

# Engineering Workforce Resilience: How AI-Powered Skill Mapping Transformed Talent Strategy

A Case Study in Building a Future-Ready Workforce

# We Transformed Our Workforce by Shifting from Static Jobs to a Dynamic, AI-Powered Skills Ecosystem



## The Challenge

Faced with rapid skill obsolescence and internal mobility stalled at ~12%, our growth was constrained by talent gaps.



## The Solution

We deployed an AI platform to map skills, predict future needs, and create mobility pathways in real time.



## The Result

The result: a 20-point mobility increase, \$4.5M in savings, and a 95% real-time view of our capabilities.

# Our Growth Was Stalled by Skill Gaps, Slow Hiring, and Unclear Career Paths

## The Symptoms

-  Rapid skill obsolescence: Across engineering, operations, and analytics.
-  Heavy reliance on external hiring: For critical emerging technology roles.
-  Fragmented internal skill data: Resulting in unclear career paths for employees.
-  Slow, annual workforce planning: Unable to keep pace with business transformation.

## The Pain Metrics

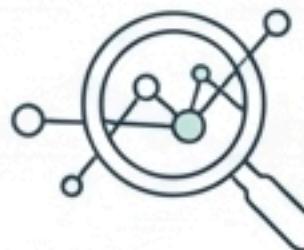
**~12%**

Internal Mobility

**60-90 days**

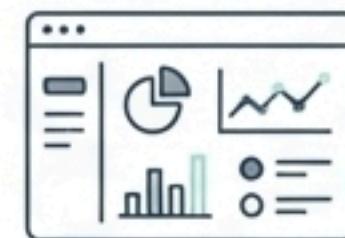
Time-to-fill for critical vacancies

# We Built an AI Engine to Continuously Map, Predict, and Mobilize Talent



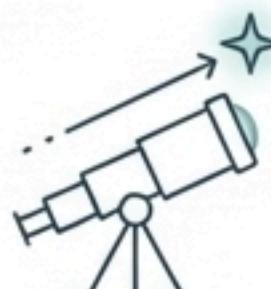
## Real-time Skill Mapping

Analyzes work outputs, performance data, and learning history.



## Live Leadership Dashboards

Provides a 'workforce heat map' of risks, gaps, and mobility patterns.



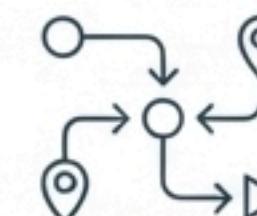
## Predictive Role Forecasting

Sees 12-24 months ahead based on market signals and internal demand.



## Personalized Upskilling

Leverages generative AI for tailored recommendations.



## Automated Mobility Pathways

Matches employee skills and adjacencies to roles, gigs, and opportunities.

# A Phased, Disciplined Rollout Was Key to Successful Adoption.



## Phase 1: Build the Foundation (Skills Graph Construction)

Created an enterprise skills ontology (~3,500 skills). Integrated HRIS, LMS, ATS, and project management data.



## Phase 2: Predict the Future (Role Evolution Forecasting)

Trained a predictive engine on internal and external data. Identified 17 emerging roles (e.g., AI Ops Analyst).



## Phase 3: Activate Opportunity (Mobility Engine Deployment)

Launched an AI marketplace for internal opportunities and auto-recommended mobility pathways. Enabled manager “mobility nudges.”



## Phase 4: Empower Leaders (Intelligence Dashboards)

Deployed real-time dashboards showing predicted shortages, team heat maps, and attrition risk.

# We Made Internal Mobility the Default, Slashing Hiring Costs and Time-to-Fill.

## Internal Mobility

**12% →  
32%** (+20pp)

Increase achieved in the first 12 months.

## External Hiring (Critical Roles)

**-45%**

Reduced dependency on the external market.

## Time-to-Fill (Emerging Roles)

**76 days →  
28 days** (A 63% reduction)

Accelerating speed-to-capability.

# We Gained Unprecedented Visibility into Our Workforce's Skills and Potential



**72%**

of employees received personalized growth paths.

**2.4X**

increase in learning consumption driven by AI recommendations.

**4**

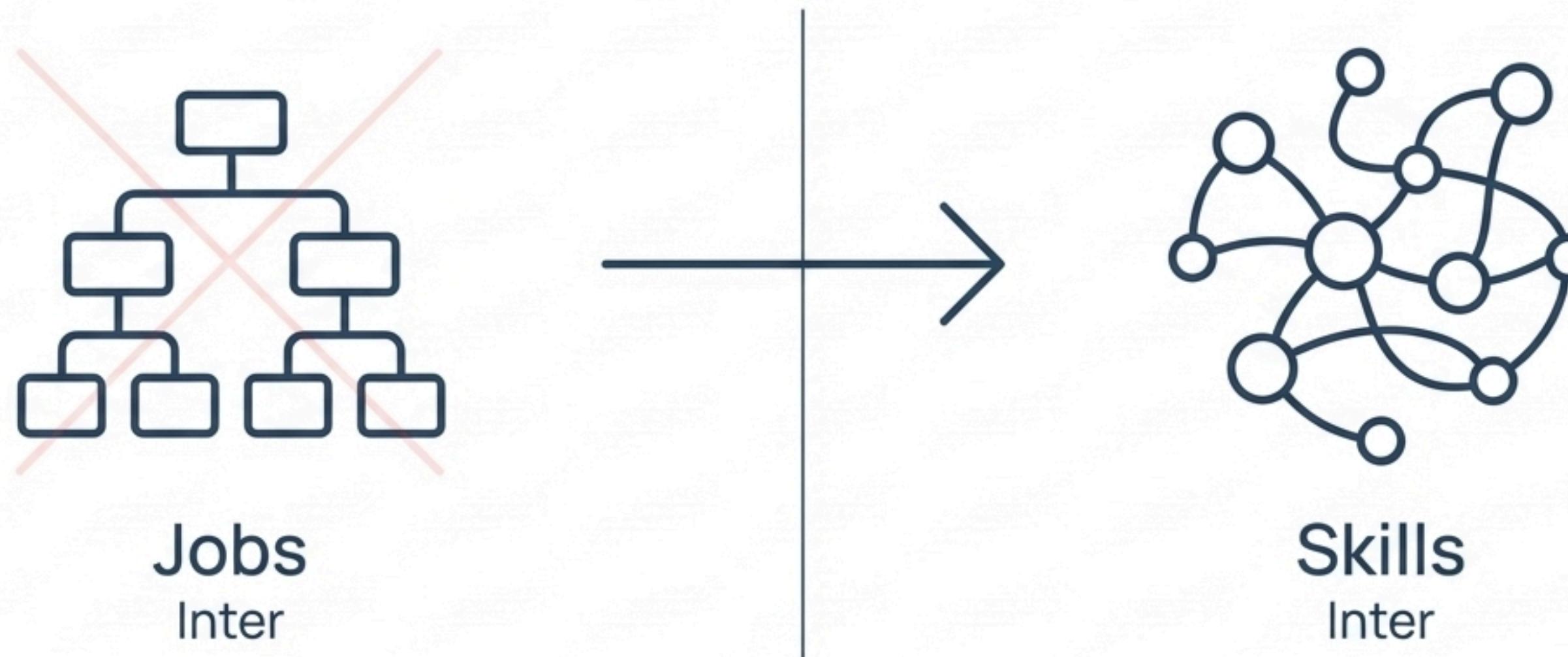
predicted skill shortages successfully avoided in mission-critical areas.

## The Initiative Delivered Significant, Quantifiable Business and Financial Impact.

**\$4.5M**

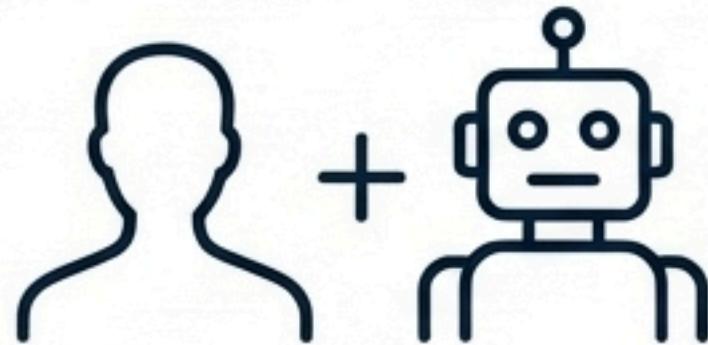
Estimated annual productivity savings from faster role readiness and reduced external hiring costs.

# Success Required a Fundamental Shift from Managing Jobs to Cultivating Skills



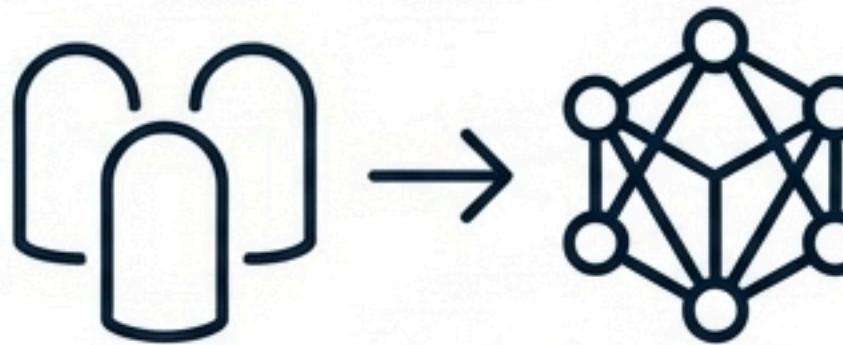
Workforce intelligence is only as good as the data it's built on. Success requires integrated systems, manager enablement, and employee trust built through transparency.

# Our Journey Revealed Key Principles for an AI-Driven Talent Strategy.



## AI + Human Expertise

Generative AI accelerates role design and description drafting, but human domain expertise is essential for validation and refinement.



## Integration is Non-Negotiable

Siloed HR data is the primary inhibitor of accuracy. Integrating all talent systems (HRIS, LMS, ATS) is foundational.



## Shared Ownership is Required

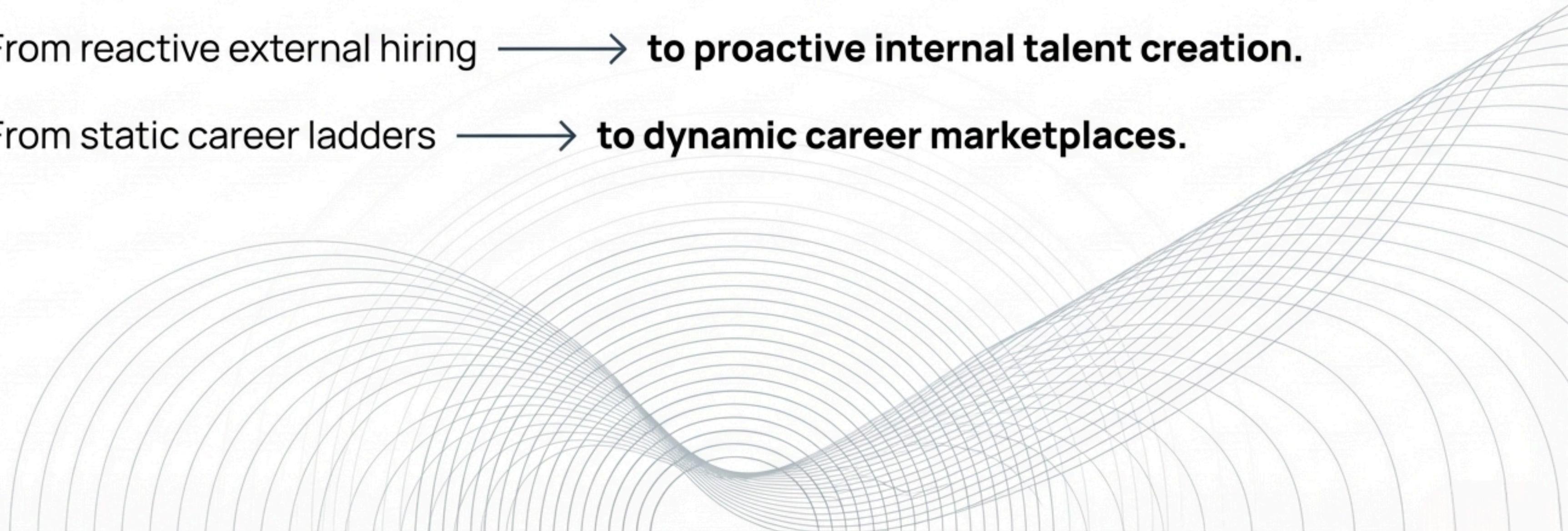
Sustained success requires joint governance of the system by HR, L&D, and business leaders to ensure alignment and relevance.

# Our Workforce is No Longer Reacting to Change—It's Ready for What's Next.

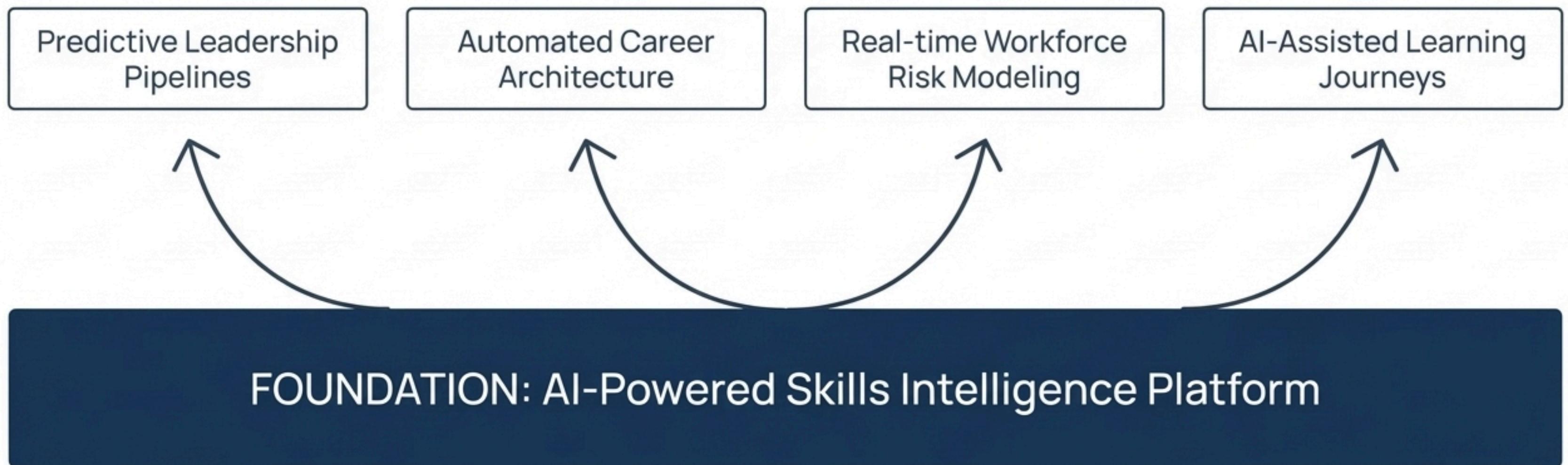
From annual workforce planning → **to a real-time, self-updating system.**

From reactive external hiring → **to proactive internal talent creation.**

From static career ladders → **to dynamic career marketplaces.**



# This Is Just the Beginning. AI-Powered Skill Data Unlocks New Frontiers.



# A Strategic Approach to AI and Skills Delivers Speed, Savings, and a Competitive Edge

## The Problem

Static job roles cannot keep pace with the speed of business transformation, leading to critical skill gaps and slow hiring.



## The Solution

An adaptive AI engine provides the real-time skill intelligence needed to see, build, and deploy talent dynamically.



## The Payoff

A resilient, mobile, and engaged workforce that is continuously ready for the future, driving significant financial and strategic returns.

