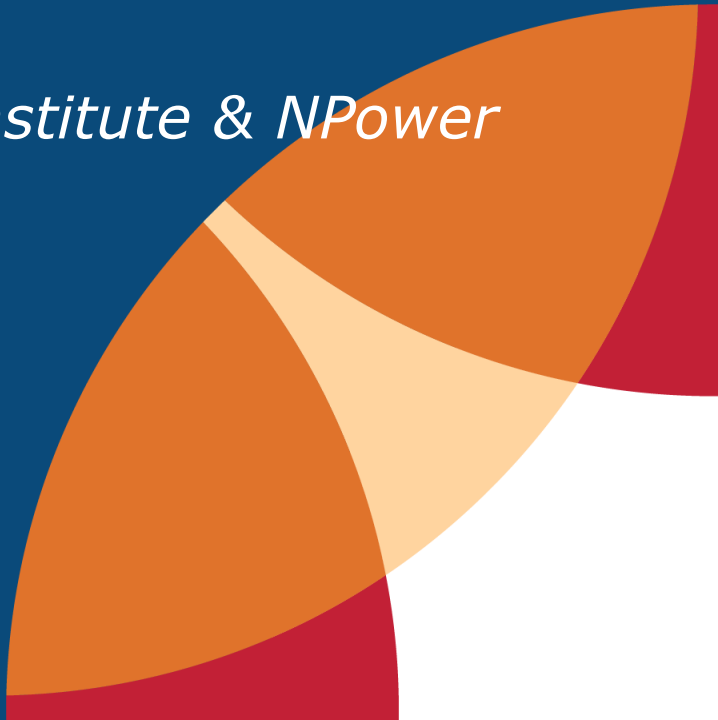


Redesigning Early-Career Tech Pathways in the Age of AI

A synthesis of employer roundtables with Burning Glass Institute & NPower

March 2026



Key Objectives and Motivations for Our Work

- **The scale of displacement is significant:** AI is having an outsized impact on the entry-level talent rung, as LLMs increasingly automate the well-defined tasks that once characterized early-career learning. Entry-level tech roles are among the first pressure points.
- **We set out to build a roadmap:** BGI and NPower are working together not just to understand AI's impact, but to actively redesign apprenticeship pathways that build resilience and create equitable access to tech careers.
- **What distinguishes this study?:** Unlike prior research, we map AI's impact across both automation and augmentation dimensions, providing a more nuanced picture of workforce vulnerability and resilience.
- **Why this research matters now?:** Workers of color, first-generation professionals, and those from low-income backgrounds are overrepresented in the entry-level roles most exposed to automation — making this a workforce equity imperative, not just a labor market trend. Without proactive intervention, the gap between employer expectations and worker readiness will widen.
- **With gratitude to our funders:** This research was made possible through the generous support of our funding partners, MetLife Foundation, Workday, CD&R and Anne E. Casey Foundation, whose commitment to workforce equity drives this work.

02 | Core Research



Measuring the Impact of AI on Entry-Level Roles

1

We looked at **52 tech job titles** and analyzed skills from job postings for these roles across:

-  Advanced Mfg.
-  Data Centers
-  Financial Services
-  Healthcare
-  IT Support
-  Retail

2

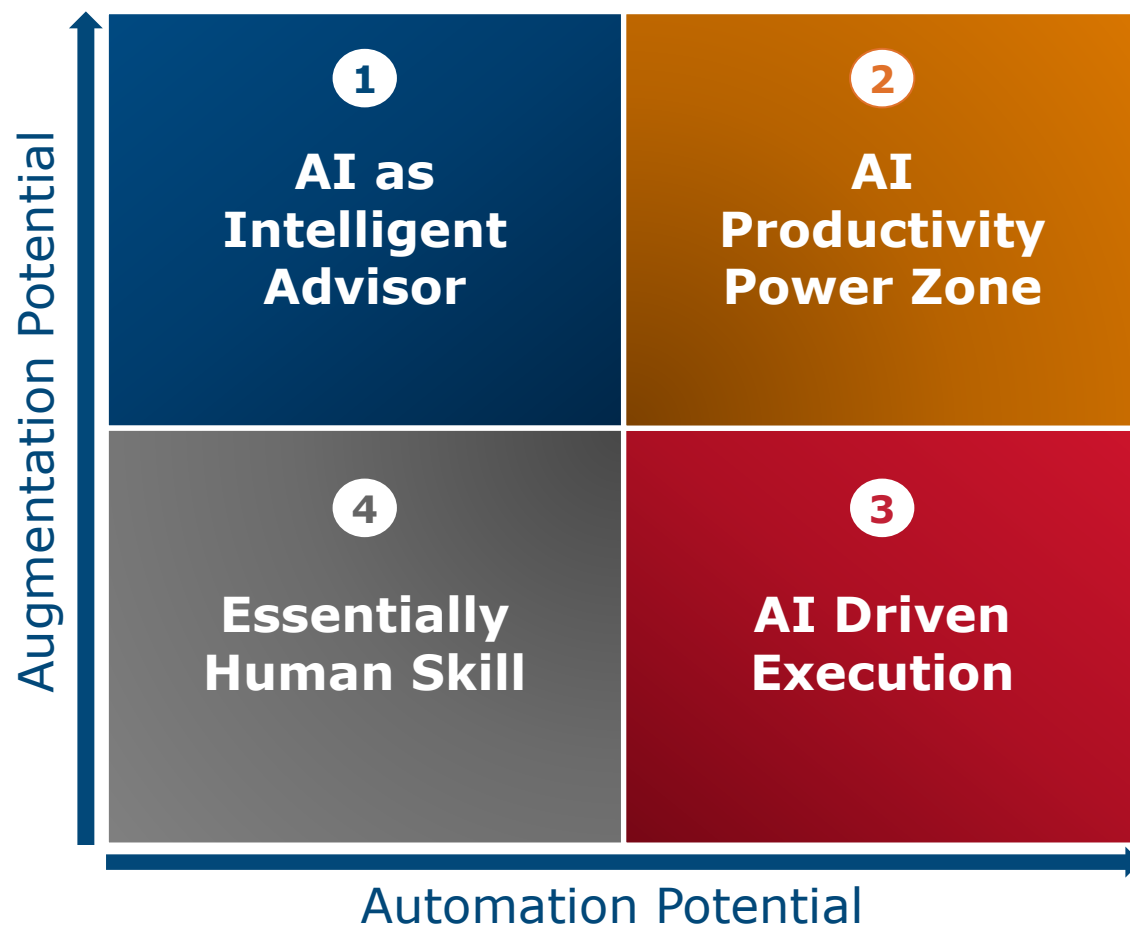
We **examined over 500 skills** that underpin these jobs positions by looking at job postings across industries and **scored them on an automation and augmentation matrix**

3

Identified a list of jobs and related apprenticeship pathways that are **most and least exposed to automation** impacts to improve resiliency of these roles

Understanding AI's Impact: Framework for Analysis

AI is having an outsized impact on the entry-level talent rung, as LLMs increasingly automate the well-defined tasks that once characterized early-career work



- 1** High Augmentation, Low Automation
 Highlights skills that are enriched, but lack the efficiency gains of automation
- 2** High Augmentation, High Automation:
 Skills in the top right deliver the greatest productivity gains and competitive advantage
- 3** Low Augmentation, High Automation:
 These skills are increasingly commoditized, expected for all as AI lowers skill barriers
- 4** Low Augmentation, Low Automation:
 Skills that remain human-centered with limited AI enhancement and automation exposure, including many skilled trades and foundational knowledge.

We analyzed **52 tech job titles** across industries

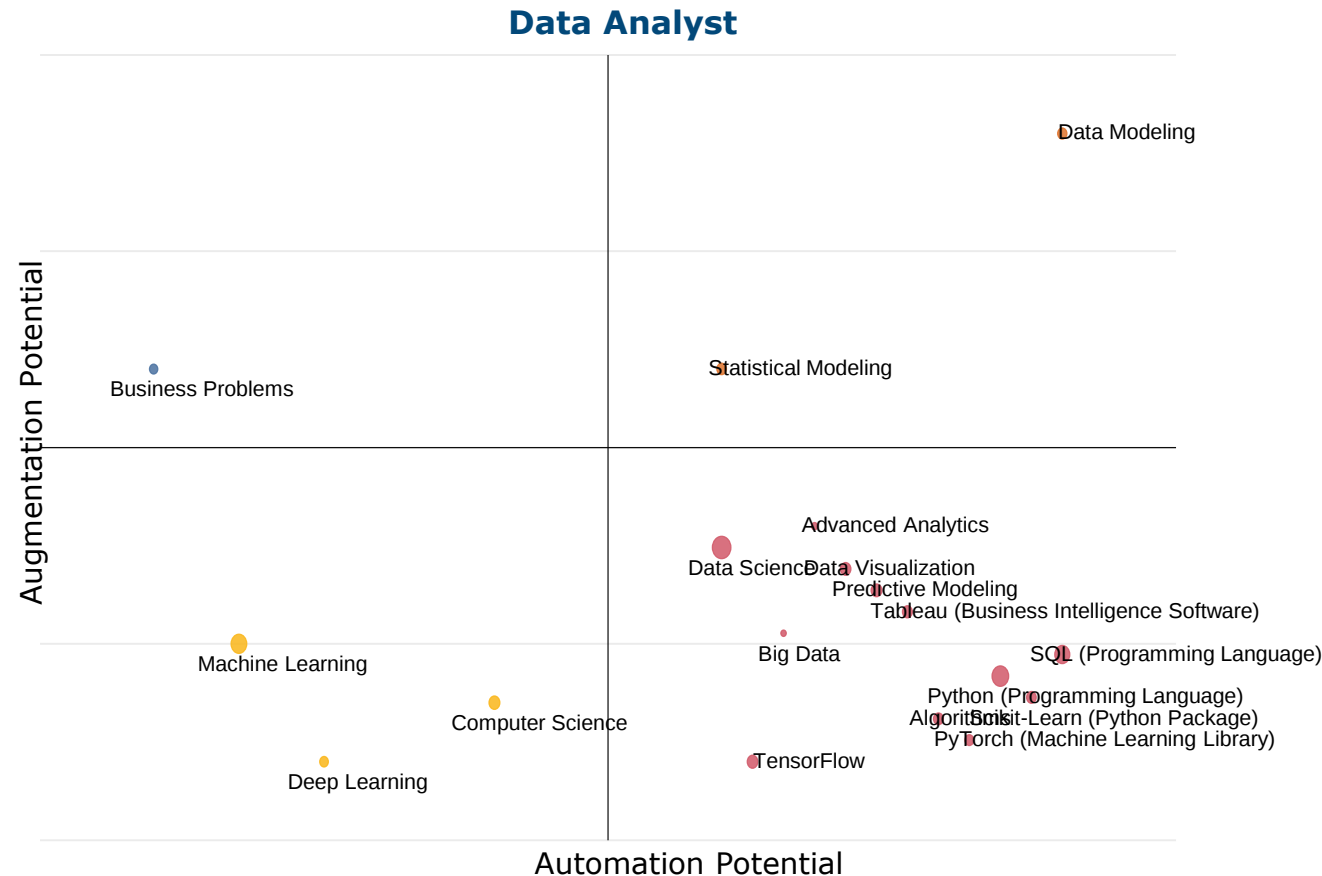
Select Roles Most Exposed to Automation

- Data Analyst
- Business Analyst
- Clinical Data Entry Operator
- Data Operations Assistant
- Helpdesk Associate

Select Roles Least Exposed to Automation

- Desktop Engineer
- Field Service Technician
- Tech Sales Manager
- Cybersecurity Analyst
- Installer

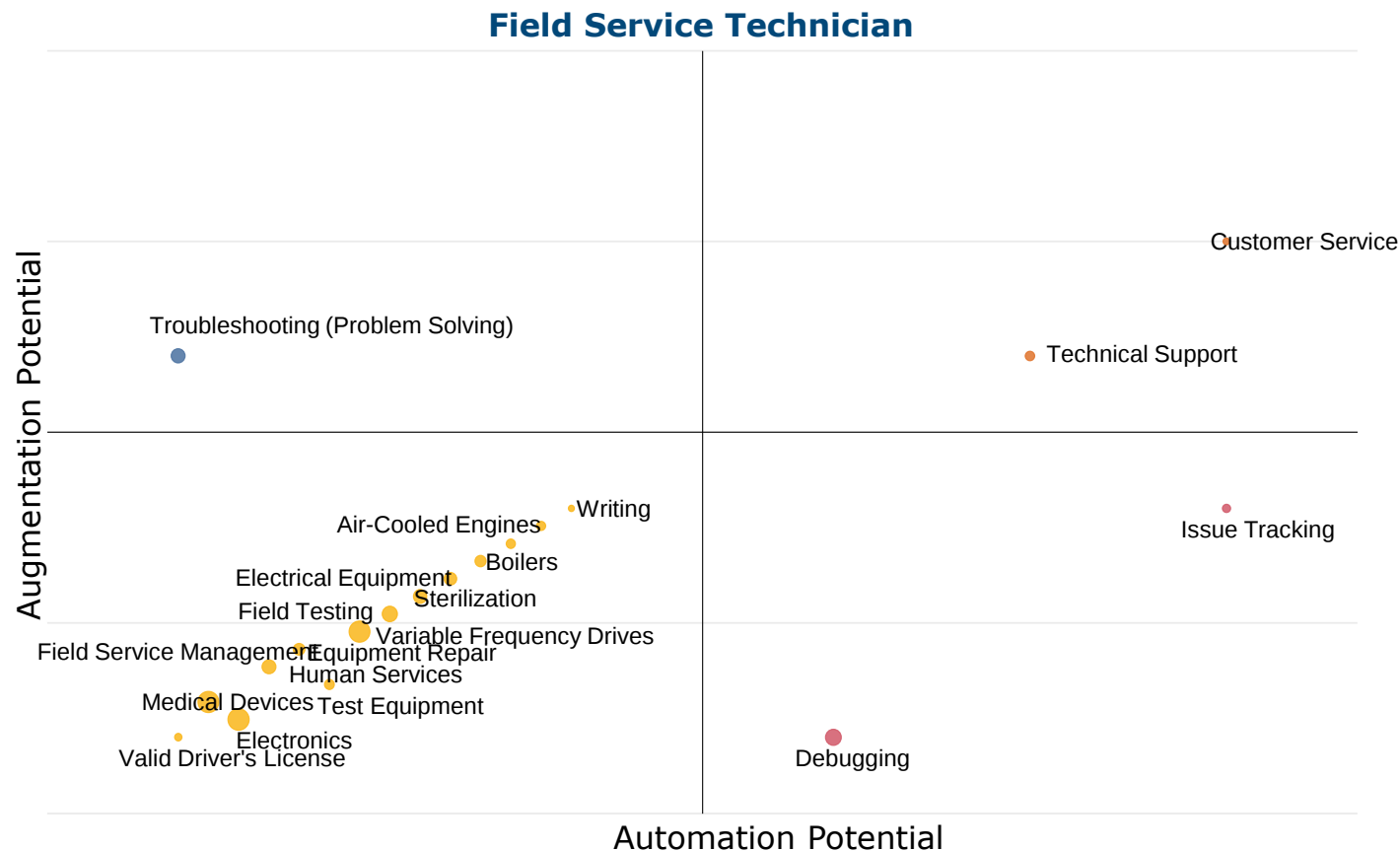
Illustrative | Analysis Shows Where Skills Land on the Augmentation and Automation Spectrum



High Automation Exposure

- **Core analytics tasks are rapidly automating:** Data cleaning, visualization, and modeling are executed by AI and low-code analytics platforms.
- **Technical credentials risk commoditization:** SQL, Python, and Tableau certifications signal minimum competence, not specialization.
- **Human advantage lies in interpretation and storytelling:** Turning algorithmic outputs into persuasive business narratives sustains relevance.

Illustrative | Skills Mapping Field Service Technician



Low AI Exposure

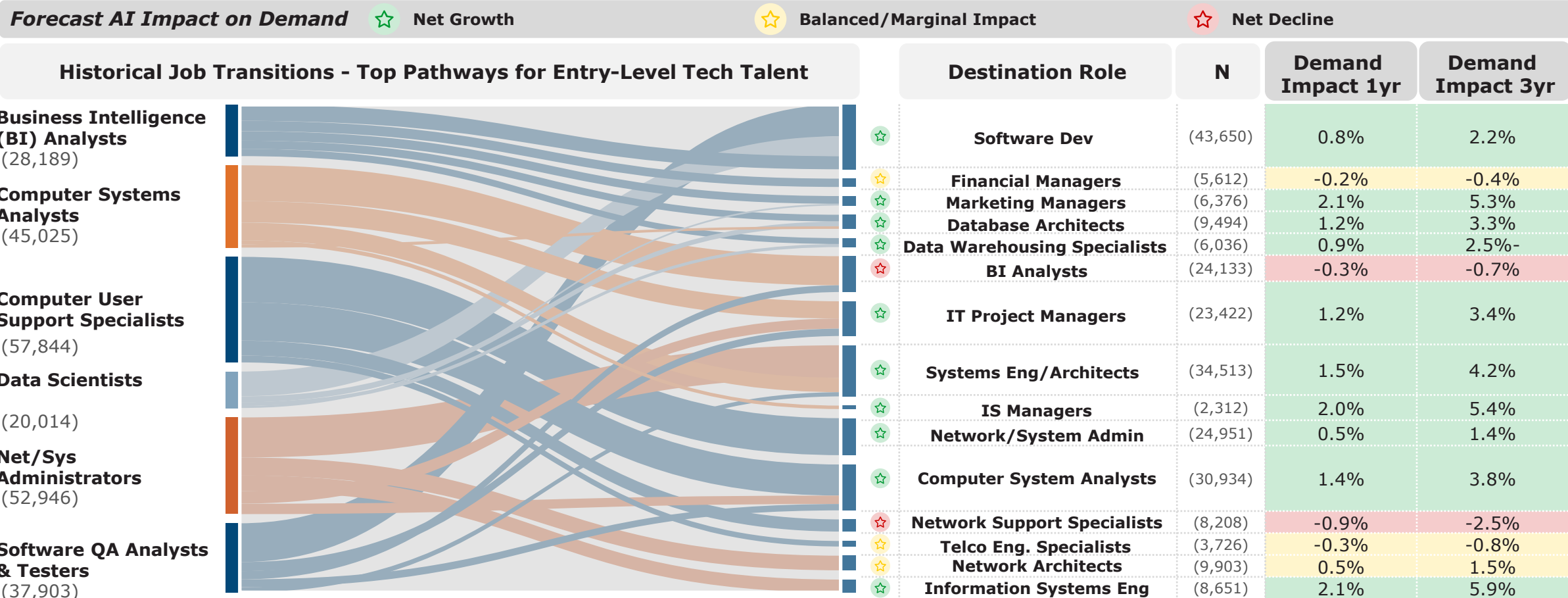
- **Hands-on technical execution:** Skills like *Electrical Equipment*, and *Field Testing* involve physical setup, calibration, and repair—tasks that demand dexterity and real-world problem-solving beyond AI.
- **AI automates routine diagnostics:** *Debugging* can be partially automated as AI systems detect and resolve common software or system errors.
- **Human-centered service and communication:** AI expedites *Customer Service* and *Technical Support* but requires a human in the loop.

● AI Amplifies Human Expertise ● AI Automates and Amplifies ● AI-Driven Execution ● Essentially Human Skills

Note: Size of the bubbles correspond to the prevalence of those skills in the job postings

Not All Career Moves Lead Up in the Age of AI

The historical pathways that entry-level tech workers have relied on are diverging: AI is accelerating demand for integrators and architects while quietly hollowing out support and oversight roles.



Top transition pathways across all eight source roles (top 3 per role shown). AI Impacts modeled for a conservative scenario

Source: BGI Proprietary Analysis

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Proprietary and Confidential

Core Research: Key Takeaways

- **Entry-level roles most exposed to automation include:** Data Analyst, Business Analyst, Clinical Data Entry Operator, Data Operations Assistant, and Helpdesk Associate.
- **Roles with the lowest automation exposure include:** Field Service Technician, Desktop Engineer, Tech Sales Manager, Cybersecurity Analyst, and Installer — many relying on physical, hands-on, or judgment-heavy skills AI cannot replicate.
- **The career ladder is becoming a lattice:** Workers in high-exposure entry roles can pivot — with the right training — into adjacent, lower-exposure roles. Mapping these pathways is critical to designing effective upskilling programs.

03 | Employer Roundtables



We Pressure Tested Findings With Employers



We hosted four roundtables in November 2025 with employers, training providers, and funding partners to validate our findings and uncover pain points

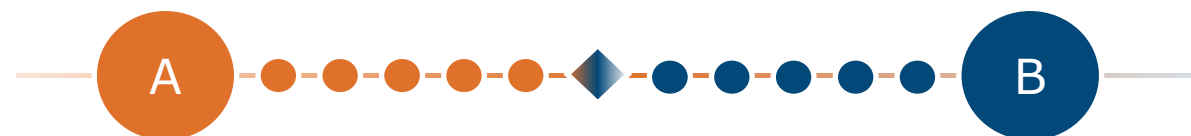


Funding Partners



Where Employers Disagree on AI Impacts

Where does your organization fall on the spectrum?



1 How do you see AI affecting junior hiring?

Reduces need for entry-level roles

Demand for more prepared talent

2 What matters most for early-career talent?

Technical depth

Domain fluency

3 What explains the thinning of middle management?

Temporary cost-cycle

Long-term structural shift

4 How fast is AI being adopted in your workflows?

Slow / superficial

Rapid / used in daily work

5 How does mobility work in your org today?

Established ladders

True lattice-style mobility

6 Is employers providing continuous learning realistic?

Unsustainable burden

Required and achievable

AI Automation Hits the Bottom of the Ladder First

"The 'handholds' are taken by AI. All the easy things that would have helped are gone for each step." - Cybersecurity Executive

"AI has not replaced people because companies have not figured out how to do that" – Staffing Firm Executive



- **AI has collapsed the bottom rung of the ladder.** The routine, well-scoped tasks that once built years 0–2 capability—QA, reconciliation, data cleaning, basic coding—are now automated or AI-assisted from day one. Juniors no longer get the repetitions that once formed the backbone of early-career learning.
- **Expectations for new hires spike just as training capacity evaporates.** With fewer managers in the middle, the organizational infrastructure that once absorbed, coached, and corrected new talent has thinned. Employers now expect early-career workers to exercise judgment and quality-check AI outputs rather than learn by doing.
- **In a moment of uncertainty, firms are hedging with senior talent.** Companies are still experimenting with what AI means for their operating model, team structure, and long-term shape. Unsure how many juniors they can productively develop—or which roles AI will ultimately reshape—they default to experienced hires and contractors. It's the safest choice in the short term, but it widens the gap in internal pipelines.

What Sets Candidates Apart



Critical Thinking Leads

- “Debate class might be more useful than C++
- MD at Financial Institution
- Employers increasingly value critical thinking, curiosity, systems thinking, argumentation, and healthy skepticism.



Domain Fluency as the New Moat

- “Domain knowledge is a key differentiator for entry-level talent. – Senior Banking Exec
- Without domain fluency, workers cannot frame the right questions or prompts.
- Clarity in the business context unlocks precise, actionable AI outputs.



AI Output Evaluation as a Core Requirement

- “People need data thinking, systems thinking, and to have a point of view – Software Executive
- Interpretation outweighs generation of work.
- Workers must assess correctness, risk, and edge cases in AI outputs.



Cultural Competence and Work Readiness

- “Formally AI can do a good job at training but bad at conveying company culture and business objectives. – Senior Advisor in Tech
- Employers need workers who understand professional norms and can operate effectively in teams.

Career Paths Are Becoming Lattices

Today, advancement runs on continuous learning and fluid, lattice-shaped careers across all career levels.



NPower is positioned to set the model for early-career development in this new era by equipping people with the skills to learn and adapt to new paradigms

“**The entry level is iterative. Each rung is a career change.**
– Cybersecurity Professional

What Employers Want From Training Providers

Capability Must Be Built Faster Than Ever

“ You will have to have more training hours compressed. Companies want to do more with less. They want a job filled then or yesterday. If you look at training hours and you see customized programs to fit in more skills, we may be looking at more hours and I don't think companies want that.” – Executive at Staffing Firm

AI Fluency Is the New Threshold for Readiness

“ How do you prompt engineer? How do you think about the training data? How do you think about interpreting the results? To the degree that we can train so that students come AI ready– these are they differentiated skills. If they know how to use the tools in a corporate setting, you can accelerate the competency anyway.”
- Exec at Workforce Non-Profit

Responsible AI Use Is a Workforce Imperative

“ Have onboarding on responsible AI use. What information you put into it or not? What does it mean to protect the data? By putting something into AI that you should not have, you can get fired. That would be foundational for NPower students to have going in and we can also do some assessments on what is the level of knowledge.
-- Executive at Staffing Firm

04 | Takeaways & Recommendations



Empowering Workers

- **Equip workers with the AI Impact Framework** — so they can pinpoint where to upskill, where automation is encroaching, and where human judgment still wins.
- **Navigate the lattice, not the ladder** — lateral moves, adjacent roles, and skill pivots build the resilience and adaptability the AI era demands.
- **Build AI literacy beyond tool use** — workers need to evaluate outputs, recognize limits, and apply human judgment: the skills that stay relevant as AI evolves.
- **Know the domain, not just the job** — understanding the industry they're working in — its language, pressures, and trajectory — gives workers the context to grow within it and across it.
- **Cultivate agency as a workforce superpower** — workers with the psychological safety to challenge existing processes, propose new approaches, and advocate for themselves are the ones who lead through disruption rather than just survive it.

Redefining “3 Years of Experience” When the First Rungs Are Disappearing

As the squeeze on entry-level hiring tightens, employers need to consider new ways of measuring workforce readiness, such as:

- **Capstone projects and certifications as evidence of skill:** Structured project work, AI tool certifications, and portfolio-based assessments can demonstrate competence more directly than years on a resume.
- **Adjacent skills count:** Experiences that build time management, project coordination, customer service, or the ability to juggle competing priorities develop transferable skills that are increasingly valued over narrow technical experience.
- **Life experience deserves a framework for evaluation:** Employers and training providers should develop shared rubrics to quantify and evaluate non-traditional experience — creating more equitable on-ramps and better matching talent to opportunity.

What Does It Mean To Be a Best-in-class Employer

*"You have a way to be an employer of choice - **training is the new pension**" – Workforce Hiring Executive*

When employers cultivate psychological safety, clarity, and continuous learning, they don't just adopt AI—they unlock the full creative and problem-solving capacity of their teams.

- **Treat continuous learning as a core benefit, not a perk.**
Leading employers invest across the talent spectrum—from entry level to mid-career—to help workers build fluency in new tools, emerging protocols, and evolving expectations around responsible AI use, data hygiene, and workflow redesign.
- **Anchor the culture in psychological safety.**
AI is reshaping work, yet many employees hesitate to use or discuss AI openly. Best-in-class teams create space to test tools, question workflows, and share what works. When people feel safe to experiment, organizations unlock real productivity and innovation.
- **Onboard intentionally and codify what "good" looks like.**
Clear documentation, well-structured handbooks, and transparent workflows accelerate productivity—especially as teams adapt to AI-driven tools. When institutional knowledge is captured, new hires can experiment and contribute sooner.



05 | The Immediacy of Apprenticeships



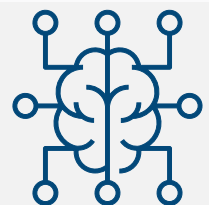
Apprenticeships Can Evolve to Meet Today's Market

A Scalable Model for Rapid Skill Alignment through Registered Apprenticeships



Traditional Entry Points Are Being Reimagined

AI is automating routine tasks that once served as learning opportunities for junior developers and analysts. The skills needed on day one have fundamentally shifted.



There is a Mindset Shift in the Workplace

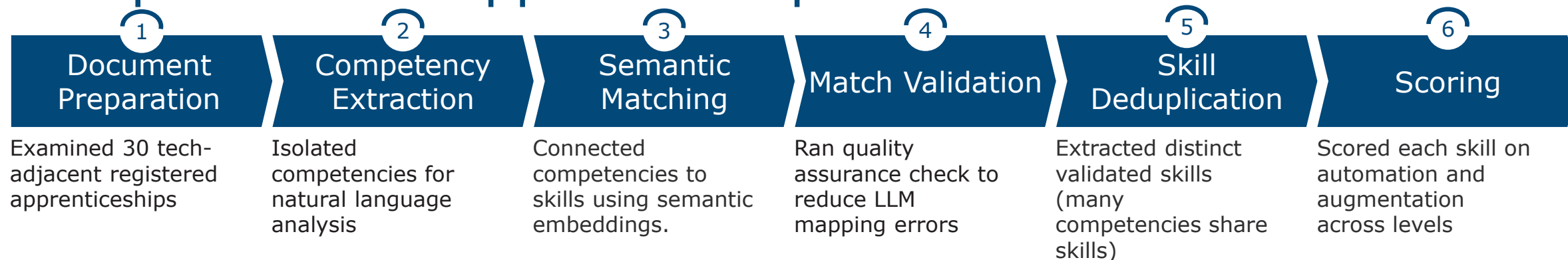
Employers need workers who can collaborate with AI, not just operate it. Traditional education can't keep pace with this rate of change, leaving thousands unable to access tech careers.



Apprenticeships Offer a Practical On-Ramp

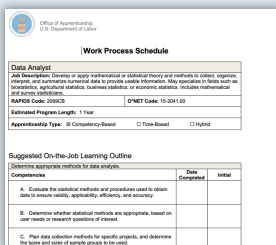
Earn while you learn. Build real-world skills alongside AI tools. Bridge the gap between education and employment with structured, employer-driven training that evolves with technology.

We Applied our Framework to Assess AI's Impact on Competencies in Apprenticeships



Illustrative

Data Analyst
RAPIDS Code:
2099CB



Work Process Schedule

Data Analyst
Job Description: Develop or apply mathematical or statistical theory and methods to collect, organize, interpret, and summarize numerical data to provide useful information. May formulate or solve such as mathematical, agricultural statistics, business statistics, or economic statistics. Includes mathematical and career education.

Estimated Program Length: 1 Year
Apprenticeship Type: B Competency-Based C Time-Based D Hybrid

Suggested On-the-Job Learning Outline

Competency	Date Completed	Initial
A. Evaluate the statistical methods and procedures used to obtain data to ensure validity, applicability, efficiency, and accuracy.		
B. Determine whether statistical methods are appropriate, based on user needs or research questions of interest.		
C. Plan data collection methods for specific projects, and determine data types and levels of sample groups to be used.		

“Evaluate the **statistical methods** and procedures used to obtain data to ensure validity, applicability, efficiency, and accuracy.”

Matched skills:

- ★ Statistical Methods
- ★ Statistical Analysis

LLM identifies skill matches that are surprising and analyst manually adjust where needed

We compare and deduplicate skills across competencies within RA's. In total we identified **700 unique skills**

Automation: **77%**
Augmentation: **77%**
Power Zone, ability to use AI increases both the quality and quantity of workers' output

Example | AI Exposure Analysis Summary Data Analyst



Office of Apprenticeship
U.S. Department of Labor

Data Analyst
RAPIDS Code: 2099CB

Office of Apprenticeship
U.S. Department of Labor

Work Process Schedule

Data Analyst

Job Description: Develop or apply mathematical or statistical theory and methods to collect, organize, interpret, and summarize numerical data to provide usable information. May specialize in fields such as biostatistics, agricultural statistics, business statistics, or economic statistics. Includes mathematical and survey statisticians.

RAPIDS Code: 2099CB

O*NET Code: 15-2041.00

Estimated Program Length: 1 Year

Apprenticeship Type: ☒ Competency-Based ☐ Time-Based ☐ Hybrid

Suggested On-the-Job Learning Outline

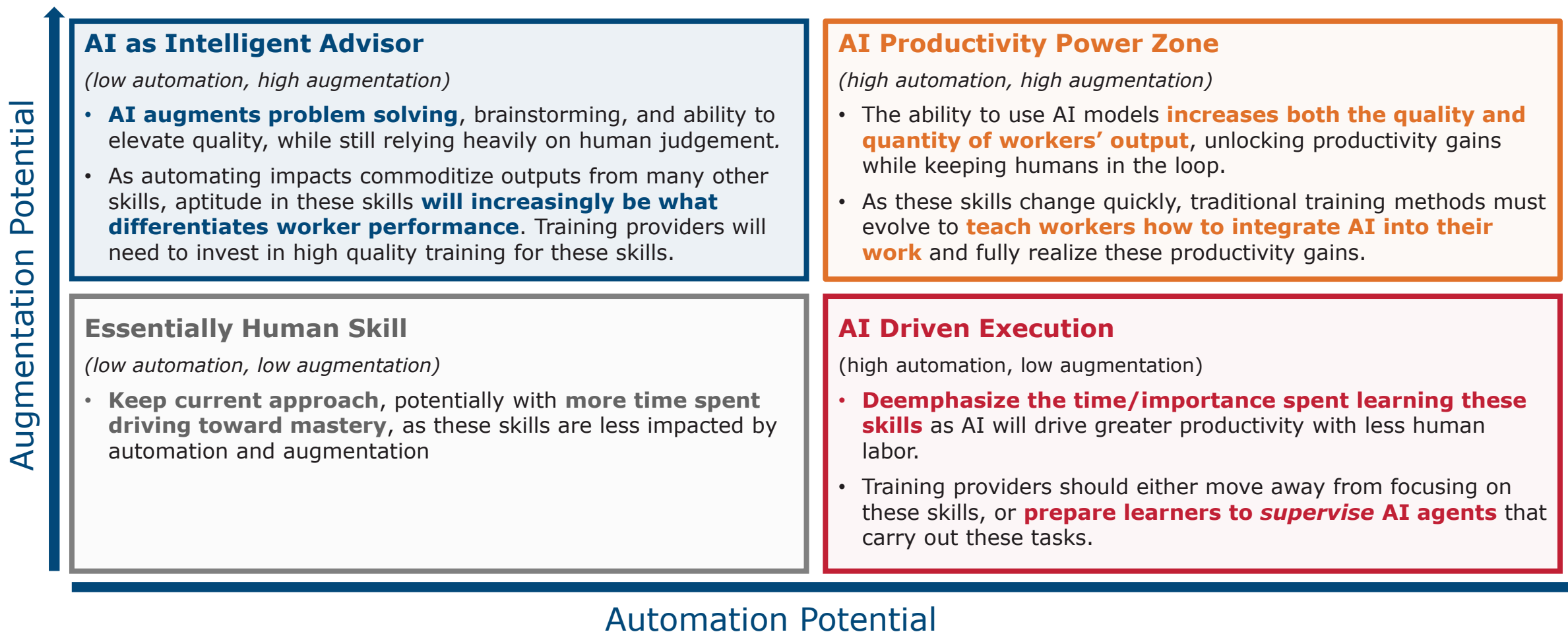
Determine appropriate methods for data analysis.		
Competencies	Date Completed	Initial
A. Evaluate the statistical methods and procedures used to obtain data to ensure validity, applicability, efficiency, and accuracy.		
B. Determine whether statistical methods are appropriate, based on user needs or research questions of interest.		
C. Plan data collection methods for specific projects, and determine the types and sizes of sample groups to be used.		



Design research studies to obtain scientific information. [JF Summary: AI as Intelligent Advisor Auto 56% Aug 87%]		
Competencies	Date Completed	Initial
A. Develop and test experimental designs, sampling techniques, and analytical methods. [AI as Intelligent Advisor Auto 43% Aug 85% Skills: Experimental Design, Research Design]		
B. Design research projects that apply valid scientific techniques, and use information obtained from baselines or historical data to structure uncompromised and efficient analyses. [AI as Intelligent Advisor Auto 49% Aug 92% Skills: Design Research, Research Design]		
C. Plan data collection methods for specific projects, and determine the types and sizes of sample groups to be used. [AI Productivity Power Zone Auto 77% Aug 83% Skills: Sampling Design, Sample Size Determination]		

From Insight to Practice Change

Behind our analysis are recommended actions on how to adapt registered apprenticeship competencies



Apprenticeships: Key Takeaways

- **A proven track record for developing entry-level talent:** Apprentices arrive with foundational understanding of tech, AI tools, and professional skills — shortening the employer learning curve and arriving ready to contribute.
- **Aligned to the Augmentation/Automation framework:** Our analysis of 30 registered tech apprenticeships shows competencies spanning the spectrum — with clear opportunities to redesign curriculum to prioritize high-augmentation, human-centered skills.
- **The earn-while-you-learn model addresses real barriers:** Financial constraints prevent many low- and moderate-income workers from pursuing traditional education pathways. Apprenticeships eliminate that barrier while delivering structured, employer-validated training.
- **Apprenticeships are the answer for now — and the future:** As AI continues to reshape entry-level roles, registered apprenticeships offer the most adaptable, employer-connected pathway to prepare talent for the AI era at scale.

06 | How NPower is Responding

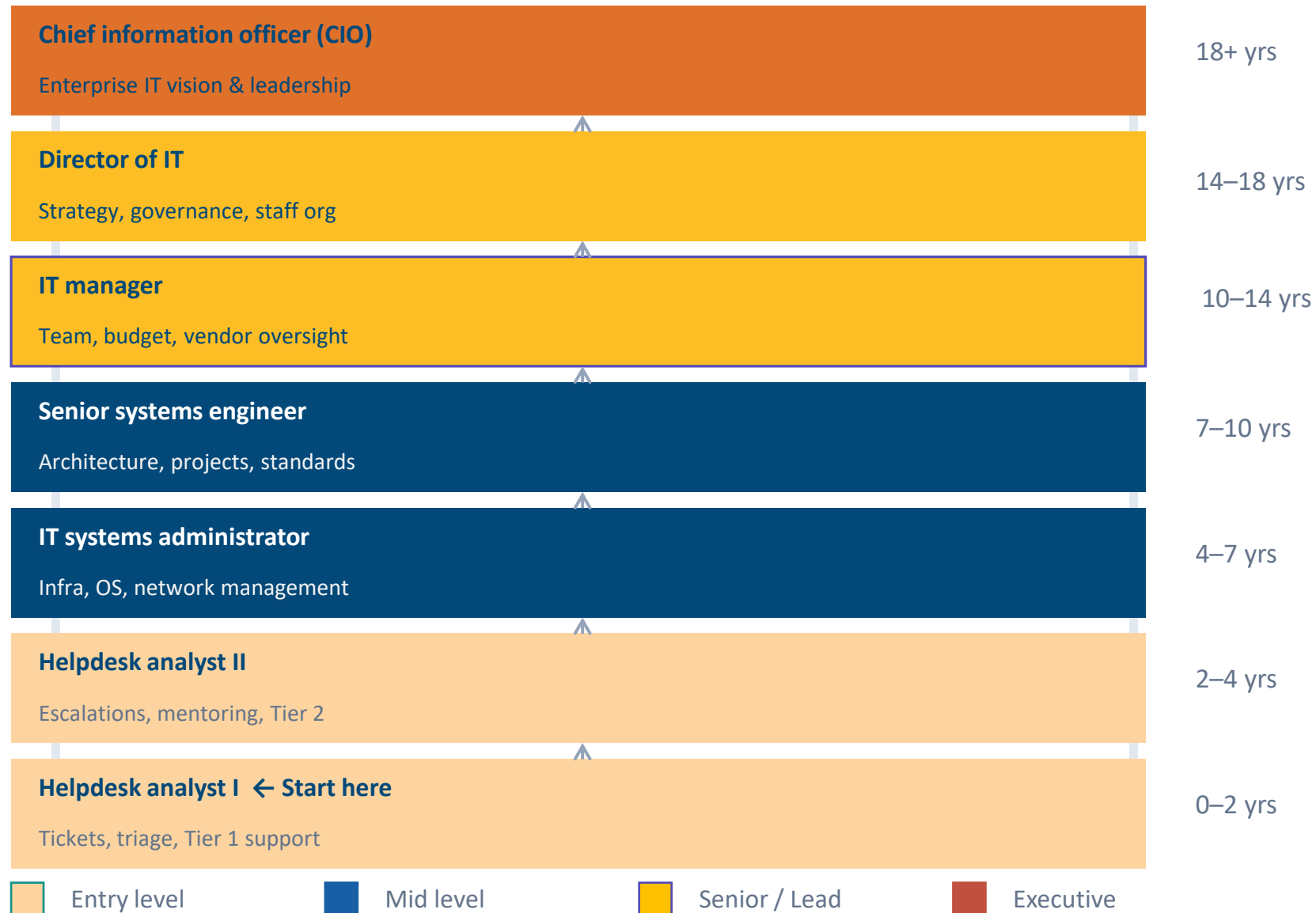


How NPower is Responding to the Research

FROM	TO
Programs	Pathways
Career Ladders	Career Lattices
Employer-informed curriculum designed to yield certs	Designed for high-augmentation and human skills (Quadrants 1, 2 & 4) PLUS Employer-informed durable skills training
Young Adults & Military Connected	Plus those in low-income jobs exposed to AI disruption
Job Placement	Plus Wage Growth & Career Lattice Navigation
AI Literacy & Competency	Plus AI for Personal Agency, Domain Exposure, and practical problem solving
Stackable Certifications	Stackable Experiences & Certifications
Internships	Apprenticeships , Capstones, Work-based Simulations
Dominant Employer Partnerships with Financial Services, Consulting, Managed Service Providers	Expanded Partnerships in Healthcare, Data Centers, Small-Medium Sized Businesses

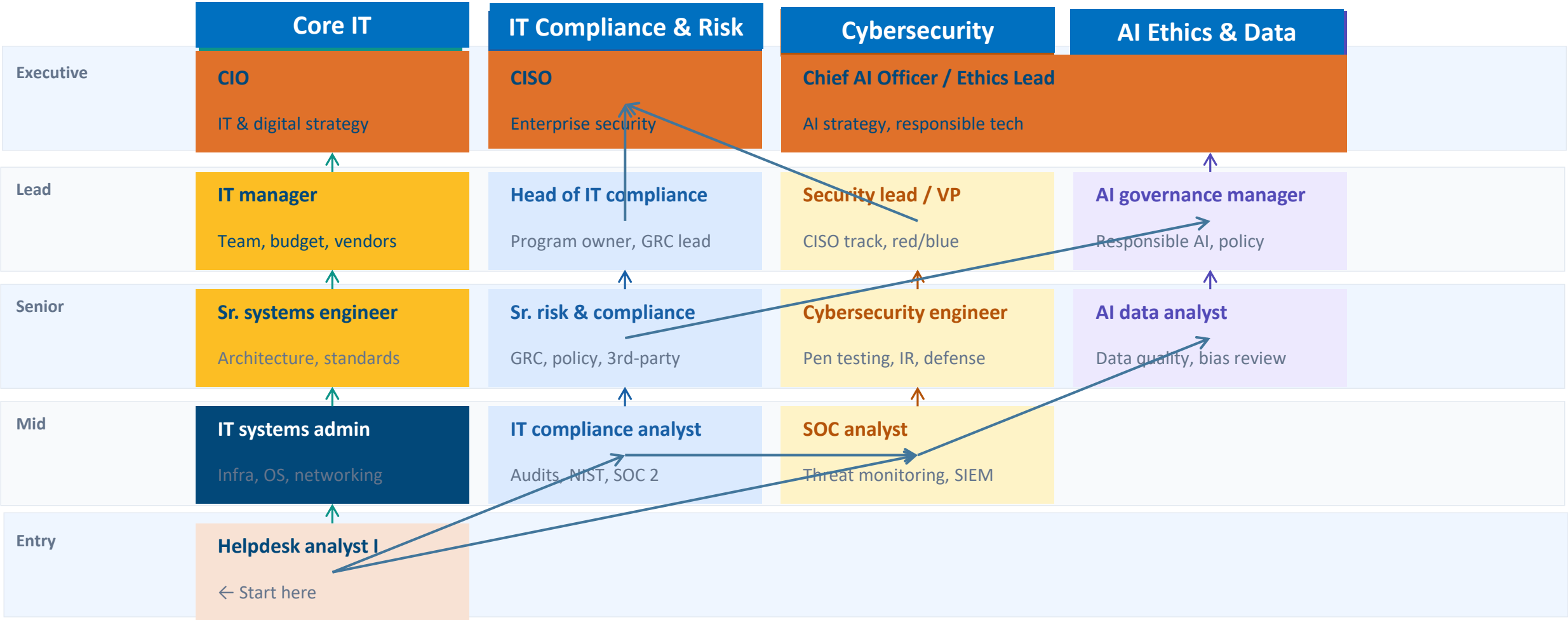
Traditional Career Ladder — IT Track

Vertical growth only · each rung builds on the last



Supporting Alum Across a Career Lattice — IT & Adjacent Fields

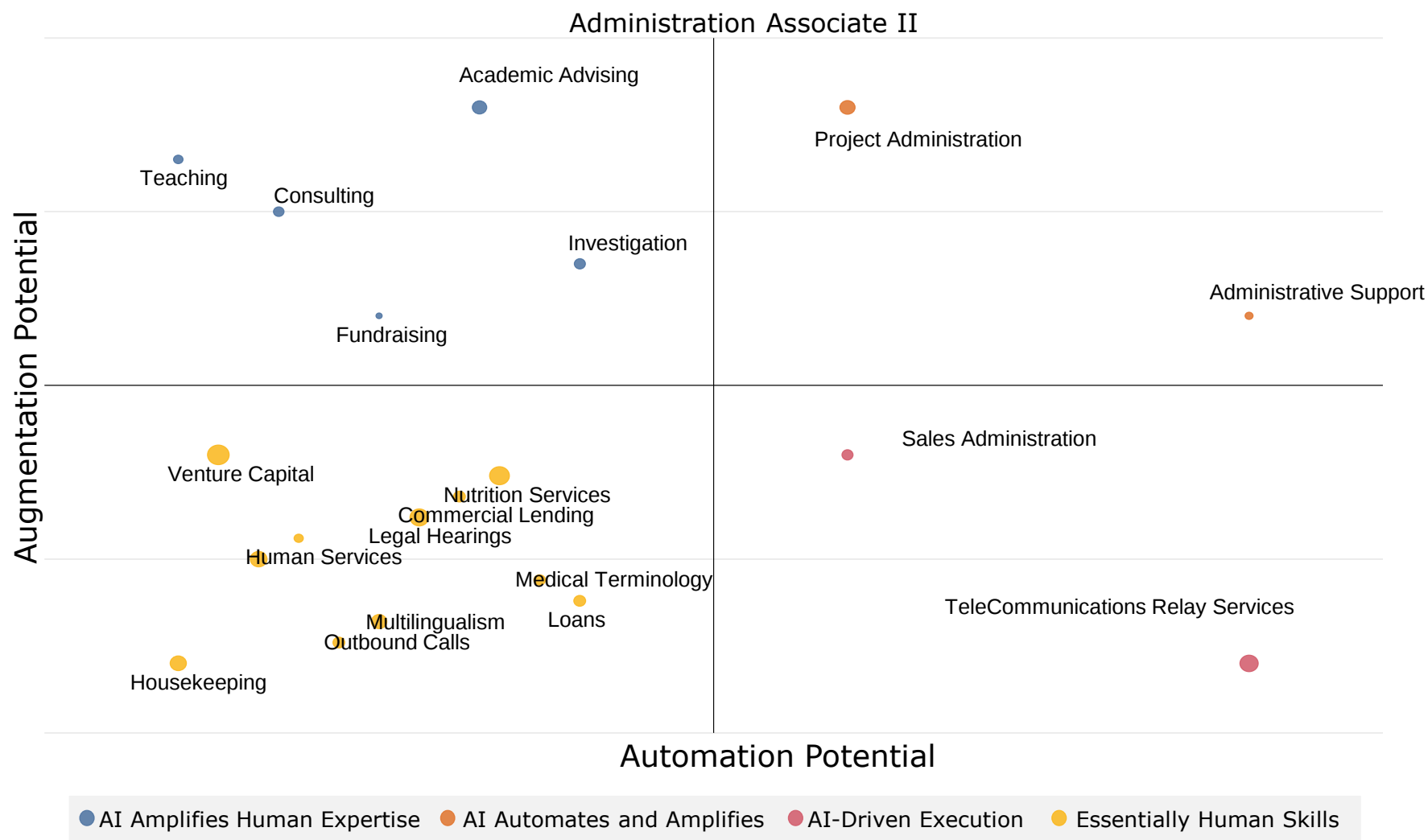
Horizontal, diagonal & vertical moves ·
broader paths to senior roles



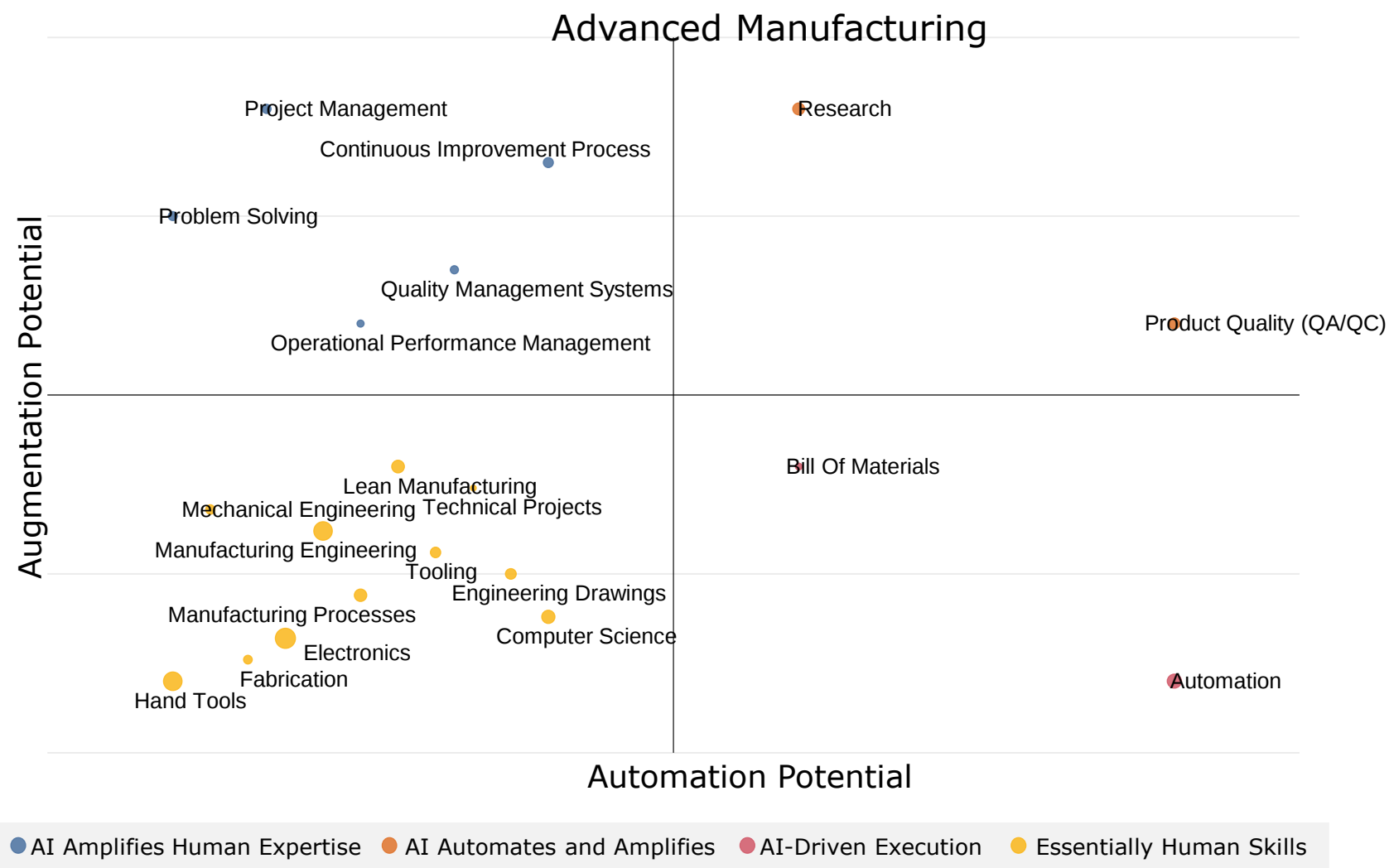
Appendix: Skill Maps



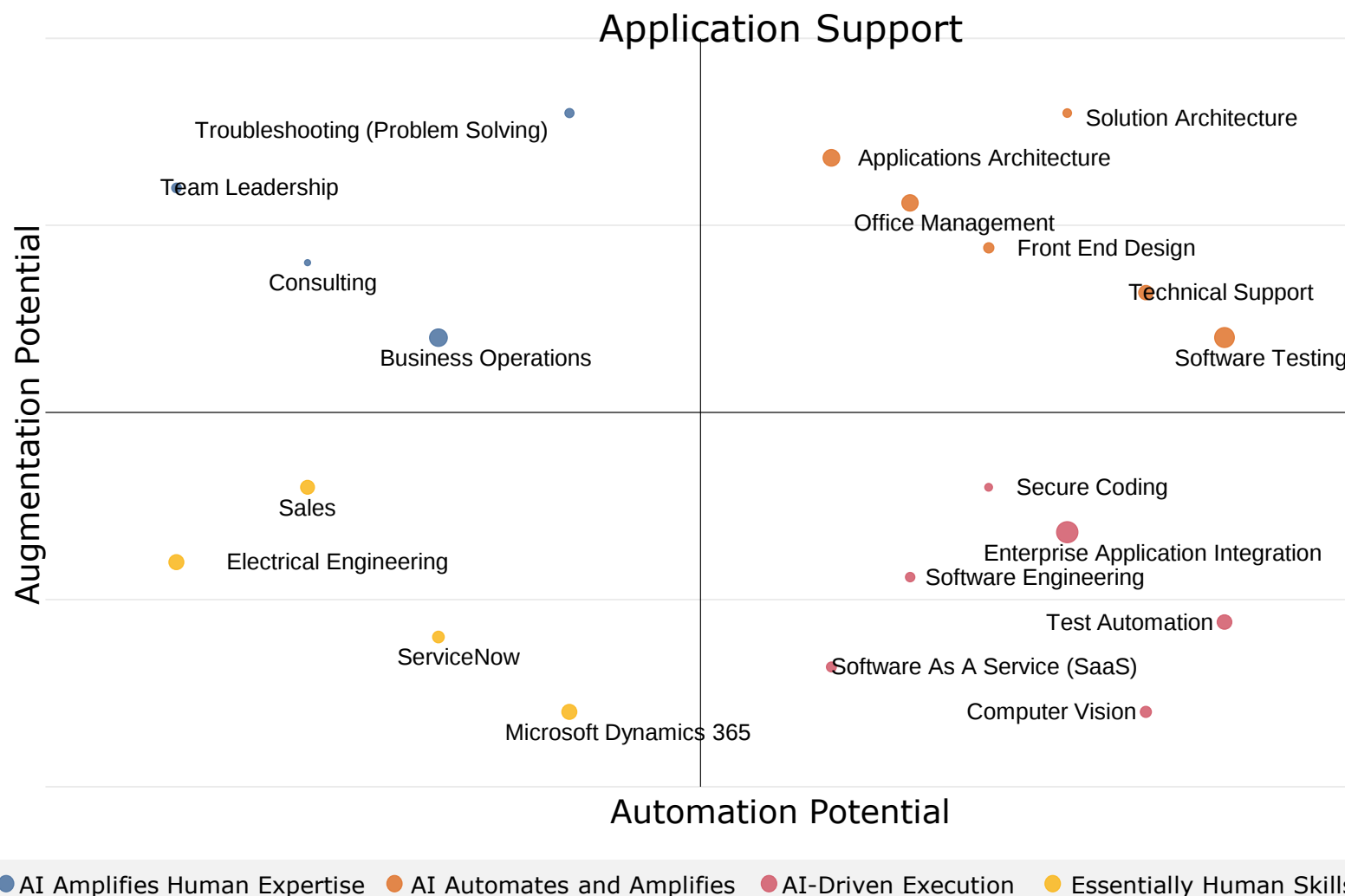
Skill Breakdown | Administration Associate II



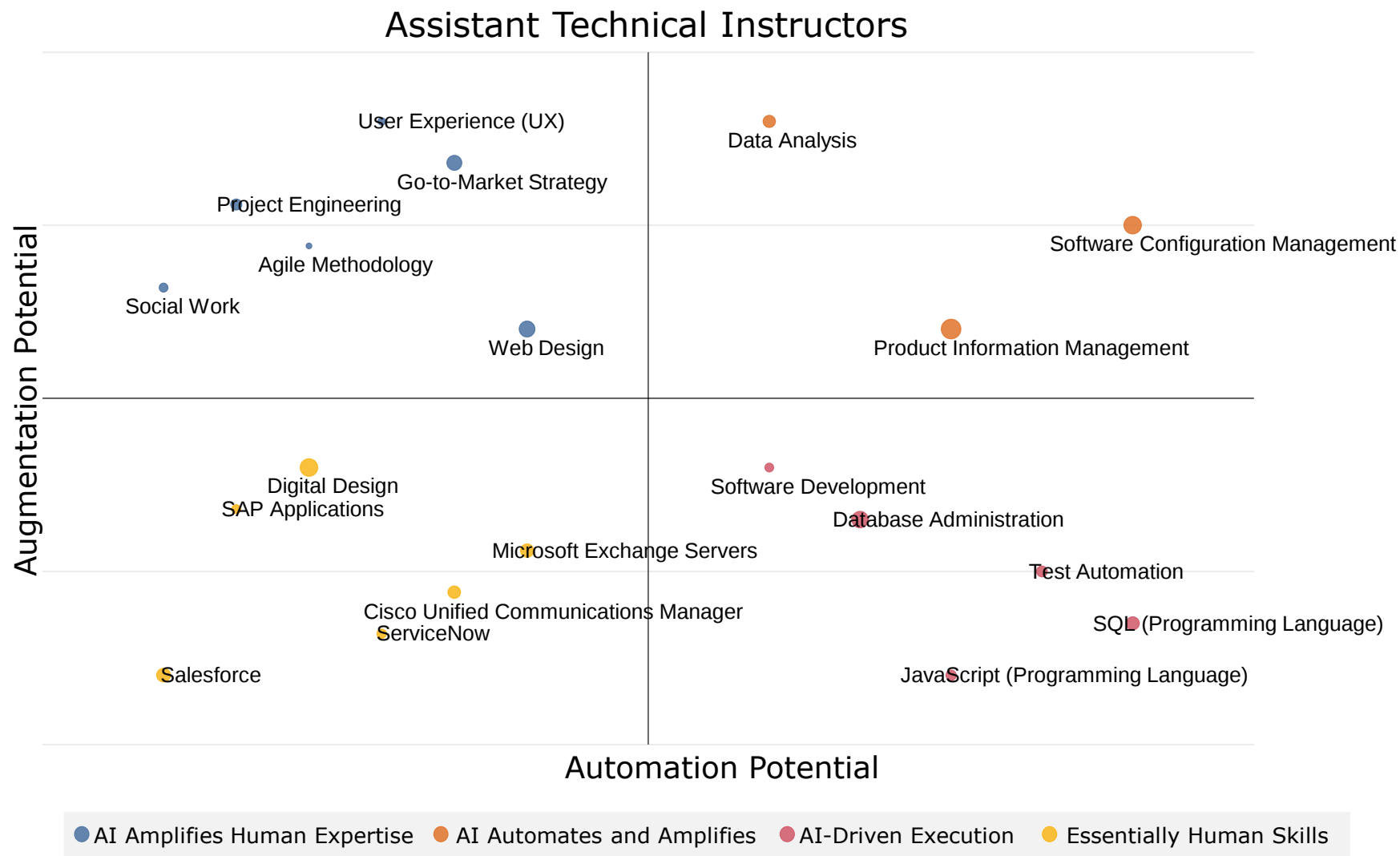
Skill Breakdown | Advanced Manufacturing



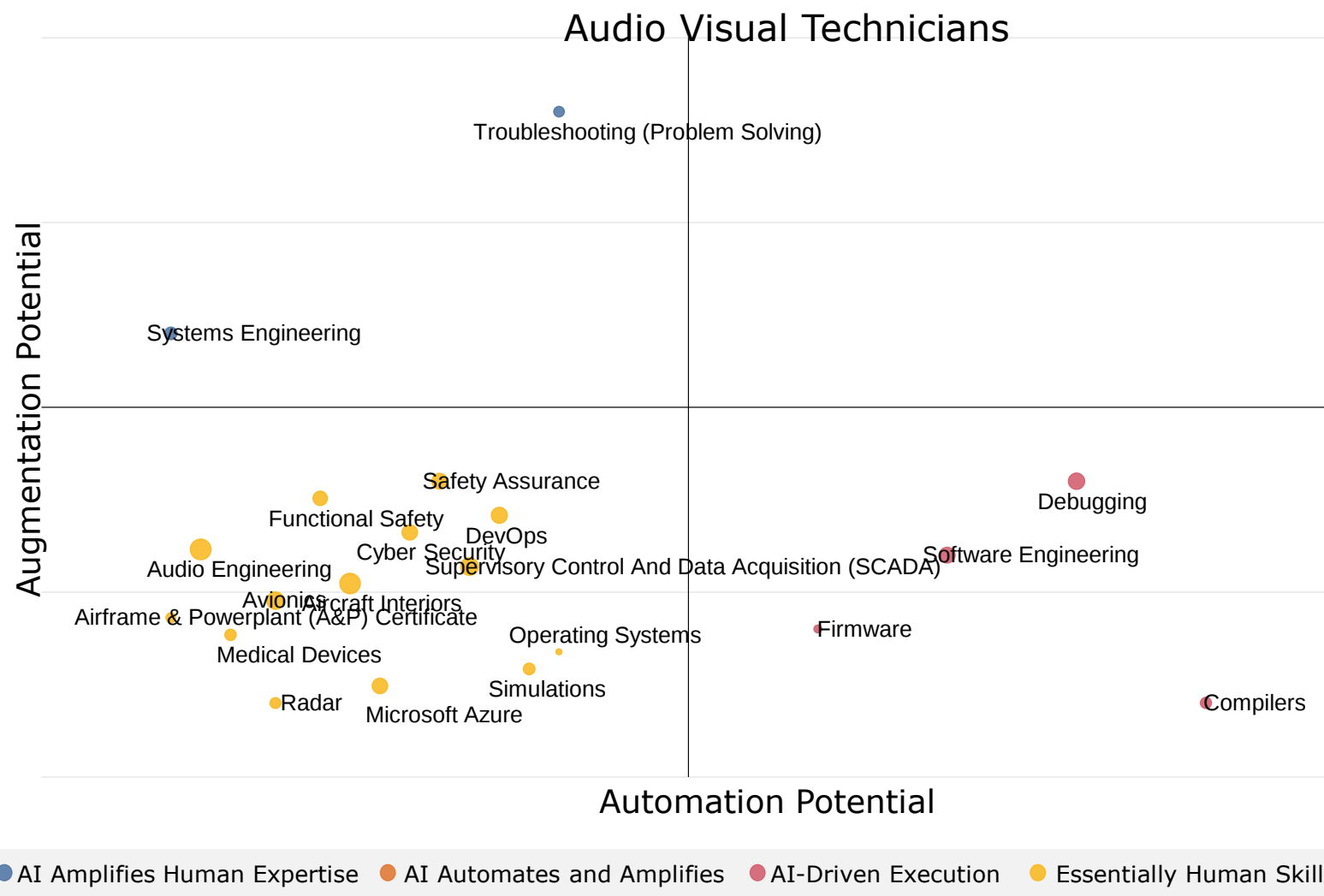
Skill Breakdown | Application Support



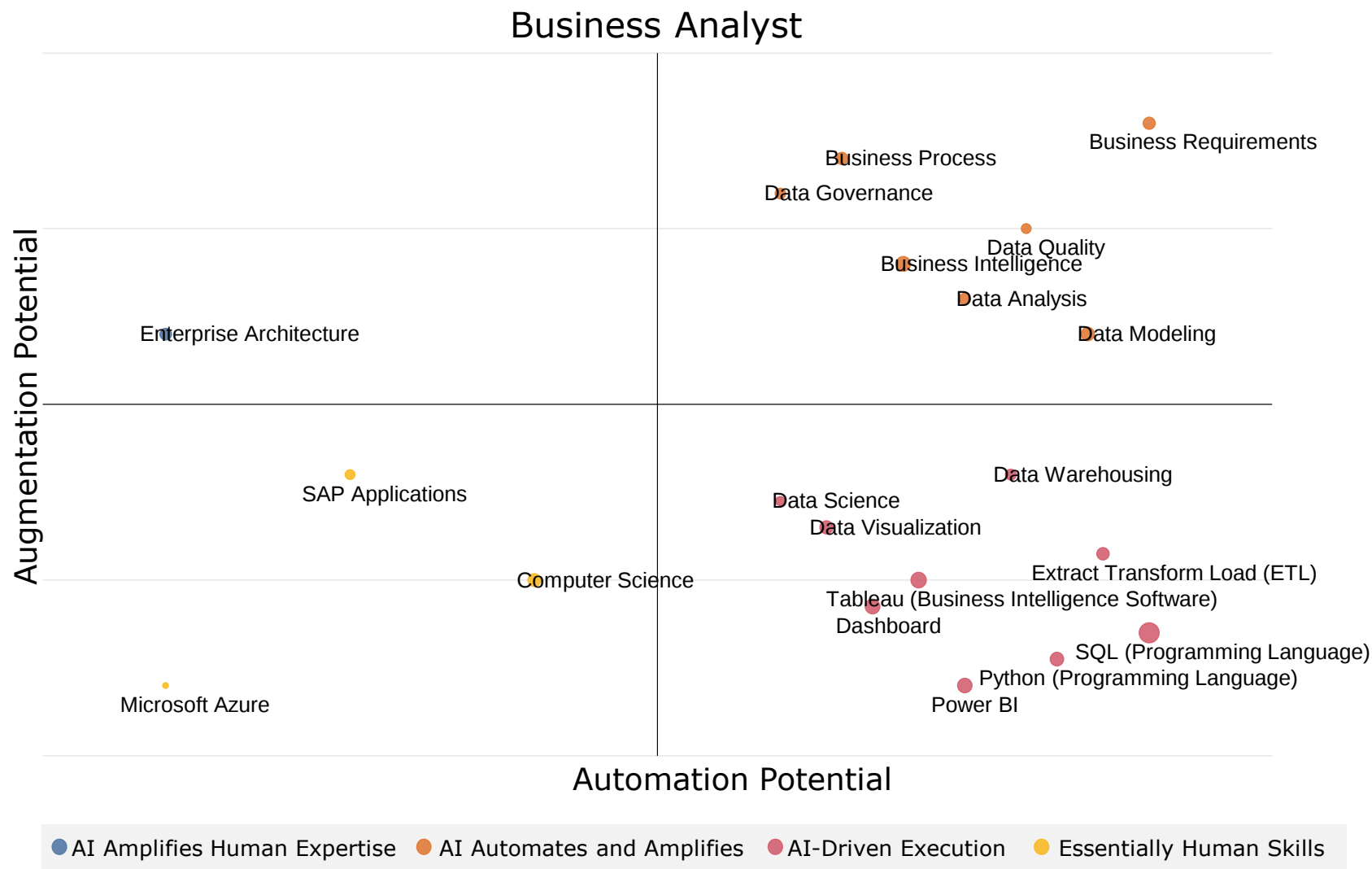
Skill Breakdown | Assistant Technical Instructors



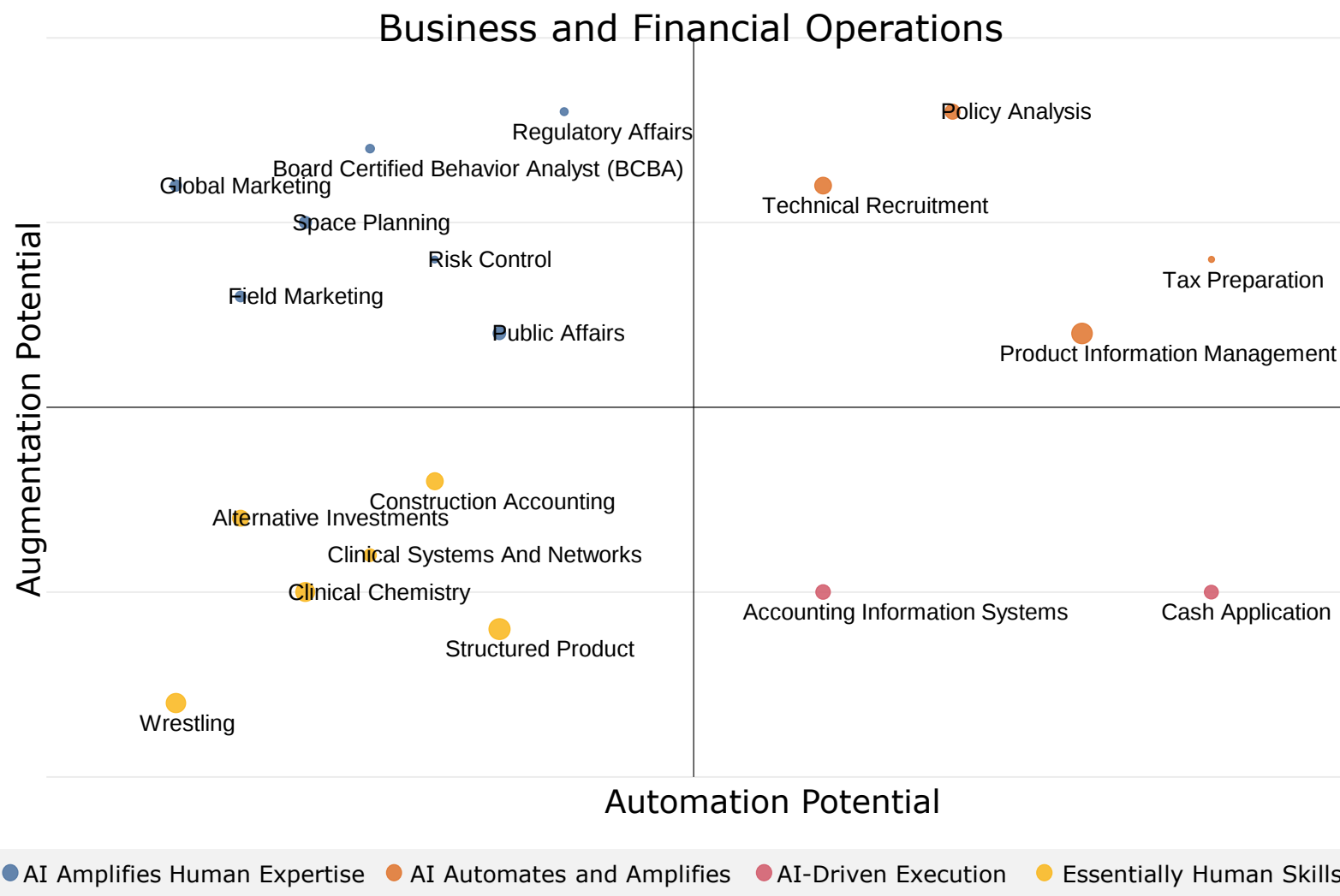
Skill Breakdown | Audio Visual Technicians



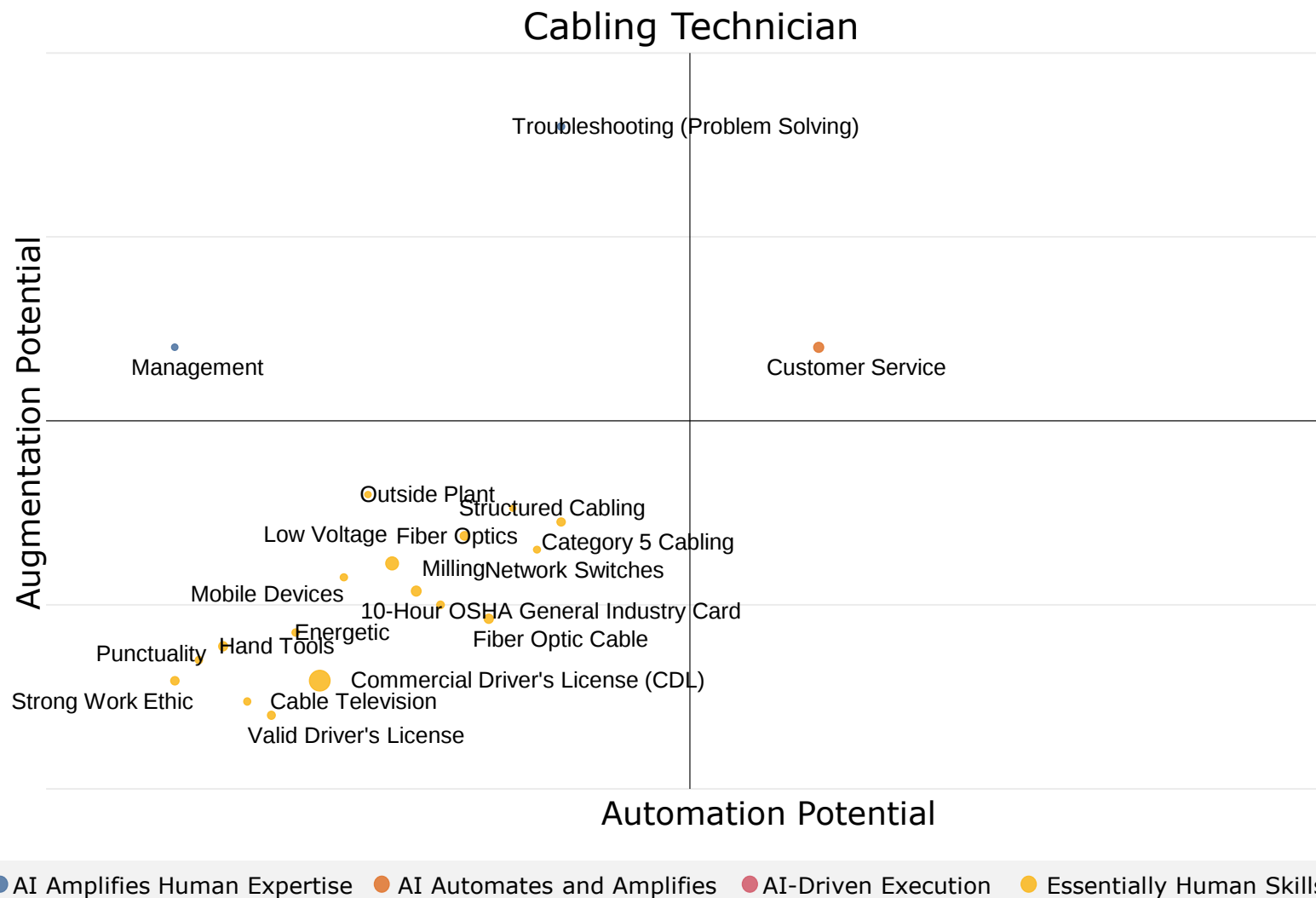
Skill Breakdown | Business Analyst



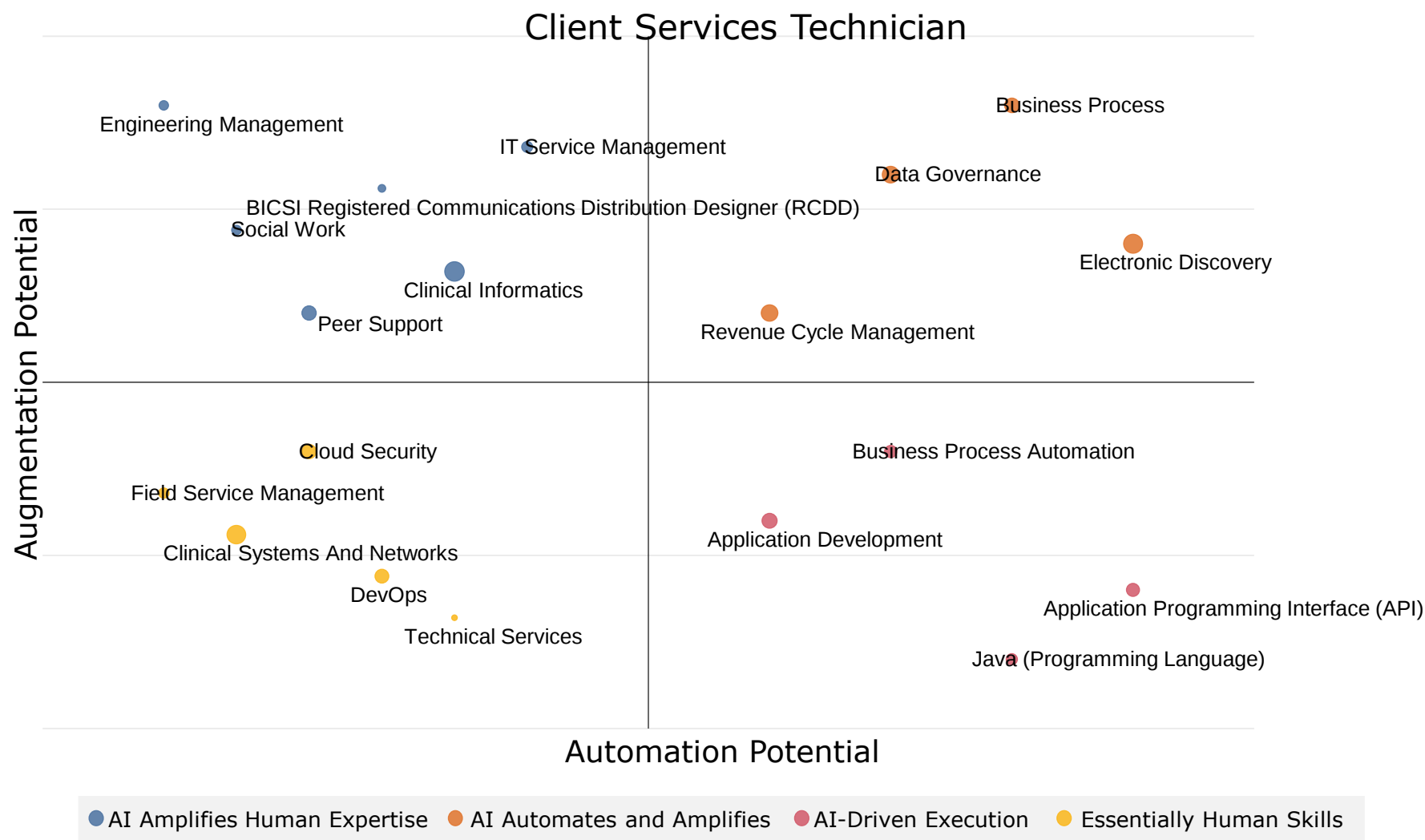
Skill Breakdown | Business and Financial Operations



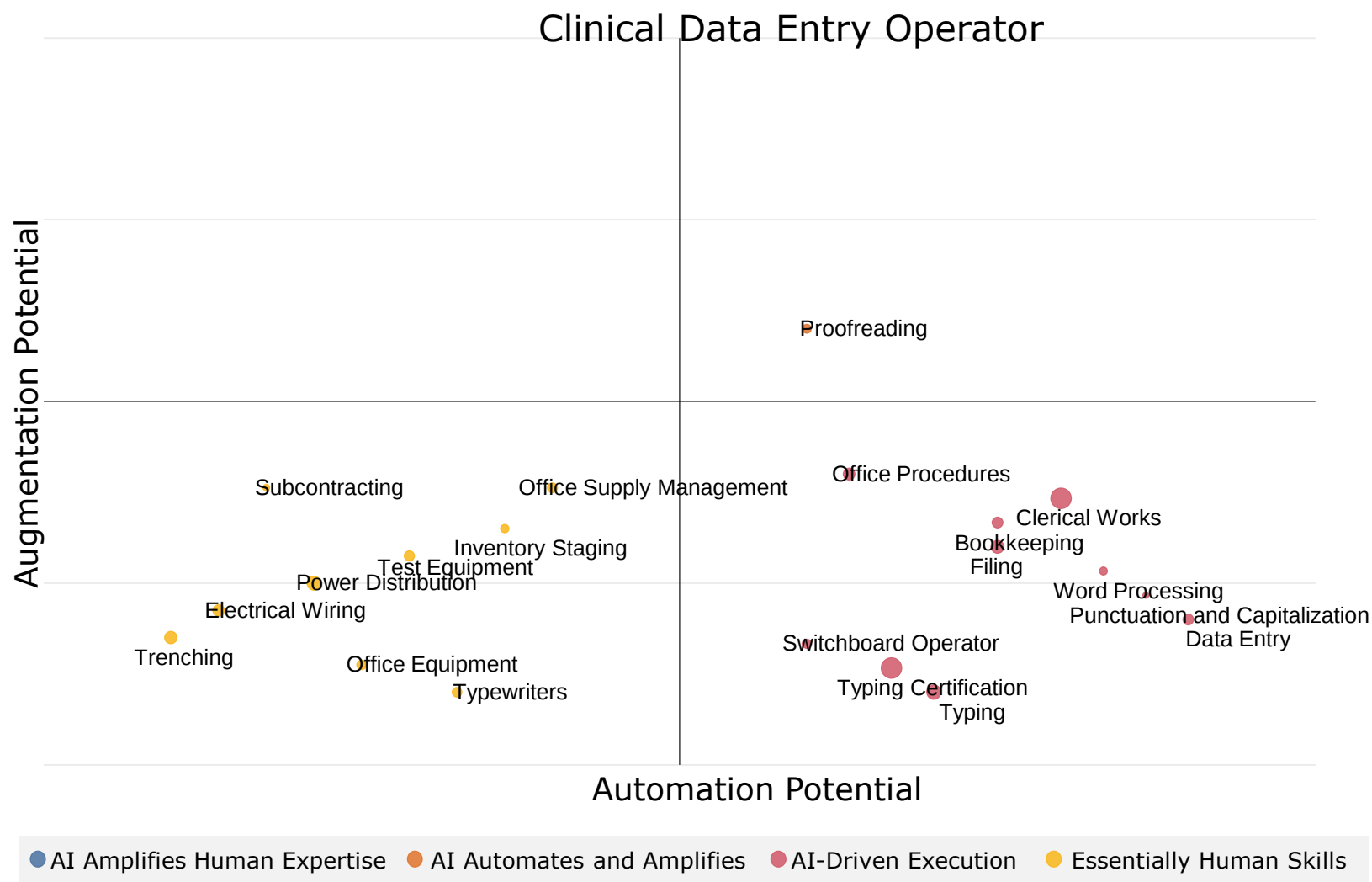
Skill Breakdown | Cabling Technician



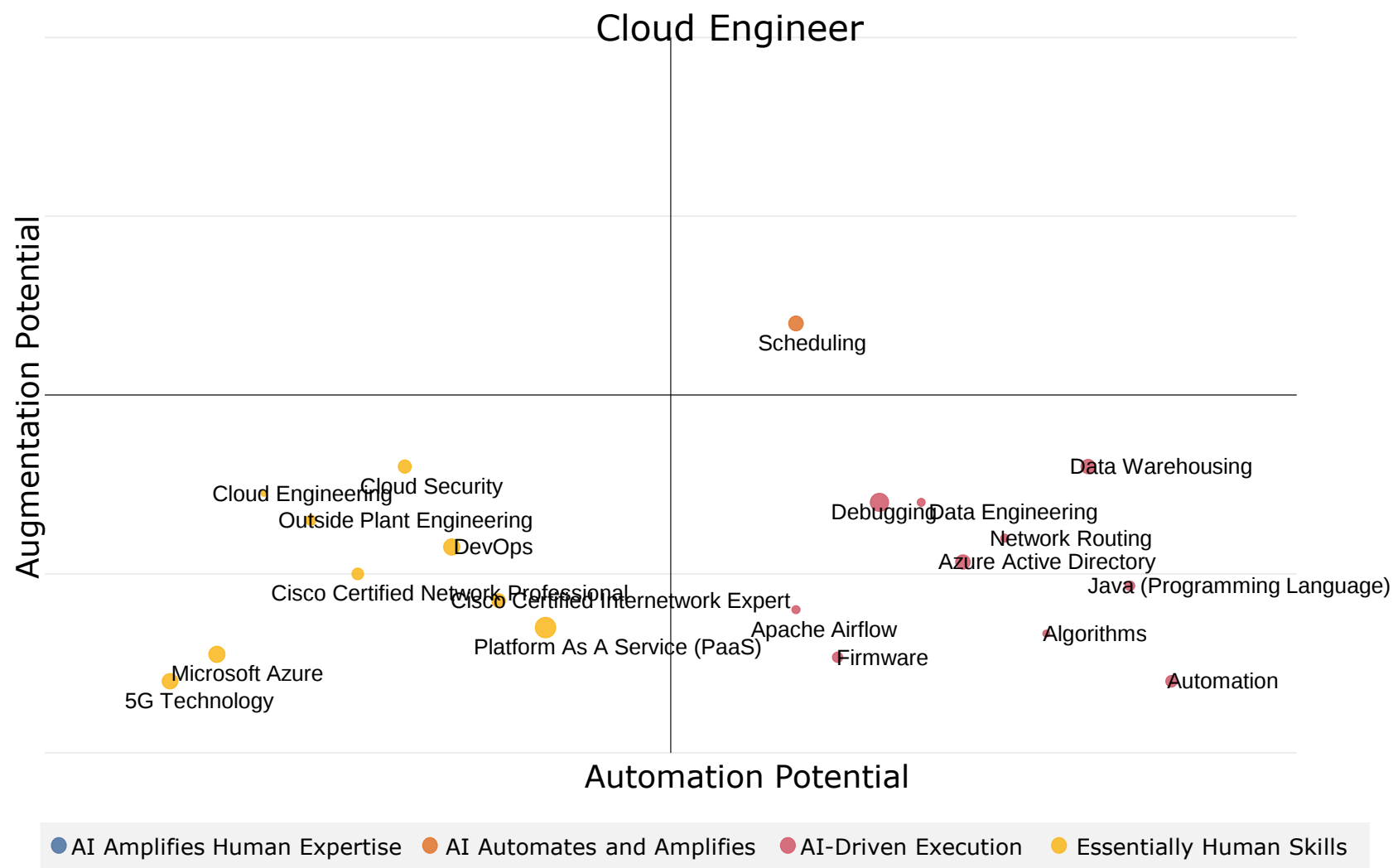
Skill Breakdown | Client Services Technician



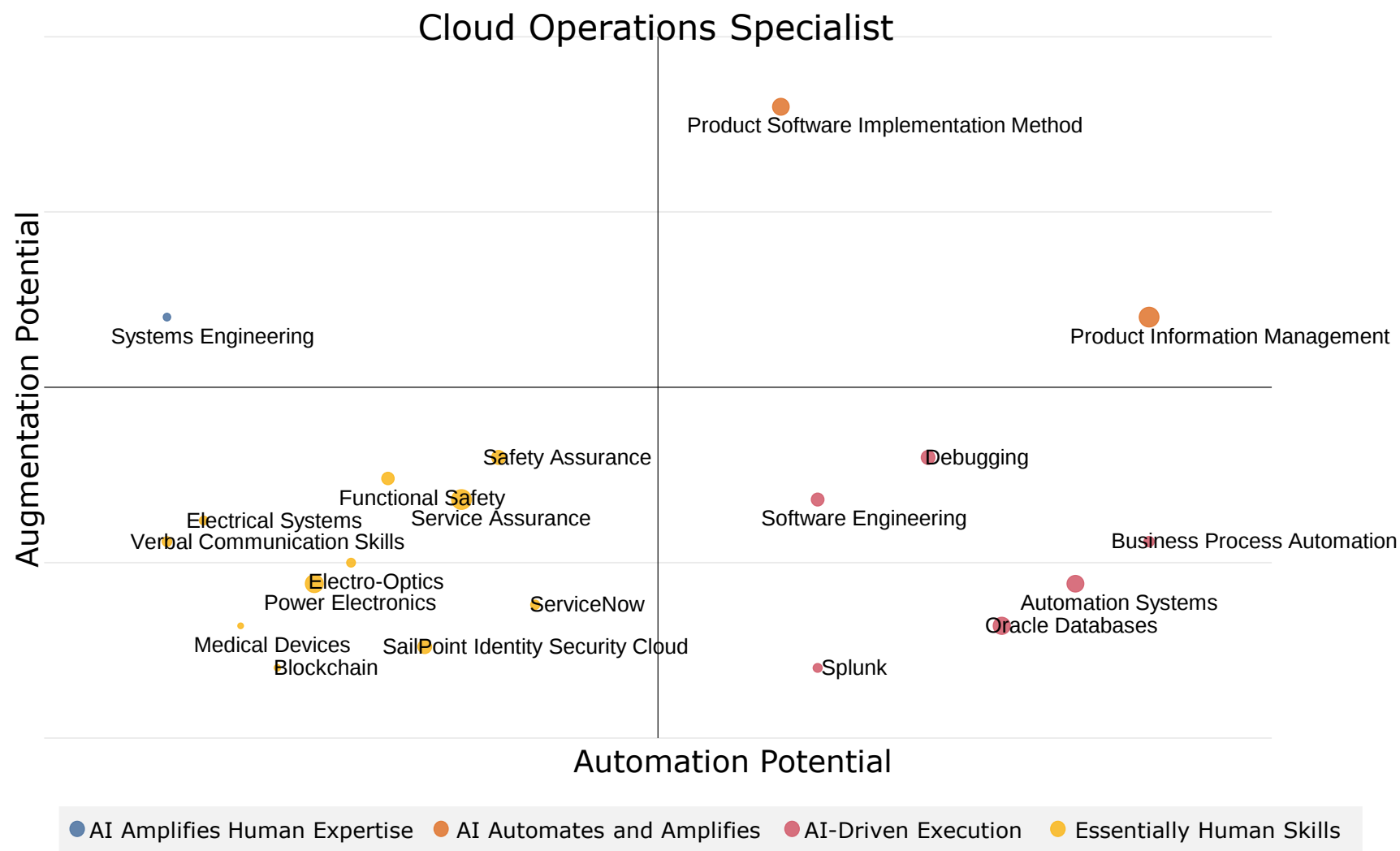
Skill Breakdown | Clinical Data Entry Operator



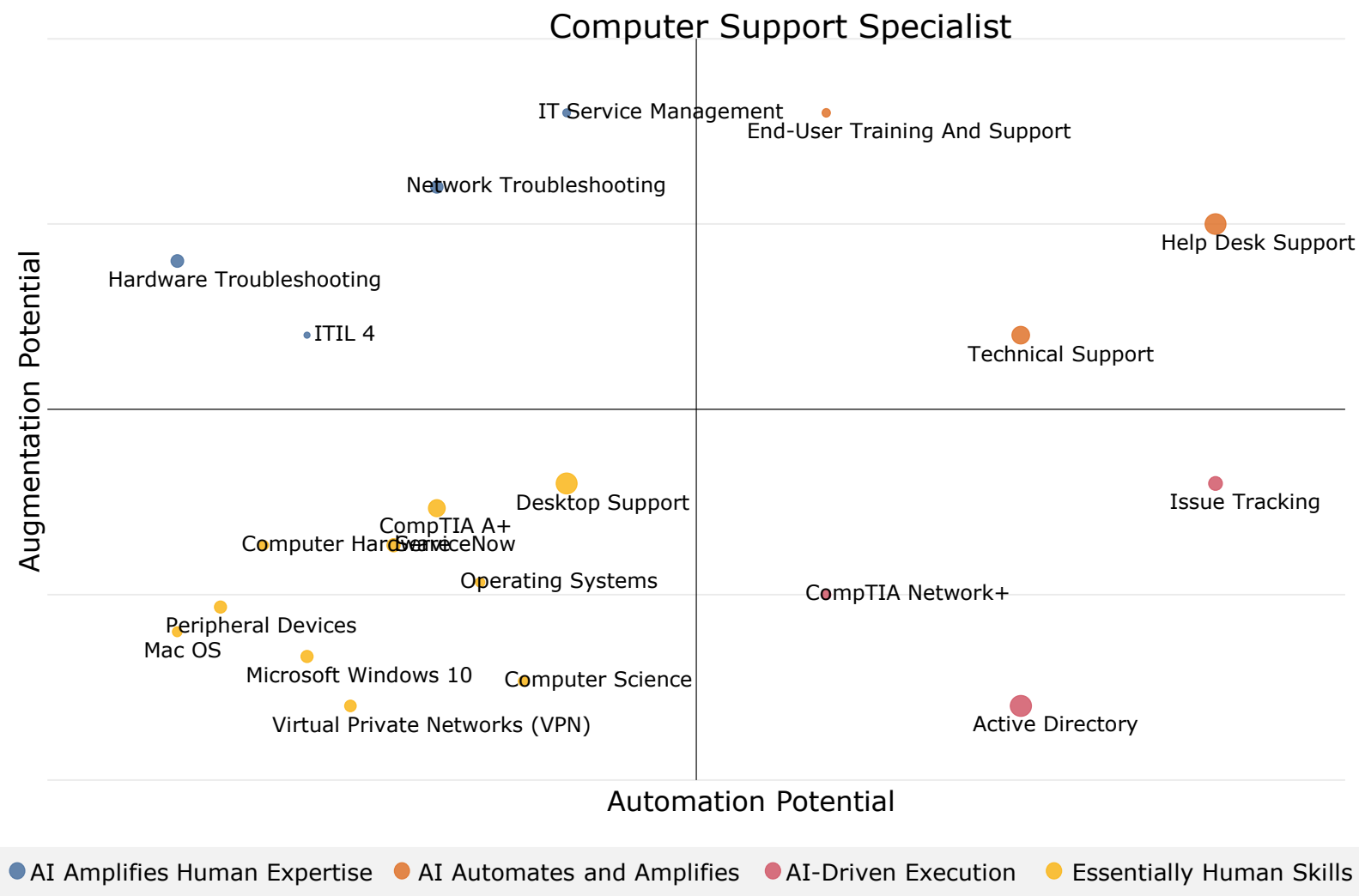
Skill Breakdown | Cloud Engineer



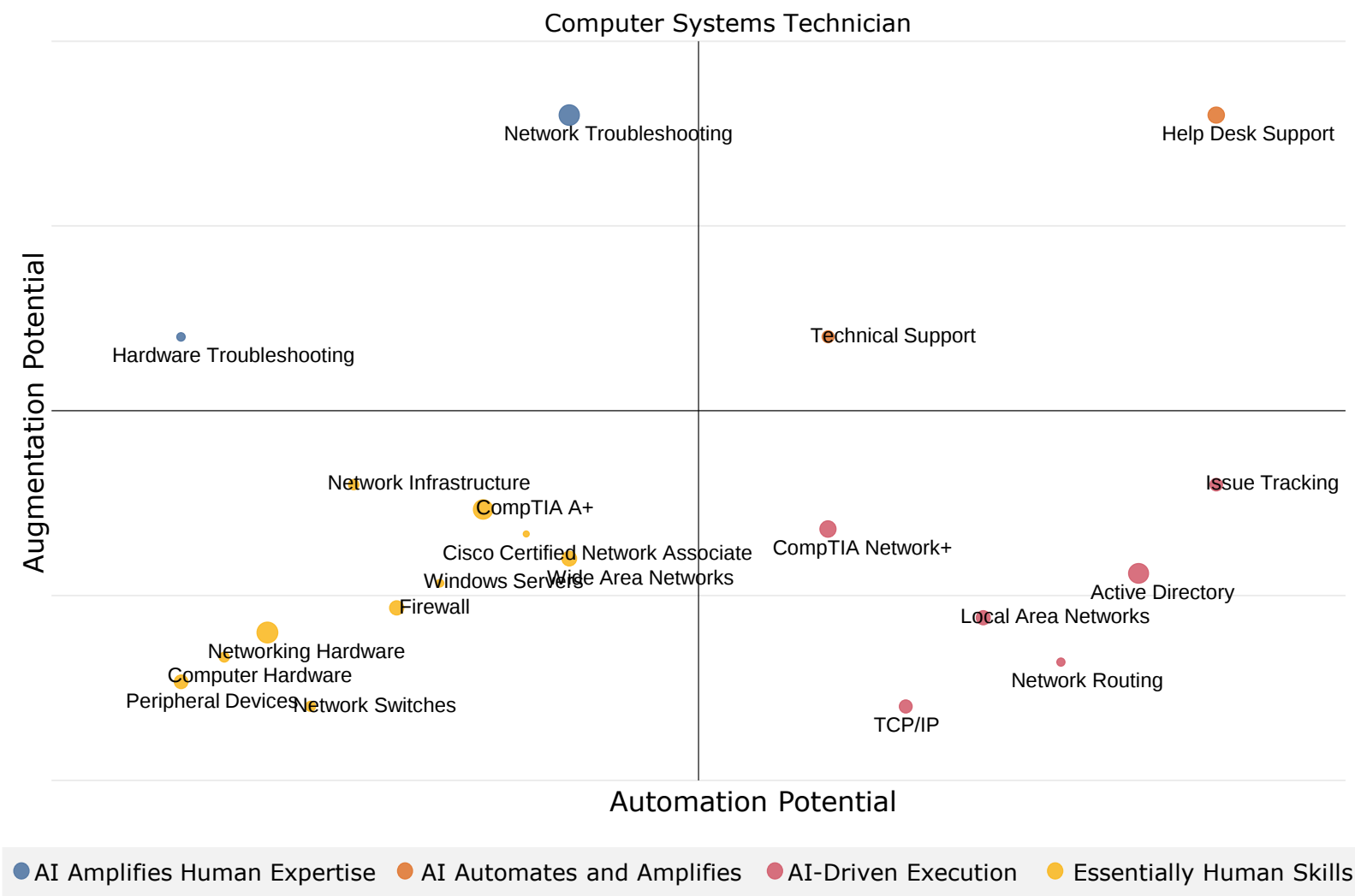
Skill Breakdown | Cloud Operation Specialist



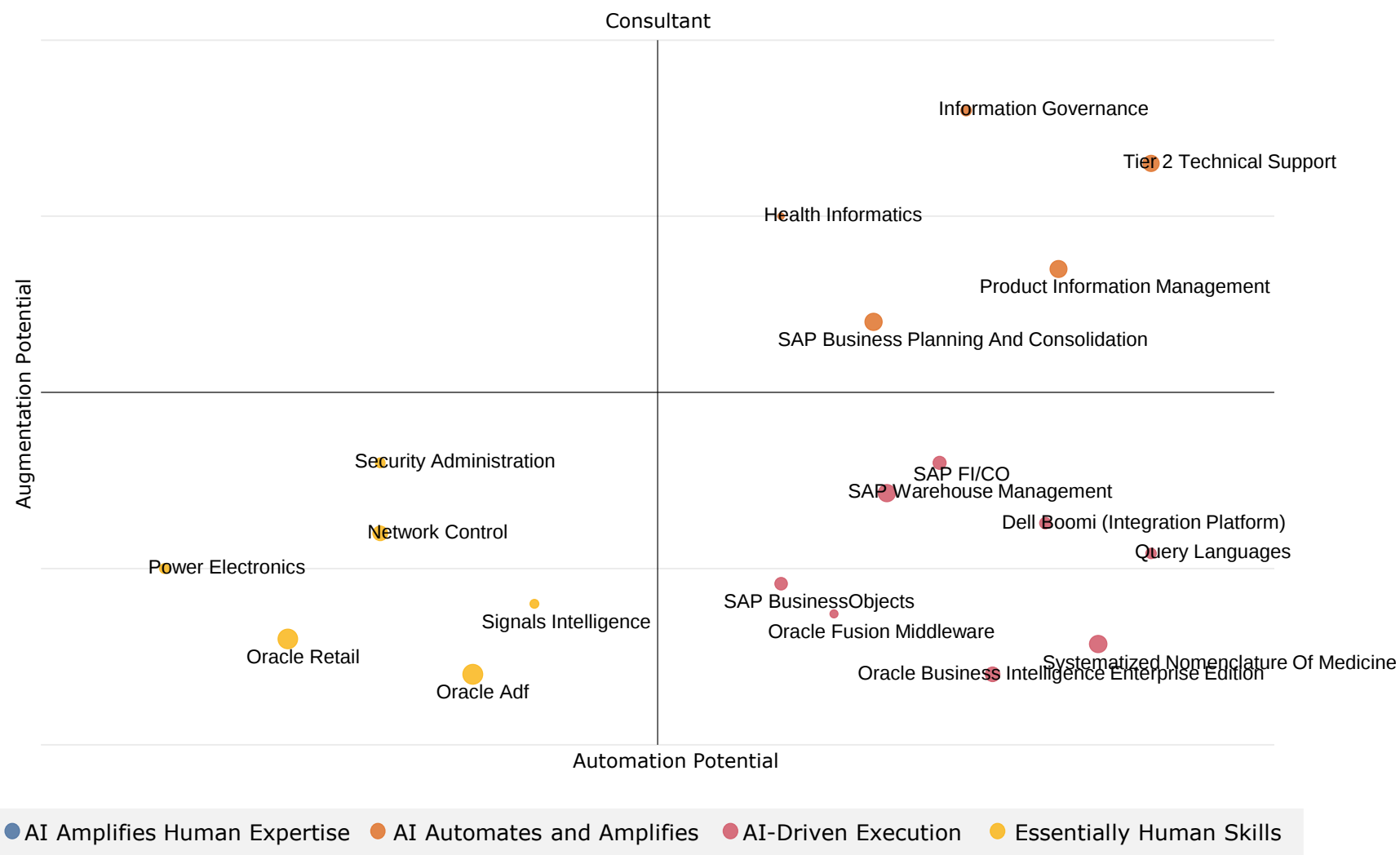
Skill Breakdown | Computer Support Specialist



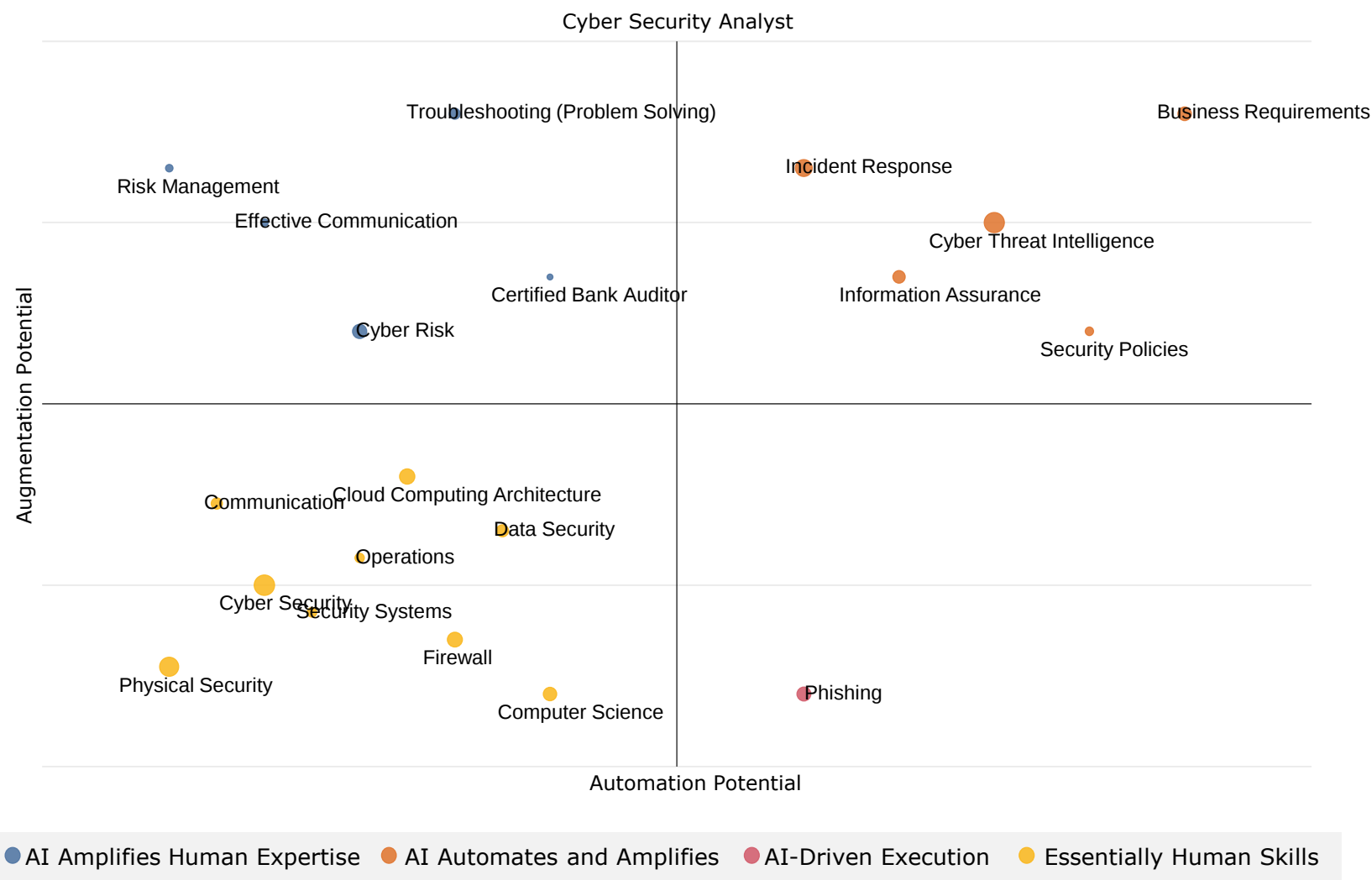
Skill Breakdown | Computer System Technicians



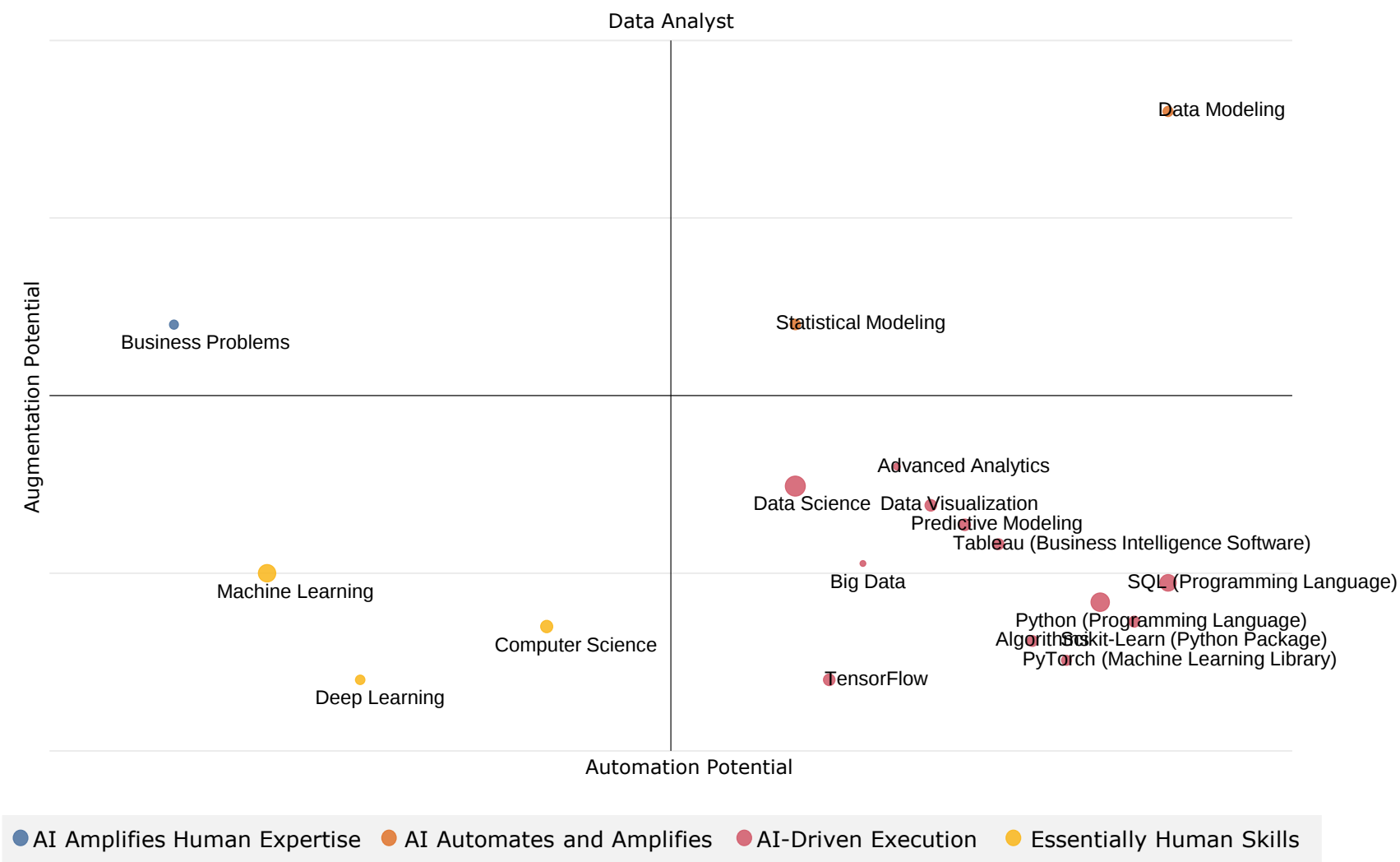
Skill Breakdown | Consultant



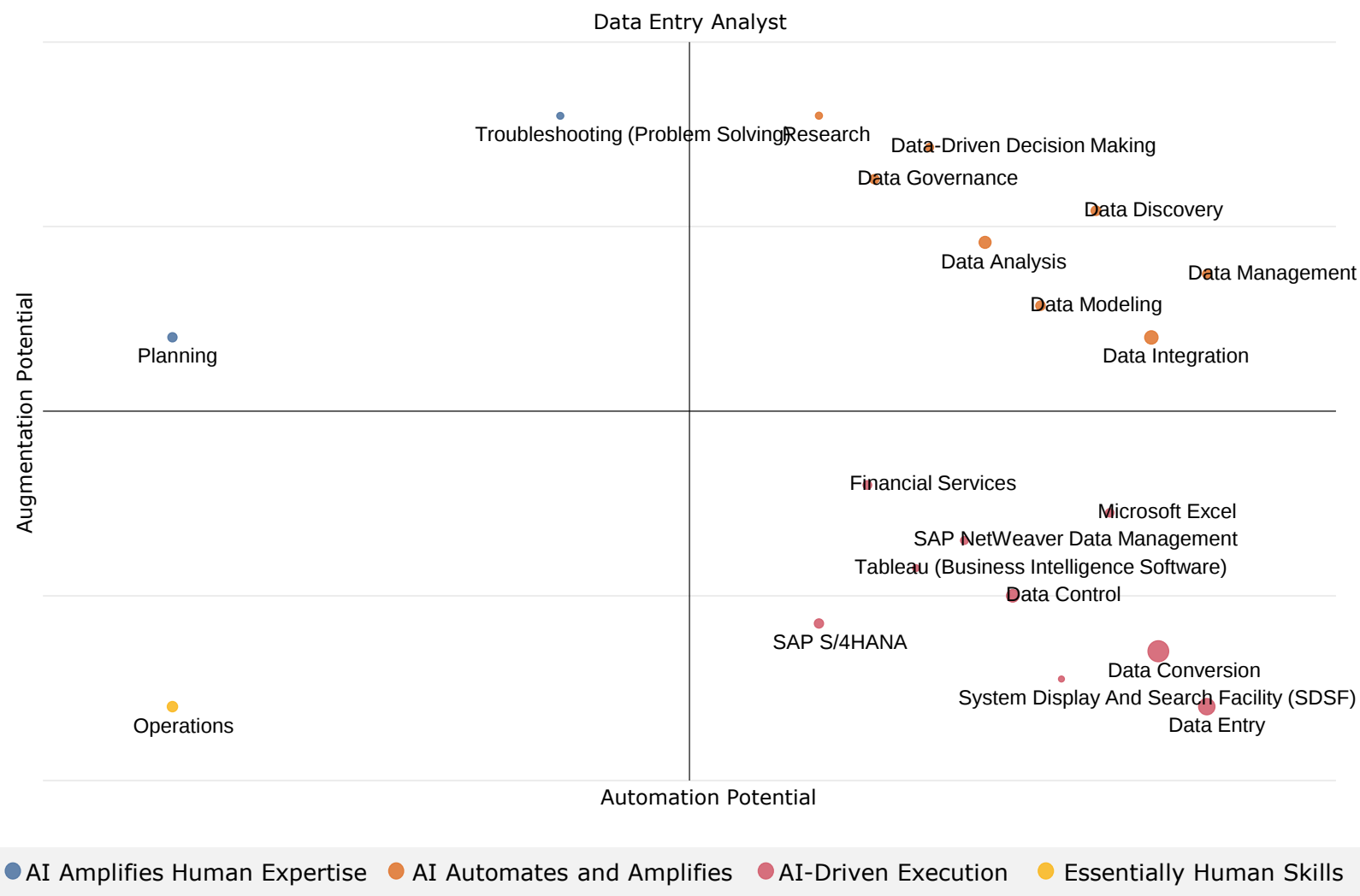
Skill Breakdown | Cybersecurity Analyst



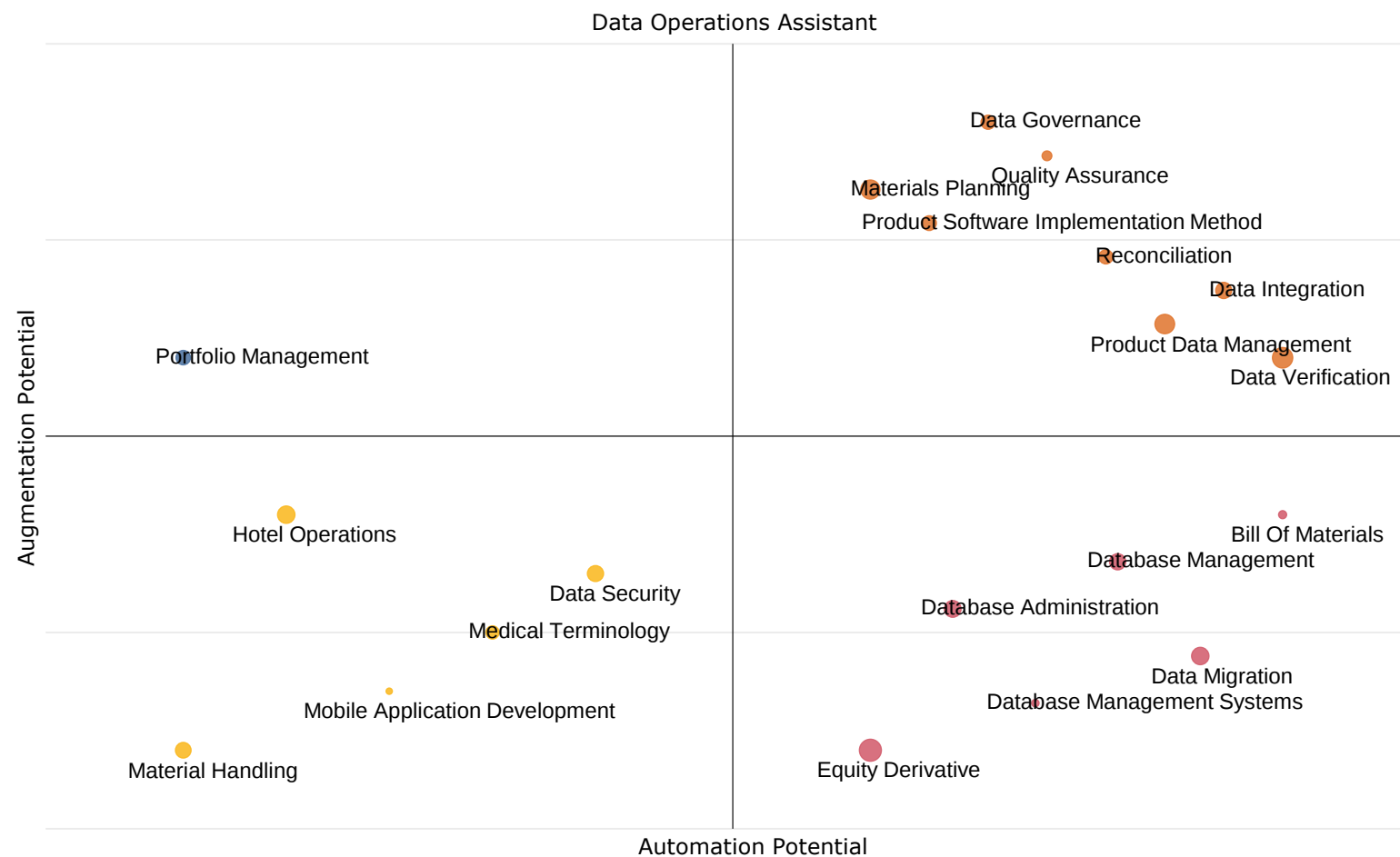
Skill Breakdown | Data Analyst



Skill Breakdown | Data Entry Analyst

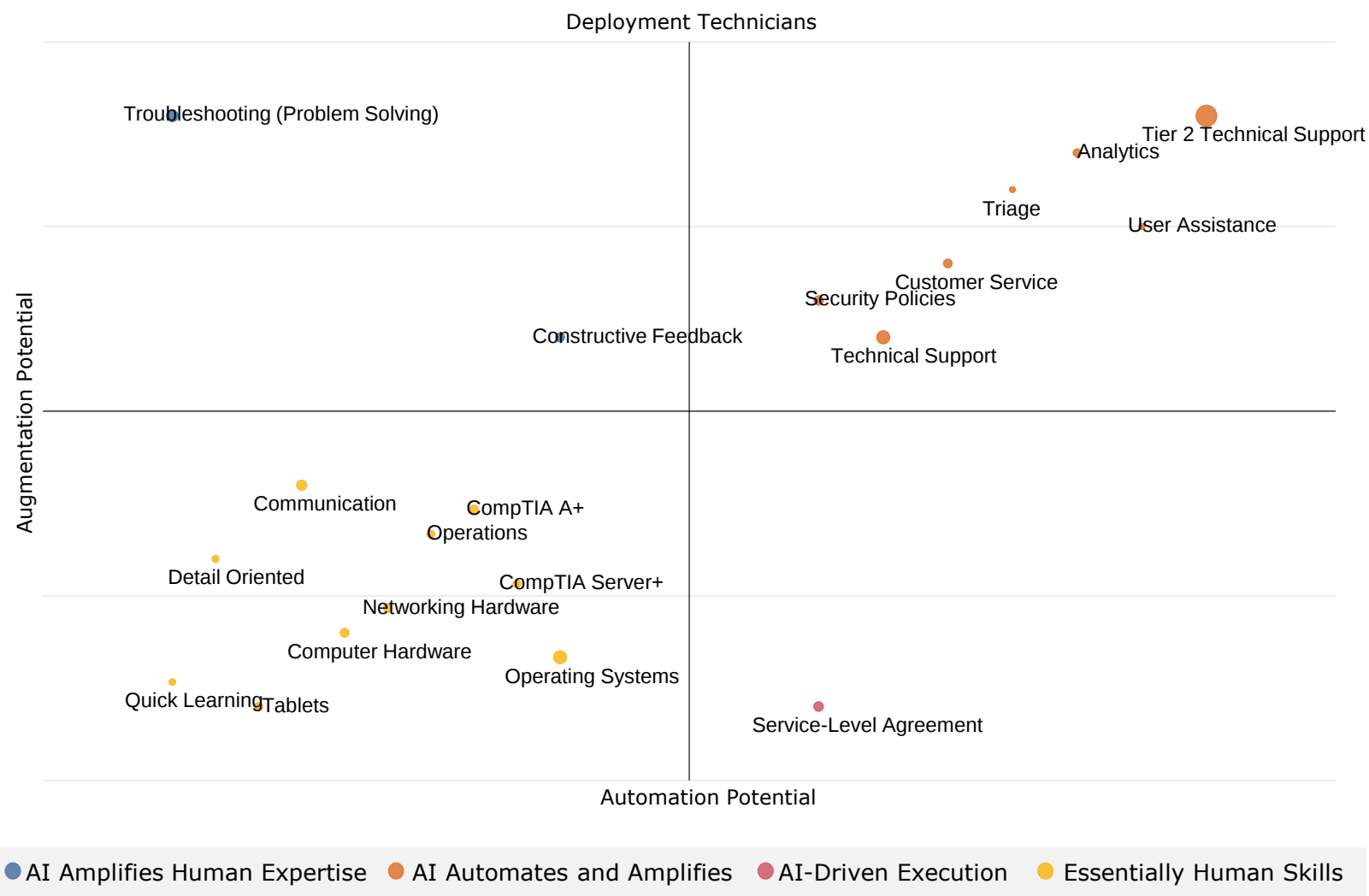


Skill Breakdown | Data Operations Assistant

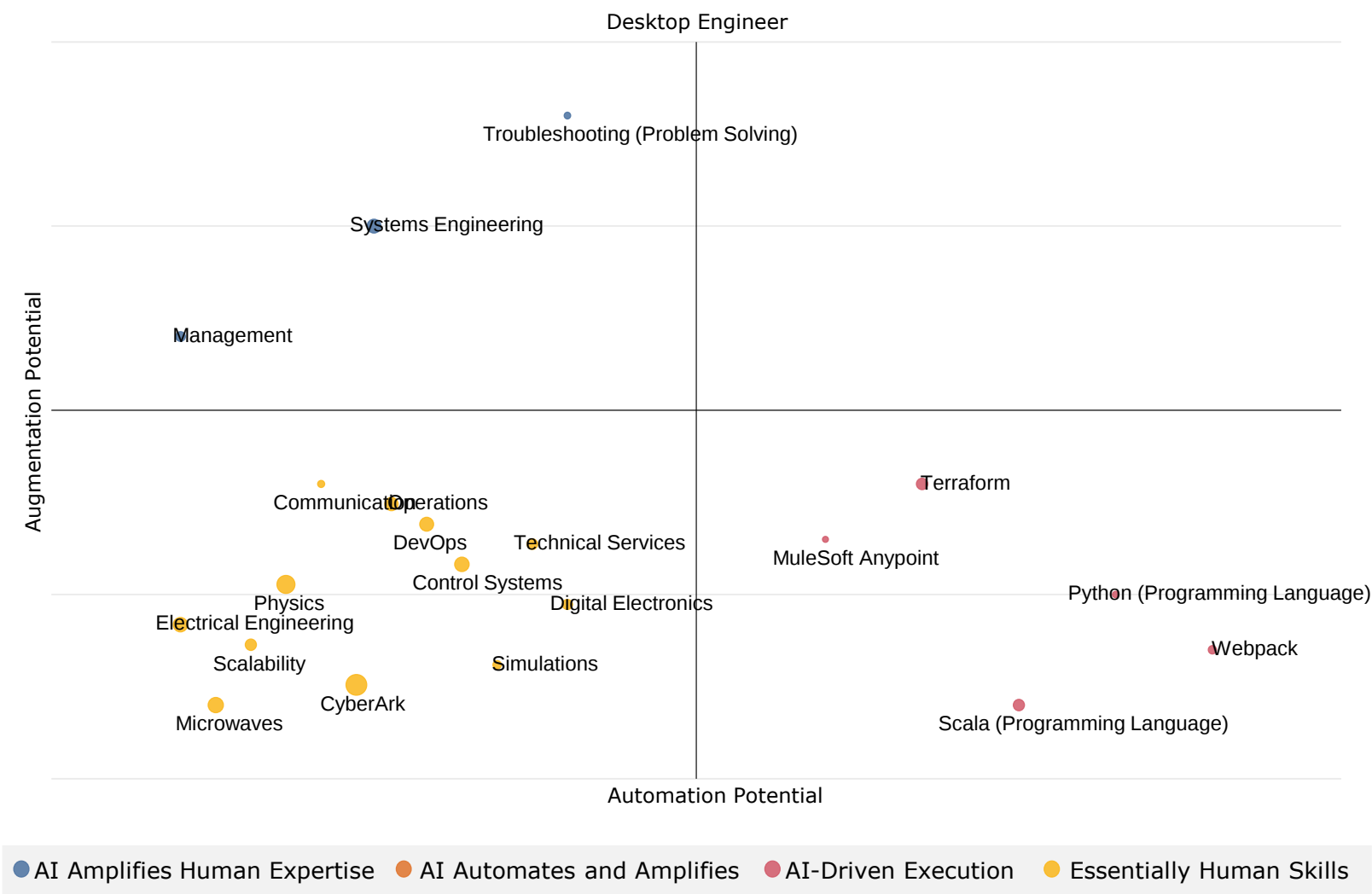


● AI Amplifies Human Expertise
 ● AI Automates and Amplifies
 ● AI-Driven Execution
 ● Essentially Human Skills

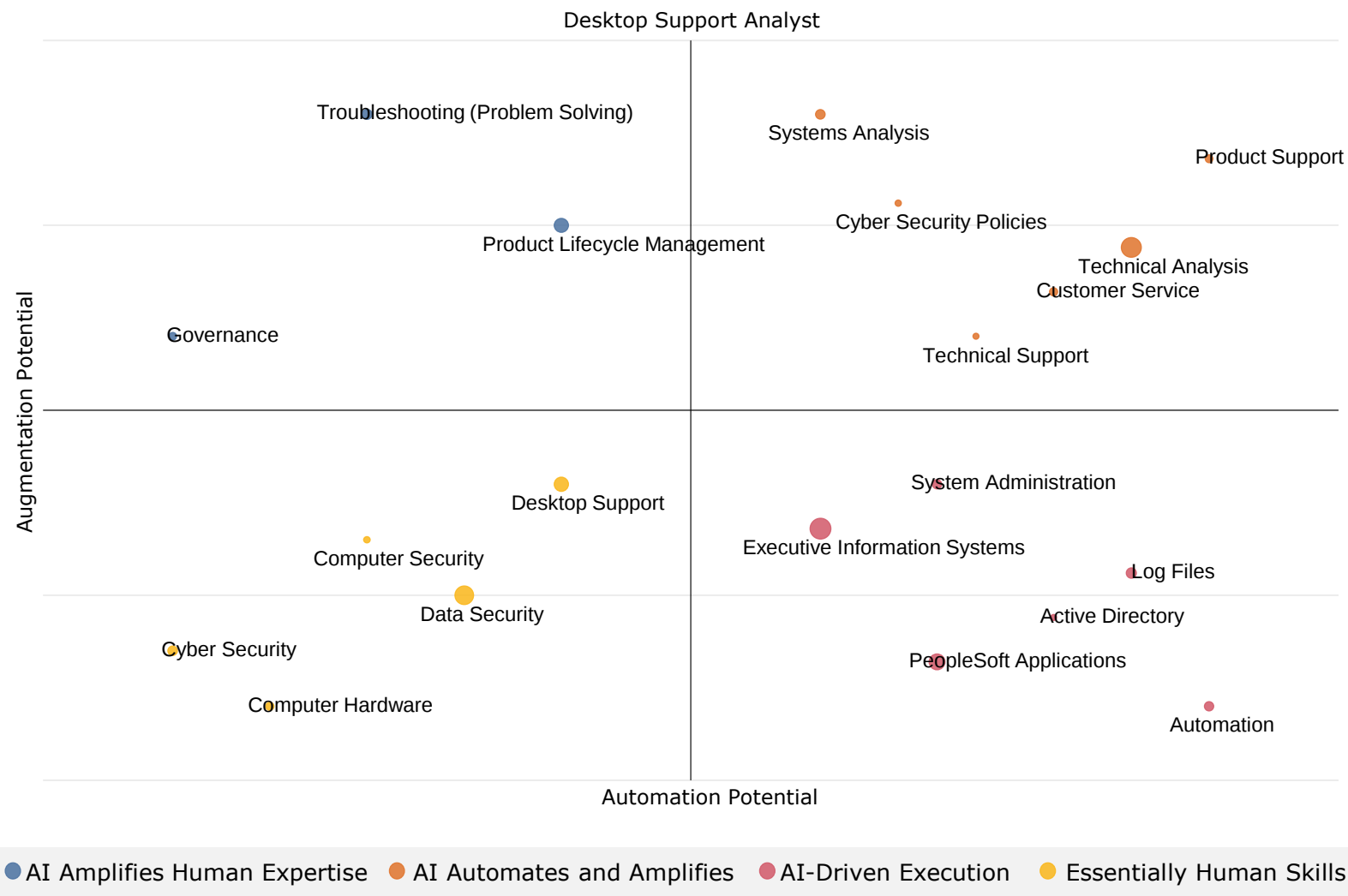
Skill Breakdown | Deployment Technicians



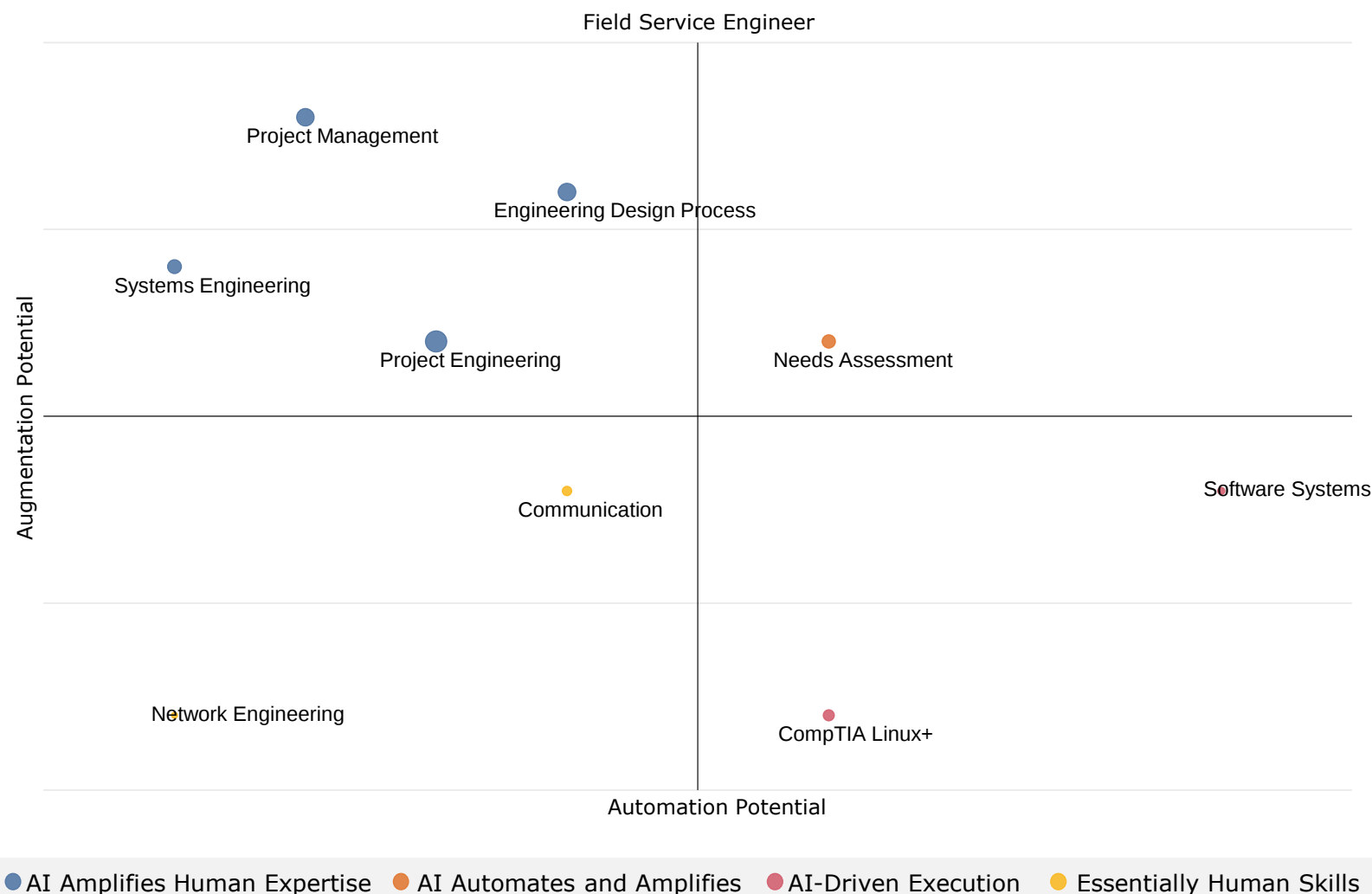
Skill Breakdown | Desktop Engineer



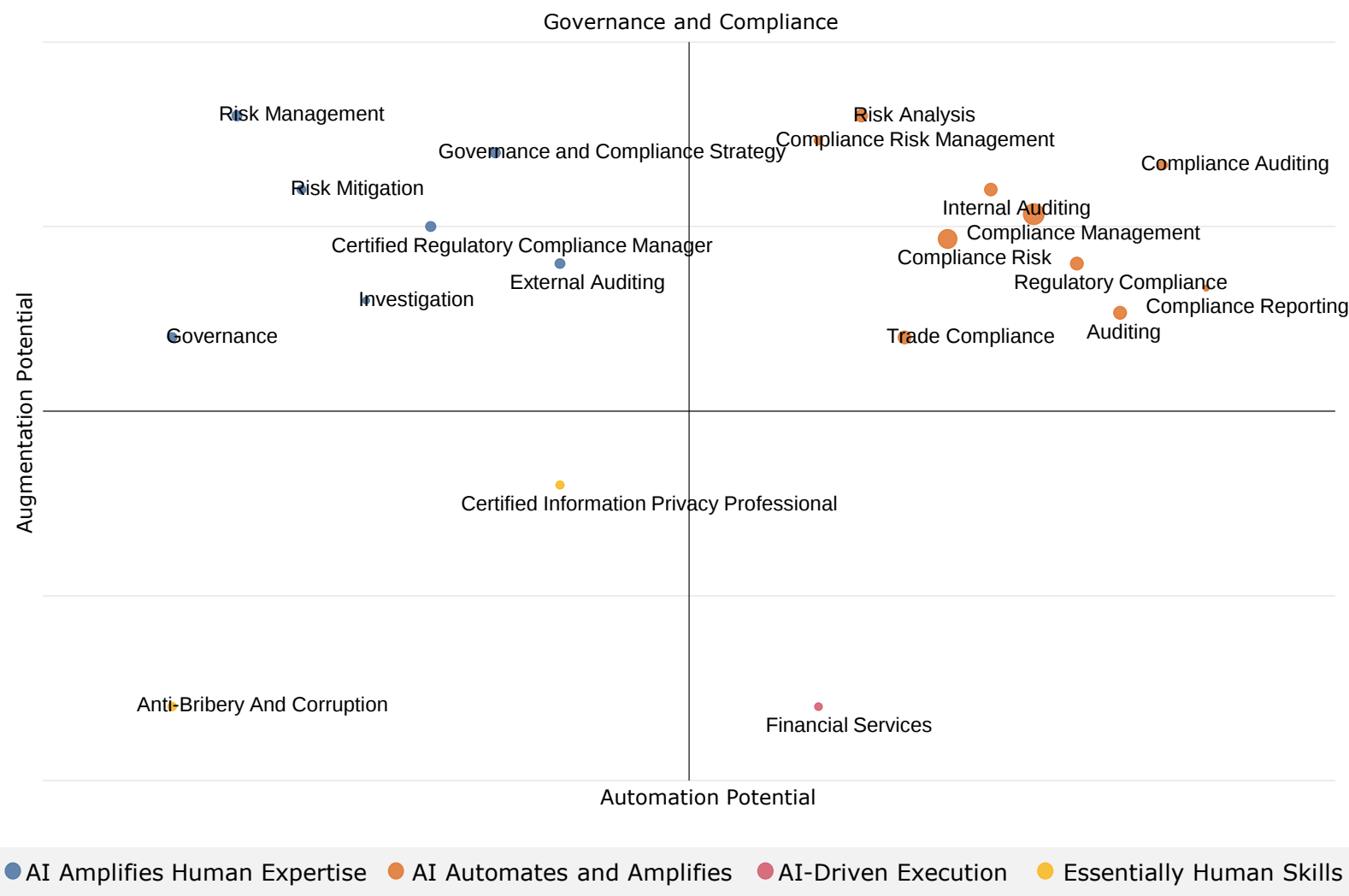
Skill Breakdown | Desktop Support Analyst



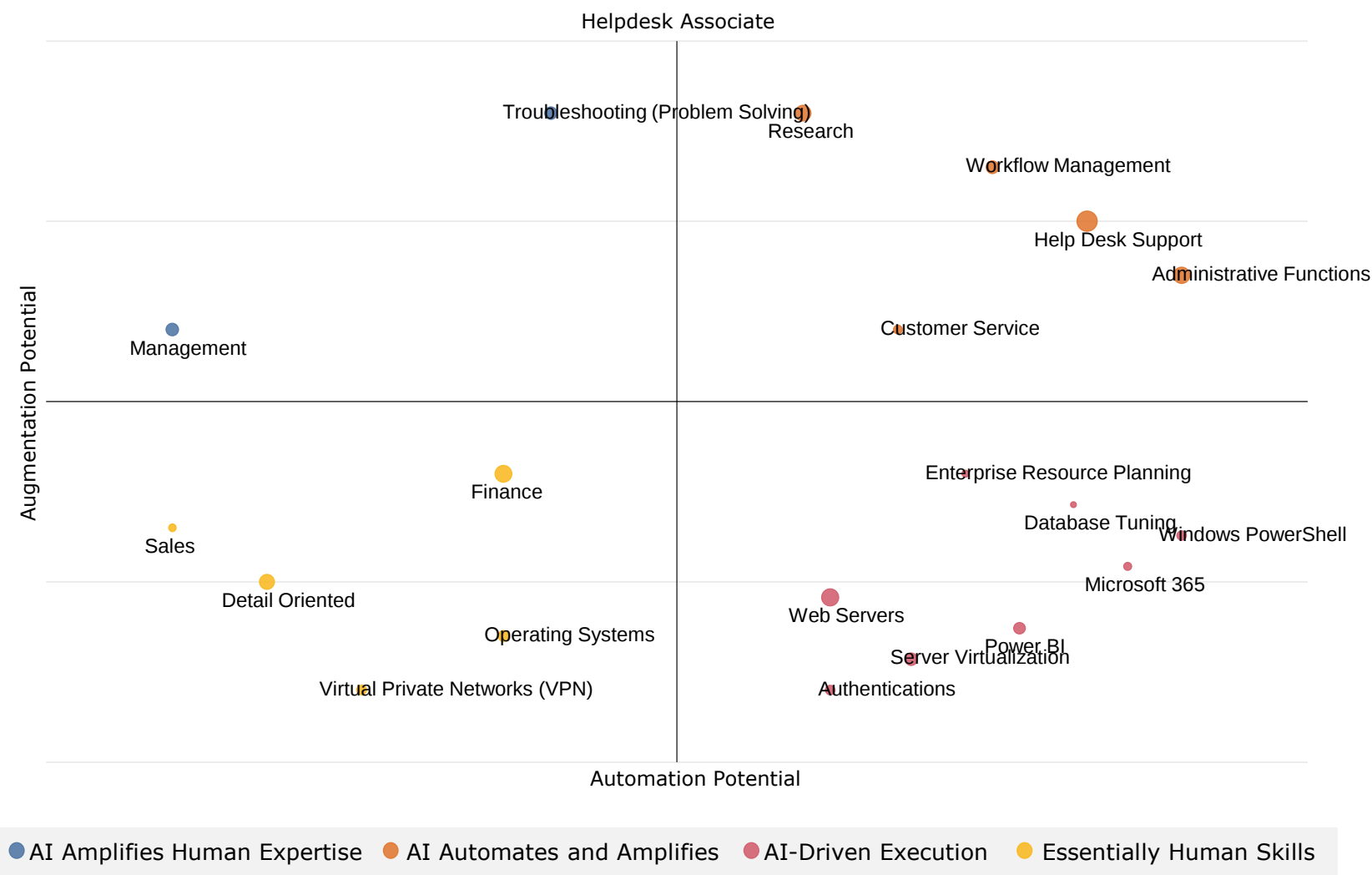
Skill Breakdown | Field Service Engineer



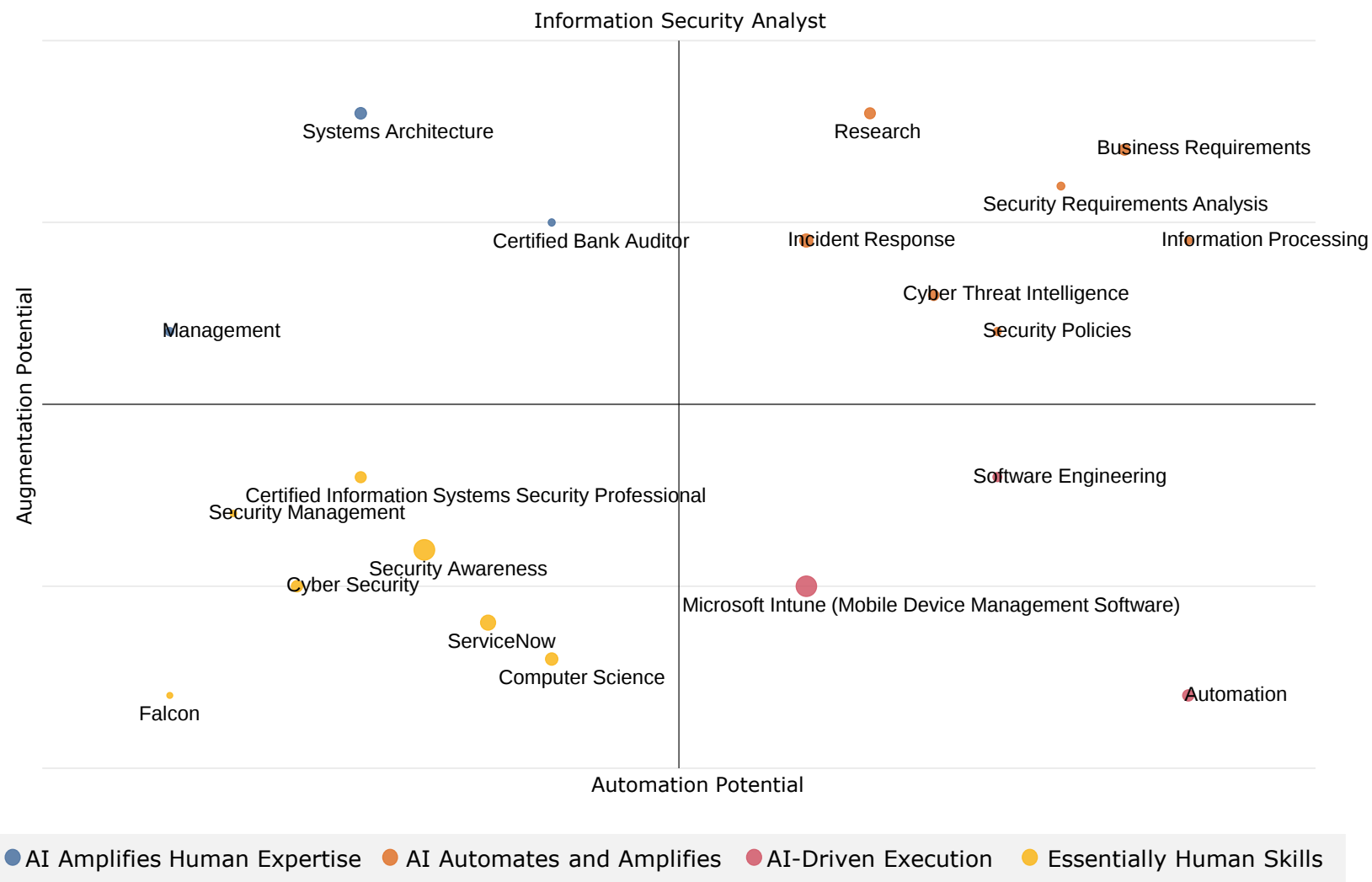
Skill Breakdown | Governance and Compliance



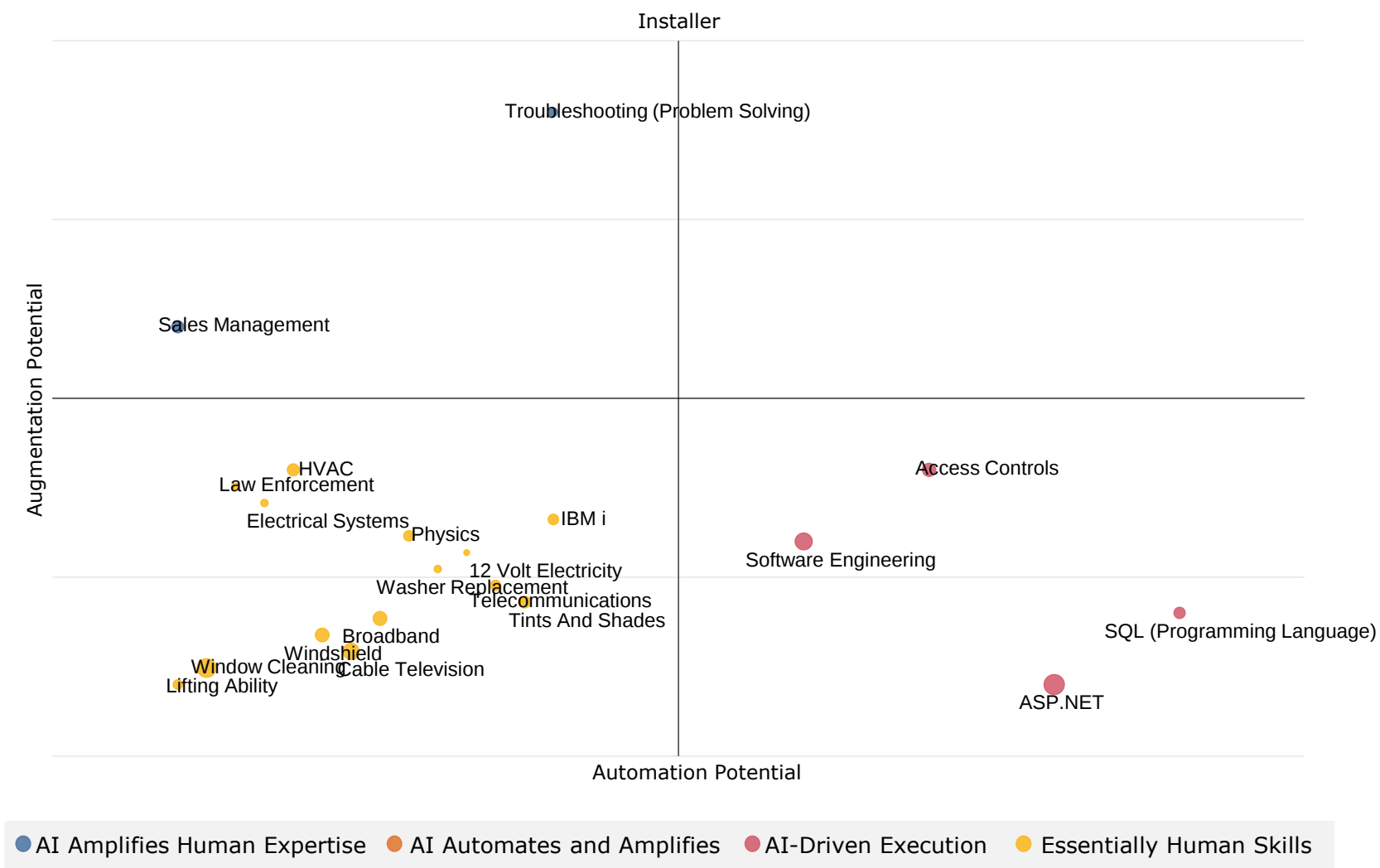
Skill Breakdown | Helpdesk Associate



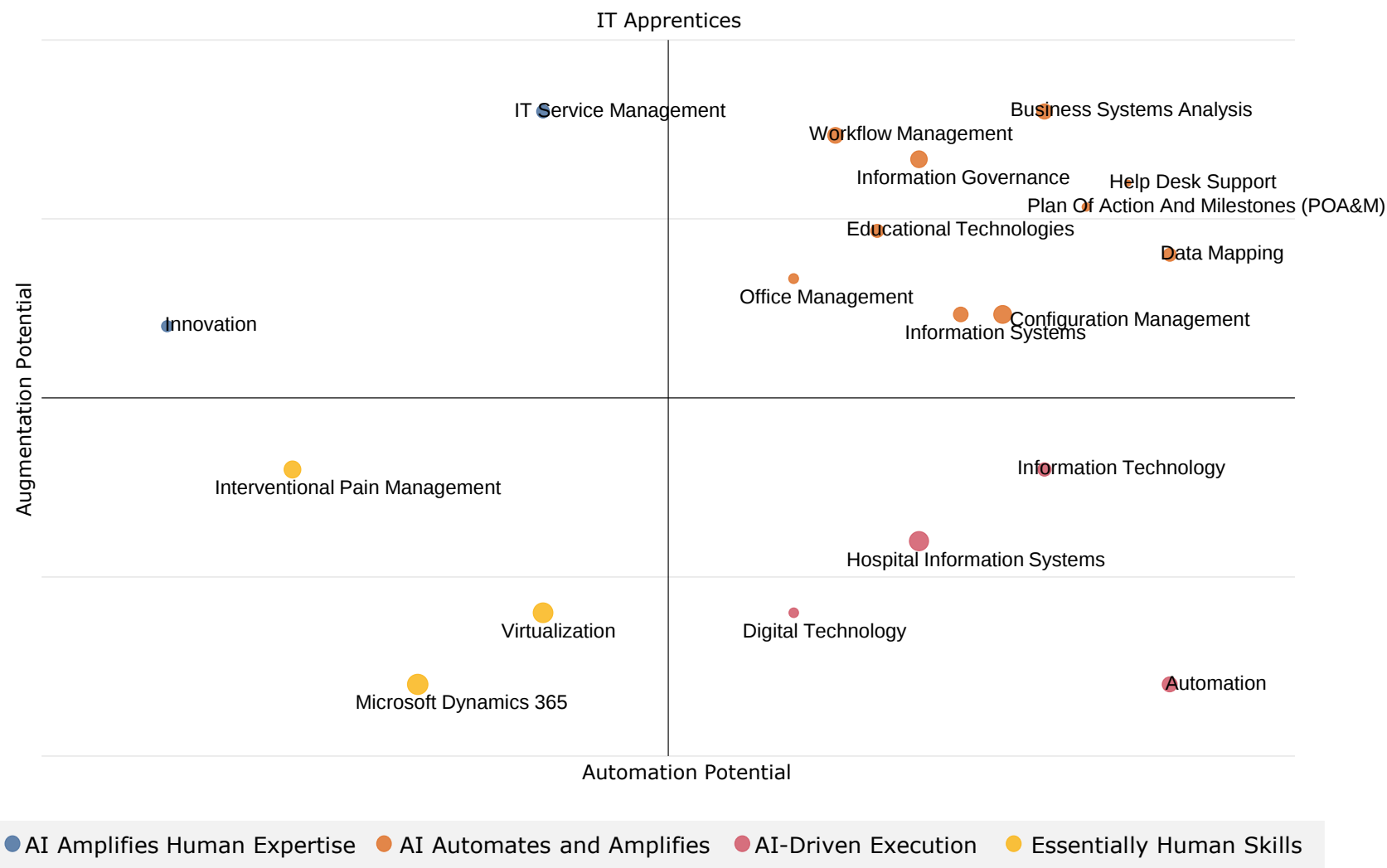
Skill Breakdown | Information Security Analyst



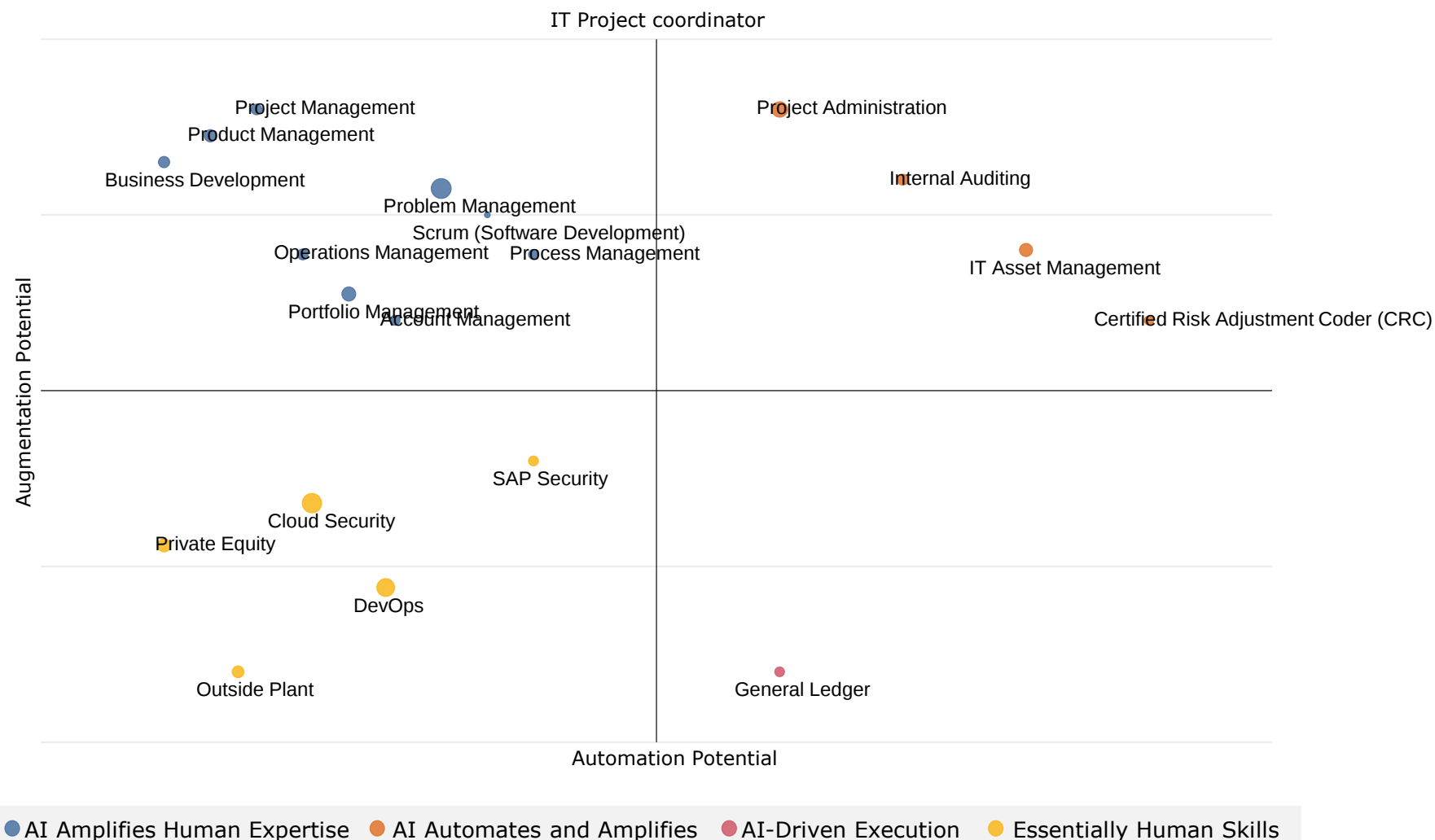
Skill Breakdown | Installer



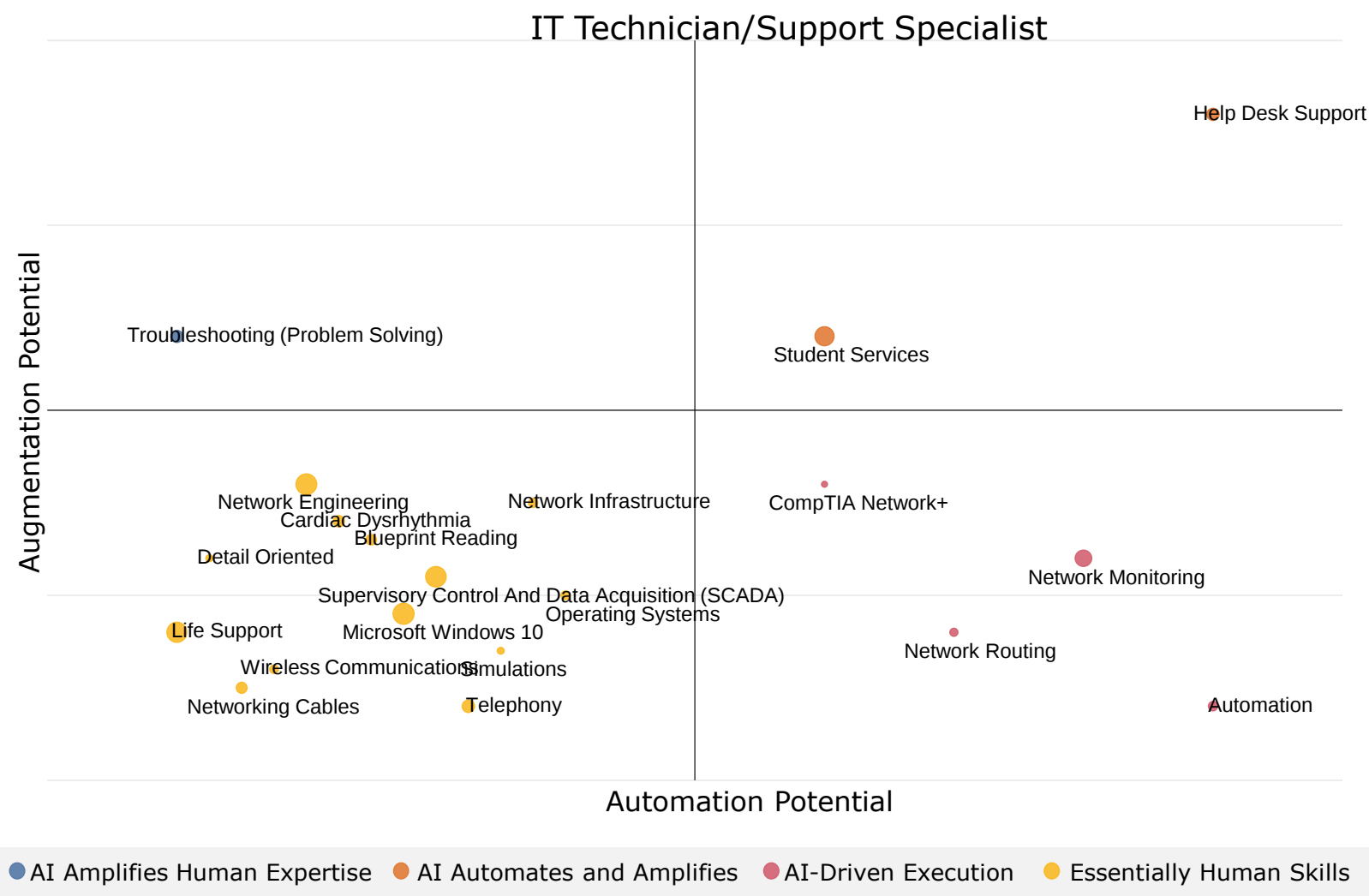
Skill Breakdown | IT Apprentices



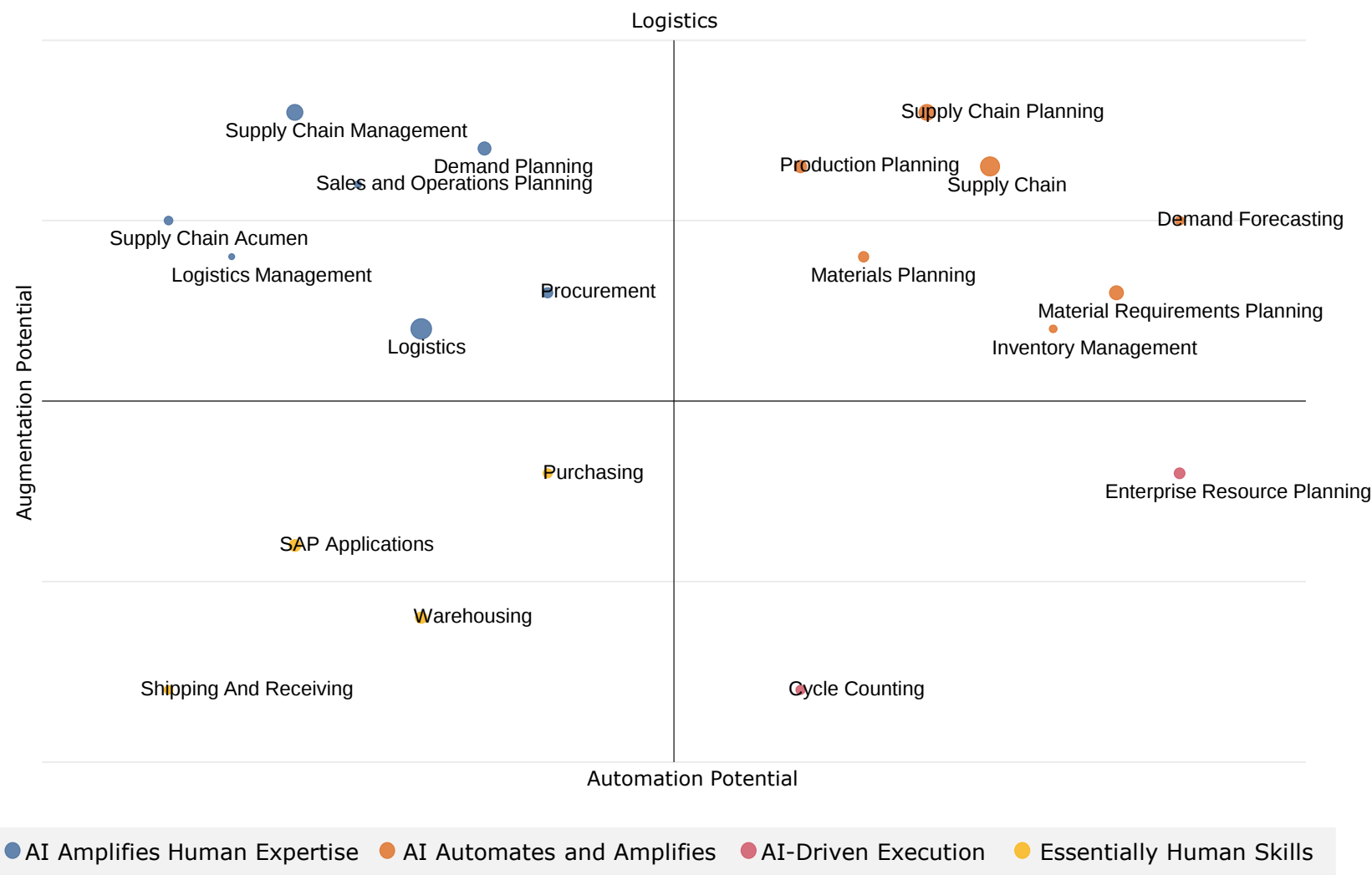
Skill Breakdown | IT Project Coordinator



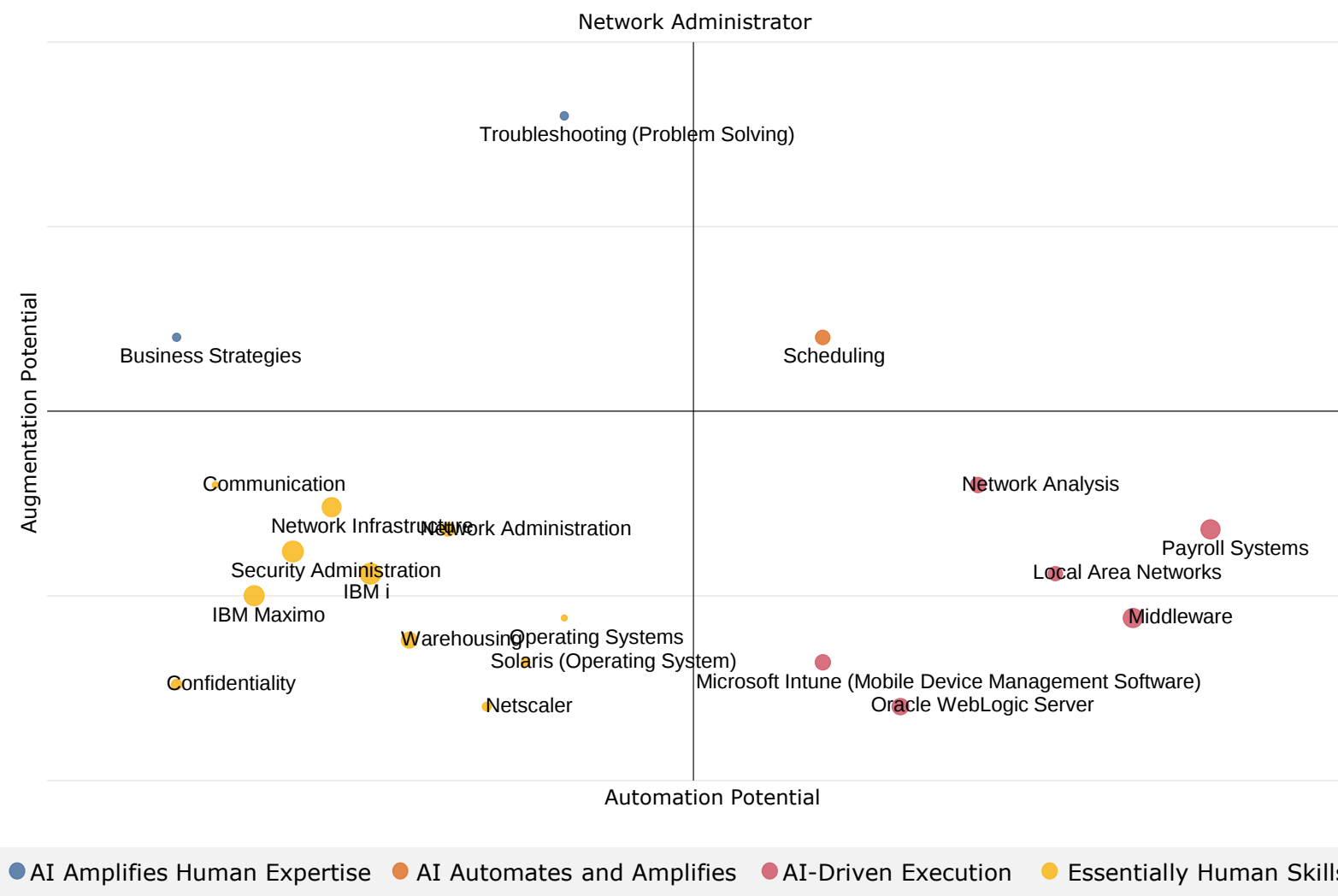
Skill Breakdown | IT Technician/Support Specialist



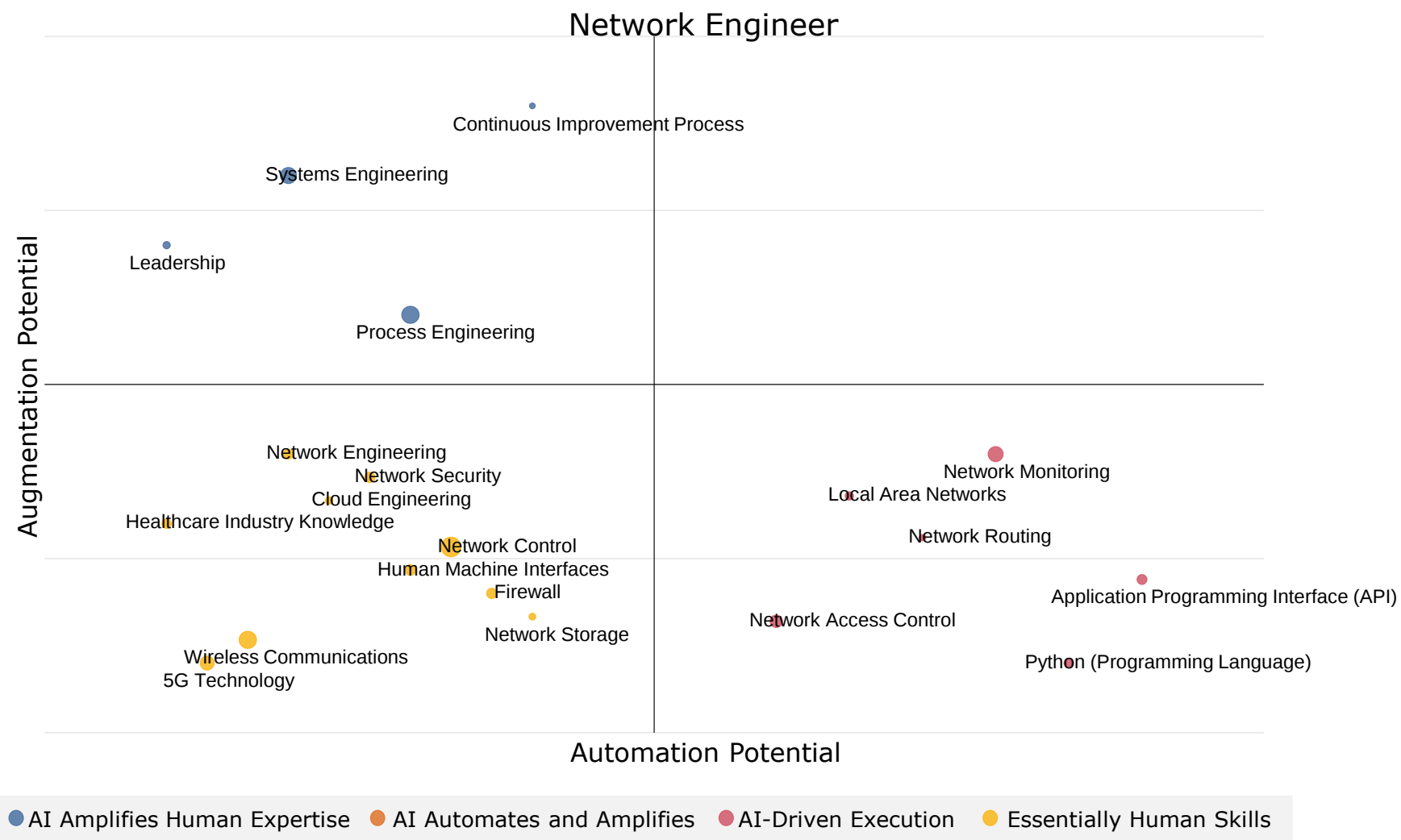
Skill Breakdown | Logistics



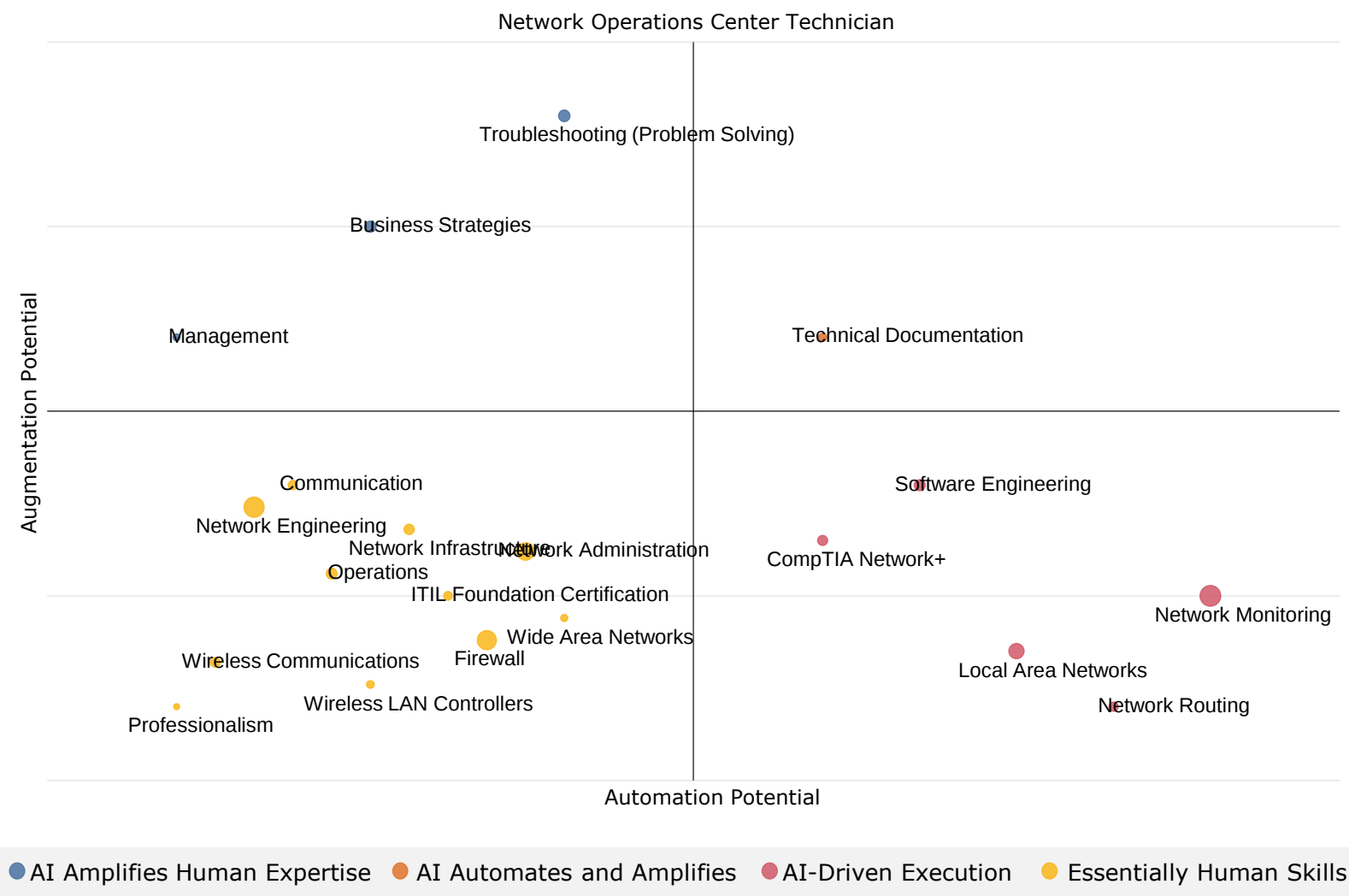
Skill Breakdown | Network Administrator



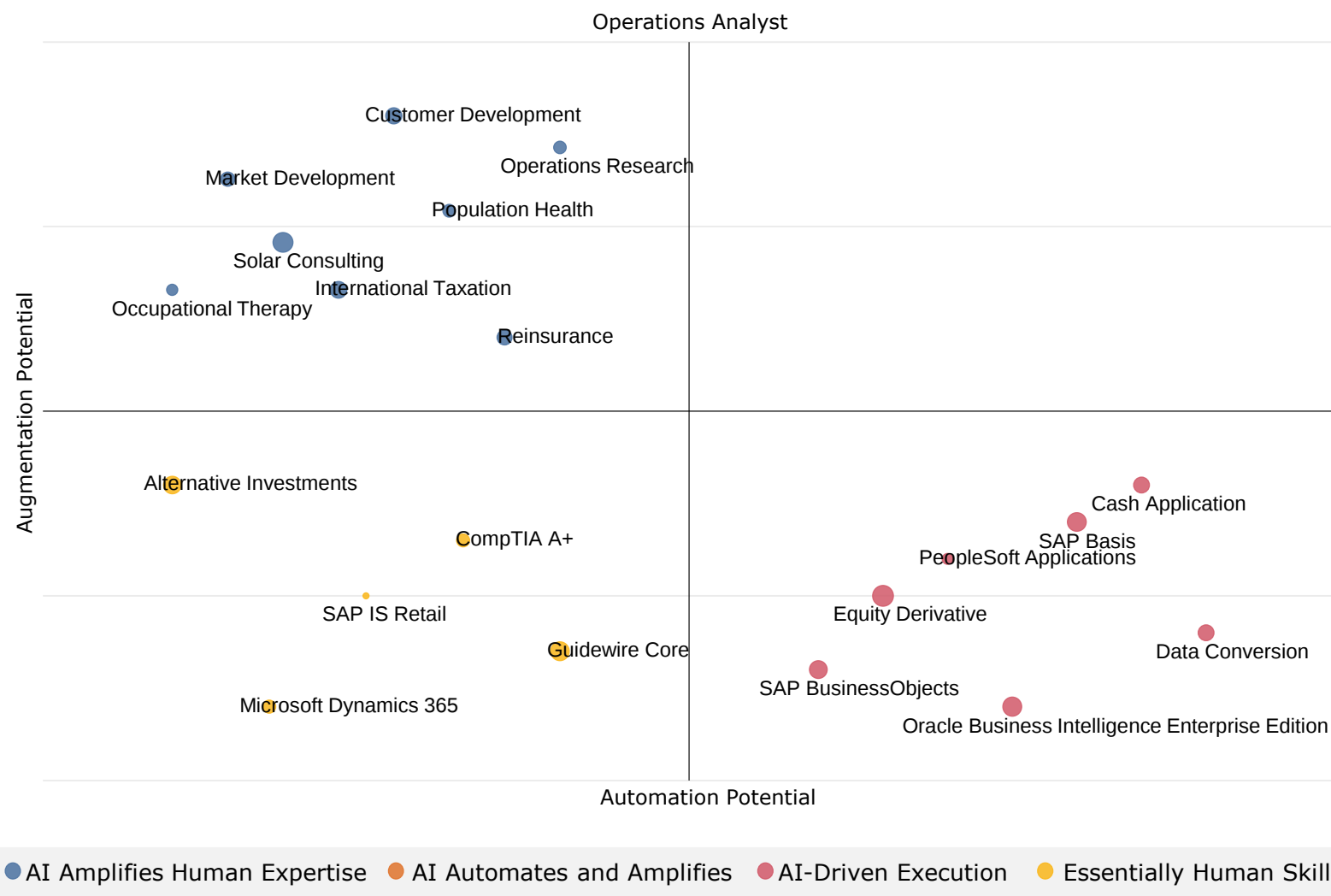
Skill Breakdown | Network Engineer



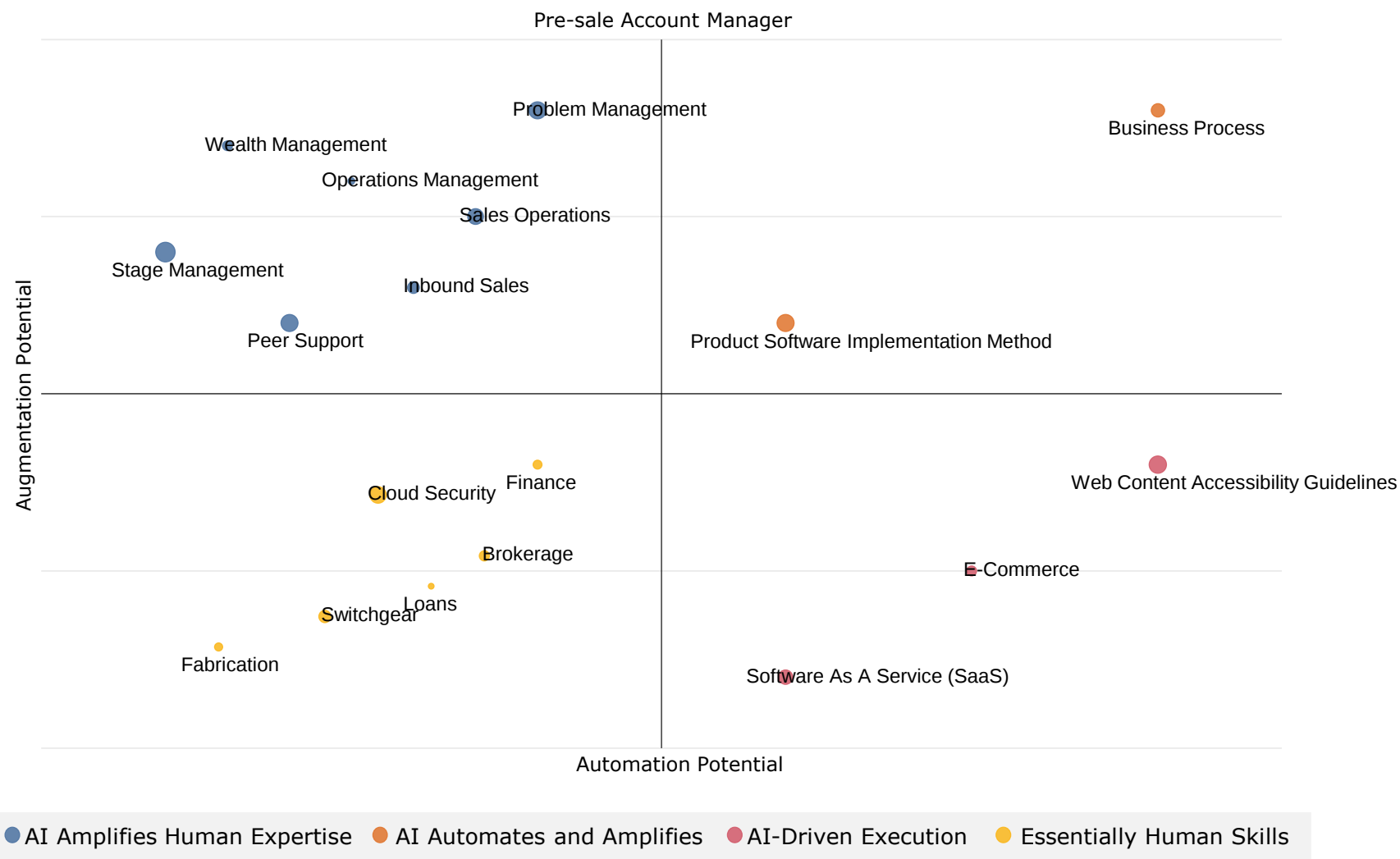
Skill Breakdown | Network Operations Center Tech



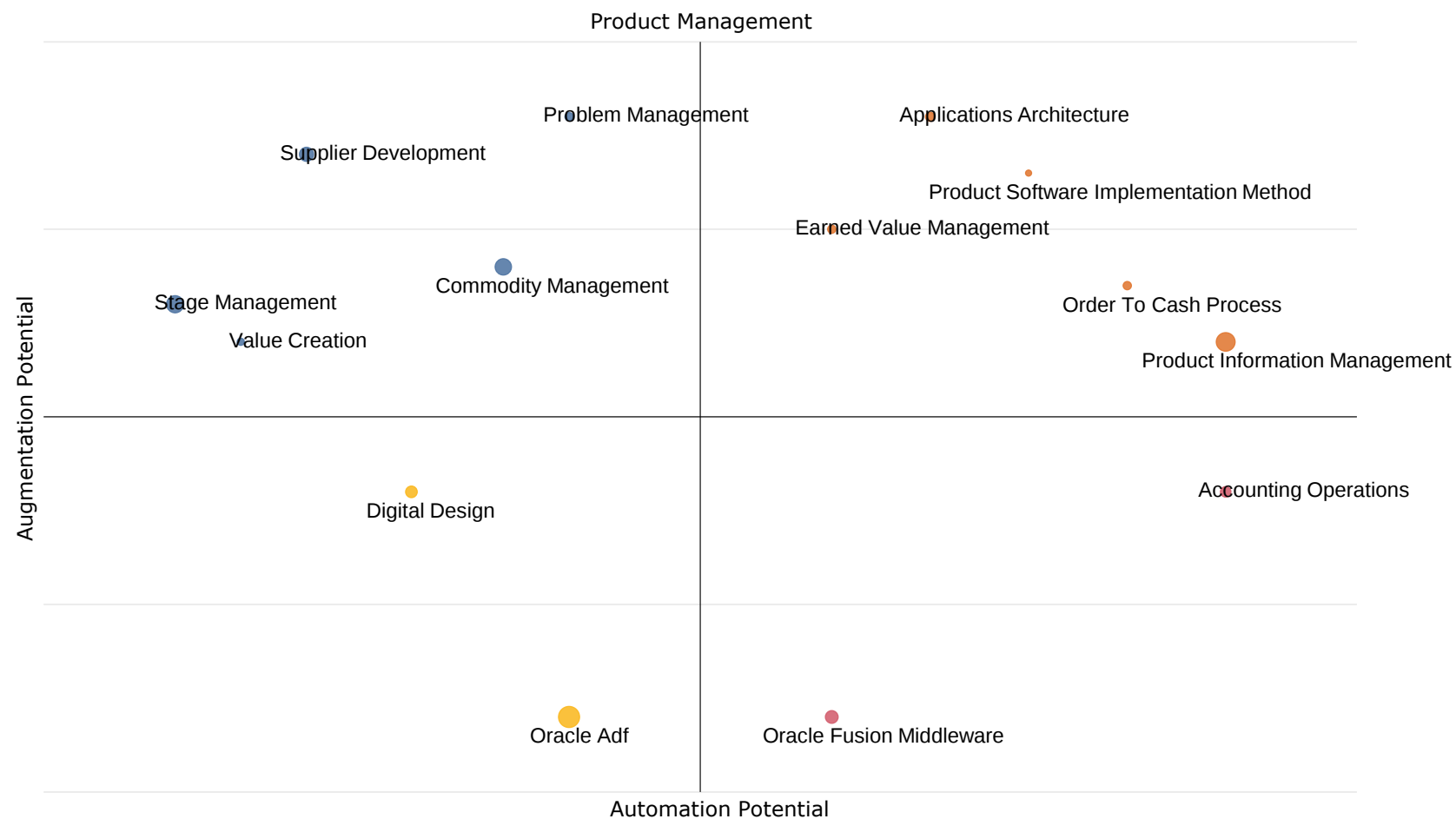
Skill Breakdown | Operations Analyst



Skill Breakdown | Pre-Sale Account Manager

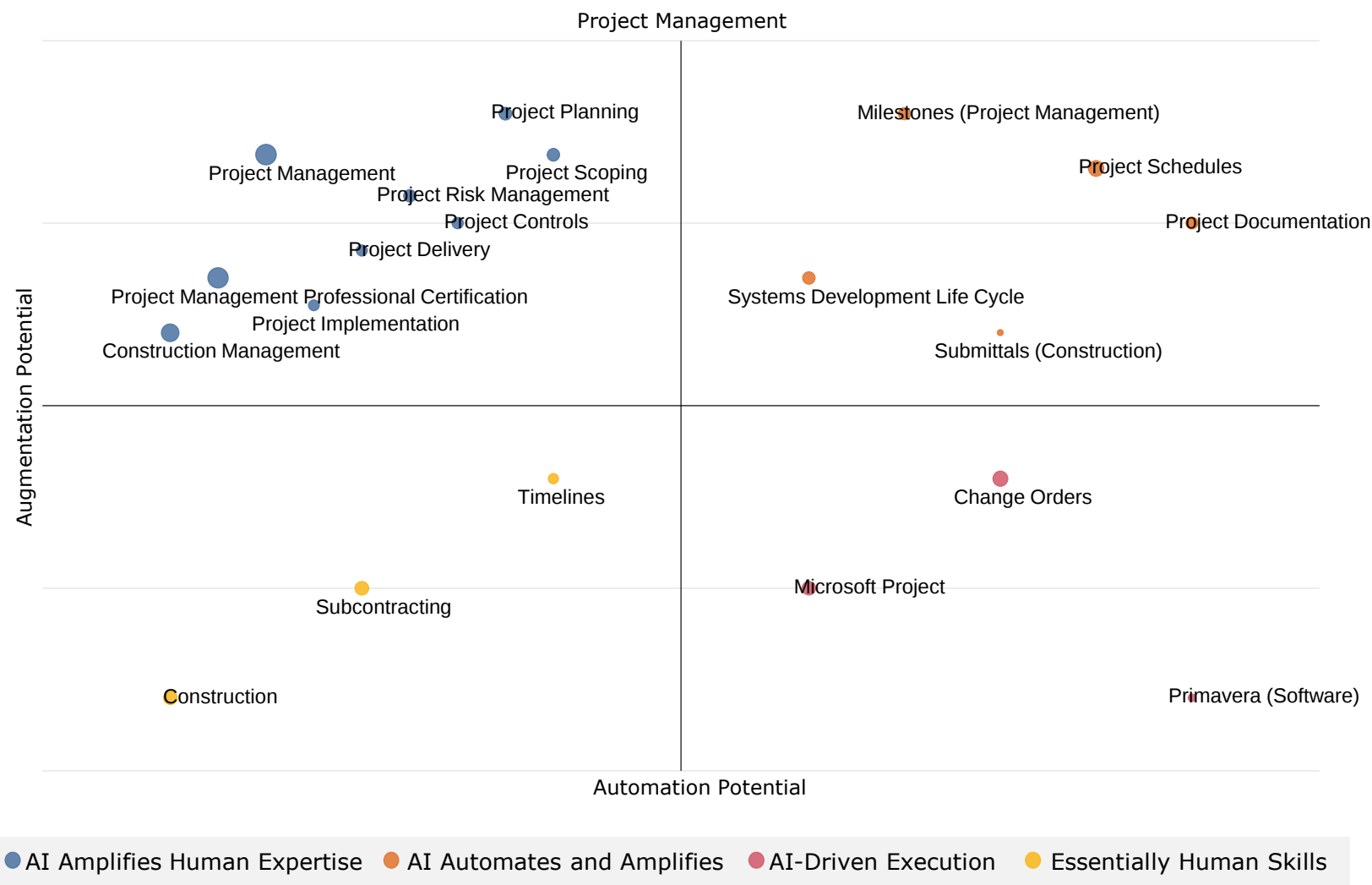


Skill Breakdown | Product Management

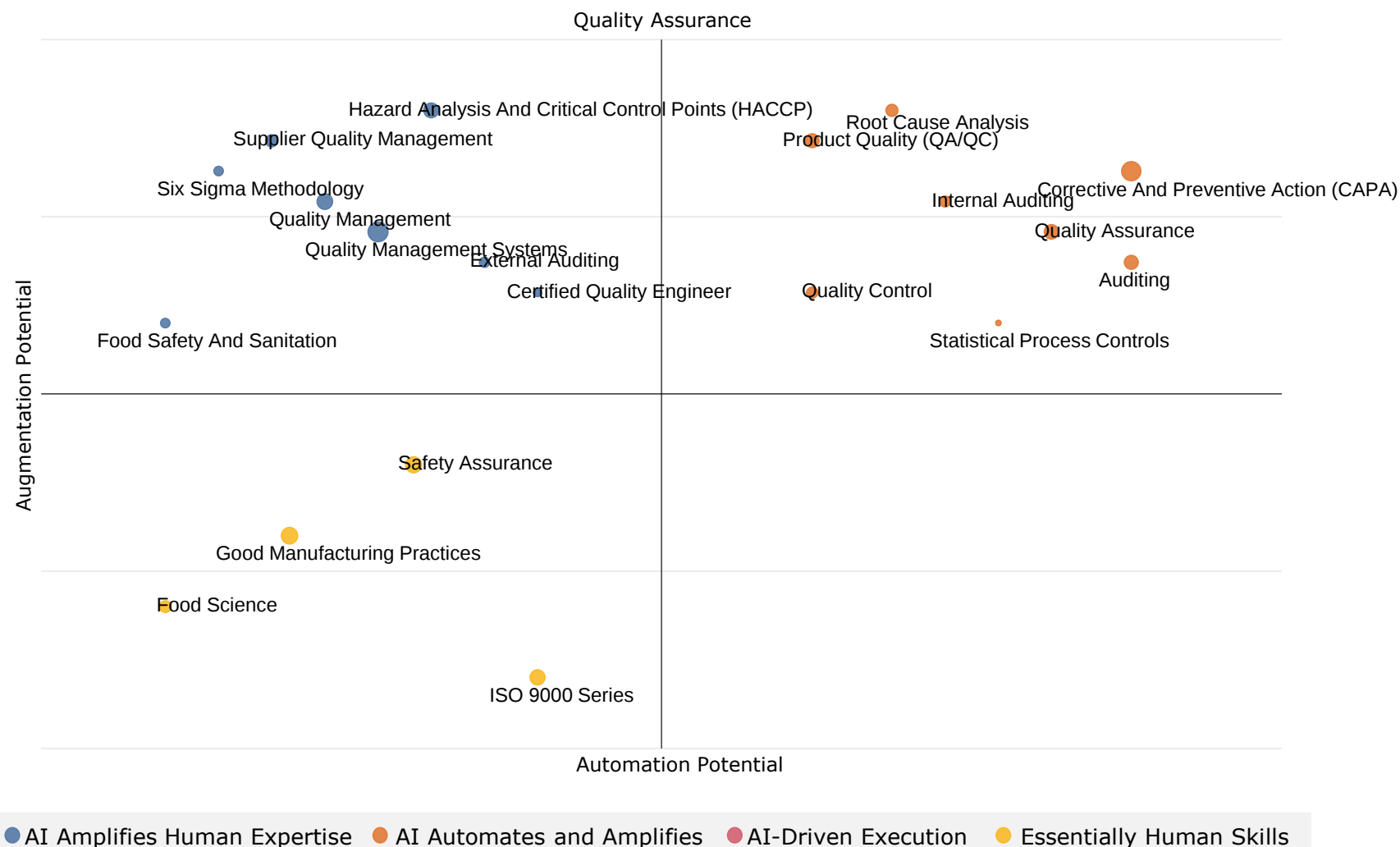


● AI Amplifies Human Expertise
 ● AI Automates and Amplifies
 ● AI-Driven Execution
 ● Essentially Human Skills

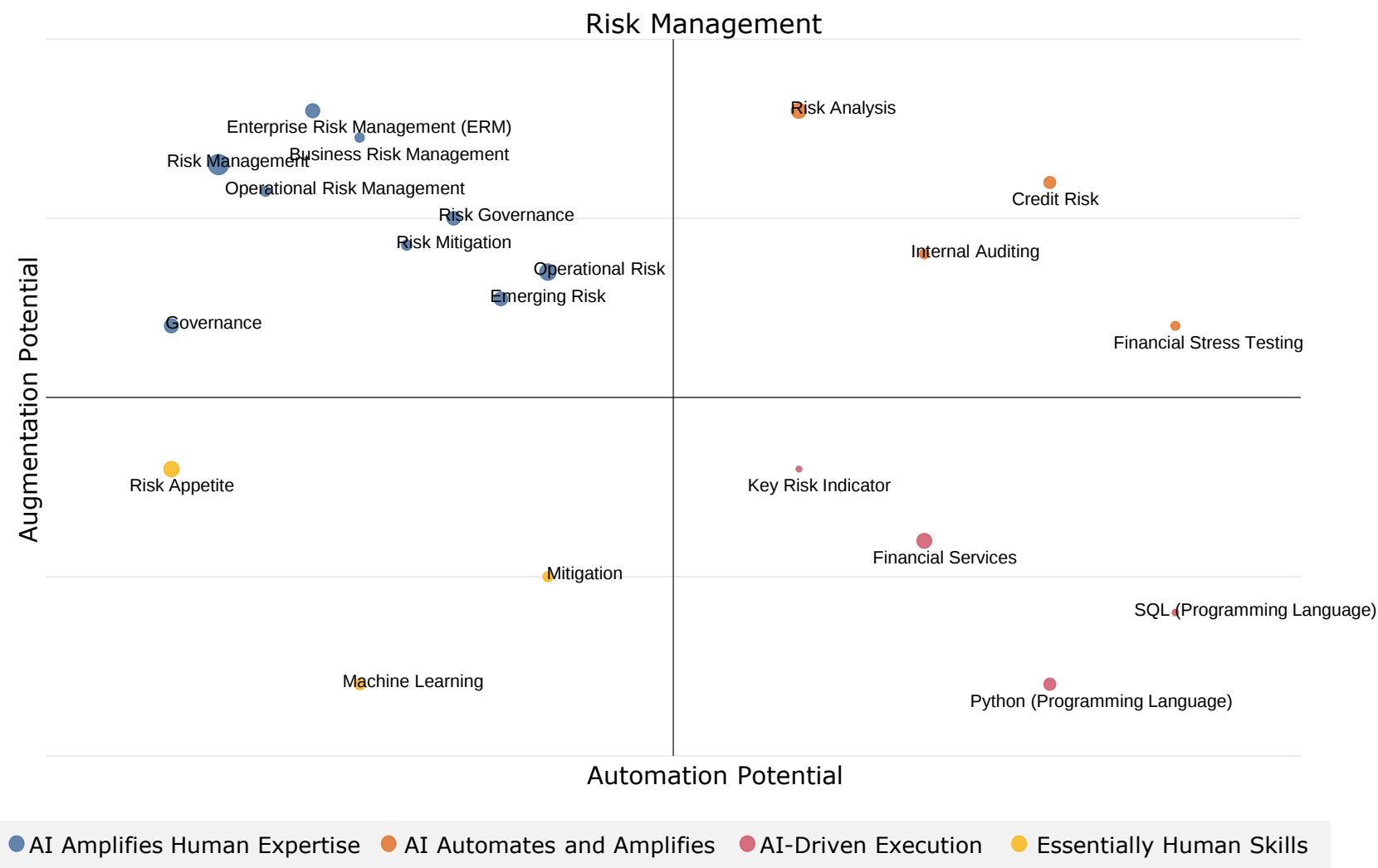
Skill Breakdown | Project Management



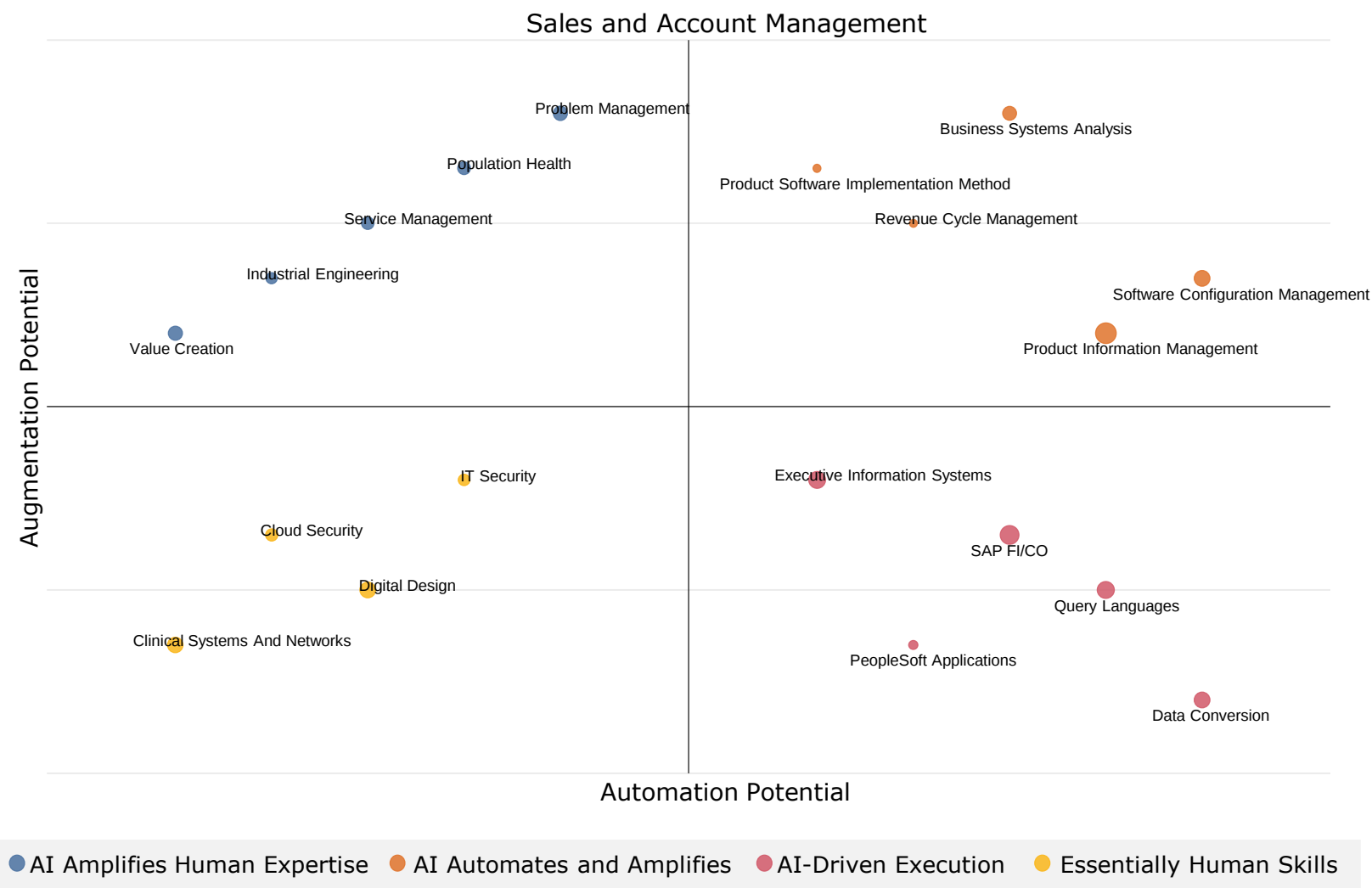
Skill Breakdown | Quality Assurance



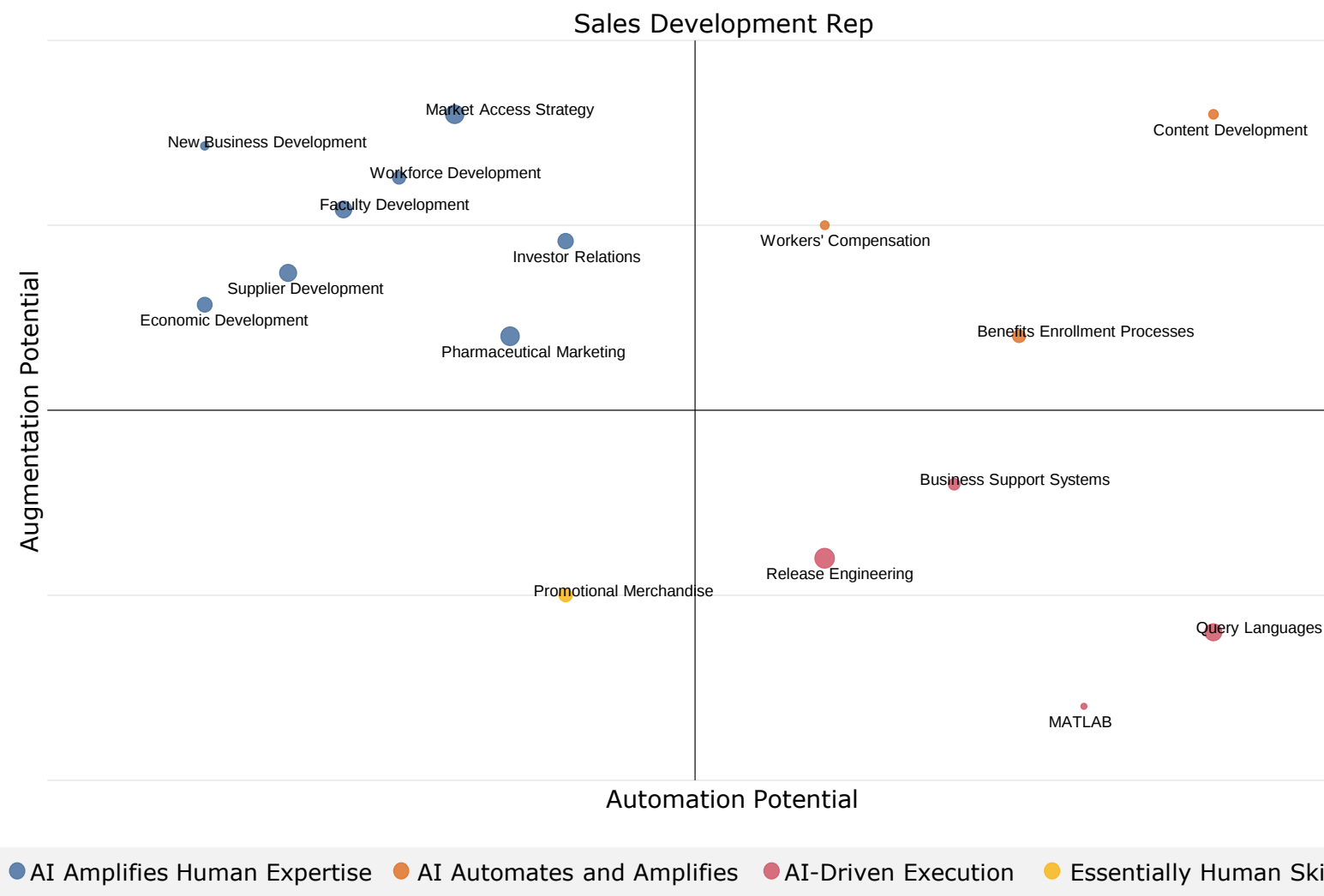
Skill Breakdown | Risk Management



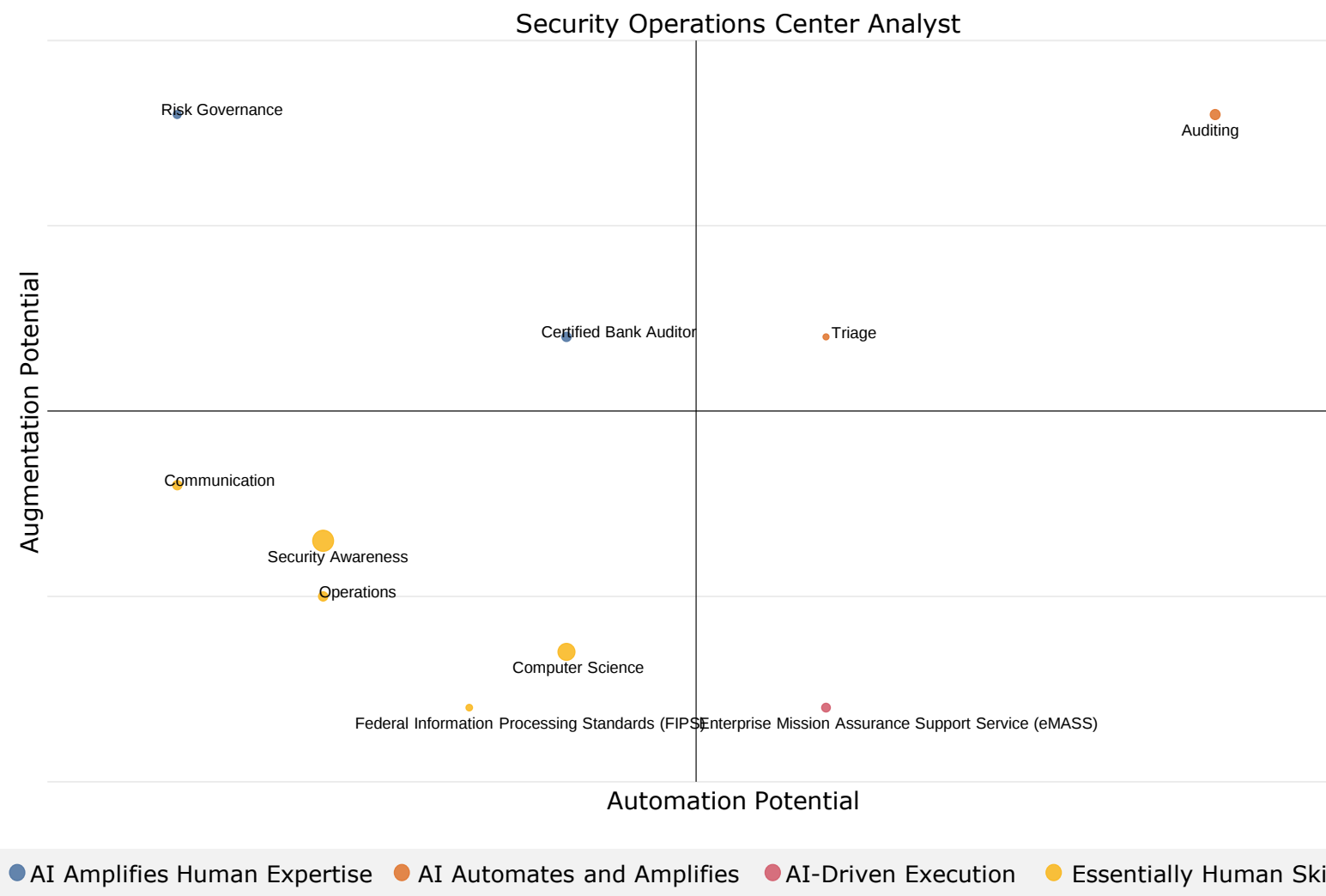
Skill Breakdown | Sales and Account Management



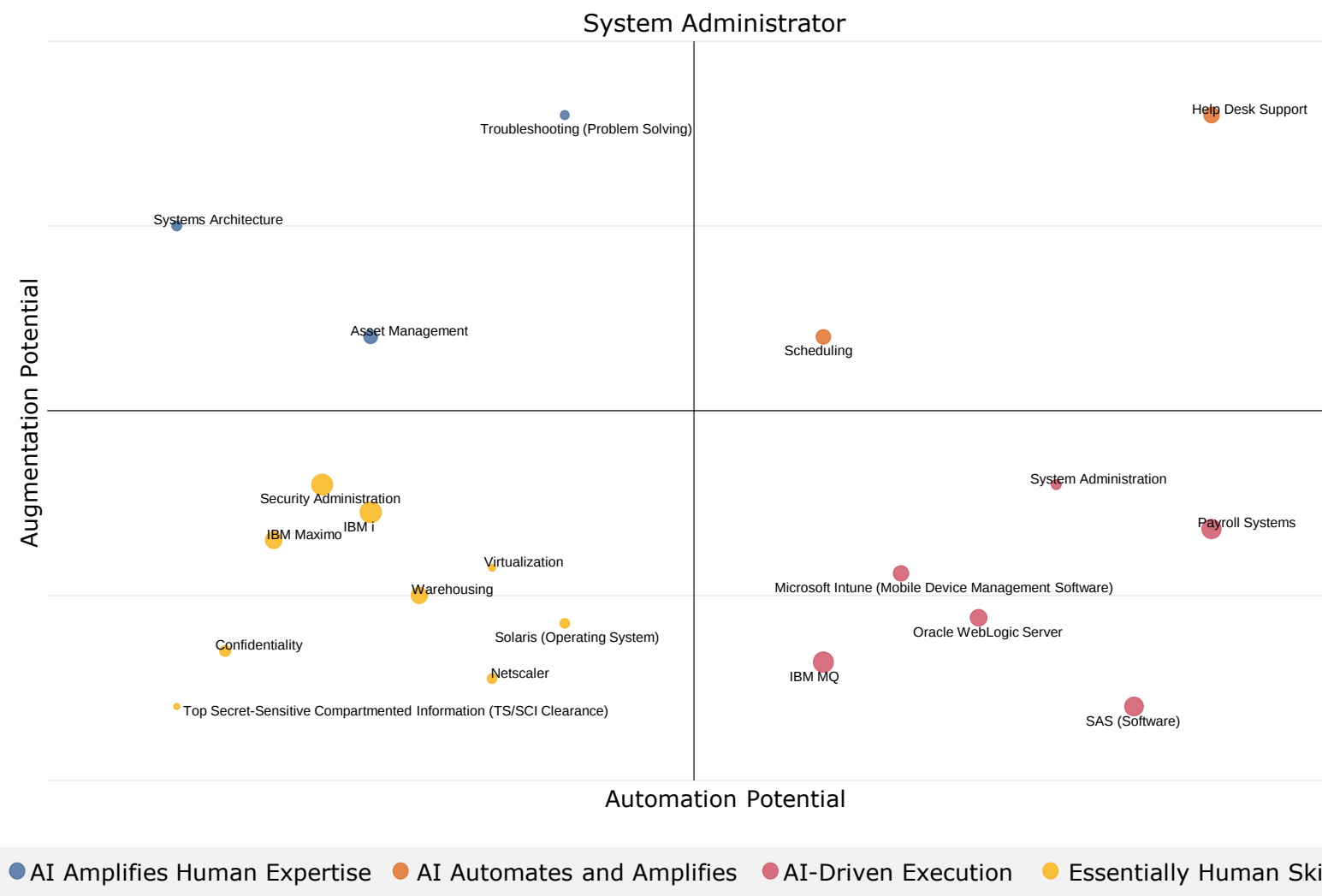
Skill Breakdown | Sales Development Rep



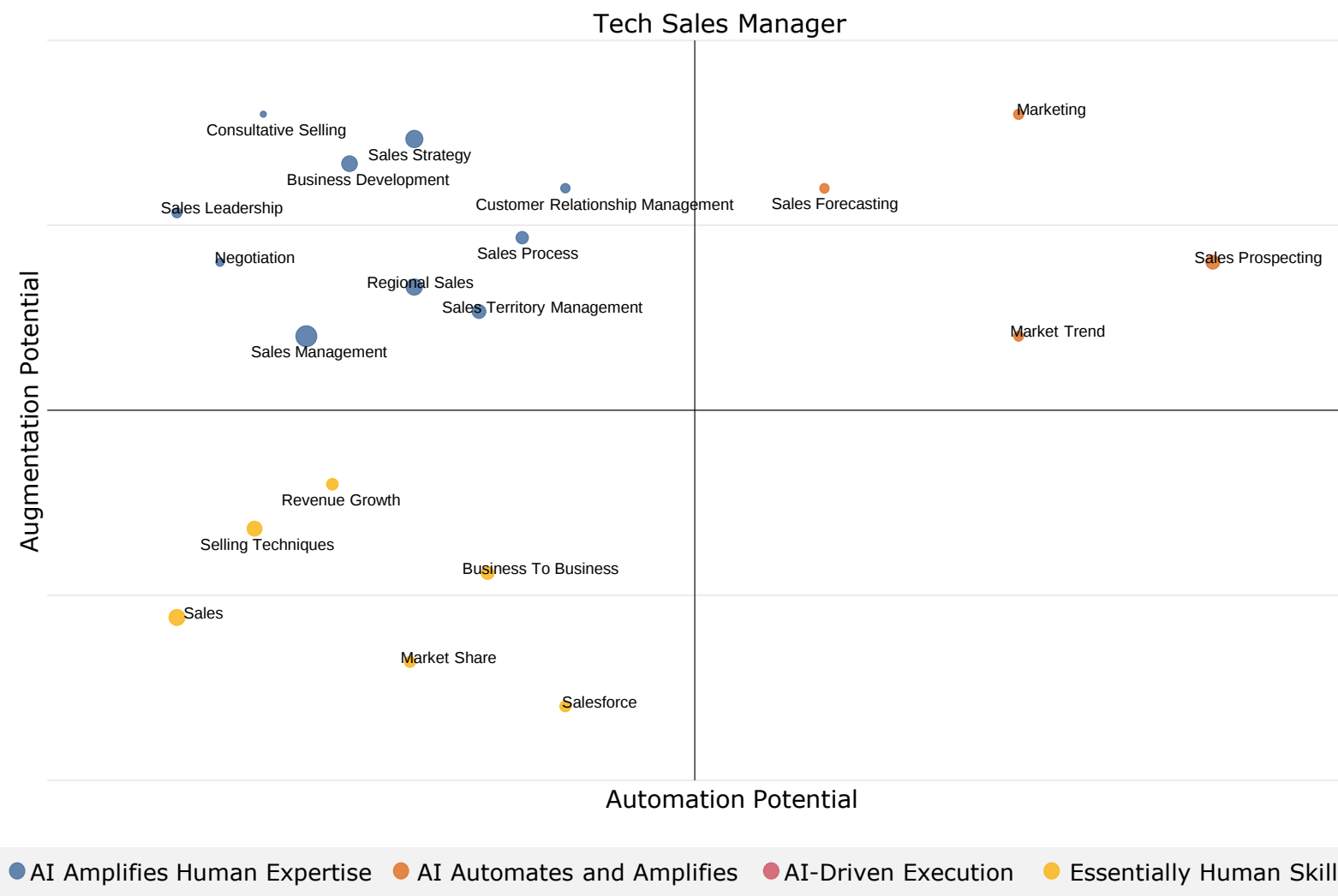
Skill Breakdown | Security Operations Center Analyst



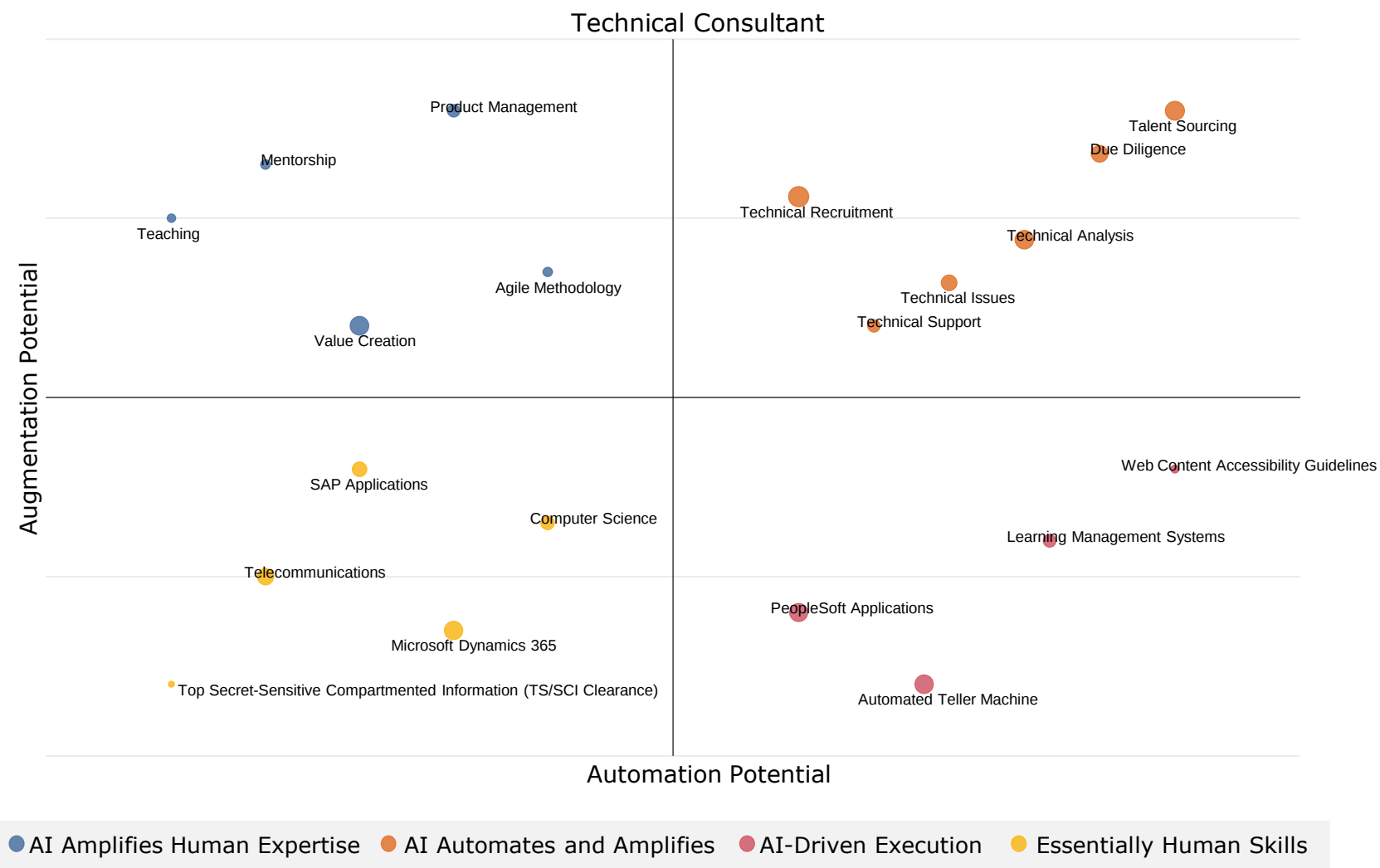
Skill Breakdown | System Administrator



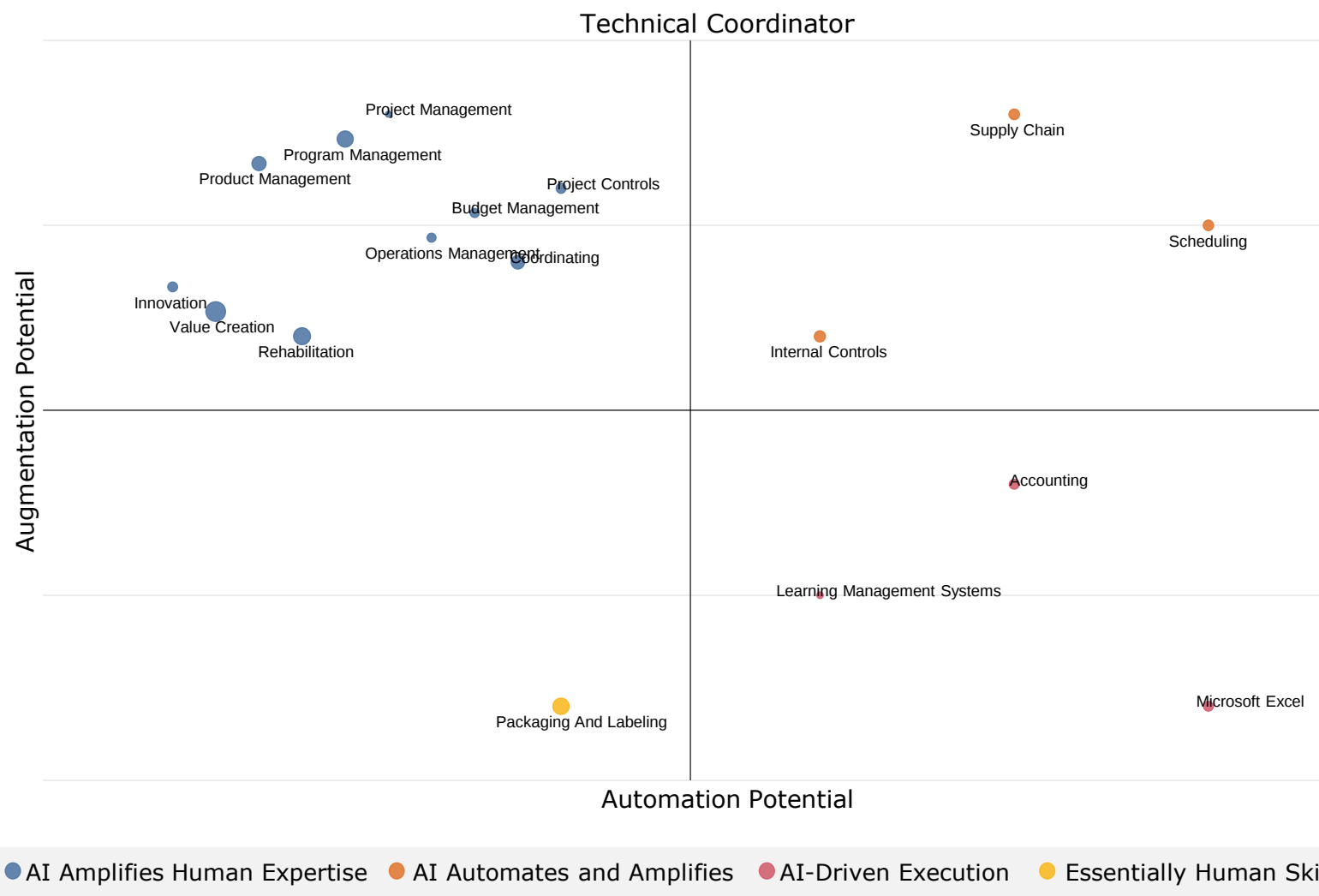
Skill Breakdown | Tech Sales Manager



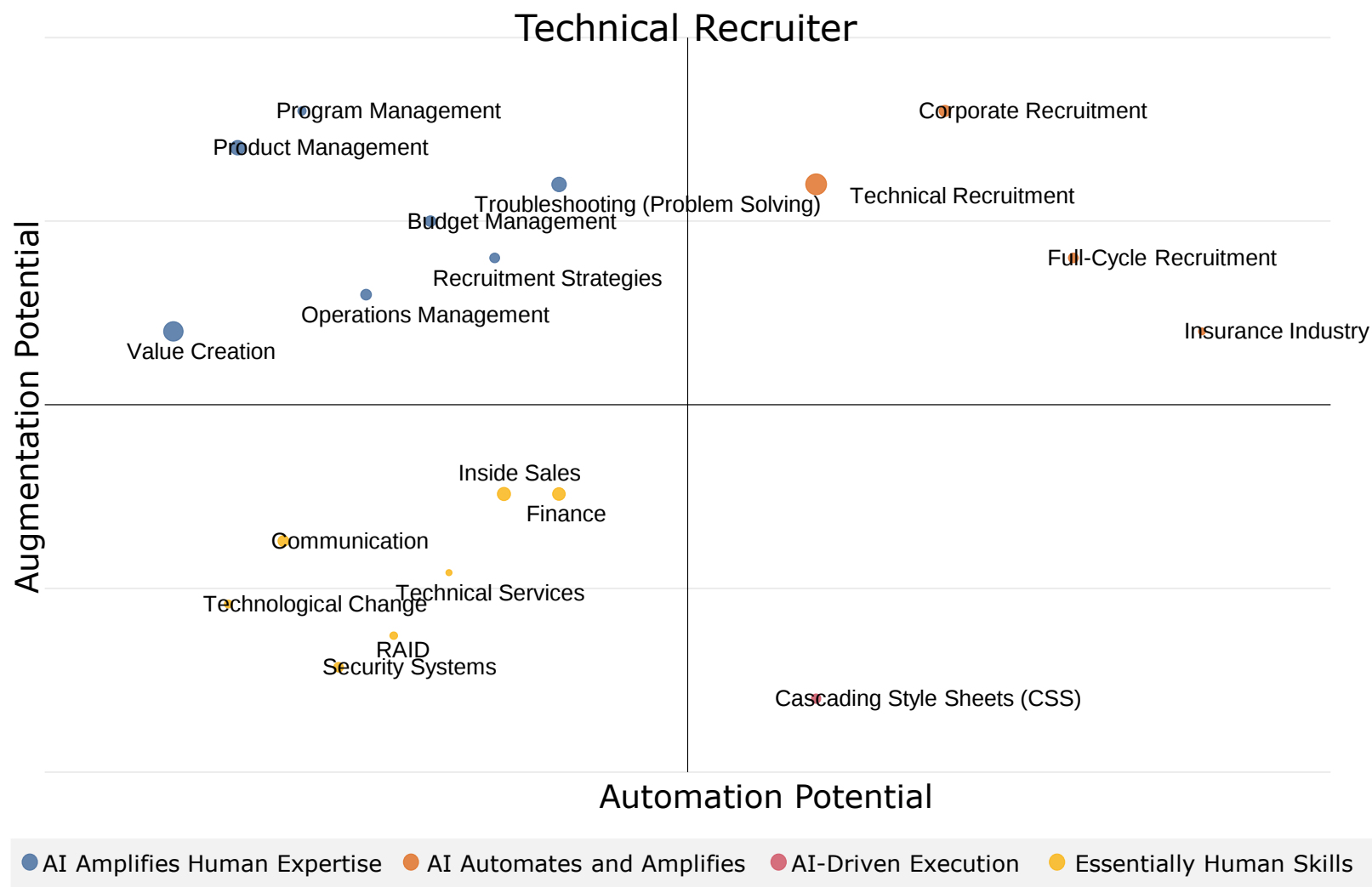
Skill Breakdown | Technical Consultant



Skill Breakdown | Technical Coordinator



Skill Breakdown | Technical Recruiter



Skill Breakdown | Technical Support Specialist

