The AI Imperative

The AI Imperative

A new era of business systems.

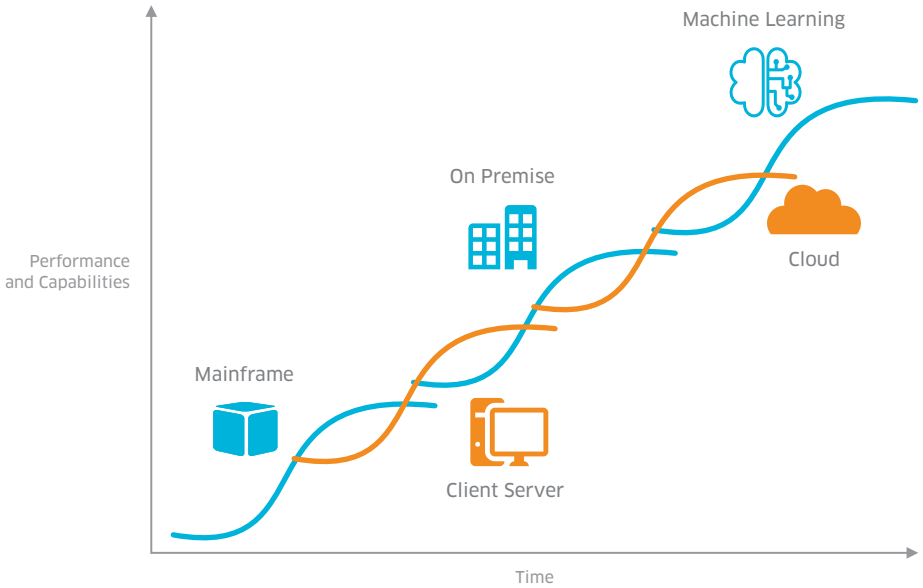
We are at the dawn of a new era in enterprise computing that will fundamentally disrupt the enterprise application space. Every 10 to 15 years, we've seen a major shift in how systems operate, starting with mainframes to client server to web-based interfaces to cloud computing. At each major shift, there's been a markedly different way in how enterprise applications function and behave. And we are now marking a new era in the enterprise by beginning to deliver on the promise of AI.

AI will fundamentally change the way we work. The use of AI to augment the worker will lead to workers and computers engaging collaboratively to solve problems and explore opportunities, dramatically increasing efficiency and productivity. We've already seen this impact in our daily lives outside of work, using AI to supplement our knowledge to make better decisions. For example, many of us use the navigation app Waze to guide us from point A to point B in the most efficient way possible. Or we invoke Alexa, Google Assistant, or Siri to quickly find information for us without having to navigate the web ourselves.

But there are other, more subtle ways that AI is being used to improve our lives. Services such as Amazon and Netflix improve our experience by leveraging AI to analyze our past usage history and make predictions on future interests, resulting in recommendations we may not have otherwise discovered. It's this ability to predict a future outcome that has so many organizations scrambling to figure out how AI, or more accurately, machine learning (ML), can be leveraged to digitally transform business and improve our work lives.

ML enables a system to learn from and predict outputs from large quantities of data without being explicitly programmed to do so. At its most basic definition, machine learning is about finding and using patterns in data.

The New Wave of Computing



What this means is that instead of programming a system with a predefined set of rules, the system has the ability to learn and identify patterns as it receives data. An ML process typically starts by "training" an algorithm with a set of historical data that includes not just initial input data, but also predictions and decisions based on that data and the outcomes of those decisions. This allows the algorithm to detect patterns in the data, make a prediction based on that pattern, and then recommend an action.

ML addresses a digital transformation core requirement, often mandated by the CEO or board of an organization, to free up workers from mundane tasks to focus on more strategic endeavors. It also helps speed up delivery of business insights and predictions to support decision-making for enabling sustained, rapid response to changes in the market. And there are many applications of machine learning, from automating manual tasks to offering recommendations for action based on insights previously unattainable through manual effort. However, the challenge for businesses and their IT teams is how to get rapid business value from their ML investments.

Today, a majority of ML platforms are essentially "tool benches" where business and IT users have to figure out how to apply it to their data. What the industry needs instead are intelligent solutions where ML is already applied to data and is able to immediately add value for the business, whether through process automation or increasing the value of human judgement through applying prediction.

Why AI matters to you.

One of the biggest challenges around ML adoption is having properly set expectations. With so many products and services claiming to be "AI-powered," it can be difficult to discern the real deal. Add to that the justifiable fear that ML automation could replace human workers and it can be difficult to understand where the real value is.

Investment in ML solutions that are tied to business value provides an economic advantage to your organization. Making those investments sooner rather than later provides your organization with a competitive advantage over those that delay and will have a difficult time catching up in such a rapidly changing market. But organizations need to make sure they are investing in the right areas to achieve business value.

Attaining the skills required to deliver ML solutions can be a daunting task for many organizations. Skilled talent in the areas of data science and ML are of course a requisite, and can be hard to come by. But the need to properly prepare the data that ML algorithms will use is often the biggest hurdle to overcome. So many organizations are turning to their enterprise application vendors, particularly cloud vendors, to build these capabilities into the applications themselves.

ERP vendors are leading the charge due to the number of ways that ML can provide value to the systems that run your business, which can be summarized in three areas:

1. Enabling better judgement
2. Enabling employees to focus on more strategic work
3. Removing barriers to action

Enabling better judgement.

Many people fear being replaced by machines since current trends focus a lot on the automation of work. The new world of work, however, will see machines and humans collaborating closely together to achieve new levels of efficiency and better decision-making. There is huge potential for ML solutions that are designed and used to augment the human worker.

Machines are very good at being able to find patterns in large quantities of data and come up with a prediction of what might happen. Their ability to process vast quantities of data far exceeds what any human could do on their best day. But machines can only base their recommendations on what the data says.

In other words, to a machine, nothing else matters but the raw data. This is where humans provide an intrinsic value that can't be easily replaced: the ability to apply judgement.

The ability to apply judgement to a situation in order to come to the right decision is a value that is difficult to measure or replicate. Decisions often involve emotion, experience, or an understanding of the situation that can't be identified within the data, such as knowing an employee's career goals when considering retention strategies.

Another example: think about when you use Google Maps or Waze. The underlying ML may predict that taking a different route will save you 10 minutes, but you know that route has lots of traffic lights and requires you to cross multiple lanes of freeway traffic. Experience helps you make the judgement call to not take that recommendation since the 4 minutes you save isn't worth the stress or risk.

While human judgement cannot be removed in most decision-making, using machines to process mass amounts of data to make the predictions necessary for decision-making, and placing those insights into the hands of the human decision-maker, ultimately leads to better judgement. As an example, should you have gone the suggested route in Waze that saved you 10 minutes and actually arrived at your destination 10 minutes earlier, it would have been largely based on the fact the data predicted that would happen. So combining machine-generated predictions with human judgement leads to better decisions, which ultimately leads to better business outcomes. The new world of work will see an increased collaboration between machines and humans, where the predictions ML creates will be used to enhance the worker, not replace them.

Enabling employees to focus on more strategic work.

As we move into the new world of work where machines and humans collaborate for better decisions, there's also a movement to create a higher-skilled workforce where employees have an increased focus on strategic, skilled work. To accomplish this, machines are being used to automate highly manual, mundane daily tasks that are predictable and repeatable. For example, entering invoice information into a system for processing is a highly manual, low-skill task that could be completed more efficiently and accurately by a machine. This frees workers from daily drudgery, enabling them to focus on more strategic tasks, such as analyzing spend against results or assessing industry trends on revenue forecasts. Enabling employees to focus on more strategic tasks also has another positive effect for organizations: happier, more engaged employees.

Removing barriers to action.

Pressure from users to have their work applications and user experience more closely match their consumer app experience is changing the way we find and access information at work. While ML is being used to push augmented insights for tasks an employee is working on, it is also being used to provide faster, more efficient access to information within the organization.

Often the information an employee needs may not be easy to track down if it exists in silos or unstructured sources such as social media posts, natural workspaces, or internal websites. Employees need an easier way to find these sources and access information to support the task at hand. In our personal lives, we use Alexa, Siri, Google Assistant, or some other digital assistant to find information related to a question or task we are trying to accomplish. This style of interaction uses natural language processing to create a more conversational interaction with the end user.

Intelligent search, with the support of ML and natural language processing, will become the new primary interface for most applications in the digital enterprise. Much like Alexa and Siri, digital assistants can help workers find information and complete tasks much faster and easier. As a result, information typically spread across multiple sources and difficult to find is now more easily accessible, helping to fuel a smarter, more informed workforce capable of making better decisions. And with ML guiding these interactions, applications can learn patterns in the way we work, anticipating our needs and leading to a more personalized experience for every individual employee.

But investing in ML to change the way we work doesn't just impact the advantage you have over your competitors. It can also help you retain top talent in your organization. In the February 2018 report "The Technology-Augmented Employee," Forrester states, "how workers perceive their interactions with a company deeply affects their levels of productivity and engagement and, ultimately, their relationships with customers…The ability to be productive and to complete meaningful work every day heavily influences employee experience." The experience that ML can produce will be more convenient and personalized to the end user, so organizations that embrace this new world of work will attract higher-skilled talent. Conversely, those organizations that are slow to embrace this change will have a more difficult time retaining talent against their competitors who offer a more attractive work experience.

The importance of data.

Organizations that can provide a clear business case for investing in ML may still find that implementing it is a challenge due to a lack of readily accessible, relevant, accurate data. For ML to have a clear business impact within your organization, the data used in ML workflows must be clean, quality data. This is one of the biggest hurdles for data scientists to overcome—and why many organizations are turning to enterprise app cloud providers.

Cloud-based enterprise application vendors already manage, store, curate, and protect your data in a well-structured and historical manner. This data is clean and high quality, unless the data has to be assembled together from multiple, disparate systems. This creates a lot of potential for organizations to partner with their cloud application providers in the development of ML solutions that become a part of the application itself. By leveraging your cloud vendors to provide intelligent applications with built-in ML, the onus for ensuring the cleanliness and quality of the data is on the vendor. And because of the multi-tenancy aspect of true cloud providers, the more customers that elect to use the machine learning solutions, the more powerful those solutions become.

It is essential, however, that your cloud partner has a proven track record of focusing on protecting the privacy and security of your data. Organizations must be provided with complete transparency and control over how and where their data is being used. Security and privacy of how data is being used must be constantly in consideration, and machine learning solutions must safeguard fairness and trust at all points in the application lifecycle.

The Workday approach.

At Workday, we put people at the center of our software—and our approach with ML is no different. We apply ML in ways that augment the user, increasing the value of their judgement and productivity and supporting better, faster decision-making. We use ML to supercharge users, not replace them.

For most of our customers, ML goes beyond their direct technical capabilities. We take responsibility for helping our customers reap the benefits, and mitigate the risks. We apply ML where it makes sense and is best-positioned to make an impact. We don't necessarily build general-purpose ML tools.

We focus on our key user personas most often within the offices of People or Finance. Our ML products have the advantage of being built by those who are intimately

aware of these personas, their pain points, and how to apply ML to support their business functions. We start by clearly identifying the challenge our customers want to overcome and whether what we build can deliver unambiguous value.

Even if there is a clear business value that can be delivered, we still identify whether ML is the right solution to address that need. There are cases where applying ML to a problem doesn't provide differentiated value over an alternative approach. In other words, not all use cases require a complex ML solution to solve. This allows us to focus on those solutions where applying ML provides distinct, differentiated value to our customers.

We build ML into the core of our applications, not as separate, adjacent add-ons. This way, all Workday customers have the option to reap the benefits that ML can provide. And because it's built into the core, there's no additional cost or complexity that our customers must incur. Over time, we leverage what we've built to create follow-on solutions that encapsulate ideas and technologies from the initial use cases.

But in order for ML to have a clear business impact within your organization, the models need to start with data. And that data needs to be ideally labeled with large volume and variety where past results have strong predictive value on future results, and costs of bad predictions can be mitigated. Our approach to housing all data in a single system gives us a distinct advantage in ML.

This Power of One has been central to the Workday vision from the beginning. It changes how you plan, execute, and analyze by bringing the critical functions of Workday Financial Management, Workday Human Capital Management, and Workday Planning together. This gives you one place to perform all transactions and analysis and apply ML off the same set of clean, quality data. This rich reservoir of customer data is added to every day, enabling everyone to leverage our ML solutions and improve the underlying algorithms. And since this is all done on the same transactional data that our applications use, the applications become smarter over time.

But how we treat that data is of utmost importance as well. Workday believes practices around the ethical use of AI must be clearly established when delivering ML solutions to achieve outcomes and establish fairness. We provide our customers unprecedented transparency and control over their data. Our customers decide which data is used and how in our ML solutions through an opt-in mechanism. Customers who do not opt-in to an ML scenario will not have their data used. This puts the decision to gain the benefits of ML in their hands.

Workday set out six key principles on how we develop ML for the enterprise responsibly and work to help address its broader societal impact:

Putting people first.

Workday always respects fundamental human rights. We apply ML to deliver better business outcomes and help people in their decision-making. Our solutions provide customers with control over how recommendations are used.

Caring about our society.

We believe that human beings will always be at the center of work. We focus on how ML can align opportunity with talent, and on contributing to the development of an ML-ready workforce.

Acting fairly and respecting the law.

Workday acts responsibly in our design and delivery of ML products and services, and strives to identify, address, and mitigate bias in our ML technologies. We aim to ensure that ML recommendations are equitable. Our products and services are developed and designed to enable compliance, and we are engaged in the policy dialogue around regulation of new technologies.

Achieving transparency and accountability.

We explain to customers how our ML technologies work and the benefits, and describe the data needed to power our solutions. We offer customers a wide range of choices for deploying our ML solutions.

Protecting data.

Our privacy principles apply to all of our products and services, including our ML solutions. We use only the data that is necessary, and embrace good data stewardship and governance processes.

Delivering enterprise-ready ML technologies.

We apply our leading quality processes—with input from customers—when developing and releasing ML technologies. We deliver meaningful ML-powered solutions that help our customers tackle real-world challenges.

We are building these principles into the fabric of our ML product development and are ensuring we have processes that drive continued compliance with them.

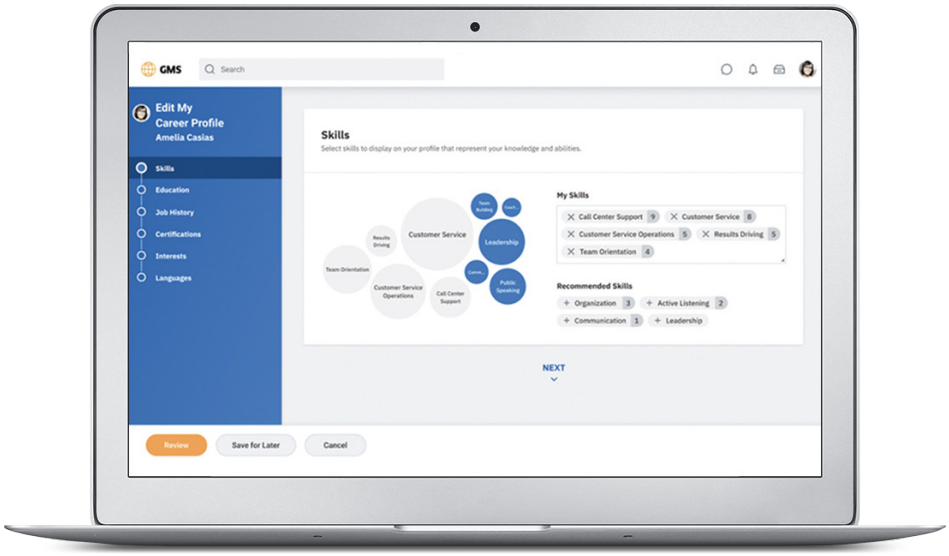
Workday ML in action.

The best way to understand the Workday approach to machine learning is by looking at a real example of how we've applied our principles. In this case, let's dive into the skills function in Workday.

We built an ontology of employee skills that could be leveraged by our customers. Part of the Workday skills graph, the skills ontology has two main components. First, there is the building and maintaining of skills. We started with a publicly accessible catalog of skills and leveraged machine learning techniques in the analysis of word embeddings to manage the relationships of skills.

From there we created simple applications, such as helping employees find and populate their profile with pertinent skills. We also created skills miner, which leverages innovation in natural language processing to identify skills within resumes, feedback, and other pertinent documents. Not all skills may be present in the graph, so we collect customer contributions of data to continuously maintain and improve the list.

By creating this base ontology of skills, we laid the foundation for applying ML algorithms involving employee skills. From here, we will be able to recommend a project team based on the skills outlined in a scope of work and recommend a team based on their collective experiences, trainings completed, and career aspirations.



Join the AI revolution.

Advances in AI and machine learning aren't just coming—they're already here. Whether it's advancing HCM to anticipate in-demand skills, powering financials with anomaly detection for a faster close, or evolving the user experience to a more personalized one unique to each user, organizations are leveraging new enterprise technologies to boost efficiency and generate better results across every part of the business. And when ML solutions can handle the day-to-day grind of manual, repetitive processes, you're freed up to focus on what matters most, such as strategic initiatives.

The best way to implement ML solutions at your organization is with a trusted cloud partner that can offer a single source of clean, accurate, and secure data. By selecting a vendor that prizes collaboration and transparency, you can ensure that your ML solutions add value in fair and ethical ways.

There's no slowing down the AI train. The only question is, when will you get on board? With the right cloud partner, you can bring your organization into the future with these powerful, transformative technologies.

workday.

+1-925-951-9000 | +1-877-WORKDAY (+1-877-967-5329) | Fax: +1-925-951-9001 | workday.com