workday

eBook
Rethinking AI in Manufacturing

Using next-gen AI to transform your organization and elevate your people.

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A new phase for AI in manufacturing.

Today, 96% of manufacturers are increasing their AI investments,[1] and two-thirds are already using generative AI in more than one business function.[2] In other words, manufacturing is an AI-friendly environment.

This is partly because many manufacturers embraced earlier AI capabilities that improved production and factory floor operations. These outcomes are crucial, but the next phase of AI deployment will address a new set of challenges—and will require a new, more holistic way of thinking about AI.

You know the challenges already. Persistent labor shortages throughout manufacturing are compounding the massive costs of stoppages and delays, and government and regulatory changes are throwing doubt into business priorities and supply chains. The rise in contingent labor, and a changing of the guard as younger generations enter the workforce, add new organizational challenges. And, of course, societal change and economic uncertainty persist.

These factors tell us something important about what manufacturers need AI to do for them next. They need it for the sake of their humans.

Welcome to the human era of AI.

The task—and the opportunity—for manufacturers today is to use existing momentum with AI to reshape the industry for new workforces, approaches to talent and hiring, market pressures, and ways of doing business. Manufacturers that make this pivot will lead their market and demonstrate the ongoing relevance, and the innovative spirit, of manufacturing as a whole.

And they'll do it using next-generation AI. The remaining chapters in this guide walk you through how to make it work. Enjoy.

Case study snapshot: Advantech.

ADVANTECH

Challenge: Advantech required global visibility into skills requirements and a unified approach to talent acquisition and development.

Solution: Advantech now has a unified platform with visibility to global talent needs and availability, and leaders are equipped with real-time data for better decisions no matter where they are.

Business value: Advantech uses AI and machine learning to understand and improve skills across the globe, building organizational agility to meet changing needs.

7 in 10

manufacturing leaders believe the industry is healthy but worry about their ability to change quickly[3]

Elevating human potential in manufacturing.

Just a couple years ago, "manufacturing and production" easily led all other categories of AI implementation in the industry.[4] This is no surprise, since early deployments tended to be focused "where the magic happens": frontline production. Manufacturers commonly saw gains in areas such as predictive machine maintenance, quality control, and floor process optimization.

However, as highlighted by recent research from McKinsey, Workday, and others, AI is starting to affect manufacturing organizations much more broadly. Deloitte research shows that smart factories and similar high-tech environments are leading to higher retention rates among workers and have reduced training time for roles such as welding by 50%-60%.[5] The Manufacturing Leadership Council reports that manufacturing leaders have led the way in weaving together interdisciplinary, interdepartmental AI technologies, with impacts from software to communications. [6]

As AI moves into all parts of the organization, its benefits have grown much more humanistic. Today, its most critical applications, typically spanning HR, finance, and operations, are showing us a new way for manufacturers to understand, and engage with,[7] its people.

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The upcoming human skills revolution.

New global data—presented and explained in a Workday report called "[Elevating Human Potential: The AI Skills Revolution](#)"—shows us that professionals who are most familiar with AI in the business are also the most optimistic. AI's true potential, the data says, lies in its ability to free people from systemic and intellectual constraints, empowering everyone to reach new levels of productivity and creativity.

For example, among several possible scenarios of AI's influence, the leading response (53%) in the study—with more than double the responses of any other scenario—was "AI will augment human capabilities, leading to increased productivity and new forms of innovation."

What might this look like in the org chart of a manufacturer? There's data for that, too.
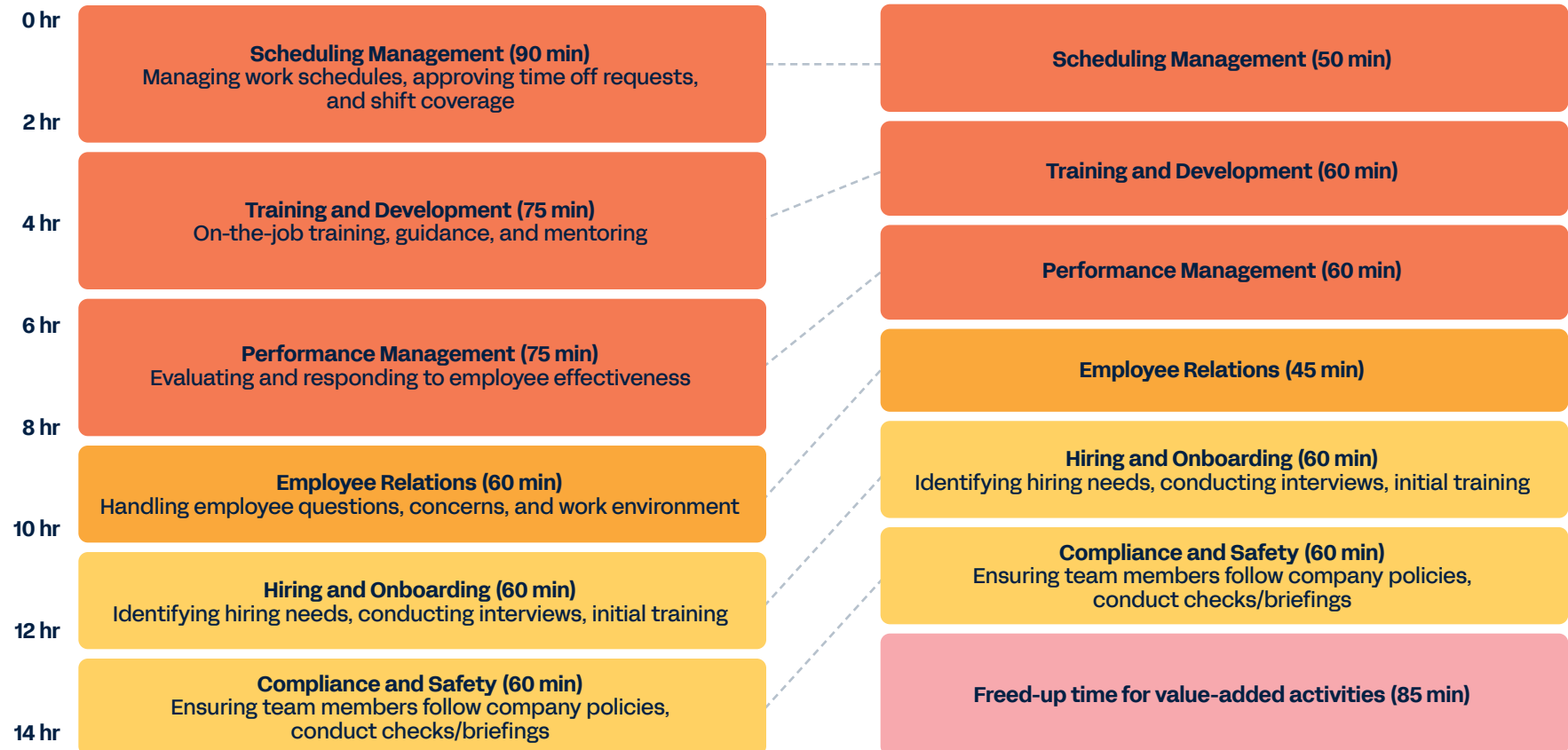
A day in the life: visualizing the real benefits of next-gen AI to a frontline people manager.

When AI functionality reaches day-to-day operations, previously laborious tasks and distractions shrink. As a result, organizations see quantifiable gains not just in the efficiency and accuracy of task completion but in the freedom and mental space that allow human workers to focus on strategy, creative problem-solving, and other value-adding priorities.

Here's just one sample from Workday internal research.

These value-added activities are instrumental as companies try to differentiate themselves and innovate in contexts of upheaval and constant change. Therefore, manufacturers are wise to think of AI's next phase not just in terms of machines and floor-level changes but as a call to action for igniting the engines of innovation, creativity, and better, more thoughtful leadership.

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0 hr

Scheduling Management (90 min)
Managing work schedules, approving time off requests, and shift coverage

2 hr

Training and Development (75 min)
On-the-job training, guidance, and mentoring

4 hr

6 hr

Performance Management (75 min)
Evaluating and responding to employee effectiveness

8 hr

Employee Relations (60 min)
Handling employee questions, concerns, and work environment

10 hr

Hiring and Onboarding (60 min)
Identifying hiring needs, conducting interviews, initial training

12 hr

Compliance and Safety (60 min)
Ensuring team members follow company policies, conduct checks/briefings

14 hr

Scheduling Management (50 min)

Training and Development (60 min)

Performance Management (60 min)

Employee Relations (45 min)

Hiring and Onboarding (60 min)
Identifying hiring needs, conducting interviews, initial training

Compliance and Safety (60 min)
Ensuring team members follow company policies, conduct checks/briefings

Freed-up time for value-added activities (85 min)

Democratizing AI benefits across manufacturing organizations.

It's hard to believe it, but the first era of enterprise-grade AI has already come and gone.

As Workday Co-President Sayan Chakraborty put it, next-gen AI "must shift from attention-grabbing use cases to being able to demonstrate real value" over time—seamlessly adjusting to change and technical evolution. Workday and other pioneers anticipated this shift and built next-generation AI tools whose technical backbone serves this new mission.
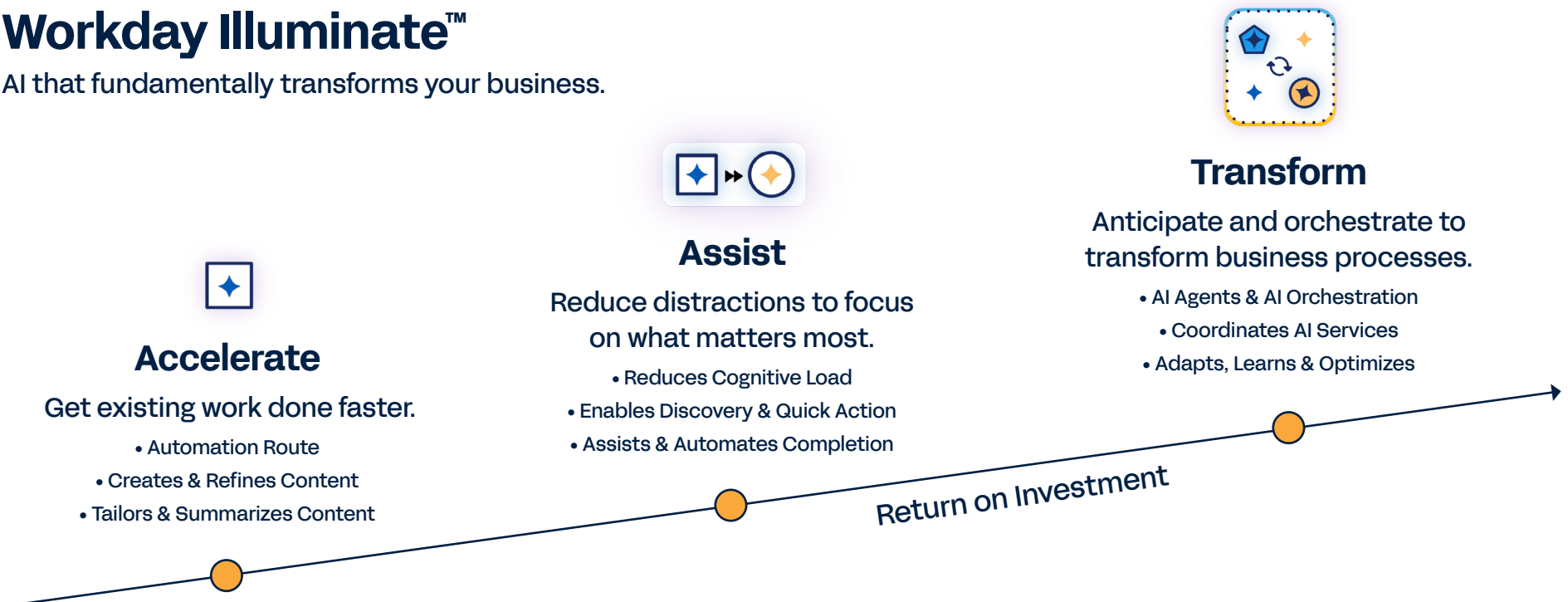
Benefits for all.

The Workday next-gen AI framework is named Illuminate because its primary effect is to bring clarity to a future pathway that has, up to now, seemed hard to perceive. It does this by fundamentally changing businesses across three phases of the enterprise AI lifecycle.

You can see that these stages take businesses from isolated automations and accelerations of existing processes—helpful improvements, no doubt—to fundamentally new processes and anticipatory ways of working. This pivot puts AI to its full use and enables perpetual business transformation.

Workday Illuminate™

AI that fundamentally transforms your business.

Transform
Anticipate and orchestrate to transform business processes.
- AI Agents & AI Orchestration
- Coordinates AI Services
- Adapts, Learns & Optimizes

Assist
Reduce distractions to focus on what matters most.
- Reduces Cognitive Load
- Enables Discovery & Quick Action
- Assists & Automates Completion

Accelerate
Get existing work done faster.
- Automation Route
- Creates & Refines Content
- Tailors & Summarizes Content

Return on Investment

This approach also democratizes AI's most significant benefits, bringing it from isolated deployments in a couple departments to a business-wide ecosystem.

Consider the typical stakeholders impacted and the benefits they receive:

Stakeholder	Notable Benefits
HR	• Develop a skills-based approach to future-proof talent management. • Gain a holistic view of each employee, from their skills to professional development and self-service actions. • Improve scheduling efficiency by aligning staff skills to business needs. • Increase retention and engagement with personalized growth paths. • Create better human connections and shared investment between employees and their managers.
IT	• Improve performance and impact; reduce IT burden. • Avoid costly AI stack and data integrations. • Easily create and run forecasting and modeling across any department. • Save time and automate aggregation with one centralized source of truth. • Deliver rapid results with 50+ generally available AI features without upgrades, implementations, or add-on costs.
Operations	• Deliver the right insights at the right time, improving decision-making across the board. • Automate managers' tasks, freeing them to spend more time with teams. • Combine external data (e.g., production throughput) with Workday data. • Run what-if scenarios powered by AI to optimize operations, plans, and schedules. • Automatically match workers and their skills to pressing business needs.

Leading with empathy takes more than a good heart.

Today's leaders are under pressure. Regardless of industry or location, most understand the need to make better decisions based on concrete, reliable information about employees—what they're experiencing and what they thought they would experience, what they're feeling, and what they want to get out of their work.

Previously, that kind of information could take months to compile and analyze, if it was attainable at all. AI—through processing summaries of team conversations and meetings, for example—makes it available daily. It makes leaders' most pressing responsibilities and goals more manageable. AI also helps meet one underacknowledged need shared by leaders across industries: more mental bandwidth for time to focus.

For more on AI and leadership, download the Workday report "Elevating Human Potential: The AI Skills Revolution."

This pivot puts **AI to its full use** and enables perpetual **business transformation**.
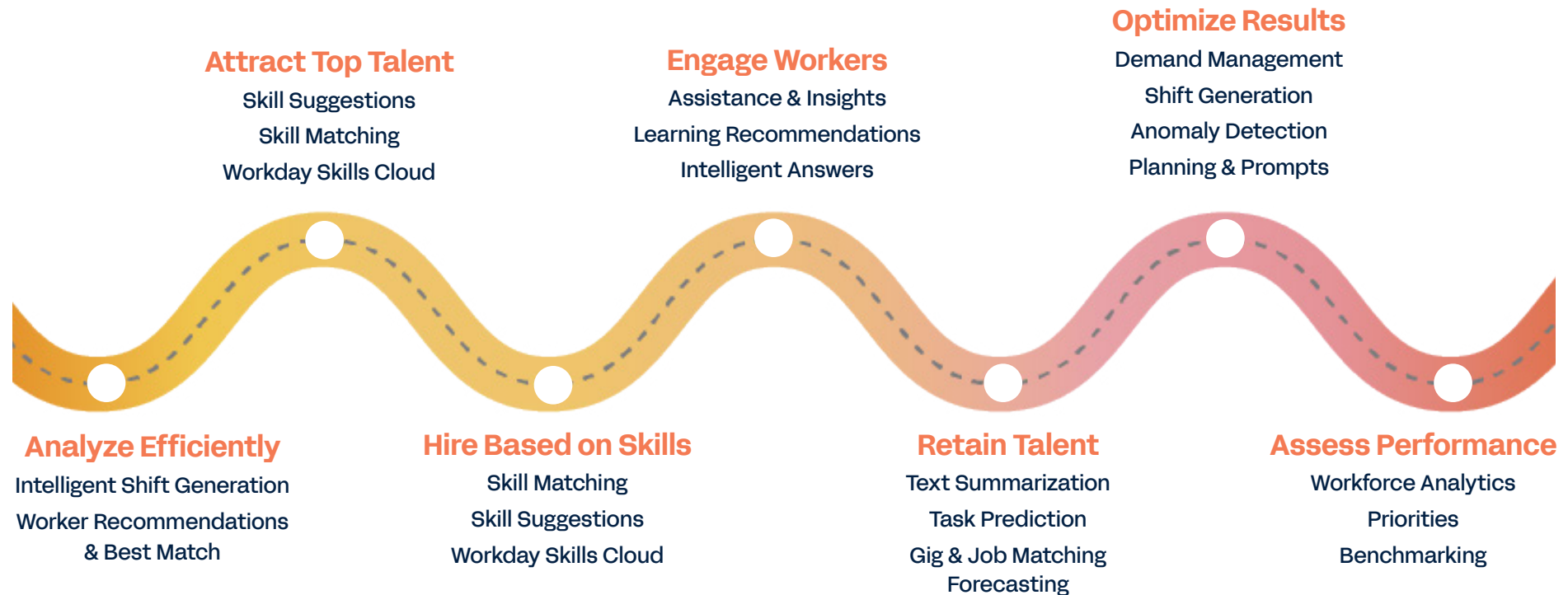
Workday Illuminate extends the reach of AI across the business, **democratizing its benefits and improving entire organizations**.

Unlocking a modern workforce lifecycle.

The key beneficiary of AI's new human-centric capabilities is the workforce. Even in manufacturing, with its emphasis on discrete production processes, many of which are machine-driven and automated, the need to shift to more intelligent workforce planning and human-centric practices is non-negotiable.

Workday Illuminate allows this across the entire worker journey:

Illuminate for the workforce lifecycle.

Attract Top Talent
Skill Suggestions
Skill Matching
Workday Skills Cloud

Engage Workers
Assistance & Insights
Learning Recommendations
Intelligent Answers

Optimize Results
Demand Management
Shift Generation
Anomaly Detection
Planning & Prompts

Analyze Efficiently
Intelligent Shift Generation
Worker Recommendations
& Best Match

Hire Based on Skills
Skill Matching
Skill Suggestions
Workday Skills Cloud

Retain Talent
Text Summarization
Task Prediction
Gig & Job Matching
Forecasting

Assess Performance
Workforce Analytics
Priorities
Benchmarking

Cheat sheet: three ways manufacturers using AI will thrive.

1. They will use skills-based talent management to overcome labor challenges.

Because AI learns, processes information, and transforms what already exists into something entirely new, it presents a new way of seeing your company and its people. Where before workers were more or less on their own, with occasional feedback or mandatory trainings, today they are much more empowered to take part in continual, targeted learning and use new digital tools to be more active in their own career path.

This paradigm shift addresses some of the most important challenges and leads to significant benefits—to the culture and the bottom line:

- Identifying, upskilling, and retaining the best workers so you don't have to hire someone in the first place
- Embracing change and the "changing of the guard" as new, younger workers enter their most productive and influential years
- Developing more sophisticated workforce planning and accounting for rises in contingent labor and various other models
- Offering technology-native workers the mobile and self-service applications they crave to take ownership of their journey and create company loyalty

All your AI agents, all together now.

Companies will increasingly include both humans and AI agents, creating a new type of workforce that demands a new digital foundation.

Far from being "task completers," AI agents can understand complex requests, make decisions, and even take action on people's behalf. This frees people to make high-level, valuable contributions using their human capacities for creativity, leadership, learning, and so on.

The Workday Agent System of Record is the foundation for managing Workday and third-party AI agents in one place. Workday has led the development of AI agents with eight that are well suited to manufacturing and many other industries:

1. Recruiter Agent
2. Expenses Agent
3. Succession Agent
4. Optimize Agent
5. Contracts Agent
6. Payroll Agent
7. Financial Auditing Agent
8. Policy Agent

Learn more about Workday AI agents online.

Case study snapshot: Yokogawa.

YOKOGAWA

Challenge: Yokogawa Electric needed to provide its employees a smart, self-service HR system with personalized career paths and skills development recommendations.

Solution: Deployed Workday to improve human capital management talent and learning to give managers and employees the ability to own their career path and development program.

Business value: By using AI to help build their talent profiles, employees' skills and experience are visible, enabling people managers to see talent available across the business and rapidly mobilize new teams in response to demand spikes.

2. They will increase AI's impact on mission-critical functionality without additional IT burdens.

Platform-level AI such as Workday democratizes the benefits of the technology, bringing functionality driven by AI to everyone in the company who needs it—whether they're factory workers or data analysts.

From an IT perspective, it does this while decreasing departmental reliance on ticketing, hour-by-hour oversight, and custom application builds—all thorns in the side of many IT professionals. Instead, IT gains the freedom to make high-level strategic contributions of its own without sacrificing security or a company's data use standards. Consider the importance of IT leaders carving out time to help lead their company's responsible AI (RAI) initiatives.

Today's next-gen AI solutions also help resolve the most significant technical challenges related to AI itself:

- Accuracy
- Repeatability
- Bias
- Latency
- Cost
- Memory

In the most general sense, this technological "new normal" improves a company's agility relative to other manufacturers—accelerating its ability to take on further innovations without undue risk.

The ideal world: IT and AI as value centers.

For more, see Workday Illuminate online.

Value-centric AI.
Every AI innovation is developed from stakeholder insights and easy to deploy correctly.

Experiences Driven by AI.
Conversational, contextual AI guidance and automation seamlessly integrate into users' natural flow of work.

Responsible AI.
Industry-leading RAI boosts AI adoption and trust while safeguarding sensitive data, ensuring transparency, and maintaining control.

Extensible Innovation.
AI capabilities are concepted and delivered rapidly with prebuilt AI APIs accessed through the central platform, with low- or no-code development and unified requirements and vocabularies.

Value-centric AI

Experiences Driven by AI

Responsible AI

Extensible Innovation

3. They will update and enhance their strategy using a human-machine mindset.

We believe that AI's greatest application is in making companies more human—returning their focus to the creativity, empathy, ethical judgment, and symbiotic relationships that make an organization powerful and nimble.

Workday sees the human-machine relationship less as a power dynamic and more as a collaboration. Our emphasis on agentic AI and the Workday Agent System of Record reflects this concept and helps companies build a new, more symbiotic kind of workforce composed of human and AI resources.

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Although AI's value includes offloading many tasks that don't require human ingenuity—as shown by manufacturing's successes with automation and production-level efficiencies—AI's greater long-term value is that it is a new way of seeing your company and its people. It's a practical way to help every person cultivate their most meaningful and impactful contributions, whether they're on the factory floor or in the C-suite.

Regardless of process automations or smart factory developments, etc., the real engine of innovation is always a company's human talent. By proactively adapting their workforce strategy and embracing a human-machine partnership mindset—as opposed to a human-yields-to-machines mindset—manufacturers can demonstrate wise leadership, unlock significant competitive advantages, and lay the groundwork for an easier, more profitable future.

> Regardless of process automations or smart factory developments, the real engine of innovation is always a company's human talent.

Closing: AI is more than technology.

AI is not just a technology; it's a strategic lever that will reshape the manufacturing industry by focusing on its people, not just its machines. This makes it timely, since manufacturing is at such an inflection point today with new, much more humanistic challenges.

Fortunately, you don't need to venture into next-gen AI alone. In fact, according to research from the Manufacturing Leadership Council, you probably won't.

"Only a small percentage of [manufacturers] say internal AI teams are the primary source of support for the development of AI competencies in their organizations," reports the Council in research supporting the Manufacturing in 2030 Project. "Software providers and automation vendors are instead filling that role."

Workday has pioneered all the topics addressed in this publication, and we're always ready to talk about how Workday Illuminate, agentic AI, and our decades of experience with these technologies can give almost all manufacturers a brighter and more workable path forward. As some Workday experts like to say, we'll make that pathway to next-gen AI less artificial and more intelligent.

The scale of Workday Illuminate.

50+ features in production

3,000+ customers sharing data

6B+ daily ingested records

7,000+ models

75M+ daily inference requests

99.9% uptime

Trusted by global manufacturers.

GE · ZEISS · CooperStandard

HITACHI Inspire the Next · POLARIS · Johnson Controls

OTIS · OSHKOSH · MICHELIN

AIRBUS · Rolls-Royce

SANDVIK · SIEMENS · SONY

thyssenkrupp · ARM & HAMMER · THALES

RENAULT · TOYOTA · FUJIFILM

Sources

[1] Manufacturing Leadership Council, "The Future of Industrial AI in Manufacturing"; 2023.

[2] McKinsey, "The state of AI in early 2024: Gen AI adoption spikes and starts to generate value"; 2024.

[3] IDC, "Modernizing HR, Operations, and Finance in Manufacturing: Balancing Efficiency and Resilience in Driving Industry Transformation"; 2024.

[4] Manufacturing Leadership Council, "The Future of Industrial AI in Manufacturing"; 2023.

[5] Forbes, "AI's Role In Solving The Talent Retention Crisis In Manufacturing"; 2024.

[6] Manufacturing Leadership Council, "The Future of Industrial AI in Manufacturing"; 2023.

[7] McKinsey, "The state of AI in early 2024: Gen AI adoption spikes and starts to generate value"; 2024.

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