	project management	11
5	planning	8
6	problem	7
7	management	7
8	arcgis	7
9	multi	7
10	autocad	7
11	water	6
12	training	6
13	sustainability	6
14	green infrastructure	6
15	revit	6
16	development	5
17	industrial	5



Model:  
ChatGPT-3



LinkedIn Scrape of All Employees into Excel



# Generalist Model: Identifying Skills and Gaps from LinkedIn Data



## Prompt:

Can you do a deep dive on design related skills and identify potential gaps given the "company specialties".

Design-Related Skills Extracted

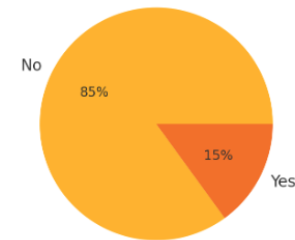
	Skill	Frequency
1	design	21
2	planning	8
3	autocad	7
4	revit	6
5	strategic planning	3
6	pump station design	3
7	sketchup	3
8	utility design	2
9	cad	2
10	urban planning	2
11	watershed planning	2
12	sustainable design	2
13	indesign	2
14	plumbing design	2
15	hydraulic modeling	2
16	durham east end connector visualization	2
17	geographic information systems	2
18	master planning	2
19	site planning	2
20	graphic design	2

Company Specialties Vs Design Skill Coverage

Specialty	Frequency	Matching Design Skills	Gap?
1 water	714	civil engineering graduate from the university of new hampshire. engineer i at weston & sampson with a focus in water distribution design, dam safety. i primarily focus on modeling surface water features to evaluate flooding impacts, design of wastewater sewer collection systems, designing stormwater bmps, drinking water plant treatment facility designs, drinking an experienced architectural designer with a proven track record of working in the architecture, bioclimatic architecture at ub. his academic, catherine is a landscape designer with a focus in nature, design professional who has completed a master's degree in architecture from the university of michigan, design professional with a bachelor of landscape architecture focused in a passionate civil engineering student with a focus on environmental engineering at wertworth institute of technology, beyond my academic pursuits, certificate in geographic information systems. experienced with environmental health, computing with an engineering management degree specializing in environmental engineering along with a chemical engineering bella developed resiliency design guidelines for protecting historic buildings from flood, climate change planning, climate resilient design solutions. i have a passion for discovering sound engineering solutions to complex municipal projects, designer. bella has demonstrated experience developing resiliency plans, leading experience in translating climate change	No
2 landscape architecture	714		No
3 environmental services	714		No
4 climate resiliency	714		No
5 aquatics	714	aquatics designs of today	No
6 construction administration	714	12 construction, proficient in autocad, cadd * construction quality control * field design * report generation * creating record drawings, construction field, have designed, construction industry. his project experience includes design for new constructions, contractor with broad construction experience specializing in design, design construction projects not just to	No
7 renewable energy	714	energy modeling specialist who is tuned into the massachusetts energy efficiency rebate programs for commercial, request energy modeling, while building on leadership skills developed at the us coast guard academy to deliver energy solutions to clients	No
8 facilities development	714	autodesk certified professional revit bim software revit training bim implementation digital design process content development sustainable design healthcare design lead ap bdc cdt, concept development, design development, design spec, development, development, architect with 30-years of drafting software expertise on multiple platforms. architectural a sustainability champion for the sustainable communities division of apa. he was also appointed in 2014 by governor lincoln chafee to serve on the rhode island state planning council. in 2022, catherine is a landscape designer with a focus in nature, design professional with a bachelor of landscape architecture focused in civil, design professional with a master of	No
9 land	714		No
10 mapping	714	coordination with municipalities to meet schedule constraints. i have also been responsible for geographic information system (gis) mapping updates	No
11 gis	714	coordination with municipalities to meet schedule constraints. i have also been responsible for geographic information system (gis) mapping updates, geographic information systems (gis) global positioning systems (gps) water, new jersey. i previously produced gis maps depicting differences in demographics across manufactured home parks under professor linda shi designing stormwater bmps, engineered designs for innovative stormwater best management practices. many of these designs have included constructed wetlands, hazard mitigation plans. mr. roy has managed several stormwater projects that have included conceptual, including review of proposed stormwater systems using hydrocad, stormwater design, advanced geotechnical design, completed this degree in december 2023 with the guidance of my geotechnical engineering advisor. my master's thesis focuses on optimizing thermospheres for permafrost stabilization by conducting numerical analysis in ansys fluent. other research projects i worked on include modeling suction caisson foundations under cyclic	No
12 stormwater	714		No
13 geotechnical	714		No
14 hazardous waste	714		Yes
15 transportation	714		Yes
16 traffic	714	traffic design	No
17 solid waste	714	disciplined engineer with a solid background in automation system design, i'm an experienced senior job captain with a solid architectural design	No

Portion Of Specialties With / Without Design Skill Coverage

Portion of Specialties With / Without Design Skill Coverage



### How I approached the “deep dive”

1. Pulled every skill from the *Prospect Summary* text again, but this time filtered down to anything obviously design-related—tools (AutoCAD, Revit, BIM), design verbs (“planning,” “drafting”), or phrases that contain “design.”
2. Parsed the *Company Specialties* column into individual items.
3. Cross-checked each specialty against the design-skill list to see whether at least one matching skill shows up in the talent pool.
4. Flagged gaps where a specialty had *no* overlapping design skill.

### Quick take-aways

Metric	Value
Total unique design-related skills detected	34
Total unique company specialties	121
Specialties covered by ≥1 design skill	103 (≈85 %)
Specialties without a matching design skill	18 (≈15 %)

(Pie chart above visualizes that 85 %/15 % split.)



Model:  
ChatGPTo3

# Typical HR Use Cases (Generalist and Chatbots/Agents)



Use Case	Description	Sample Gen AI Prompt
<b>Automating routine content (e-mails, newsletters, policy drafts, job descriptions)</b>	Quickly drafts standard HR communications and documents to save time.	"Draft an employee-wide email announcing our new hybrid-work policy in a friendly yet professional tone (≈250 words)."
<b>Performance-review narrative drafting or calibration</b>	Turns bullet feedback and ratings into well-structured review comments and checks for consistency.	"Turn these manager notes into a balanced performance summary for a senior project engineer (≈150 words)."
<b>Resume screening &amp; short-listing</b>	Extracts key skills, scores fit, and surfaces top applicants for a role.	"From the 40 attached résumés, list the ten best civil-structural engineer candidates for job req #12456, with one-sentence rationales."
<b>Proactive candidate sourcing &amp; tailored outreach messages</b>	Searches public profiles for target skills and crafts personalized outreach.	"Find BIM coordinators in the Midwest with 5+ years in Revit and write a customized LinkedIn InMail inviting them to discuss our open role."
<b>HR self-service chatbot for policy / benefits Q&amp;A</b>	Provides 24/7 answers to common employee questions, reducing help-desk tickets.	N/A (implemented as bot; sample utterance: "What is our parental-leave policy?")
<b>Skills taxonomy creation and gap analysis</b>	Maps roles to skills, identifies shortages, and informs upskilling plans.	"Generate a skills matrix for our water-resources discipline and highlight gaps vs. upcoming project needs."
<b>Resource &amp; workforce planning tied to project pipeline</b>	Predicts staffing demand and recommends hiring or reallocation.	"Using our proposal win probability data, forecast senior mechanical-engineer demand by quarter through 2026."

# Typical HR Use Cases (Generalist and Chatbots/Agents)



Use Case	Description	Sample Gen AI Prompt
<b>Safety-training assets generated on demand (images, videos, VR)</b>	Produces site-specific, engaging safety material without external vendors.	"Create a quick VR scenario showing proper ladder setup on a high-rise renovation site."
<b>Drafting or summarizing compliance documentation (EEO, OSHA logs, etc.)</b>	Speeds preparation of mandatory reports and reduces legal-risk workload.	"Summarize the attached OSHA 300 log into a one-page executive brief with key trends and recommendations."
<b>Employee-engagement pulse summaries &amp; sentiment analysis</b>	Converts raw survey or message text into actionable insights.	"Analyze these survey comments and list the top five morale drivers and detractors."
<b>Diversity &amp; inclusion language audits/rewrites for job ads &amp; comms</b>	Flags biased wording and rewrites to attract diverse talent.	"Rewrite this job posting to remove gender-coded language and appeal to traditionally under-represented candidates."
<b>Predictive attrition or retention-risk narratives with suggested actions</b>	Turns analytics into plain-language stories and action plans.	"Explain the drivers behind the 12 % attrition risk in our geotechnical group and propose three retention tactics."
<b>Idea-generation workshops (e.g., "green-field" solution co-pilot)</b>	Uses Gen AI as a brainstorming partner to accelerate innovation sessions.	"Facilitate a 30-minute ideation exercise: generate 10 novel benefits ideas for on-site craft laborers, grouped by theme."



# Commercial Off-The-Shelf: Monday.com

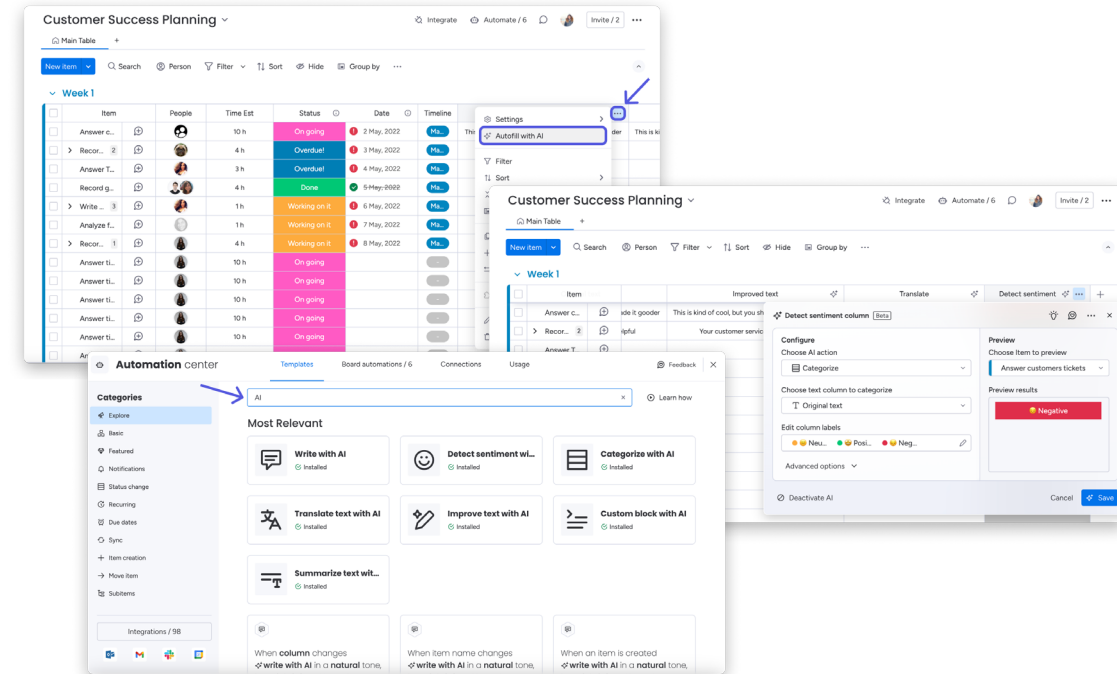
**Focus:** Work operating system that enables organizations to manage tasks, projects, and workflows. Offers customizable solutions for various teams to streamline operations and enhance productivity.

## AI Features:

- **Automations:** Implements AI-driven automations to handle repetitive tasks, such as invoice approvals and budget tracking.
- **Integrations:** Seamlessly integrates with financial tools and software, ensuring real-time data synchronization and accuracy.
- **Data Extraction:** Utilizes AI to extract data from financial documents to expedite processing and reduce errors.

## Value Proposition:

- **Enhanced Efficiency:** Automates routine financial processes, freeing up time for high-value tasks like strategic financial planning and analysis.
- **Improved Accuracy:** Reduces human error in financial data handling through AI-powered data extraction and processing.
- **Better Resource Allocation:** Provides visibility into project budgets and resource utilization, aiding in informed decision-making and financial forecasting.



Proposals, Marketing & Business Development



Technical Analysis & Deliverable Production



Project Management & Resource Planning



Coding & Workflow Optimization

# Commercial Off-The-Shelf: Wrike Work Intelligence

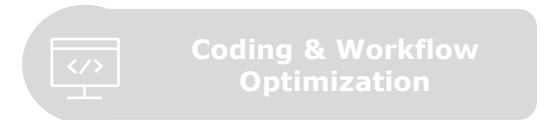
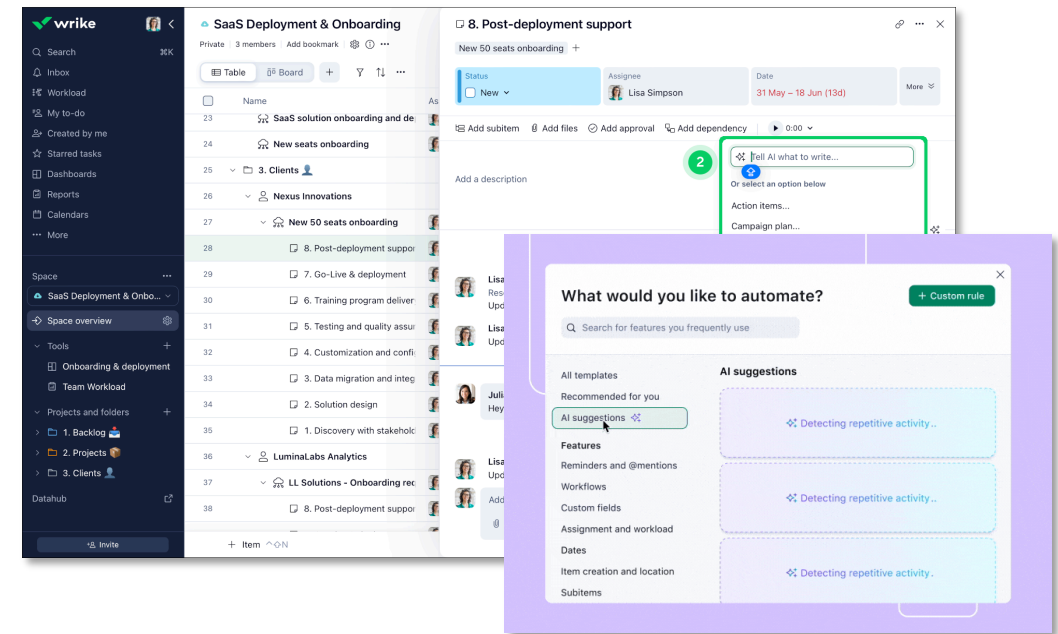
**Focus:** Collaborative work management platform that helps teams plan, execute, and monitor projects.

## AI Features:

- **AI Subtask Creation:** Automatically generates subtasks from task descriptions, ensuring comprehensive task breakdown and assignment.
- **Risk Prediction:** Identifies potential project risks by analyzing task statuses and timelines, allowing for proactive mitigation.
- **Workload Balancing:** Suggests optimal task assignments based on team members' availability and workload, promoting efficient resource utilization.

## Value Proposition:

- **Risk Management:** Provides early detection of financial and operational risks within projects, enabling timely interventions to prevent budget overruns.
- **Resource Optimization:** Ensures effective allocation of financial and human resources.
- **Data-Driven Decisions:** Delivers insights through AI analytics, supporting informed financial planning and decision-making.



# Commercial Off-The-Shelf: Cursor

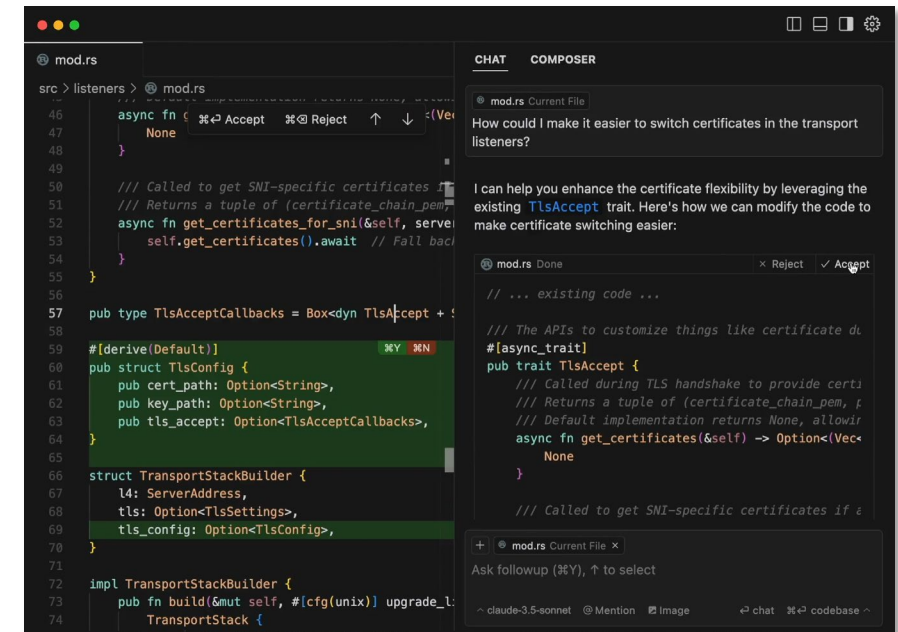
**Focus:** AI-powered code editor designed to enhance developer productivity through intelligent code completion and editing features. While primarily aimed at software development teams, its capabilities can be leveraged for developing and maintaining financial systems.

## AI Features:

- **AI Code Completion:** Provides context-aware code suggestions, reducing development time and improving code quality.
- **Natural Language Editing:** Allows developers to make code changes using natural language commands.
- **Codebase Understanding:** Enables querying of the codebase in natural language to retrieve information or documentation, enhancing code comprehension.

## Value Proposition:

- **Increased Development Efficiency:** Accelerates the development and maintenance of financial applications and systems.
- **Improved Code Quality:** Enhances code accuracy and consistency, reducing the likelihood of errors.
- **Reduced Onboarding Time:** Assists new developers in understanding existing codebases more quickly through natural language queries.



Proposals, Marketing & Business Development



Technical Analysis & Deliverable Production



Project Management & Resource Planning



Coding & Workflow Optimization



# Key Takeaways

## **Four main categories where firms are using Generative AI.**

- Firms are actively leveraging Generative AI across proposals, project management, technical analysis, and workflow optimization.
- The methods of implementation include generalist models, for-purpose chatbots, and commercial off-the-shelf tools (COTS), depending on specific needs.

## **Generalist Models are accessible and widely applicable.**

- Everyone should learn this! These tools (e.g., Microsoft Copilot, ChatGPT) are versatile and can handle a wide range of tasks.

## **For-Purpose Chatbots are a growth opportunity for larger firms.**

- A growth opportunity for larger firms. By investing in in-house chatbot capabilities, firms can create tools tailored to their workflows, client engagement needs, or specialized tasks.

## **Commercial Off-The-Shelf tools are good for accelerating quickly.**

- These tools allow firms to gain rapid efficiency improvements without the time or cost of developing in-house solutions.

## **Ask Us Questions**

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