



Clarity on Digital Labor

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October 2017

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Digital labor has the potential to fill the human skill and talent gap as well as address capital and time constraints faced by businesses.

Changing the way we do business - moving to a digital labor force



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Exciting times with great opportunities exist right around the corner. Digital labor, the term given to the continuum of technologies ranging from automating swivel-chair activities such as cutting and pasting content from one system to another right up to cognitive solutions that can think, learn and reason like humans, is no longer a consideration but a mandate. It is no longer about “if” but about “where, how and how fast.”

Digital labor will likely change the landscape of your back office operations and most likely your front office functions as well, but like most technology-based evolutions, it is likely to happen in increments. It is also likely to happen “while you sleep” – with progress that is likely to surprise you. Be prepared to say at some point: “How did we get here and when did all of this happen?” It will be important to embrace it, understand it, get ahead of it, and be an early adopter.

Be thoughtful and make sure that you engage the best and the brightest in your organization to carry the digital labor initiatives forward. In all likelihood, you will be amazed at what comes out of the lab, and you are likely to be highly encouraged by the returns you will garnish and the insight into your business that you will gain, if done correctly.

Are you ready for the era of digital labor force?

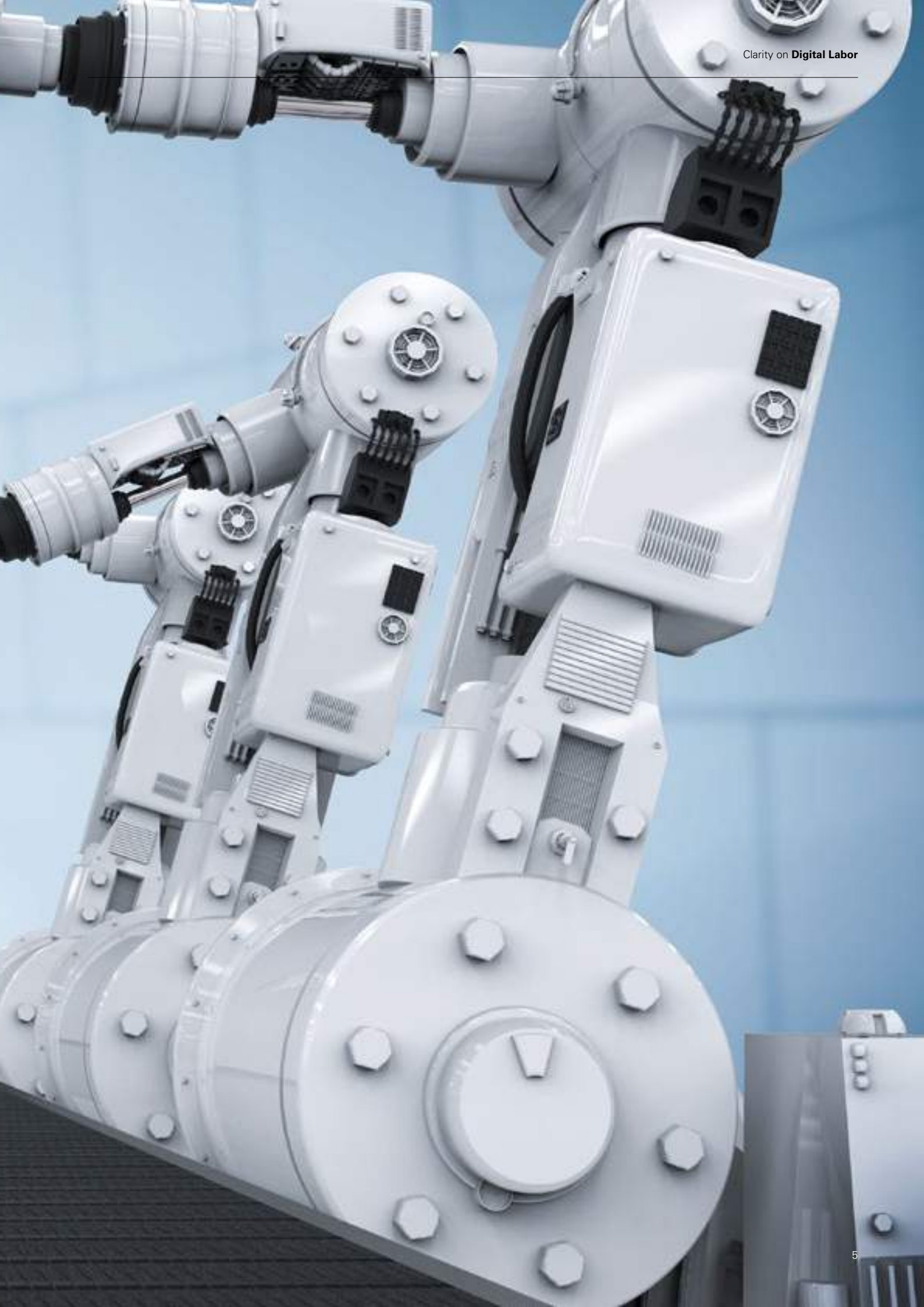
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Employees: endangered or about to be reborn?

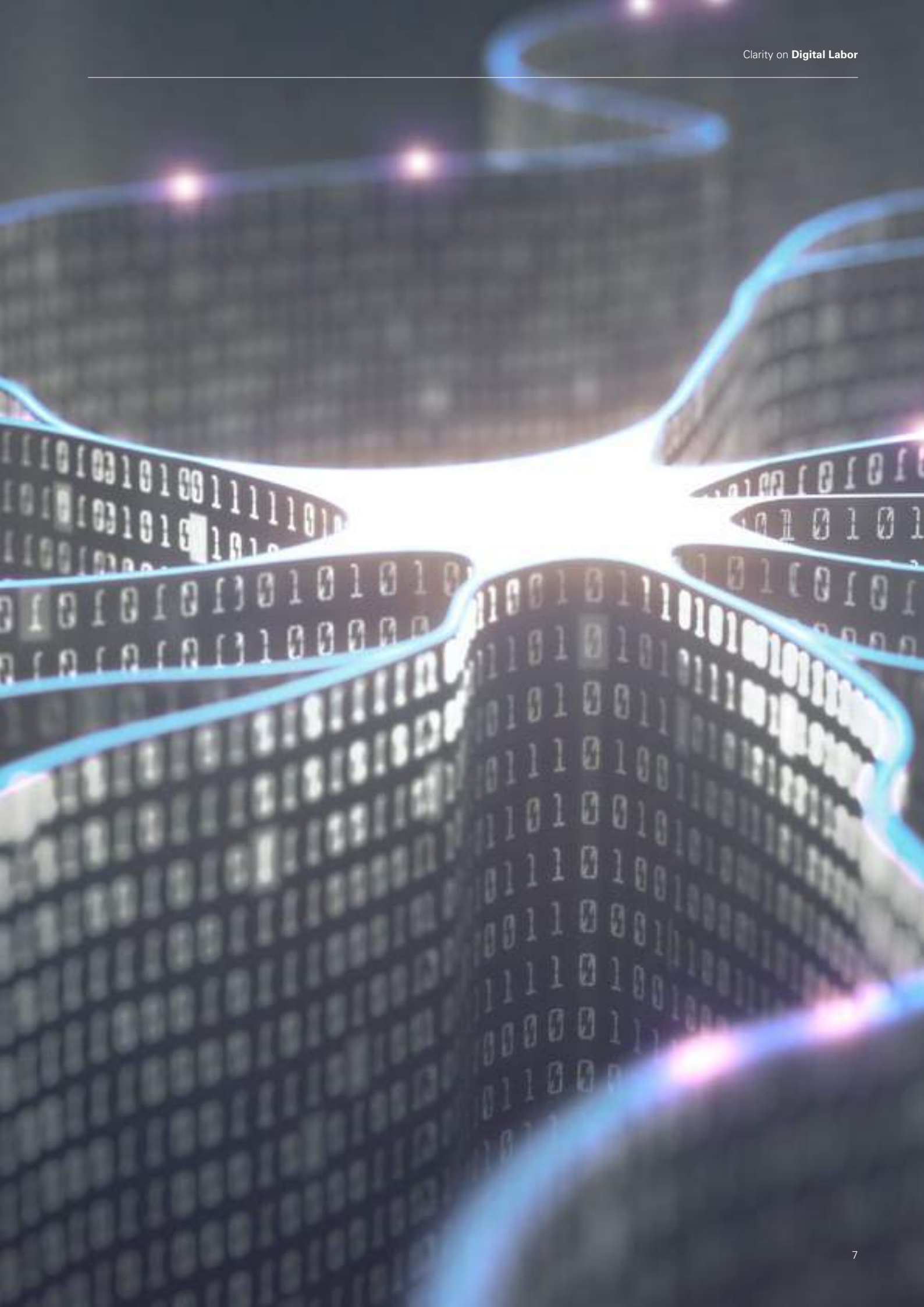
As automation becomes more intelligent and affordable, 30 percent of corporates jobs may be performed by robots in just ten years from now. This will free up many firms to use their employees for more innovative, value-creating roles.





Embrace the change (and the yields)

From life sciences to financial services, digital labor is beginning to yield significant cost savings. The London School of Economics estimates that investments in RPA may yield savings of up to 600-800 percent on certain tasks.

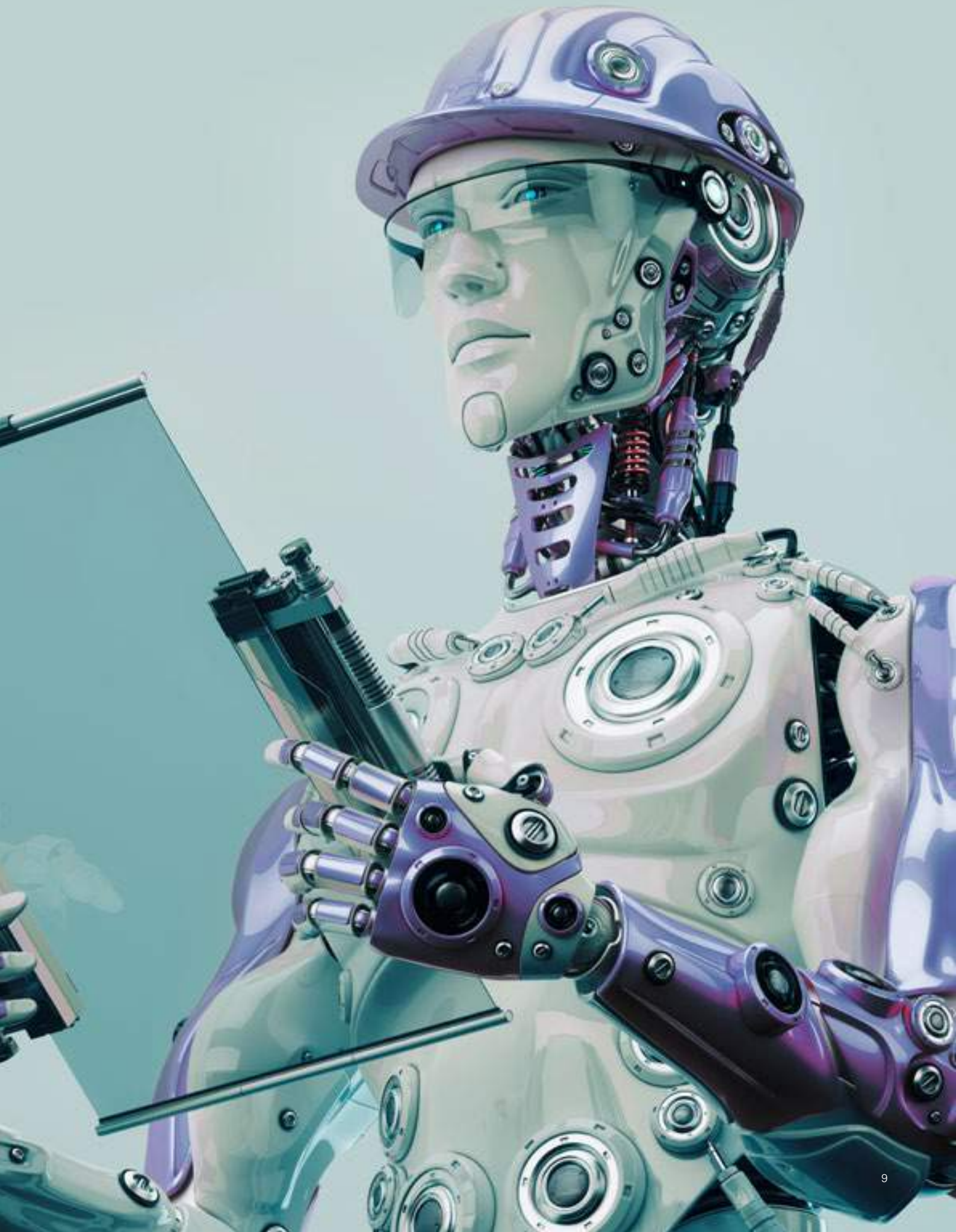


They're already here

A recent study by HfS Research and KPMG reports that 55 percent of North American enterprises are looking at new opportunities available with digital labor systems.

47 percent of jobs in America are at risk of being replaced by robots and artificial intelligence (AI) by 2026.





The radical change in the model of labor arbitrage

The traditional approach of offshoring is inadequate as the global talent pool becomes shallower and more expensive. Digital labor will impact more than 100 million knowledge workers globally by 2025.



Summary

Technology economics

The declining cost and improving performance of digital technologies are the enablers of digital labor. Cloud processing and storage, cognitive technology, Data and Analytics, the Internet of Things, mobile technologies, and social media are converging to create effective alternatives to labor at lower costs.



USD 6 trillion



Economic impact

The current knowledge worker economy is estimated to employ 240 million people at USD 9 trillion or 27 percent of global employment costs. It is estimated that digital technologies will automate almost half of the currently performed activities by 2025 – with productivity of USD 5.5 to 6.4 trillion in equivalent labor.

Labor impact

It is estimated that digital technologies will create new categories of abundance and change the landscape of knowledge workers, with technology offering equivalent capacity of between 120 and 140 million employees by 2025. Re-skilling will be key for both employees and employers.

130 Million Workers



Service provider impact

Many incumbents providers of knowledge services in the USD 1.2 trillion outsourcing space are experiencing lower growth rates. Labor arbitrage as a source of value is giving way to digital technologies, which makes location less relevant. Top tier service providers have introduced cognitive platforms as an alternative to labor, and expect a huge impact on economies.



Demographic impact

As technology becomes more abundant and labor becomes scarcer, digital labor will have a positive effect on economies, allowing productivity and economic growth to continue while labor pools decline.



Digital labor has the potential to impact the various aspects of your business.

USD
152.7

The global market for robots and artificial intelligence is expected to reach USD 152.7 billion by 2020. The adoption of these technologies could improve productivity by 30 percent.

Bank of America Merrill Lynch



55%

A recent study by HfS Research and KPMG reports that 55 percent of North American enterprises are looking at new opportunities available with RPA systems.

Markets and Markets estimates that the AI, or cognitive computing marketplace, will generate revenue of

USD 12.5 billion by 2019



From USD 1.7 billion to USD 14.9 billion

According to Quid, from 2010 to 2014, private investment in AI has grown from USD 1.7 billion to USD 14.9 billion and was on track to grow nearly 50 percent year-on-year in 2015 alone.

600% and 800% ROI

Recent research from the London School of Economics suggests a return on investment in robotic technologies of between 600 percent and 800 percent for particular tasks.



Top
5

Gartner predicts that by 2020, smart machines will be among top five investment opportunities for more than 30 percent of CIOs.



Chapter I: Digital labor demystified?

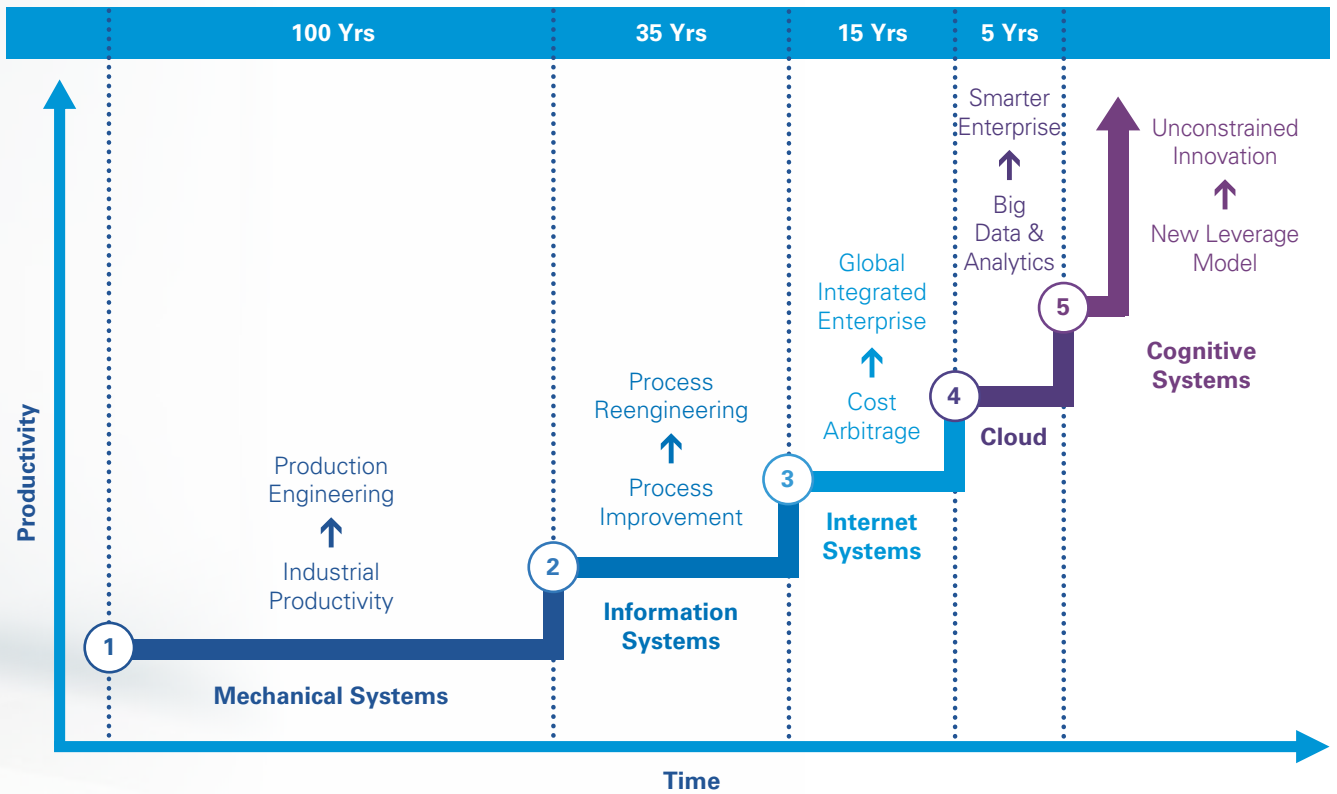
Humans have been simplifying tasks since their existence thereby transforming the labor landscape

In pursuit of simplification of tasks and to achieve higher productivity, there has been a constant evolution of labor over the ages. While the evolution is a continuous process, the five ages that have redefined the labor landscape are as follows:

The five ages

The implication for business is clear – at each age, there is a progressive effort to augment human labor with available tools and technologies, thereby freeing humans to do more creative and innovative tasks. This is the core of digital labor where the focus is on leveraging a continuum of technologies to take over maximum routine tasks from humans and freeing them for higher value adding work.

What does digital labor mean to business?



Mechanical systems

The mechanical systems era spawned machines that could augment human labor by mimicking human musculoskeletal functions. The assembly line was born, as business leaders sought to improve industrial productivity.



Information systems

Beginning in the late 1950s and early 1960s, companies created information systems to codify critical business processes and automate common tasks. Through the late 1990s, leaders focused on improving productivity by reengineering business processes – with the help of enterprise resource planning, supply chain management and customer relationship management.



Internet systems

By the early 2000s, as enterprise productivity plateaued, business leaders seized on the opportunity for labor cost arbitrage in emerging markets. Organizations became globally integrated, using shared services, outsourcing, and offshoring to shift previously codified business processes to geographically scattered, low-cost labor pools – all connected by the Internet.



Cloud and the Internet of Things

In recent years, enterprises have leveraged the long tail of the Internet era to become smarter and more connected – through social media, mobile, analytics, and cloud.



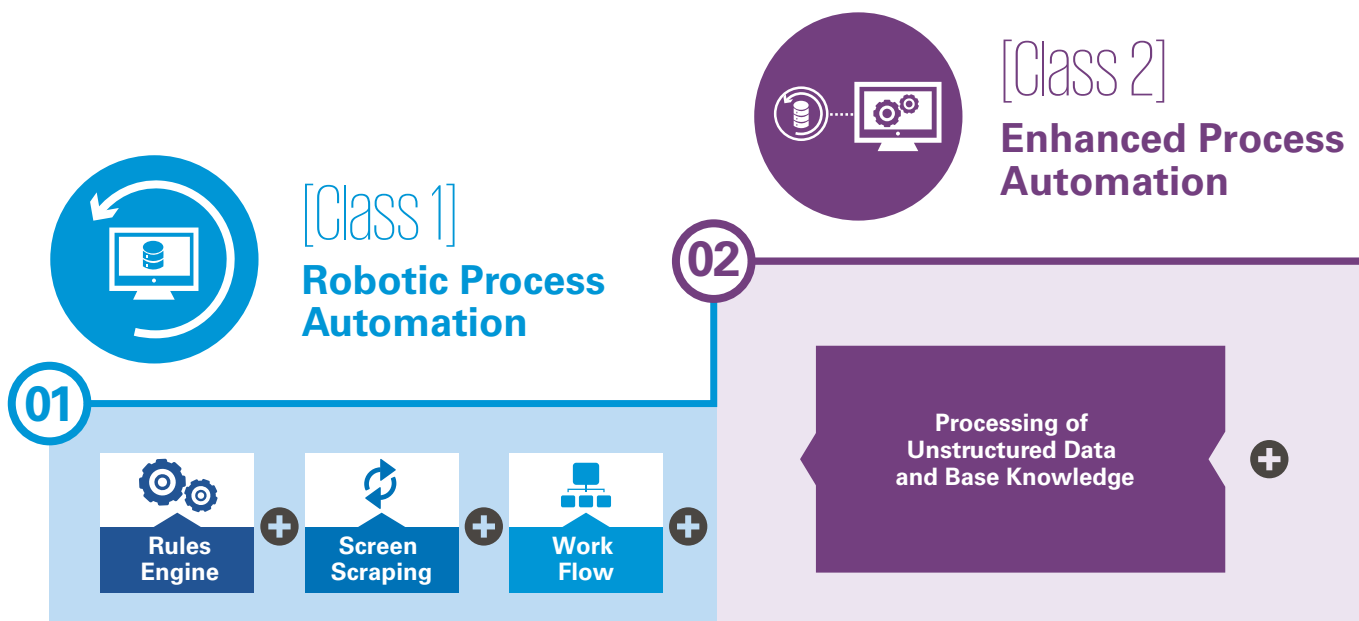
Cognitive systems

Today, the advent of cognitive automation is the most exciting phase of enterprise transformation in more than a century. Cognitive systems are poised to bring new, unprecedented levels of automation and productivity to functions throughout the enterprise, including those traditionally driven by human judgment and experience.

Digital labor means “the automation of labor by leveraging digital technologies to augment or automate the tasks undertaken by knowledge workers in business”

Digital labor is an array of capabilities that span a spectrum of age-old core technologies such as rule engines and workflow, up through more sophisticated technologies such as artificial intelligence (AI) and machine learning that can support cognitive reasoning. They are at different stages of

maturity and are evolving at different rates, providing a spectrum of capabilities ranging from simple, repetitive task automation to ones that actually learn and adapt. To provide clarity, we have categorized digital labor into three classes.



Class 1: Robotic Process Automation (RPA):

RPA is the basic class of automation which addresses simpler processes that follow very explicit manual steps, often leveraging multiple applications and systems. These automation tools often reside right on top of the desktop resulting in shorter integration times and faster path to automation.

Typical application of RPA can be found in order entry tasks, service desk ticket registration, reconciliations, report generation and activities that involve copy-paste actions.

Class 2: Enhanced Process Automation:

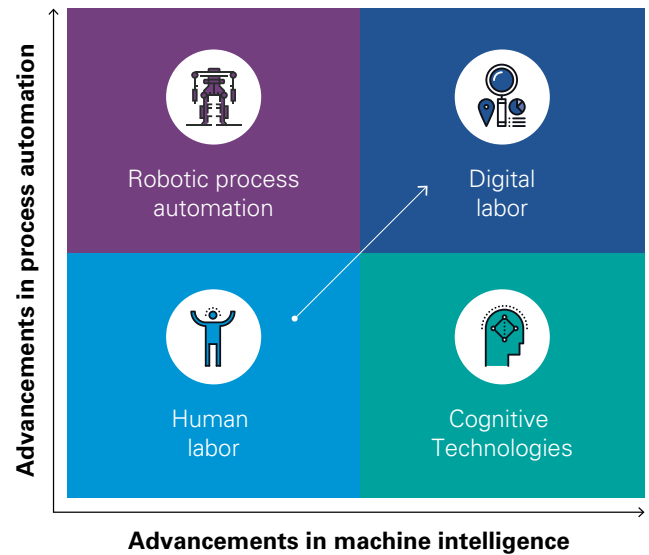
Enhanced process automation with built-in knowledge, natural language processing capable of parsing unstructured data and pattern recognition supports elements of self learning.

Typical application includes exception handling e.g. trade failures, escalated service requests and basic call center resolution.

Class 3: Cognitive Automation

Cognitive automation is the most advanced and exciting class of automation that leverages artificial intelligence, natural language recognition and processing, big data analytics, machine learning, adaptive alteration, self-optimization, predictive analytics and evidence based learning to automate processes that require cognitive intelligence. Cognitive software mimics human activities such as perceiving, inferring, gathering evidence, hypothesizing and reasoning. When combined with advanced automation, these systems can be trained to execute judgment-intensive tasks. Cognitive automation is

creating a new class of digital labor that can enhance human skills and expertise, making every employee an innovator. And instead of innovating just on Fridays or 20 percent of their time, employees will innovate all the time, transforming the enterprise into an engine of innovation.

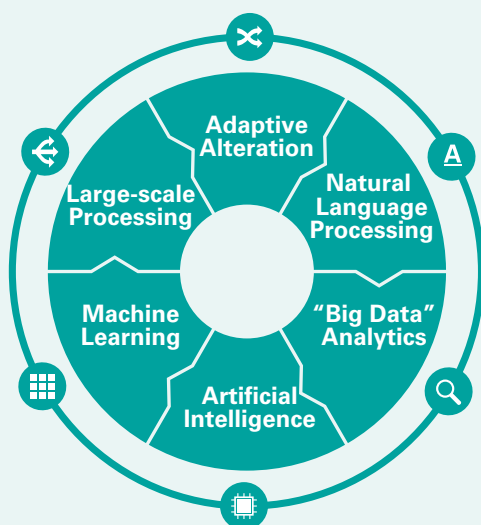


Digital Labor is a continuum of technologies that allows organizations to achieve improvement and change.

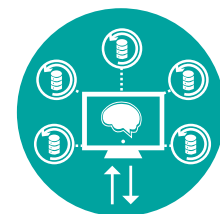
As digital labor increasingly penetrates the tasks that are manual in nature, it is poised to dramatically transform the way work is done today.

The potential and perceived impact of digital labor on business is discussed in detail in the following section.

03



[Class 3]



Cognitive Automation



Swiss
politics in the
digital age

Digitalization is moving forward in great leaps. But, as is so often the case, legislation is lagging behind.

Federal Chancellor Walter Thurnherr sees this as a key political challenge.

Wages and carrying costs in Switzerland are very high compared to other countries. For this reason, relocating production sites to Asia or Eastern Europe has continued to be a topic in industry through to the present day. This is becoming less of an issue nowadays, since efficiency is increasing exponentially as a result of digitalization. Is it therefore possible that Switzerland will develop to become a technology-driven “high-tech outsourcing hub” for companies and other countries?

Yes, that’s certainly possible. Principally because Switzerland has a good reputation for reliability, discretion and security. For data management in the future, these things are likely to be more important than cost considerations alone.

Can you be more specific?

We are witnessing interesting developments in the USA and other countries: certain companies are moving their data to Europe or Switzerland because the government authorities where they are located have demanded access to data that is subject to confidentiality agreements with their customers. Is that a good potential business model?

If you observe developments like 3D printing, the Internet of Things and artificial intelligence, do you think that they will have a significant impact on all of us?

Yes, I think so. Perhaps a bit less so in the case of 3D printing than AI right now. Unprecedented opportunities are arising through technical developments, along with several challenges as well, of course – particularly for the state. Take the Internet of Things, for example. These things – your thermostat, your smart meter and your car – now periodically receive updates. Who is checking what kind of software is being loaded onto them? Until recently, if you wanted to drive your new car, you first had to complete an emissions test, crash test, etc. Then you could drive it around for a while.

And in the future?

This may become a thing of the past. Your car periodically receives new software, perhaps even very good software. But how do you control authorization? How do you ensure that each brand receive the right update? Do you regulate on a national level and, if yes, how exactly? I mention cars because the effects are immediately apparent, but of course it also applies to your TV, which might suddenly be able to record you or do other “things”.

Let’s talk more about regulation: is Switzerland running the risk of lagging behind in the area of digitalization and missing opportunities as a result?

Policymaking is always too slow. And frankly, it would also be presumptuous to believe that technology can always be regulated “in advance”. However, digitalization is likely to put the legislation process as we know it under pressure. It usually takes years before we are able to discuss and hear arguments for revising a law, vote on it if necessary and ultimately adopt it. Technical development and regulation in other countries – you of course see it in the area of data privacy, security, net neutrality, etc. – has a completely different rhythm. So the challenge will be to formulate a given regulation with adequate flexibility so that we don’t constantly have to amend it, or to draft it at the deepest possible level so that we can quickly amend it when we need to.

How will the Federal Administration be transformed by digitalization and what processes can be standardized here in the future?

Federal Chancellor Walter Thurnherr takes a position on this in a KPMG interview.

If we may, first we have a personal question: When you are traveling privately, do you use platforms like TripAdvisor, Airbnb or Uber?

I do use Airbnb, TripAdvisor to a lesser degree, and I've never used Uber.

When was the last time you used one of these platforms?

Thurnherr: A few weeks ago. Looking for a hotel in Ticino. I was on vacation with my family in Australia some years ago and all the hotels were booked up. I downloaded Airbnb and from then on, I didn't have any more problems.

To what extent do you think digital customers on private platforms are also digital citizens in terms of how they would like to communicate with government administration?

That depends on several factors; for example, whether government can offer citizens a good service that is otherwise unavailable through analog channels. In Switzerland, government services tend to be reliable and fast. For this reason, there is less of a need to handle matters electronically than in

"Digitalization will radically transform the culture and structures of modern administrative processes."



other countries. And there is still room for improvement in terms of e-government in Switzerland.

That said, do you think there are services that citizens would prefer to handle electronically?

Yes, there are certain things that citizens would prefer to take care of electronically. For example, postal forwarding would be a bit easier, or filling out tax forms or dealing with driver's license formalities. But if citizens can take care of a specific problem by email or phone, then of course they will be pleased to do it this way. There is also a difference here between whether citizens make use of the service at the municipal or federal level. While problems can often be dealt with easily and in-person at the municipal level, there is a greater need for an electronic platform at federal level.

When answering questions or dealing with complaints, machines are increasingly replacing humans in commerce. Do you see a similar trend in government administration?

Thurnherr: There's likely to be more of this, which is where artificial

intelligence comes into play. In ten years, I think it will be the norm for machines to communicate certain information and handle specific matters – including verbally. On the other hand, from the responses to customer complaints, I see that it is often less helpful for computers to deal with complaints.

In this context, we often use the term "cognitive reflection". Cognitive reflection is used to help a machine understand the human it is interacting with and know what the issue is. The machine is therefore capable of reflection in response to the person. A robot used in a call center, for example, can respond to the customer based on the emotion it detects in their voice. What do you think about that?

I've observed this trend, particularly in standardized processes. But it will probably take a while before it results in more than a form of triage. Ultimately, it's not just about communicating; the customer wants a problem to be solved. That takes more intelligence than you might think, and you can of course observe this when you contact a call center that hasn't started using AI.

Standardized processes will be automated in commerce. How do you define standardized processes in the context of administration? Do you have an idea about the share of processes that are and could be standardized?

Within the Federal Administration, there aren't that many standardized processes. The reason for this is that many parts of the federal government do not have any direct contact with citizens at all. The contacts of the Federal Administration aren't so much the citizens themselves, but the cantons, municipal administrations, associations, other governments, parliament or internal staff. Meanwhile, in specific federal offices, there is a massive amount of business to be dealt with, even though there are already many standardized processes, such as processing customs or taxes. Documents in government agencies are, however, already being digitized and with the appropriate access restrictions made available to the other administrative bodies.

How will government administration change as a result?

Organization and culture. The organizational charts and hierarchical processes have become less important since digitalization began. In the past, we adapted the structure to what was available to us at the time. In the future, it will be the other way around. The possibilities available to us through digitalization will determine the structures: more horizontal, inter-divisional, project-supported and more flexible forms of collaboration.

What does that mean specifically?

In the past, for example, an ambassador holding a foreign post had a monopoly on information: the diplomatic pouch sent from Bern went to his office first. I've even met ambassadors who couldn't accept the fact that their staff received an email

"In order to take advantage of the opportunities, we should primarily consider whether, where, how and how fast we need regulation. And then leave the rest up to researchers and the business sector."

regarding an important matter before they did. They demanded that the emails first be sent to them so that they could pass them on themselves – fully absurd from a present-day perspective, but it shows you what has changed. There used to be many women in government administration, but nearly all of them were secretaries who typed up documents from hand-written papers. That's no longer the case either. In the past and, in fact, in many parts of government administration, we still produce, manage, mail and archive in a "document-based" way. In the future, the format will become less important, and the content and data will circulate more freely. For example, it will be possible for multiple employees to edit a document simultaneously. And that will also change how we work and collaborate.

So a philosophical shift is underway: digitalization will bring about a new culture and thus new working conditions and a new type of collaboration that should function across government agencies. Do you sense that this will develop of its own accord?

No. Firstly, these IT applications don't materialize out of thin air. And secondly, they have to be phased in and monitored. There are, of course,

several risks associated with them as well. If such a system ever fails, major damage is caused relatively quickly in one blow. Plus, new forms of collaboration always require some getting used to. That takes time. Not only in government administration.

Employees often express fears that digitalization will take away their jobs, particularly wherever it might be possible to standardize processes. Take the Federal Archives, for example...

Yes, I understand that. Documents, of course, used to be physically archived in the Swiss Federal Archives and cataloged on index cards and such. Today, we create files and store them electronically. Why then do we still need an archive? But if you look a bit closer, it is a bit more complicated. The work is different, but there is still work to be done. When the steam engine, the automatic loom, cars and computers were introduced, someone always hailed the end of work. Just before the weekend starts or I'm about to leave on vacation, I always say to myself, "If only!" I'm convinced that new jobs will be created in spite of digitalization. Today, there are numerous bona fide professions that didn't exist ten years ago.



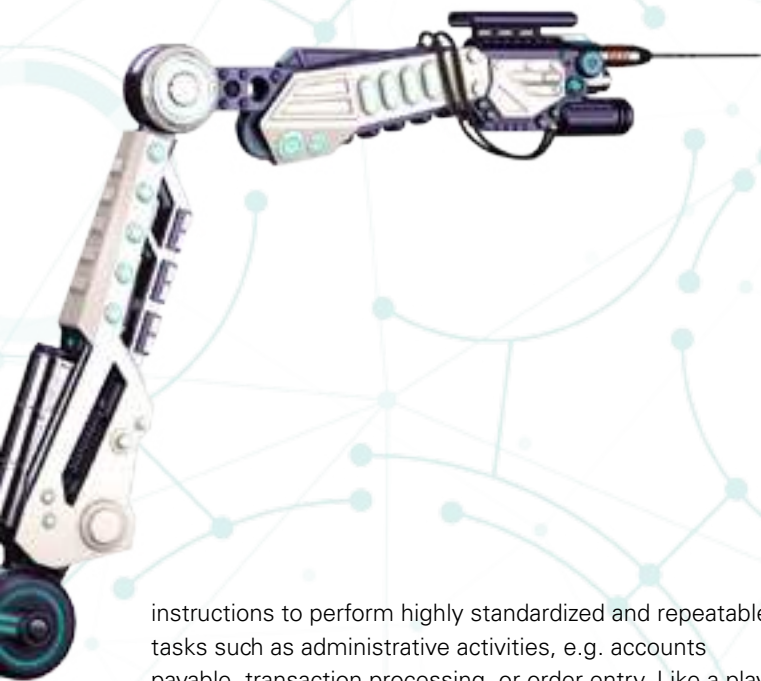
Impact on employees: endangered or about to be re-born?

With the growth in digital labor, one area that concerns employees and businesses alike is what will happen to the existing manual workforce – will it be replaced or transformed?

We will try answering this question by discussing threadbare the various aspects of human and digital labor.

Can a robot actually perform knowledge work as well as or better than a human?

When we hear the term 'robot', we think of a machine that is programmed by a human, instructed by a computer, and primarily carries out physical actions. In 1961, General Motors first introduced this basic type of robot into the assembly line in Detroit, since when robots have been critical to improving productivity and increasing scale. However, today's shift to automation and digital labor is being driven by a more advanced kind of 'virtual robot' – software that can execute tasks that would previously require both a human and a computer. Fifty years after General Motors' robotic machines disrupted the automotive assembly line, BluePrism's virtual robots helped the UK company's clients automate large segments of their offshore operations. The nascent but growing class of software that automates the clerical tasks in a business is called robotic process automation (RPA). RPA tools do not infiltrate the IT system, but rather sit at the presentation layer, following



instructions to perform highly standardized and repeatable tasks such as administrative activities, e.g. accounts payable, transaction processing, or order entry. Like a player piano, this class of RPA can effectively do what a human is trained to do: complete a basic task autonomously, within well-defined parameters.

It is important to note that basic Class 1 RPA (as already discussed), which executes tasks exactly as instructed, is not a cognitive technology. Cognitive technologies are a collection of machine intelligence technologies designed to interact, reason, and learn in a way that is similar to humans. As the world saw on the game show Jeopardy, IBM's Watson, a supercomputer in the cognitive class, was able to discern a probabilistic answer from a question posed in the form of a pun, riddle or metaphor. Computer science experts around the world were awed to discover that a computer could parse a complex question, recognize its true meaning, analyze volumes of data, form a correct hypothesis, and ring the buzzer – all as fast as a human.

While RPA has already had a major impact on the business services industry, we are poised to see a truly transformative shift in the economy and the larger society as it integrates with a new class of cognitive technologies. This is happening now. Recently, some RPA platforms have begun to incorporate cognitive technologies to make robots smarter, more intuitive and more useful in a wider range of business applications.

While automation is nothing new – for example, most major stock exchanges are almost fully automated – the sweeping scope of technologies targeting high skilled knowledge work is something we have never seen before.

The primary goal of digital labor is not to replace humans but to augment their efforts by removing the “mechanical” aspects of their day-to-day activities.

In reality, it is more likely that robots will become adjuncts to the traditional workforce. They will free up human capital for higher level tasks requiring skills that cannot be automated today, such as subjective decision-making, creativity, emotional intelligence and communication. As it was the case in the Industrial Revolution, there will be concerns that machines and robots will take away jobs and further expand income inequality.

The onus lies on the organizations to follow a well-defined strategy for adoption of digital labor while managing the fallout of manual labor through effective change management and robust re-skilling and up-skilling of resources.

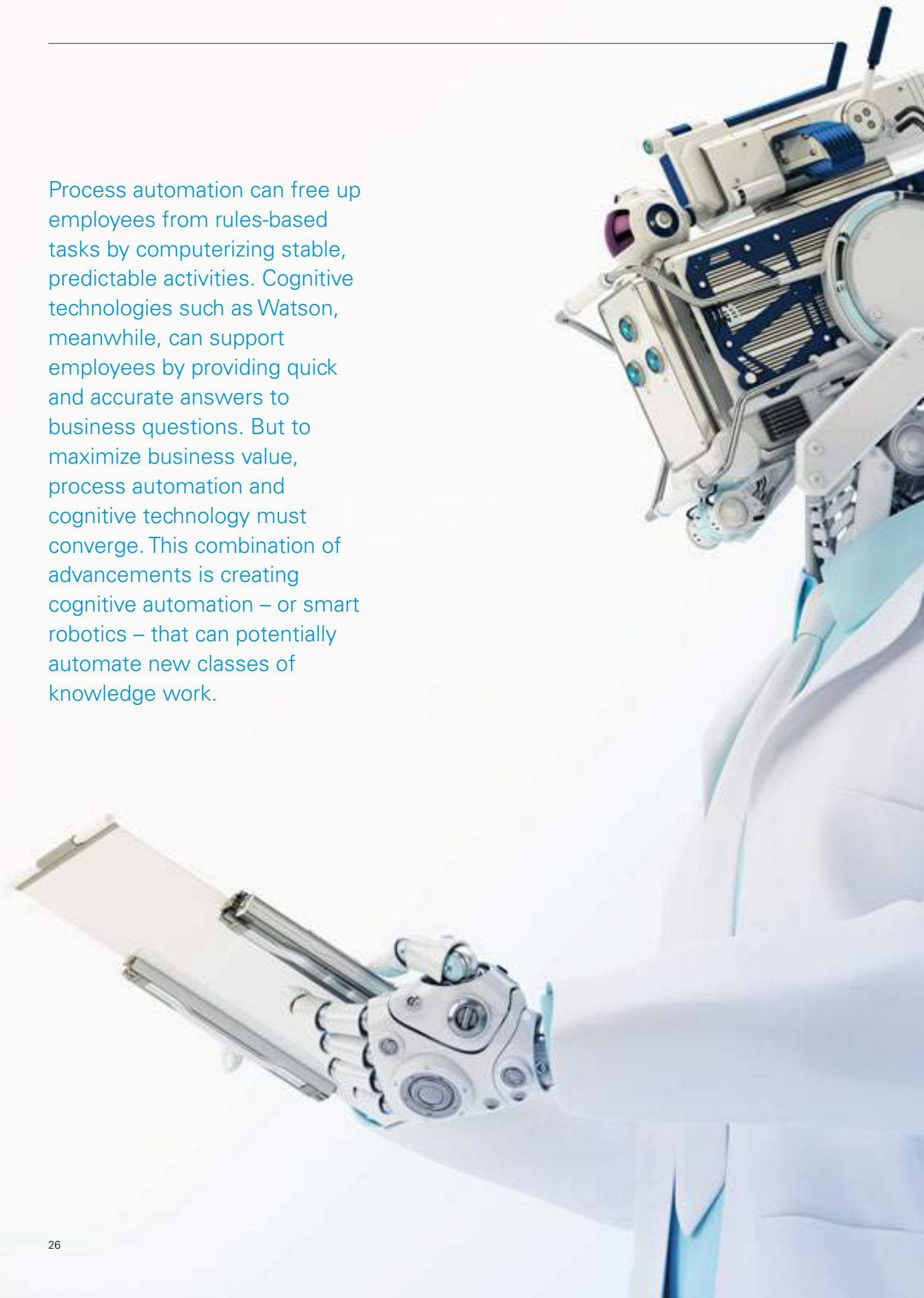
Traditionally, activities such as responding to customer inquiries, performing administrative services, conducting clinical research and managing aspects of financial and legal services has required humans to rely on their intelligence and situational analysis to make decisions and take action. However, advances in automation and cognitive technology in the ever-evolving digital economy is making this human requirement less of a barrier.

Given the promise of digital labor to bring labor costs down while improving productivity and quality – as well as the huge segment of the workforce potential in its cross fire – the cognitive revolution raises serious questions to the economics of offshoring and outsourcing.

In fact, as human labor is replaced with process automation technology, the entire value proposition of offshore outsourcing begins to crumble. Labor costs in many of the top low-cost outsourcing locations have actually been accelerating year after year, while digital labor technologies become better, faster and cheaper. It is no wonder that headcount growth in offshore markets has begun to decline as revenue and profitability of major business process outsourcing (BPO) service providers improves. Thanks to continuously improving automation in all categories, companies are able to scale and expand their services to more customers and more markets at a lower marginal cost.

But what about the jobs and the impact on the economy? Digital labor will allow some companies to free employees from low-level work so they can focus on innovation and higher-value activities. Others may need to reinvent the workforce through re-skilling or up-skilling and finding new ways to deploy talent in order to remain relevant in the marketplace.

Process automation can free up employees from rules-based tasks by computerizing stable, predictable activities. Cognitive technologies such as Watson, meanwhile, can support employees by providing quick and accurate answers to business questions. But to maximize business value, process automation and cognitive technology must converge. This combination of advancements is creating cognitive automation – or smart robotics – that can potentially automate new classes of knowledge work.



**Digital labor in action: Leading global company**

At one large global company, employees were spending a lot of time copying order information from three different applications and pasting it into spreadsheets that could be emailed for order processing. To free up these employees for higher value work, the company is using RPA to automate these mundane, repetitive, rules-based tasks. Further, the robots work through the night, so that when employees arrive at work in the morning, the order information has already been culled from the applications and organized in the spreadsheets. Using a cross-functional approach, the company is developing bots that will save an estimated USD 7 million in their first full year of operations.

Digital labor in action: Automating oilfield maintenance

In the oil and gas industry, maintenance technicians often struggle to diagnose problems with legacy oilfield equipment that has been modified over the years. But with Amelia, a cognitive platform agent from IPsoft, field engineers can quickly get their questions answered, helping to improve safety and productivity by reducing equipment downtime. Amelia can instantaneously review machine manuals, company policies and maintenance records for each piece of equipment to give technicians the information they need. Amelia reads natural language, understands context, applies logic, and infers implications.

Cognitive Technology in action: Tools for law enforcement

Timely information access and knowledge support is critical for law enforcement. Digital technologies play a key role in both as they provide a predictive analysis that can effectively anticipate and prevent crime. Data mining can extract knowledge from a very complex and vast amount of data to determine crime patterns, geographic and demographic analysis, target profiles, and threat assessments, among other crucial policing supports. Cognitive tools can be used to correlate and reveal relationships between different data about tangible evidence such as shoe prints, DNA, fingerprints, and intangible behavior evidence to identify formerly hidden or ambiguous correlations between crimes and people.

RPA in action: Contact centers

One company is using cognitive technology to transform its contact centers, which is reducing headcount, improving reliability and speed to resolution, and providing an impetus for growth. In cognitive platforms for call centers, digital knowledge workers can understand callers' questions and execute a process to solve the issue. If the robot doesn't know the answer, it can find it by searching the web or intranet, or by escalating the issue to a human colleague. Then the robot 'observes' the human's actions and learns new responses for future reference.



Nurturing leaders in the digital economy

The pace of innovation is increasing, businesses are facing new demands as never before and the competitive landscape is rapidly changing. Companies must continually reinvent themselves to retain a competitive advantage in the digital economy.

Traditional functional-based organizations are increasingly exploring new operating structures, such as project-based organizations or other new agile ways of working. In the last few years, partly due to expansionary monetary policies, increased liquidity in the capital markets and the advent of a multitude of innovations, most traditional organizations have changed focus from a cost-optimization strategy to one of continuous improvement through digital business transformation.

Leaders in the digital economy need personality traits, characteristics and qualities that are focused less on tasks

and transactions and more on relationships and change. As the digital economy entails framing and reframing ways of working, business operating models and processes, companies require leaders who can envision, plan and prepare for a broad range of scenarios. The digital economy necessitates a system-thinking approach in which leaders approach problems at a cross-functional and holistic level. Leaders in the digital economy need to be able to spot opportunities where there is risk, relate to others with empathy, break down silos and enable communication between teams in order to facilitate a successful transformation. Such skills are

typically not possessed by conventional managers, whose traits and behaviors often lack the sophistication to manage diverse stakeholders with competing interests and priorities. These managers are perceived as operational experts, and their leadership and soft skills are given little importance. New empirical studies, however, have shown that small improvements in managerial leadership qualities can result in significant leaps in motivation within the team, resulting in higher levels of productivity among team members.

Leaders in the digital economy need to be extroverted, open and humble.



Extroversion is perceived as one of the leadership traits that most consistently impacts performance at all three levels; i.e. at the individual, team and organizational level. Highly extrovert leaders are likely to project charisma and display personal consideration towards their team members – qualities that are vital in winning the trust of the team. For a strategic leader, openness to new ideas is another crucial trait. They should be comfortable dealing with the complexity, uncertainty and ambiguity that new ideas bring. Once they fully understand the value proposition of a new idea, they should be able to articulate this idea to audiences both up and down the hierarchy in order to secure their buy-in and alignment with the new strategic direction. Finally, leaders should also show compassion

and humility in order to gain team members' trust. Humility is about the esteem with which one treats others. Leaders should empathize with and nurture their team members, and interact more frequently with individuals; this means investing energy in order to get to know each member personally and learn what makes them tick. They should not only be interested in results, but also understand the nuances of how the team operates. At times of uncertainty, they need to provide stronger direction to the team than they are temperamentally inclined to do.

For leaders to be more effective, they need to hone their character, habits and behavior. To refine their skills, it is useful to take the following simple but proven approach:

1) Baseline their personality traits, behaviors and leadership skills, and gain “360-degree feedback”.

Nitin Manoharan
Director, Head Enterprise
Architecture & Vendor Governance
at Philip Morris International.





“Leaders in the digital economy must undertake a system-thinking approach where problems are approached at a cross-functional and holistic level.”

- 2) Identify the ideal target personality traits, behavior and leadership skills that they need to possess.
- 3) Produce a personality development roadmap to address the gaps that will help reframe thinking and enable them to adopt the personality traits, behavior and leadership skills they have identified as lacking.

To summarize, leaders in the digital economy must undertake a system-thinking approach where problems are approached at a cross-functional and holistic level. All three vital qualities – extroversion, openness and humility – are necessary for inspirational

leadership. They must become or must be already part of a leader’s personality. A leader may have gaps in leadership traits, which can be filled by another member of the team with complementary traits and behavior. Although it may be argued that it is not easy for somebody to reframe their thinking or change their personality traits and behavior, if they do not try they will never know if it is achievable. Finally, leaders should identify a support network to provide honest feedback and seek out expert guidance from an experienced coach, which will improve the probability of success of such a personal transformation.



Chapter II: Why is digital labor becoming important now?

They're already here

Digital labor is not a completely new phenomenon and has been around us for a long time now.

Robotic Process Automation (RPA) as macro-based applets, OCR and screen scraping has been automating transactional, rule-based and repeatable business processes for industries like financial services for ages.

Since the 1960s, artificial intelligence (AI) has been subject to peaks and troughs of hype and disappointment. There is even a term for the periods of pessimism and reduced funding for AI research: the "AI Winter."

However, what has changed now is the scale of investment into digital labor technologies leading to gradual development of an ecosystem. Also, there has been a convergence of the three classes of automations to create exciting solutions. Together, the impact of digital labor on how work is being done, has increased in both scale and scope.

We are witnessing massive investments in AI from companies such as Google, Dropbox, and Facebook, along

with the launch of high-profile solutions like IBM's Watson and IPSoft's Amelia that clearly indicate that AI winter seems over.

In fact, according to Quid, from 2010 to 2014, private investment in AI has grown from USD 1.7 billion to USD 14.9 billion, and was on track to grow nearly 50 percent year-on-year in 2015 alone, and it's not just spending in research and development (R&D) either. Markets and Markets estimates that the AI or cognitive computing marketplace will generate revenue of USD 12.5 billion by 2019.

As the convergence of computer intelligence and business process applications accelerates, the market is creating a new class of intelligent automation that is capable of performing activities that currently require the knowledge and skills of highly trained personnel. Some fear these smart robots may replace more than 100 million knowledge workers – or one-third of the world's jobs – by 2025.

We can see interesting applications of automations in our daily lives:

Automated wealth
management
by Wealthfront /
Betterment

Anna:
IKEA's Digital
Assistant

Facebook's
photo tagging
based on facial
recognition

In recent times however, the adoption of digital labor is amplified as it helps businesses navigate through challenges posed by demographic shifts, skill and talent gaps and capital and time constraints.

Digital labor addresses challenges caused by demographic shifts

Reshaping your workforce

The change in the labor landscape is due in part to changing demographics. At the same time as machines are getting more sophisticated, the global pool of talent is becoming shallower and more expensive.

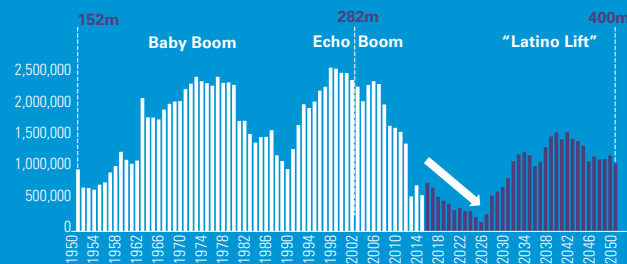
According to KPMG's demographic studies, the working-age population in the US spiked in the 1960s and 1970s following the "Baby Boom", and then again in the mid-1990s through the mid-2000s following the "Echo Boom". However, the labor pool has been declining dramatically since 2010 due to lower birth rates that began in the 1980s. This decline is expected to continue for the next 10 years, but may be helped in the 2020s by the rising birth rate in the Hispanic population. Canada is in a similar position, as are Germany, Italy, France and the UK. The Baby Boom of the 1950s has given way to a Baby Bust in 2010 and beyond.

Meanwhile, in Japan, the working-age population has contracted since 1994 and will continue to do so until 2050 and beyond. In China, likewise, the labor pool will begin contracting later this decade and will continue thru 2050, due largely to the country's one-child policy initiated in the 1970s.

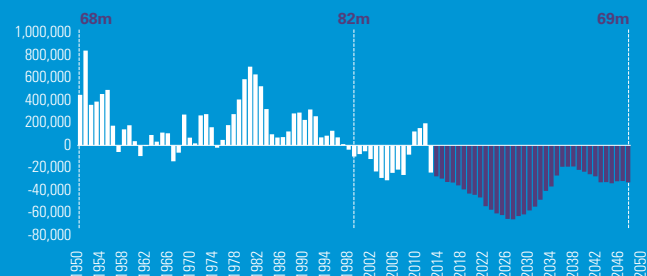
As a result of these demographic shifts, businesses in these countries will simply not have the luxury of picking and choosing their labor, which is another factor contributing to the increased use of digital labor solutions. However, as companies move toward automation, they will increasingly need digital talent to manage it. From where will this talent come?

Demographics around the world: The incredible shrinking workforce

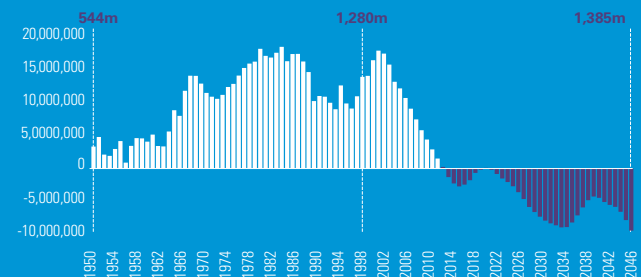
The following charts show the net annual growth in the working-age population between 1950 and 2050:



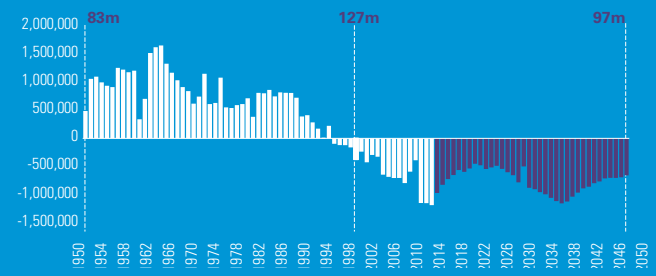
US



Germany, France, Italy, UK



China



Japan

Bucking the trend

Notably, a few countries are expanding their labor pools. Brazil's workforce will grow for another decade, and India's will continue expanding thru 2050. Australia, meanwhile, has solved its labor problem by doubling immigration over the past decade.

The situation begs many more questions, as employers shift their attention to this kind of skilled talent and automate many lower-level jobs. What will happen to the vast numbers of workers who hitherto have been soaked up by manufacturing assembly lines or call centers? Some speculate that if those jobs are automated, the workers will become unemployable.

Others postulate that the very makeup of society will change when knowledge workers contribute to technology and productivity while others are not engaged in that process. The scenario also invites questions about the

distribution of wealth, especially when some parts of the population are not contributing to it.

Despite some predictions, digital labor will not cause catastrophic global unemployment, with mankind becoming idle while machines do the work. Rather, by automating low-level activities, digital labor will ultimately free employees to focus on higher-value work or discover innovative ways to provide higher value. This will also address the allied challenges faced by businesses due to skill and talent gaps on one hand and capital and time constraints on the other.



Digital labor has the potential to fill the skill and talent gap as well as address capital and time constraints faced by businesses

Augmenting human skills, enabling employees to contribute new insights

With cognitive software at their side, generalists can behave like specialists, and less experienced employees can perform like seasoned veterans. For example, a young tax accountant who once may have struggled to interpret a general ledger can now use a cognitive system to instantly analyze enterprise transactions, and effortlessly translate GAAP accounts (prepared with generally accepted accounting principles) into tax accounts. Moreover, this accountant can simultaneously learn why certain line items are treated the way they are.

Overcoming the barriers to innovation

When it comes to innovation, most organizations face hurdles related to talent, capital, and time. Cognitive automation is a way to surmount them.

Skills and talent gaps

Issue: Due to a lack of skills, training, and knowledge, many workforces are not capable of driving innovation effectively.

Solution: Digital labor augments human intelligence to make employees more knowledgeable and productive.

Example: A machine analyzes massive amounts of cancer research in the time it would take a human to analyze a single study.

Capital gaps

Issue: Amid competing priorities, valuable resources are often devoted to immediate needs, and not to higher-level, innovative pursuits.

Solution: Digital labor helps workers complete mundane, routine, lower-level tasks more efficiently, so they can add value through innovation.

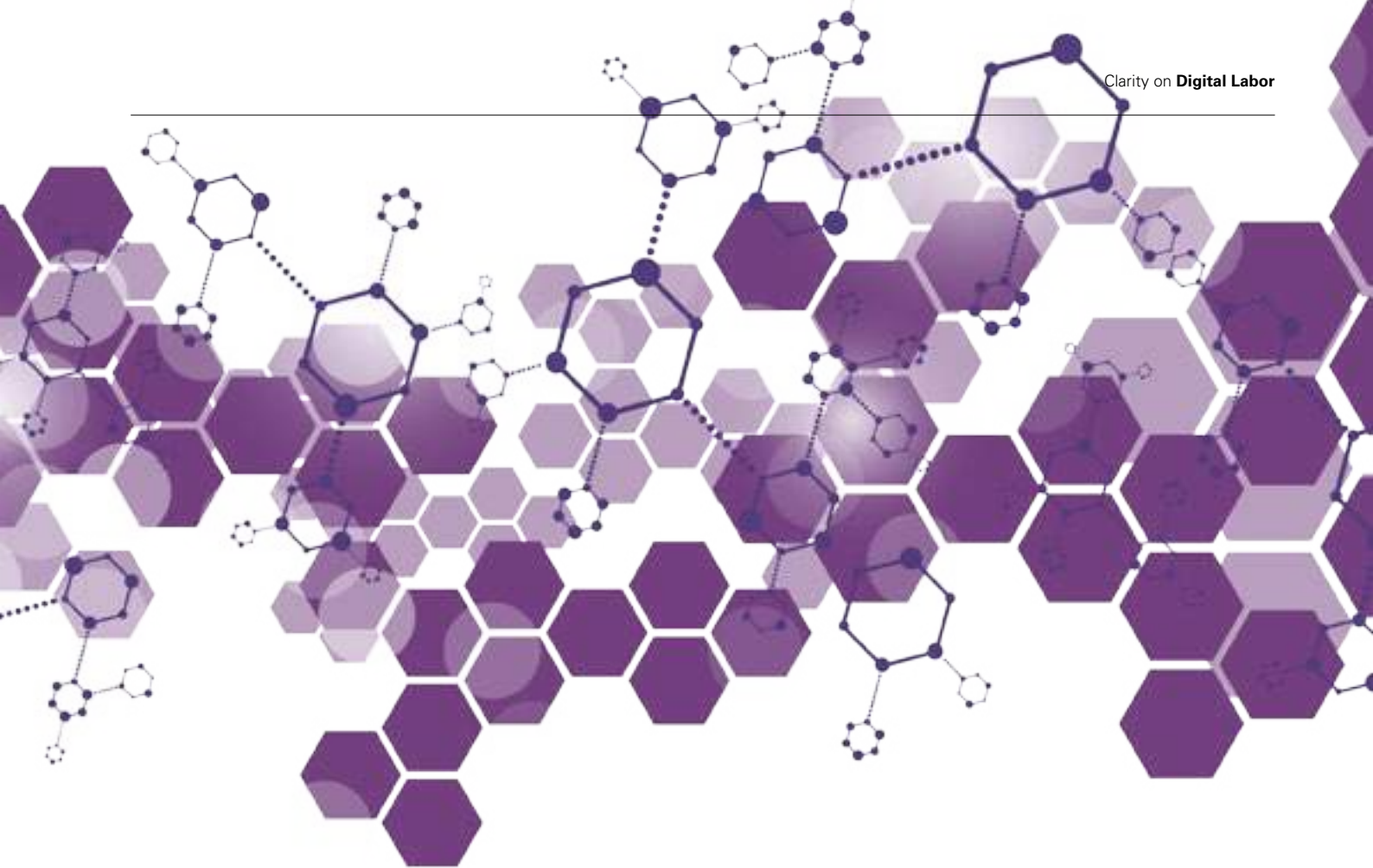
Example: A major US bank used RPA to resolve more than half of its information-technology-related incidents without human intervention, freeing up IT staff to work on business-advancing initiatives.

Time gaps

Issue: Many enterprises innovate too slowly to seize emerging opportunities and separate themselves from competitors.

Solution: Digital labor enables employees to devote more of their time to creative, high-value work that increases company agility.

Example: A finance professional who previously spent half his workday processing transactions now has time to evaluate new cost-saving opportunities for the firm.



A physician, meanwhile, can use a cognitive system to read a patient's medical records and uncover innovative treatment protocols by researching a vast, constantly evolving body of knowledge.

Digital labor helps employees tackle unfamiliar professional situations, and contribute new insights to the enterprise. For example, a paralegal who traditionally used, say, LexisNexis to identify legal precedent is no longer limited by the size of the knowledge base or the time required to search, analyze, and synthesize the findings into a compelling rationale. Instead, by using cognitive software to analyze massive amounts of structured and unstructured data, he or she can now research everything in a short period – and suggest new ideas that the legal team previously had not considered. In this way, cognitive automation helps employees evolve quickly from casual experts to professionals with deep skills.

Similarly, an auditor can use a cognitive system to significantly improve his or her analysis of a company's books. Instead of reviewing just the past 10 years, he or she can review the past 100 years – and potentially uncover new correlations and historical anomalies that could point to previously unknown risks. In short, cognitive systems can significantly help professionals solve routine and unfamiliar problems, so they can discover new insights and innovative ways to do their jobs. And this discovery will not be relegated to one afternoon a week; it will potentially be in every minute of their professional life.

Accelerating time to proficiency

With the help of digital labor, new employees – both untrained and professional – can quickly assimilate into the enterprise culture and begin delivering on key performance indicators. In a call center, for example, a new agent may typically spend considerable time training in knowledge bases and other systems before taking a call in a live customer support environment. But by using cognitive software – in the form of a digital assistant – a relatively inexperienced agent can become proficient much more quickly, answering questions that typically would be fielded by more seasoned veterans. As baby boomers leave the workforce and millennials enter it, companies can use cognitive assistants to bridge the expertise gap.

Scaling expertise across the enterprise

An enterprise is a function of talent and expertise across the ranks. That is why companies spend billions each year to acquire the right employees, identify the best performers, codify their characteristics, and diffuse them throughout the organization – so all employees can function like the best employees. With cognitive systems, this process of scaling expertise becomes much easier.

Cognitive systems can observe and learn from top performers – and quickly transfer those learnings to other employees. Cognitive systems can be trained on the basis of the top performers, and then used to assist and augment other employees in a digital assistant mode.

So whether you are looking at the back office, middle office, or front office, cognitive systems can help you overcome the traditional barriers of time, capital, and talent to scale expertise across the enterprise. These systems can also improve the quality and consistency of output.

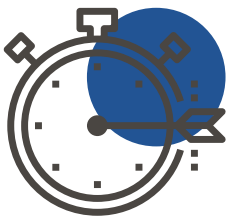
One of the most profound examples is in the healthcare industry. Leading medical institutions such as Memorial Sloan Kettering are using cognitive systems to quickly scale medical expertise to distant markets such as the Middle East and Asia, where local doctors may not have the same

knowledge or training as their U.S. counterparts. These local doctors are being assisted by specialist trained cognitive systems when they diagnose and treat patients, bringing advanced diagnosis and treatment assistance in the form of cognitive assistants. Thanks to this innovation, these institutions are providing overseas patients with high-quality healthcare, previously unavailable in these markets.

Ultimately, the cognitive era will likely unleash transformative enterprise growth through unconstrained innovation, so you can reduce risk, respond more quickly to market demands, and pursue adjacent opportunities. Additionally, digital labor can deliver significant cost and efficiency gains, reduce time to value, increase scalability while keeping the employees happy by freeing them from mundane and repetitive tasks.

A different kind of leverage model

Cognitive automation is poised to remove constraints on people, time, and capital throughout the enterprise:



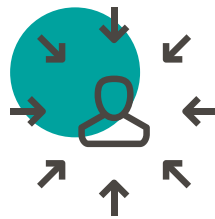
Accelerate

time to employee proficiency

Casual expert
Skilled expert

Inexperienced employee
Seasoned veteran

Speed and responsiveness



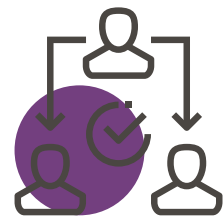
Augment

decisions in the moment

Value through new insights

Reduced risk

Consistency of output



Scale

expertise within the enterprise

Pursuit of adjacencies

Revenue growth – without the proportional growth in headcount

Significant labor cost savings

White collar labor currently accounts for 27 percent of costs worldwide, according to the Bureau of Labor Statistics Employment Cost Index.

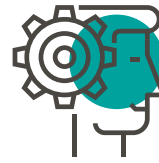
While traditional outsourcing offers a 15 to 30 percent cost takeout, automation technologies boast savings of 40 to 75 percent for certain functions, and these are permanent cost savings.

A starting point for many companies is to use RPA across financial functions, e.g. Record to Report processes including general ledger closure and end-of-month reporting. Estimated savings in this area can range from USD 5 million to more than USD 10 million.

Quicker, most cost-effective implementation

Digital labor can be implemented and used productively in less than a year. This is significantly more time efficient than traditional technology engagements, which often run for multiple years and lock up considerable capital.

Digital labor implementations can be achieved for tens of thousands rather than tens of millions of dollars. The projected return on investment is staggering: London School of Economics research suggests that robotic process automation investments will yield a return of 600 to 800 percent for certain tasks.



Productivity/Performance

Software robots work 24/7, and 365 days a year; do not take vacations, get sick, suffer from work/life balance issues; and perform tasks at digital speeds.



Employee Satisfaction

Eliminating the mundane repetitive tasks allows employees to focus on strategic initiatives, thereby impacting the business in a more profound way and enabling more job satisfaction.



Scalability

Software robots scale instantaneously at digital speeds to respond to fluctuating workloads. There is also no overtime, no hiring challenges, no training, and no severance.



Quality/Reliability

Software robots always do what you tell them to do – when properly configured they do not make mistakes and thereby eliminate human error. Having said that, when not properly configured and/or maintained, a robot will fail, and fail at digital speeds.



Auditability

Software robots keep the perfect audit trail—the software log—a file built by the software that documents every action it took and the corresponding resulting outcome.



Consistency/Predictability

Software robots do not make inconsistent decisions or elect to “turn right” one day and “left” the next. They are configured to solve a problem the same way every time.



Cost Efficiency

Estimates thus far show a software robot is approximately one-third the price of an offshore full-time employee (FTE), and about one-fifth the cost of onshore FTE. Digital labor savings are estimated to be between three and ten times the cost of implementing the automation.

Digital labor as a co-working opportunity

Prof. Dr. Oliver Bendel shares his view about the role of AI in our working environment and to what extent AI and robotics will be used.



What is your view of the future of digital labor – are you cautiously optimistic and if so why?

AI systems and robots can support us in many activities, and replace us in some. We may have to work less in our money-earning jobs, perhaps only

four or five hours a day, and then spend the rest of the day having fun. This would require a fair distribution of corporate profits. I am optimistic about the possible applications of machines and the ability of humans to adapt, but I am also pessimistic, as human greed will not diminish.

What do you think are the key drivers in the adoption of digital labor today?

An increasing number of AI systems will be developed with ever more varied applications. Factory machines will be more mobile than ever; they will be predominantly generalists, capable of learning from workers who show them how to do a job, or who move the arms of robots to determine tracking and movement. Cooperation and collaboration robots, so called co-robots, work in tandem with humans and complement each other perfectly.

Are the capabilities of machines overstated or underestimated? What is your view?

Well, it depends. The first chatbot hype started 20 years ago. Now we see the second hype. One can achieve much more with the dialog systems today than back then, but I believe they are overvalued. We see giant progress with robots and AI systems in the health segment – AI is good at proposing therapies. My discipline, in addition to information ethics, is machine ethics. The question no longer is, and has not been for years, whether we can teach moral rules to machines. Of course we can. The question is which moral rules to teach to which machines.

Where do you think machines can perform better than humans and vice versa?

Machines can take over tiring and laborious activities in factory production and routine jobs in offices. They can even score in creative professions, but not in all: they still have problems with human language. Good articles and books still come from humans, as do good translations and good abstracts. However, there are powerful new tools in the field of translation, such as DeepL. Some activities are best done by machines and humans together. I already mentioned co-robots; machines and humans will also merge into cyborgs, with chips, data glasses and exoskeletons. Cyborgs will be very important in the future world of labor.

Is the key value proposition from the adoption of digital labor limited to enhanced productivity, or do you see other business applications for human-machine collaboration?

There are many fields of application. Security and surveillance robots will monitor many shopping malls and factory sites. Surgical and therapy robots will work in the majority of hospitals and clinics. Nursing and care robots will find acceptance. Package robots and delivery drones are being tested, but I am skeptical about the ground. The complexity of streets and roads should not be increased, and no rolling pitfalls should be introduced. Right now, the air still has free capacity, but probably not for much longer.

What are the factors that inhibit the rise of machines?

Cost is one obstacle. Certain robots still are very expensive to produce and operate. However, prices are falling; a certain co-robot is available for only €10,000. Ideological reservations are another obstacle: some are justified, but others are based on a questionable labor ideology.



Prof. Dr. Oliver Bendel
Institute for Information Systems,
School of Business FHNW

Do you believe there are any tasks that machines cannot or will not do?

I already mentioned language skills. Machines are no good at writing journalistic or scientific articles or books. I would also mention the fine arts. Computer poetry is old and machines can now paint and compose, if not very well. It is not only the outcome that counts; the process of artisan and artistic creation is important. Humans have to be creative. Machines do not. More generally speaking, we can say machines will never develop feelings; they will never love or hate. We humans can love them – or hate them.

What, in your view, is the biggest risk in the adoption of digital labor?

There will be a long transition period of great uncertainty. Workers will have to learn new tasks and there will be less work for all. Workers will need more certainty amid the uncertainty to feel safe; perhaps the provision of an unconditional basic income would be the answer.

People in general are concerned about the rise of machines. What is your view?

Europe has been concerned about this matter for thousands of years. Some



"Machines can take over tiring and backbreaking activities in factory production, as well as routine jobs in office labor."

artificial creatures in the work of Homer and Ovid, and later in the Middle Ages and the Renaissance, seemed to be ghoulish visions, such as Talos, Pandora or the Golem. On the other hand, there are also some pleasant or funny appearances, such as Galatea, the Pygmalion love doll and Pinocchio. Machines are what humans make them. They can make us free or unfree. It all depends on us.

What do you believe is the role of regulation in the rise of machines?

Statutory regulation can support and restrict machine development, and ethical guidelines can accompany

machine development. Several institutions and groups are working on this: the European Parliament has considered it, as has the IEEE Global AI Ethics Initiative. I was happy to contribute from the sidelines.

What will be the impact of the adoption of digital labor on the employment market over the short, medium and long term? Job creation or job reduction?

Less work will exist for humans – that is the purpose and intention of automation. Simple routines will disappear; they will be delegated not only to robots and systems, but also to

customers. We will be defined less through our work, and the meaning of work will expand. There are many meaningful activities other than earning a buck.

What three tips would you give to organizations embarking on the digital labor journey?

1. Use robots, AI systems and information systems to support and unburden humans.
2. Do not use hardware and software to spy on humans or to make them dependent.
3. Leave the last say to humans, unless a machine has a better argument.

Chapter III: Is your business ready to gain from digital labor?

Are you already using some form of digital labor?

Of course, a vast majority of companies have been using robotics on the manufacturing floor for many years, and they have even been using RPA in the back office for some time.

Over the past 18 months, however, the robotics ecosystem has matured and grown. Companies have evolved from robotics projects focused on finite issues to scenarios where digital labor is core to companies' global business services (GBS) and clinical trial models. Both therefore require business and IT-oriented perspectives.

As digital labor is used in more mission-critical operations, it must gain enterprise scope with appropriate governance and risk management. Governance programs should act as

air traffic controllers, mediating and reconciling systems. As an example, a company may have basic robotic process automation for GBS, several automation vendors for financial processes, and cognitive computing in the research lab.

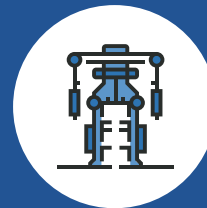
When it comes to risk management, allowing robots to handle a process still requires human review. Companies should therefore continue to apply a detailed review process to ensure quality and accuracy.

Whether you are starting a digital labor journey or have covered some ground, it will be helpful to assess where you stand and how to move ahead in the digital labor journey.



Human Labor

Traditional shared services and outsourcing, both on and off-shore



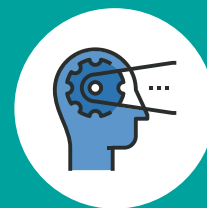
RPA

Automation of transactional, rule-based repeatable processes



Enhanced Process Automation

Algorithms known as smart bots that execute judgment and reasoning-oriented tasks



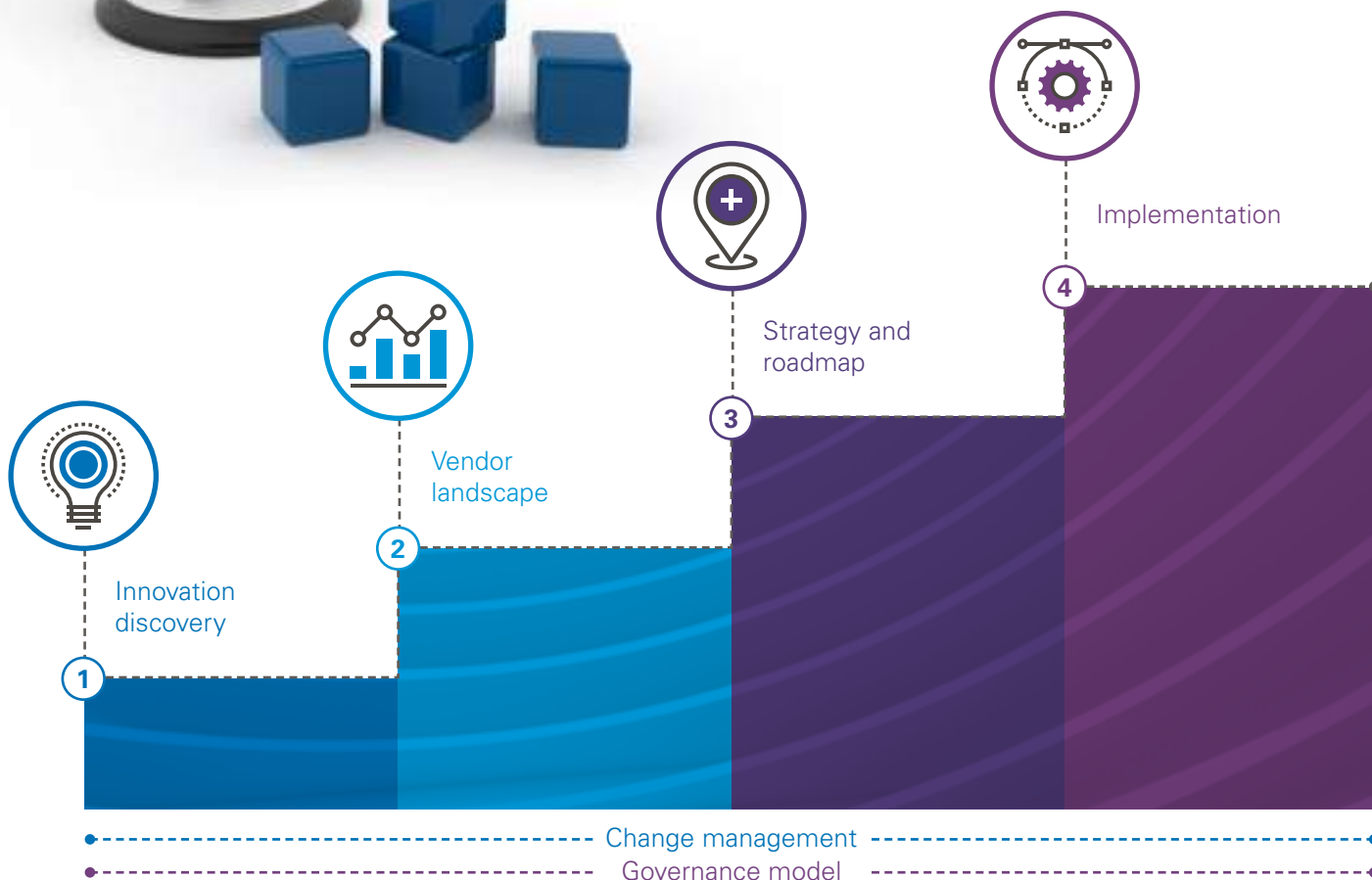
Cognitive Technologies

Machine learning and adaptive technologies that understand context, infer probabilistic answers, and extract valuable insights from Big Data

How to move ahead in the digital labor journey?



Innovation leaders see cognitive automation not just as technology implementation, but part of a holistic strategy that reaches across the enterprise, potentially improving the performance of every employee. If you would like to harness digital labor for enterprise innovation, consider these four phases:



Innovation discovery



With your industry leadership at stake, it is critical to navigate the complexities of digital labor and evaluate its potential in your enterprise – and do so quickly. To start and sustain the digital labor journey, determine what the disruptive trend will mean for your business processes, people, and culture. What are the benefits of digital labor? What are the cognitive opportunities across functions? How will employees do their jobs differently? Your innovation discovery should culminate in clear understanding of these factors, so that you can prepare the organization for significant transformation.

Vendor landscape



Digital labor vendors have varying levels of maturity and capability, so it is important to separate hype from reality and choose the right solution for your needs. Do you need a niche software provider with narrow applications, such as digital assistants for retail customer service? Do you need a vendor for configurable process robotics software? Or is it best to seek a provider of more comprehensive platforms in artificial intelligence and machine learning? Ultimately vendor selection should align with your strategy for creating enterprise value, balancing short-term quick wins with long term game changers. Also consider how vendors will complement your internal capabilities.

Strategy and roadmap



To help ensure success in the digital labor journey, determine where to start and how to progress. Your strategy and roadmap should include prioritized use cases, along with “cognitive moments” that represent transformative opportunities, plus quantified benefits, a high-level solution architecture, and user personas to show how employees will be impacted by digital labor. This kind of approach will serve as a blueprint for execution.

Implementation



Use a portfolio approach to reduce the risk of your digital labor transformation, while ensuring that the enterprise can extract value from implementations both simple and complex. For example, you might want to start with simple RPA for quick value, which in turn can support more complex cognitive projects. Cognitive projects take longer to implement but, accordingly, have a higher business impact. Finally, ensure that technology teams use modern design thinking and agile methodologies to drive user adoption at every stage of the implementation roadmap. Just as critical to sustained success is a model for change management and governance, which should have the full commitment of leadership and underpin all four phases of the transformation journey. This model helps ensure that the digital labor vision – to transform the enterprise into an engine of unconstrained innovation – becomes a reality, with buy-in from all parts of the organization.

Embrace the change (and the yields)

The rise of robots is clearly not just about new technology; it is a significant shift toward digital labor, which presents compelling opportunities to reduce costs and drive new kinds of strategic advantage. It also presents tremendous challenges related to recruitment, skills training, the redeployment of workers, and the redesign of business models.

As automation increases, how will you tap the scarce digital skills you need to compete? To benefit from robotics, how will you focus on value and outcome versus process and people? It's time to change your thinking.

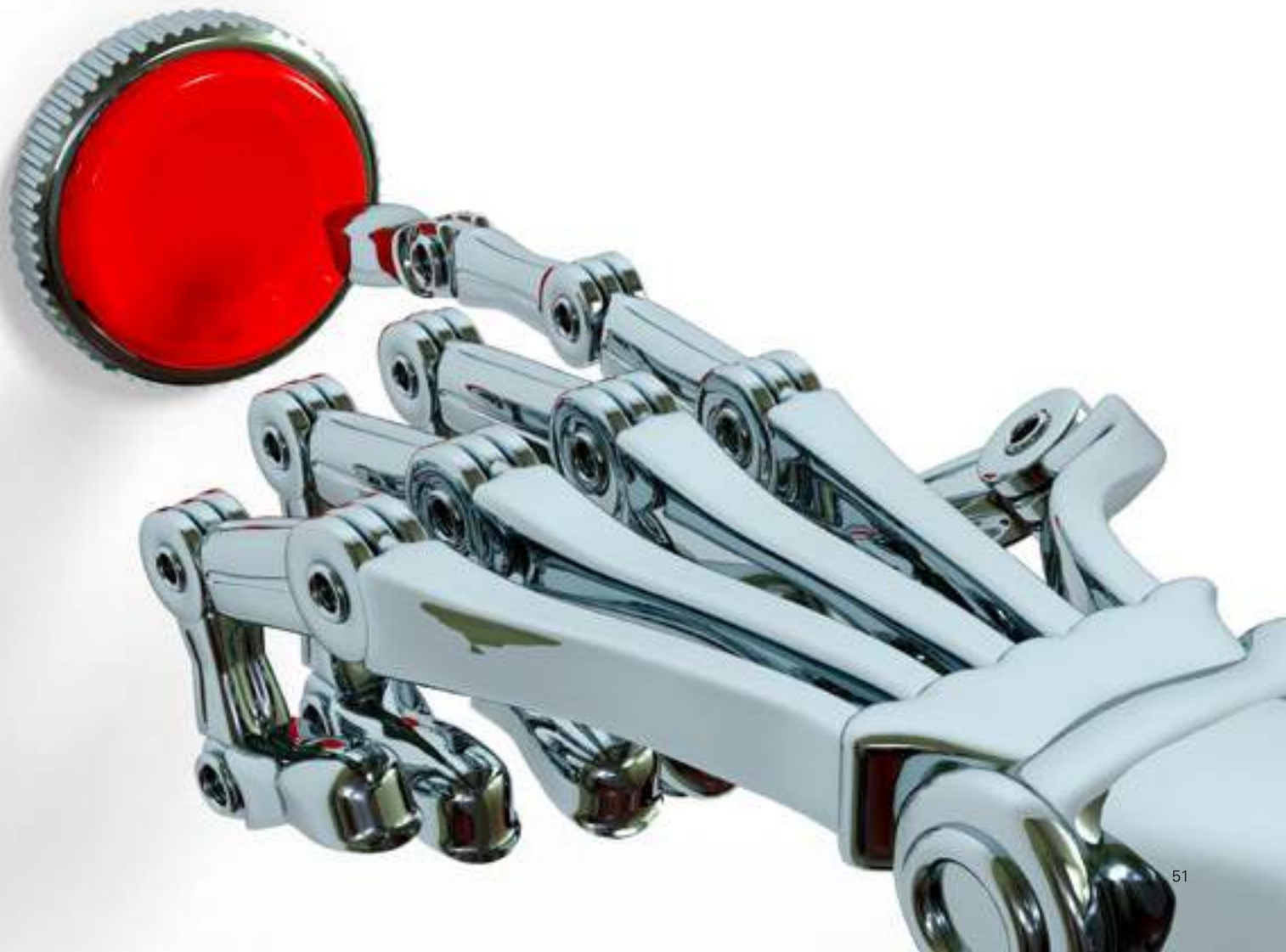
As you begin to lay the groundwork for digital labor in your business, you need to be mindful of few considerations:


Revisit your company's strategy to understand how you can leverage emerging automation platforms to digitize business processes, eliminate manual activities, and drive greater cost efficiency, responsiveness, productivity and innovation.

Rethink your innovation and business models to harness these technologies and the ecosystems around them for new value propositions and competitive advantage.

Reconsider your resource allocation to ensure you are positioned to manage widespread workforce change and enable a culture of innovation.

Digital labor era is here. Are you ready to embrace automation to break transformation barriers and make every employee an innovator?





Automation and optimization: digital labor at Credit Suisse

Youssef Chihi, Uday Singh and
Yatin Chhabra share their expert
knowledge with KPMG in this
interview.

What are the key drivers for pursuing digital labor initiatives at Credit Suisse?

At Credit Suisse, we are on a multi-year journey to digitize our processes front to back and have successfully implemented advanced technologies, such as process automation, robotics and machine-based learning. The primary drivers for pursuing these initiatives are improved time to market, enhanced process controls, increased focus on value-adding tasks, increased uptime for example 24 / 7 availability and increased overall efficiency.

From your viewpoint, what is the scope of digital labor at Credit Suisse?

The scope for digital labor opportunities cuts across all business divisions and support functions of the bank like Risk, Finance and Operations. Initially, increased focus was put on mid- / back-office types of activities or processes that are highly repetitive and manual-labor intensive. A mix of existing such as scanning tools / workflow engines, etc. and new solutions such as robotics process automation, desktop automation, machine-based learning, etc. were brought into the bank to tackle the first waves of digitization initiatives. We are now at a stage where we have built up the necessary expertise and feel confident in scaling up and industrializing the delivery of these types of initiatives for example the Ops Digitization program for Swiss Universal Bank, Negative News and

Name Screening for Know-Your-Customer processes. In addition, we are continuously looking for additional areas to apply these advanced technologies. So our scope really covers the entire bank.

What, according to you, are the major challenges in adopting digital labor technologies in an organization?

Good question! We believe there are several major challenges in the adoption of digital labor technologies. Firstly, it is about creating the necessary buy-in from the organization. Sponsorship and awareness at all levels of the organization is key and needs to happen up front in order to anticipate how to deal with any risks, concerns, reluctance to change, etc. It is equally important to clearly articulate what the robot is and what it is not. Secondly, it is about addressing the risk aspects linked to digital labor technologies. Working side by side with IT, Security and Risk teams in the early stages is a key success factor. Another major challenge is the risk of implementing robots in the wrong way. The key is to look at a process, review and streamline it before adding any of the automation solutions on top of it. Putting a robot on top of a bad process is still a bad process.

What is the time-to-value horizon for investments in digital labor and what is your organization's risk appetite for digital labor implementation? How did you overcome the risks?

The current focus for Credit Suisse is on digital labor initiatives where the entire lifecycle from design to implementation can be completed in a relatively short amount of time (12–18 months). From a risk perspective, the expectation is that the implementation of digital labor will enhance controls and improve the risk profile while providing increased uptime / coverage.

«The technology based on supervised machine learning enables efficient information finding, contextualized-information display and the re-direction of this information to the right functional expert.»

Can you share a few examples of how digital labor is harvested or is being planned to be implemented in Credit Suisse?

We can share a few representative examples from various processes across the bank. For instance, as part of the KYC (Know-Your-Customer) compliance check, Credit Suisse needs to screen the names of all potential clients for negative news. Negative News and Name Screening (NNNS) is a key step of the client-onboarding process as it involves checking clients against global databases for negative news related to fraud, anti-money laundering and other risk areas. Front-office and compliance resources (e.g., conducting online searches, manually copying and pasting, performing manual checks) currently perform these checks manually. We have initiated a Process Automation and Robotics project that aims to automate many manual rules-based repetitive tasks that Compliance Officers perform, thus allowing them to focus on more high-value activities that require judgment and expert knowledge (such as the in-depth investigation of cases or alerts by reviewing the collected documentation).

Additionally, there is a strong momentum of robotics-related projects being initiated at Credit Suisse in the Operations domain. Historically, the Operations division has consisted of legacy systems and silos where a substantial amount of work is performed manually and involves paper-based forms. Despite significant improvements in the past to increase processing efficiency, there are still significant opportunities for automation, especially in report production, script automation, product-onboarding and finally making the office truly paperless. In our Swiss Universal Bank, the front-to-back digitalization effort focused on digitizing processes to increase straight-through-processing (STP) with paperless operations, thereby greatly reducing manual handling and improving error rates. The effort is on track to digitize more than a hundred operations processes including online-banking onboarding, client-agreement production, rent deposits, product processing and address changes. The initiative is a significant contributor to the bank's strategic digitization plans. Through the integrated front-to-back digitization program, the Operations division is able to offer an enhanced customer experience while enabling the bank to act on new opportunities for growth.

Within the Finance domain, a robotics project related to Legal Entity Standard Reporting (LESR) focuses on the automation and optimization of processes related to regulatory and MIS reporting. The idea is to optimize sequencing and workload balancing, increase processing speed and arrive at 24-hour uptime. The effort is being implemented as we speak and will benefit all business divisions.

Besides the described projects, we are making headway in using cognitive technologies for advanced automation solutions. One example is an intelligent contact center solution. Such an intelligent contact center will enable a more direct channel for internal and external customers to solve their operational inquiries that does not depend on time or location. It will also provide a more interactive and immediate user experience when communicating with or within the bank whilst improving quality control, thus reducing operational risk. The technology based on supervised machine learning enables efficient information finding, contextualized-information display and the re-direction of this information to the right functional expert, thus allowing our customer service representatives to focus on high-value-adding activities for example issues that require greater context and human interactions to resolve.

What have been the results from the early stages of implementation of digital labor in your organization? To what extent have these met your expected business outcomes?

The initial results were very promising and achieved the expected business outcomes. This resulted in further scaling and industrialization going forward. Of course, we are still in the early stages but we are very excited about the new opportunities being identified.

Which elements of your operating model needed to be tuned to align with the digital labor program?

Currently, it is the business divisions and support functions that are pushing the implementations within their areas. This makes sense because this allows them to ensure that their process expertise is closely linked to the actual delivery and management of the robots. At the same time, the Central IT Strategy & Architecture team are acting as a competence center, focusing on selecting the right solutions for the bank, setting minimum standards and controls and providing support. As we continue to ramp-up digitization and identify additional opportunities, new avenues are being explored to further fine-tune our operating model.

How does Credit Suisse address the topic of governance for digital labor? We have observed that organizations have focused on the change management aspect too; how has Credit Suisse addressed this?

Change is very important in any transformation and running a digitization initiative is no different. Having said this, one thing that needs more attention and consideration is the speed of the change. Robots and other advanced technologies are being implemented at a much faster pace than traditional system transformations. Also, communication with employees is central to this effort. Employees need to be taken on the journey, and we must continuously explain why we are working on such initiatives. Our workforce is the key to our success, and it is important to communicate that all digitization efforts will result in more value-adding, that is, more interesting jobs in the future.

As far as managing digital labor is concerned, a strong governance framework is required to prevent any risks and outages. Just like employees, robots still need supervision and monitoring.

What three pieces of advice would you give to organizations embarking on the digital labor journey?

First, focus on the process rather than on the tool. Pick apart the process from the beginning to its end, re-engineer it and then select the right technologies in consideration of this. Don't forget to look at all the advanced technologies already on the market rather than just limiting yourself to what you already have. Second, establish a small core team of digitization experts that can create the needed awareness across the organization. Third, go after the low-hanging fruit first. Repetitive tasks are a perfect target, thus freeing up employees to focus on more interesting / value-adding tasks. While doing this, do not forget to talk to your employees. In fact, the approach should be 'communicate, communicate, and communicate' to get all employees on board. You will see: soon you will have the employees themselves demanding digital labor as opposed to the company having to defend it.



Key considerations before jumping into the digital labor bandwagon

During the journey of digital labor, here are six questions that you need to ask yourself?

1

Where can I pilot the use of digital labor?

Opportunities for automation exist across industries and functional areas, and many companies have begun exploring them to reduce labor costs, improve business services, and drive competitive advantage.

To get started, work with process owners to identify activities that include a large number of manual, rules-based, or swivel-chair tasks, and then invest in a proof of concept for a targeted area. In addition to evaluating the technology, the proof of concept should consider factors such as costs (including licenses, infrastructure, and maintenance), anticipated return on investment, and payback period.

Some companies are exploring these kinds of basic projects as part of a self-funded automation strategy. Then, using the savings from those small projects, they can fund larger, longer-term enterprise projects.

Many companies are also creating innovation teams that monitor the technology landscape for new tools, so when a business unit is interested in automation, it can enlist the help of the innovation team to explore the technology, review prospective vendors, and execute a proof of concept. Other organizations are scaling RPA through centers of excellence that apply a test-learn-adapt approach.

2

Do I understand how to develop and manage digital processes?

A people-based process is linear, as activities move from one employee to another. In a digital process, on the other hand, activities are disaggregated, as technology pulls information from numerous inputs, kicks exceptions up to experts who can clear them, and then puts everything back together to create a solution. The Uber platform, for example, integrates GPS, statistical analysis, dispatch, billing, and demand management into one automated product – with very little personnel.

This kind of process model is very different from the traditional linear execution of a business process, and it requires some new thinking. Competitive advantage in the next few years will come from how well you can harness data and technology to run your business – not about running the same old business processes with cheaper labor in offshore markets. How quickly can you go from a labor-centric model to a technology-centric model for business processes? That question will define the winners of tomorrow.

6

3

What is my capital investment strategy for business processes?

Thanks to advances in RPA and as-a-service delivery, you can potentially shed much of your back office and rent it from service providers. Or, you could choose to build some of your own infrastructure and rent the rest. Either way, your investment strategy now requires a shift in thinking: Instead of trying to manage the transaction, as you would in a traditional business process or outsourcing agreement, focus on mastering the outcome. That is, do you want to master the audit or master compliance and shareholder value? Do you want to be a master of the recruitment process or a master of talent?

With this in mind, think about where you should pilot digital labor technologies.

Also, be on the lookout for new, disruptive competitors who will embrace a digital model and may come out of nowhere. With a virtual infrastructure, these new, nimble companies have little to lose as they vie for your market share.

4

How will I manage the fallout from displaced labor?

The automation of human jobs may cause some unrest, so as your plans materialize, prepare to have honest, open discussions with your organization.

Also, keep a close watch on employee morale, which can quickly turn to active disengagement in the face of new technology that threatens jobs. Keep in mind that even an early-stage investment in a proof of concept can send ripples through all levels of your organization. Resistance may come not only from the workers in automatable roles, but also from directors who may fear erosion in their span of control, as they potentially go from managing employees to managing bots.

To mitigate the risk, proactively work with your human resources department to develop a plan for employees who may lose jobs to robots. Consider training your top performers to help manage the robotics program, or shift them to more critical or revenue-generating functions.

5

How will I get the digital talent I need?

Amid the shrinking supply of digital talent, consider how you will compete for the expertise you need to manage digital labor adoption. Another option is to reskill some of your existing employees, noting that different types of digital labor solutions require different skill sets.

For example, if you're building and maintaining robots for transaction processing and repetitive tasks, you need people with strong analytical skills who understand how to translate business rules into logic statements. While a programming background is not required, it does help shorten the learning curve of the new technology and ultimately decreases the payback period for the investment.

On the other hand, if you are pursuing robots for cognitive technology, you need people with deep subject matter expertise to provide the robot's initial knowledge base, validate that knowledge base over time, and respond to cases when the robot does not know the answer. You will also need people who can codify the robots' knowledge base, which may require some technical expertise depending on the product. Either kind of robot will require people to set up and maintain the technology's infrastructure, identify opportunities for adoption throughout the business, and mitigate risks. You may already have people with the aforementioned skill sets, so work with functional leaders across your organization to identify them. Also consider your strategies for training, retaining, and incentivizing your top performers.

6

How will I manage the fallout from displaced labor?

In addition to managing impacts from widespread job loss, you will face a nexus of risks related to cloud, social, mobile, and analytics technologies. To ensure that you are not just scaling your problems through automation, consider appointing a digital risk officer. This person should collaborate with IT and functional executives to identify and mitigate risks associated with innovation, which can help you gain an early advantage.

Nine must have factors in the digital labor proposition to the board

One question that is often asked by executives of the organizations is whether investing in RPA and cognitive automation is right for their organization. According to Justice, this is the wrong question to ask. "At this point in time, it's not a question of whether you should or should not adopt RPA," he declares. "You risk remaining relevant if you don't. The question should be: 'What's the best way for your firm to employ RPA and AI?'"

Here are nine factors to consider in your plan of action:



Where would RPA work best?

- Start with the areas that are the most labor-intensive or involve repetitive, rules-driven work.
- This may include, for example, jobs that require a large number of relatively low-skilled employees with high turnover.



What is the quality and accuracy of the data you currently receive? Have you measured error rates?

- Determine how digital labor can help you harness and analyze data for better decision making (in terms of strategy, operations and product development) and reporting.
- Project the potential savings that will result from reduced errors and increased speed.
- Consider the potential benefits of improved data analytics guidance (e.g. to achieve a profile of your most profitable customers; to determine which customers require closer risk monitoring).

3

What is the status of your existing technology systems?

- Calculate the technology debt you have on your balance sheet.
- Assess the skills/talents you have in targeted technologies.
- Determine whether existing products used in the front office can be applied to middle and back office tasks.

4

Are you facing escalating cyber threats to your operations and the security of your account information?

- A properly designed and operated digital labor solution should allow for better risk control.
- Consider creating a public and private cloud strategy.
- Assess the sophistication of your data retention/deletion policy.

5

How much market-share erosion have you experienced as a result of new entrants and increased competition from traditional competitors? How are you reacting to it?

- Determine how customer experience can be enhanced by improved automation, including straight-through processing.
- Assess whether an AI-driven data analytics program can help you spot trends that will inform your business strategy.

6

What are your customers demanding in terms of service, speed and mobility? Are you keeping up?

- By spotting trends and analyzing preferences, RPA and AI could help your firm attract and better service customers or clients.
- Map out any new offerings you will be able to provide to your customers as a result of enhanced robotics.

7

Is your business being impacted by macroeconomic issues and geopolitical developments, including new and increased regulation?

- Consider how RPA and cognitive automation will enhance regulatory compliance in terms of speed, accuracy and reduced headcount.

8

What is your talent acquisition strategy to meet new technology needs?

- Determine whether you will need to hire new employees, retrain current staff, or contract with third parties to operate and/or oversee the machines.

9

What is your strategy for communicating your plan to transition to RPA and AI innovations?

- Clear communication of any innovation effort of this nature – for example, how it will be accomplished and its goals – is the first step on the road to a successful program.
- It's essential that lines of business understand their roles and responsibilities in this effort.

Chapter IV: How can KPMG help?



KPMG has been
the pioneer and
continues to be a
leader in digital
labor technology...

... through its trusted partnership
with clients throughout the digital labor
journey from strategy to execution
while maximizing business benefits
through integration of digital labor
journey into client's transformation
roadmap.

The convergence of robotic process automation (RPA), machine learning, cognitive computing, artificial intelligence, and advanced analytics has created an exciting class of digital labor that is driving unparalleled business model transformation. In this uncharted territory, enterprises need a partner that can help them seamlessly integrate people and machines, while simultaneously harnessing the technological disruption into competitive advantage. KPMG is recognized as the trusted partner for transformation enabled by digital labor.

KPMG is using Digital Labor to transform how our clients operate:

Enable Efficiency Through Full robotization Life Cycle

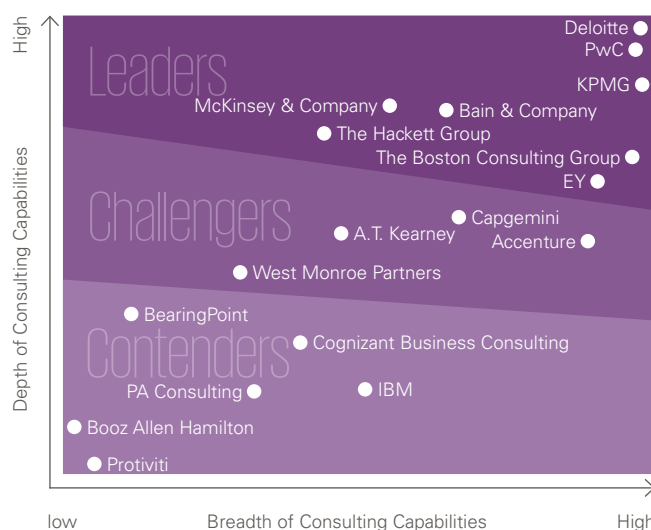
We have assisted multiple clients to create, implement, and execute a well-developed digital labor roadmap for value realization. We have supported clients through the building of digital labor solutions, understanding the impact to affected stakeholders, and rolling out of solutions on a global scale.

Solve Business Issues Through Digital Labor

KPMG has applied Digital Labor technologies to pervasive finance organizations issues, thereby changing how our clients effectively address them. KPMG's People and Change practice has significant experience helping clients across most industries and of various sizes address their most pressing people issues. Originating out of adoption of innovative and disruptive technologies, like digital labor.

Defining New Ways of Working Through Cognitive Automation

Working in an exclusive arrangement with **IBM Watson**, KPMG is addressing industry problems, and reinventing how we serve our clients.



"KPMG offers clients a well-defined portfolio of IT strategy services within its CIO Advisory Services group."

"KPMG approaches IT strategy as a full-service transformation firm that incorporates strategy and business process into IT initiatives."

Best-in-Class – Internal Client Insight: "KPMG expertly uses workshops, interviews, Ignition Centers, and Innovation Centers to identify opportunities, collaborate with and gain full support, provide in-depth market research, and ultimately define the target state for the client."

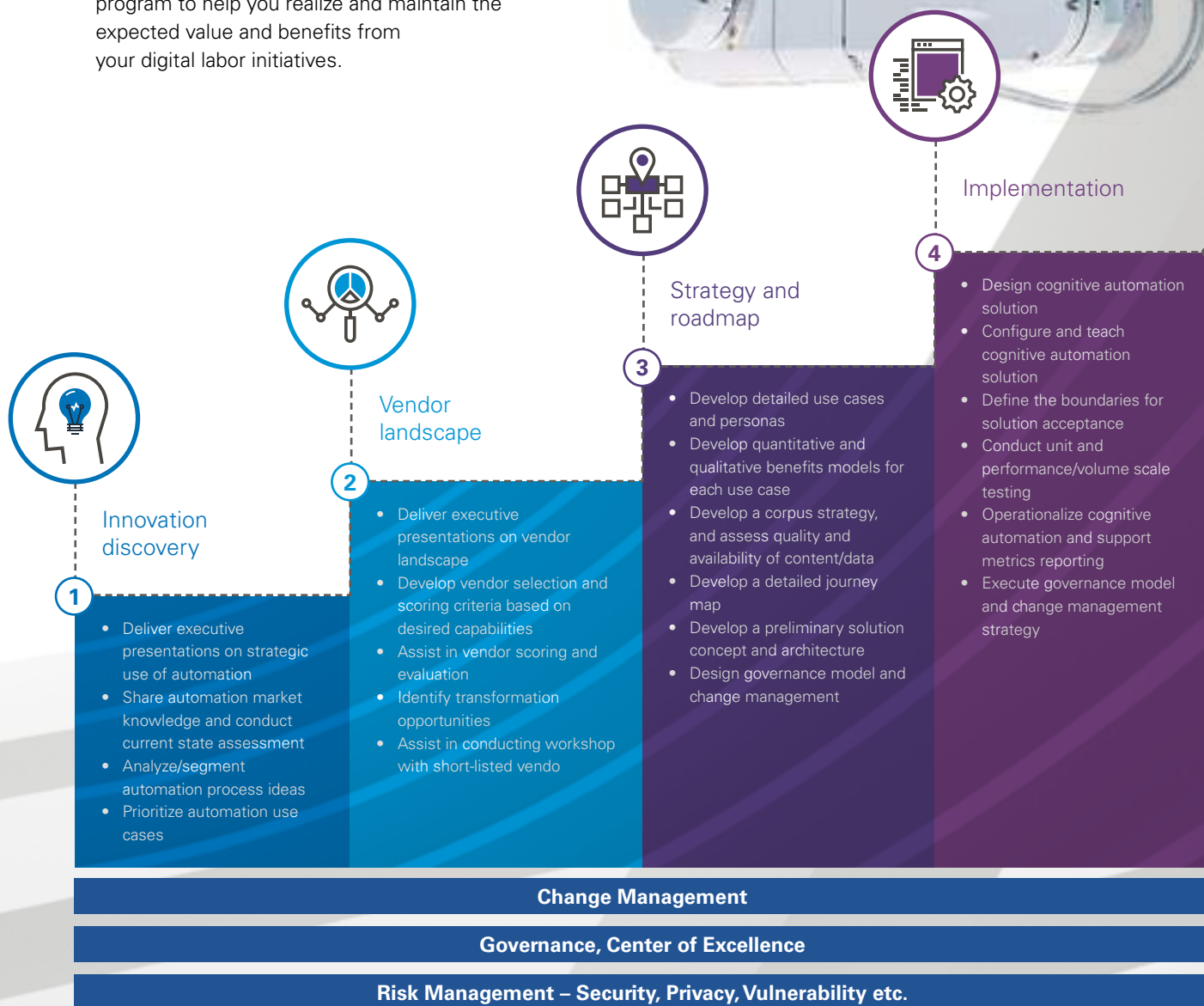
"...the firm's IT Capability Model ... guides consultants through an assessment of the IT department, determines the client's overall maturity level, and ultimately serves as a tool to prioritize and define initiatives."

Source: The ALM Vanguard: IT Strategy Consulting, ALM Intelligence, January 2017

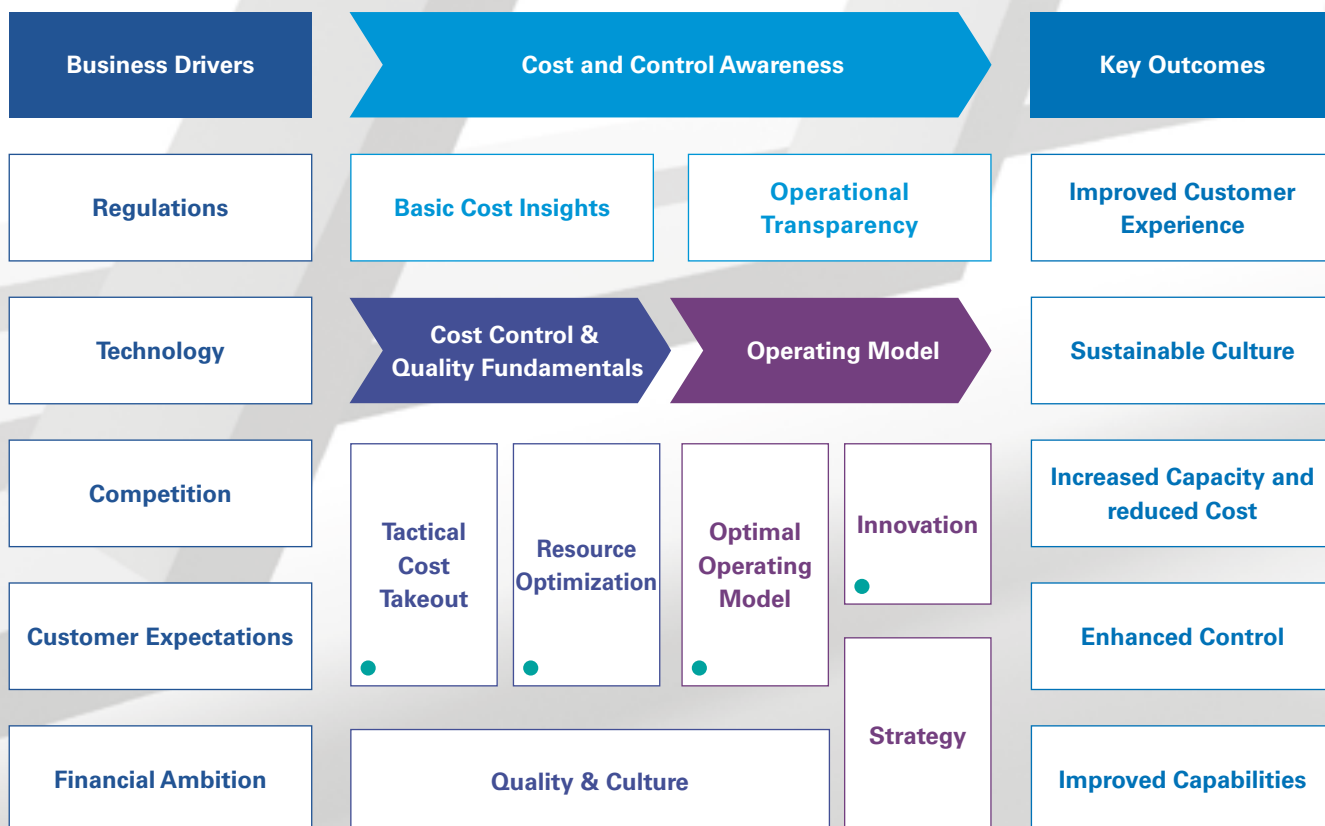


KPMG’s holistic approach – from strategy through execution – will assist you on each step of your journey towards realizing the benefits from digital labor by:

- Identifying priority areas for technological transformation
- Developing a multi-faceted strategy and roadmap for your workforce of the future
- Selecting the right providers and partners for your unique needs
- Establishing a governance strategy and program to help you realize and maintain the expected value and benefits from your digital labor initiatives.



As organizations move from a “campaign” mode to prove that digital labor works into a BAU mode, it is important to embed digital labor capability into the transformational toolkits of the organization to maximize business benefits while reducing operational risks.



● Levers where digital labor should be considered

A case in point: Digital labor in Financial Services





Digital labor solutions can cut costs for financial services firms by up to 75 percent.

“In the next 15 years, it’s likely that 45 percent, and maybe up to 75 percent, of existing offshore jobs in the financial services sector will be performed by robots, or more precisely, robotic process automation (RPA),” stated Cliff Justice, KPMG LLP (KPMG) Advisory principal. “That should translate into enormous costs savings of up to 75 percent for firms that get on board.”

The potential benefits don’t stop there. “Success in today’s complex global financial markets requires unprecedented levels of speed, accuracy and cost efficiency beyond what a human workforce can provide,” observed Bill Cline, KPMG Advisory principal. “That’s why firms in the financial services markets are increasingly turning to digital labor and artificial intelligence (AI)-driven cognitive automation to transform their businesses.” As technology improves, robots will be able to do more sophisticated tasks faster and more efficiently than human workers.

“Businesses that don’t start taking steps now to integrate robotics and cognitive automation into their operations will not only find themselves at a huge disadvantage, they likely will be as obsolete as the employees that the robots have replaced,” says Justice.

“Although capital markets have been expanding globally,” observes Cline, “there’s been an increase in competition from traditional competitors as well as from disruptive new entrants into financial services. And some of these new entrants are much more nimble and tech savvy than established firms with legacy infrastructure to support.”

“This increased competition, together with the ever-mounting pressure to reduce costs, means that it’s not just a matter of working harder any longer, it’s a matter of working smarter.”

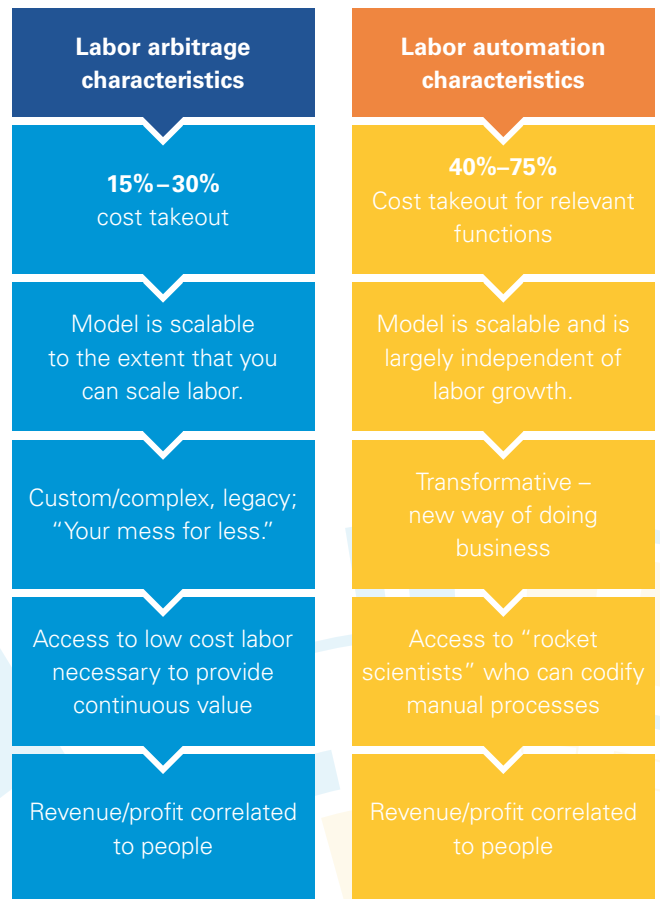


Figure 1: Benefits of labor arbitrage vs labor automation
The chart above compares the characteristics and benefits of labor arbitrage and labor automation

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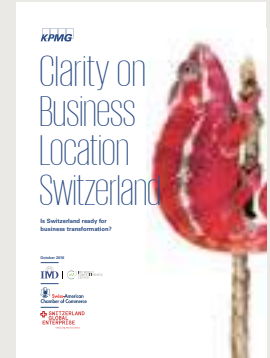
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