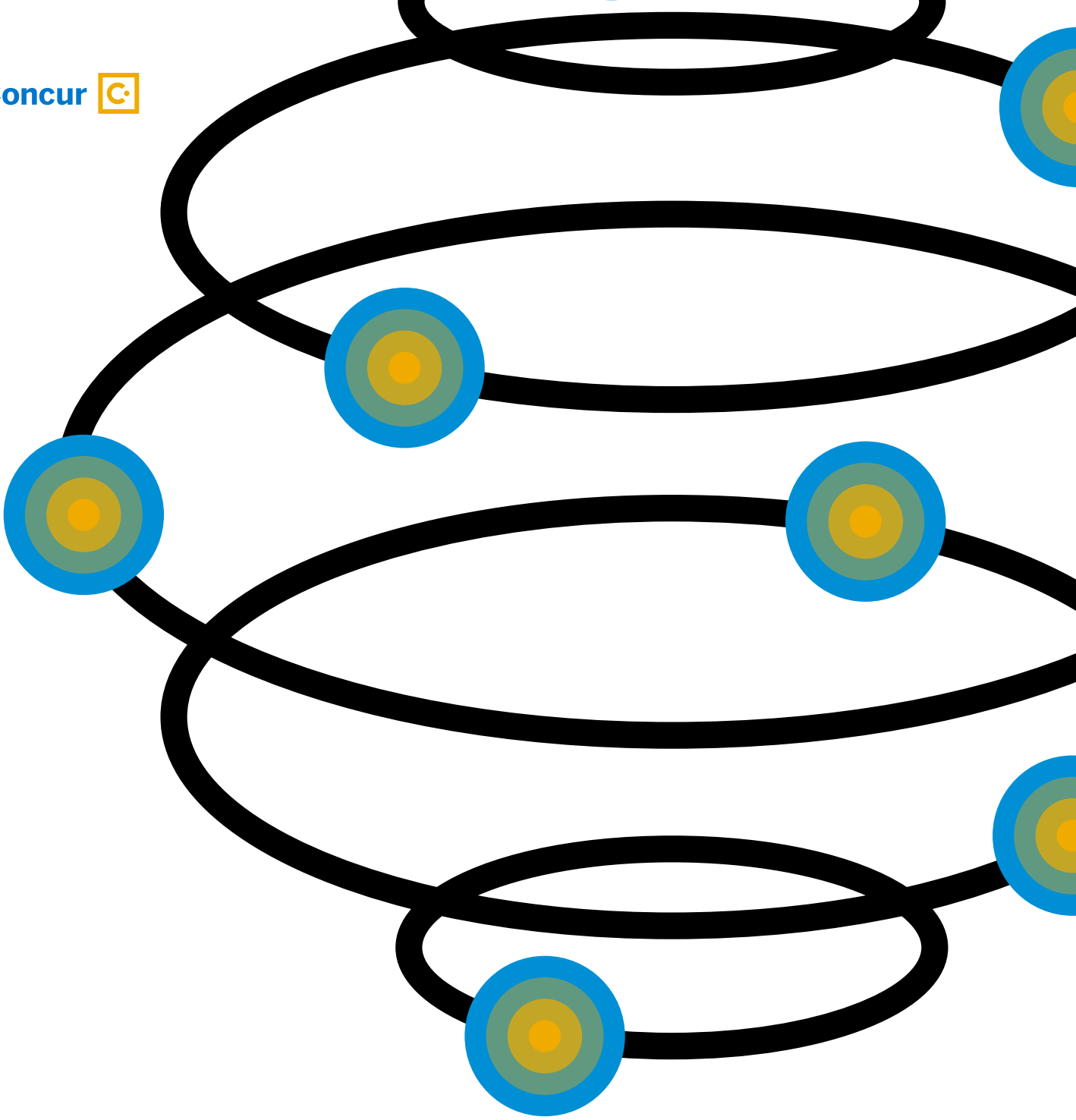
SAP Concur



The Robots Are Coming!

Why you should be excited about artificial intelligence and machine learning coming to accounting and finance

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Repetitive Notion Syndrome

Ask a group of kids what they want to be when they grow up and chances are slim that they'll excitedly proclaim they want to "look at transactions all day and verify their accuracy."

No one dreams of spending their workdays manually entering data for receipts, processing invoices, researching expenses, and auditing transactions. Yet, in companies large and small, finance and accounts payable staff spend hours every day slogging through reams of paperwork and millions of transactions. It's difficult to concentrate on such monotonous jobs; before long, boredom sets in and people take shortcuts or make mistakes.

62% of accounts payable costs come from labor.

The cognitive dissonance is acute: We want employees to be educated, creative, and innovative, but we ask them to perform tasks that are repetitive and mind-numbing, wasting untold labor hours just to receive error-riddled results.

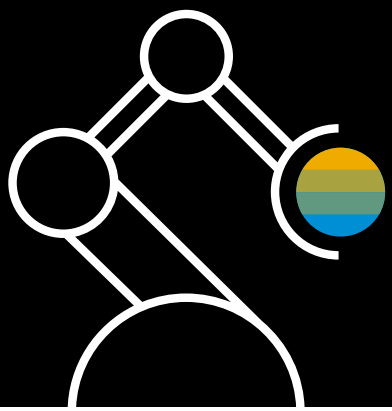
The toll isn't only on morale and accuracy. The price to corporations is enormous. According to the 2015 APQC, 62% of accounts payable costs come from labor[1] – and that figure doesn't account for the opportunity cost of wasting time that could be better spent on innovative and strategic thinking.

It's for these reasons machine learning (ML) and artificial intelligence (AI) hold such promise for improving job satisfaction and reducing errors and cost for corporations. With SAP Leonardo™, we are investing in the future of ML and AI with a set of innovative services that make everything from travel booking to expense auditing smarter, more automated, and easier for your employees.

When discussing the elimination of rote tasks, ML and AI can stoke futuristic and even apocalyptic visions – will we have robot maids easing our lives, à la The Jetsons, or will we be waging war against Skynet?

A more realistic fear is that automation will take over jobs. McKinsey & Company believes almost half (49%) of today's jobs will be affected by some degree of automation, but fewer than 5% will be fully replaced. In most cases, automation will take over specific tasks, not the whole job. Almost every occupation, writes McKinsey, has tasks that could be automated. What this means for higher-skilled, higher-paid jobs is that "people will perform activities that complement the work that machines do, and vice versa."[2]

Instead of fearing automation, many employees can look forward to jobs that challenge and interest them, providing opportunities to add more value instead of performing mundane, repetitive tasks.



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Artificial Intelligence vs. Machine Learning

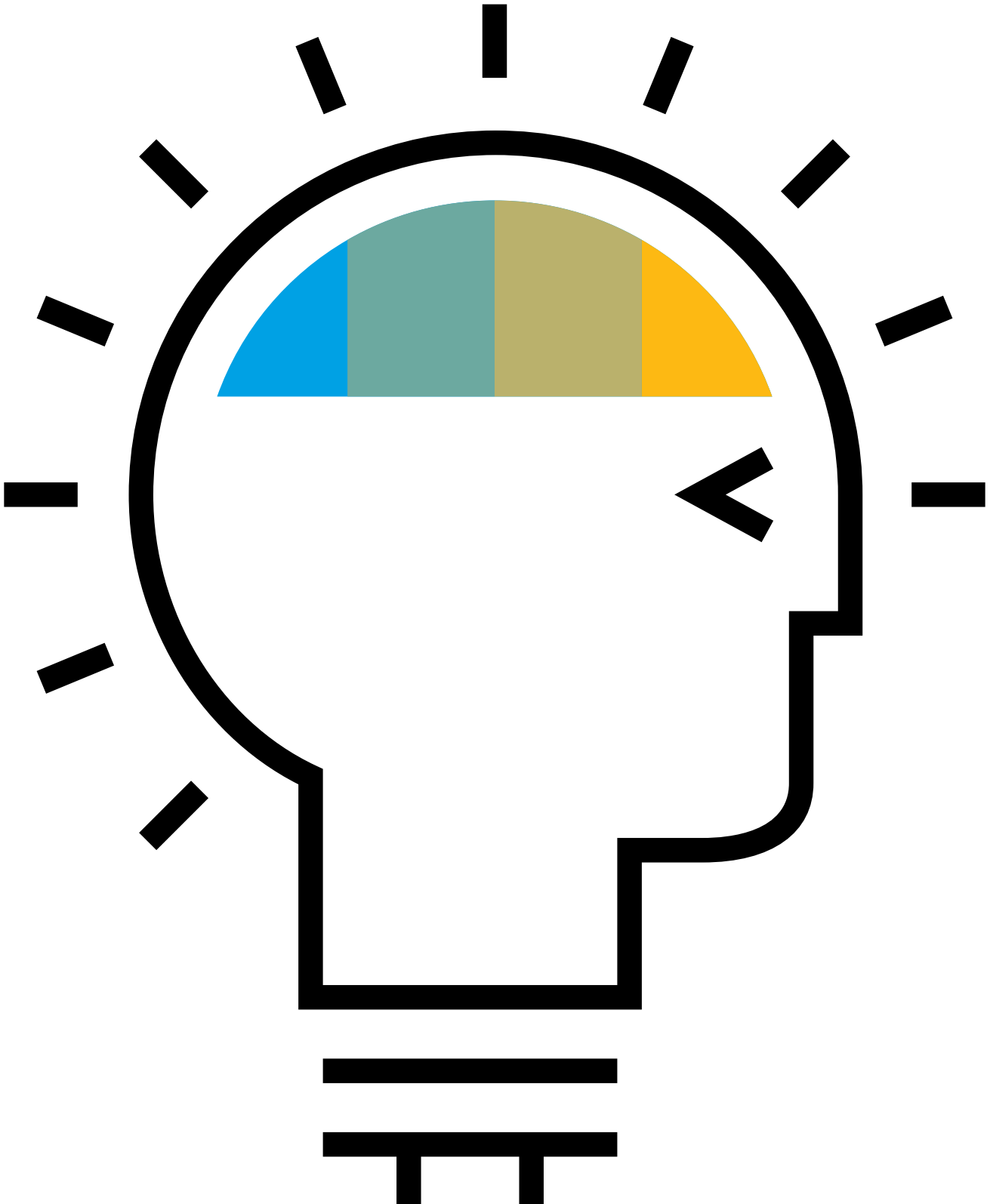
While scientists and researchers have been working on AI for decades, much of the field is still theoretical.

However, machine learning, a subset of AI, is here today and being used in both business and home software. "At SAP Concur, we have been using ML for several years to do things for our customers that could not be done any other way," says A.G. Lambert, SVP, Spend & Data Insights, at SAP Concur.

AI tries to make computers think like we do – and "we're probably dozens of years out from AI being able to reason things out like a person," says Dr. Zbigniew Jerzak, head of the SAP ML Deep Learning Center of Excellence.

ML, on the other hand, leverages algorithms to process vast volumes of data (i.e., Big Data) in a way that humans can't. The more data that learning algorithms can work with, the smarter they get. So, when Siri or Alexa answers a question near-instantaneously, they're leveraging what they have learned from millions of data points and continuing to improve over time.

Machine Learning in the Workplace



A Machine-Learning Renaissance Man

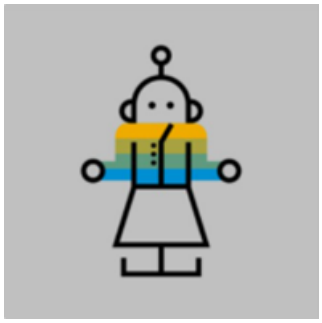
The underlying strength of ML technology is the ability for algorithms to learn from both structured data (like fields in a spreadsheet) and unstructured data (such as images and emails) as they efficiently and quickly work.

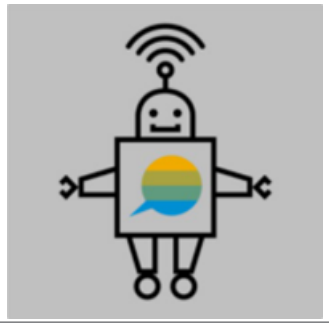
SAP Concur uses a set of technologies, collectively called SAP Leonardo, to access millions of aggregated and anonymized corporate travel transactions, from booking to receipts, daily. Like its namesake, SAP Leonardo combines technique and technology to create innovations moving the state of the art forward. For SAP Concur, one of our unique ML advantages is scale. SAP Concur sees a staggering number of spend transactions a day. More data equals more opportunities to learn and improve.

Without explicit programming, the ML algorithm determines what is right and what's wrong, over time. However, no ML can do this entirely on its own; it requires feedback from human teachers to course correct and make sure it is learning to produce the desired outcomes.

How does this look in practical terms?

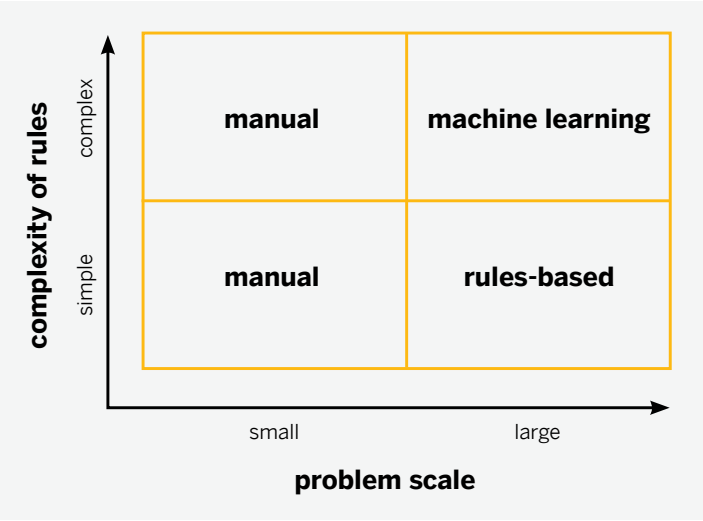
Nobody likes filing expense reports, but they are a necessity of managing employee spend and making sure expenses are compliant. ExpenseIt™ automatically turns photos of receipts into completed expense reports for end users. It uses optical character recognition (OCR), a technology that has been around for decades, to extract text from images. But SAP Concur goes beyond simple OCR by using ML to put letters and numbers into context. For example, it can identify the date and total and determine the currency. It can even select the expense type and spot non-compliant or potentially fraudulent expenses before reimbursement occurs. SAP Concur ML technology leverages what it learned by processing millions and millions of receipts, and cross-checks data against hundreds of public and private databases – from online menus to social media – to unearth patterns humans can't see, recognizing if a venue is a restaurant or a casino, or if an extra hotel charge was a minibar nightcap. Only potential issues are routed to humans to investigate, saving untold hours of auditing time.





Learning the Rules

Paradoxically, ML does its best learning by making some errors. "If your algorithm is right 100% of the time, you're probably doing something wrong," says Dr. Jerzak. You may not be providing the necessary feedback, or you may be applying ML to the wrong kind of problem. There's a sweet spot for ML: If you have a large-scale problem with complicated rules, you're in luck. This is especially true when it comes to compliance: ML relentlessly and consistently follows the compliance guidelines you set.



A great example of a large-scale challenge with complex rules are invoices. While invoices follow a general format, there's still a remarkable amount of variation from one to another. People may use non-standard abbreviations or misspell words. Sometimes they use a decimal point to separate dollars from cents; sometimes they round to the nearest dollar. Plus, invoices can have various layouts.

These differences are easily understood by people, but machines need to learn that $15 and $15.00 represents the same amount. Now, include different languages and currencies and then multiply it by the number of lines in an invoice, across thousands of invoices. You can see how the job gets big, fast.

The benefits of processing invoices with automated technology go beyond accuracy and relieving employees of this mind-numbing duty. With increased speed to payment, companies can take advantage of vendor discounts and even negotiate better rates over time. Companywide, how big of a difference would a 2% discount make to your bottom line?

A Long Island Iced Tea is Not Iced Tea

By codifying best practices, based on internal compliance rules, industry best practices, and what our ML systems have learned from parsing millions of transactions, ML can help leadership improve compliance, while also keeping well-meaning employees from accidentally going out of bounds. Let's say an employee is expensing a dinner, but forgot or didn't know the company expense policy doesn't reimburse alcohol. An ML algorithm can recognize the names of common drinks or question the high dollar amount of the beverage, kicking it back to the employee before it is submitted. The employee saves face, while AP saves time.

As this example shows, when a customer chooses SAP Concur, they're not just getting an ML-powered service that understands what they see in their business, they get a smart technology – growing ever-smarter – that uses the aggregated power of all of SAP Concur's customers' data to deliver exponentially better results.

Opportunities Abound

These examples are just the beginning. Other innovations include:

- **TripIt™:** Forward any kind of flight, hotel, or Airbnb booking email to plans@tripit.com, and ML parses the email and formats it into a beautiful mobile experience for easy access from your phone on the go.
- **Concur Detect** by AppZen**:** Leveraging the power and speed of ML, automatically auditing 100% of expenses, reducing potential fraud and end-user errors.
- **Concur Locate:** Designed to help organizations perform Duty of Care, Concur Locate uses ML to predict where employees may be through credit card data, itineraries, and other sources, so companies can reach employees in the event of an emergency.

ConcurLabs is working on new ML-aided integrations that can ease expense and travel planning burdens for end users, too. For example, one project uses a Microsoft Outlook integration to automatically read email confirmations of travel and expense receipts to pre-populate expense reports. Another project aims to allow employees to use Slack to chat with a virtual travel assistant or submit expenses from within the app.

People
Are Not Computers

Back to the Future

From the Industrial Revolution to today, the pace of innovation has accelerated tremendously and created occupations unimaginable a few generations ago. Now, we're on the cusp of another sea change.

Today we talk about AI and ML in terms like "robots" with a bit of fear in our voices, afraid that humans will lose much-needed jobs and be replaced by automated technology that can work far quicker and smarter than our own mammalian brains. But consider the locomotive – once we stopped calling them iron horses, we stopped thinking about how they were replacing equine-related jobs. Horsemen turned into engineers, new industries sprang up creating even more opportunity, and far-flung places were connected.

Maybe someday, too, we will have a different name for AI. Like the railroads, AI and ML are creating new opportunities. Companies can save money by paying invoices quicker, keeping employees and company transactions compliant, providing spend visibility and analysis, and safeguarding employees. It's truly remarkable that when you know where your cash is and where it's going, you can quickly and intelligently assess risk and opportunity.

But most importantly, by unshackling smart people from laborious menial tasks, ML can help you unlock new opportunities for interesting, creative, strategic work – the type of meaningful work that helps both your employees and your business get ahead.

SAP Concur

About SAP Concur

SAP Concur, imagines the way the world should work, offering cloud-based services that make it simple to manage travel and expenses. By connecting data, applications and people, SAP Concur delivers an effortless experience and total transparency into spending wherever and whenever it happens. SAP Concur services adapt to individual employee preferences and scale to meet the needs of companies from small to large, so they can focus on what matters most for their businesses.

[1] APQC, *The Payoff of Electronic Payables Processing*, 2015

[2] McKinsey & Company, "Harnessing Automation for a Future that Works," January 2017

www.concur.co.in

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