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Capitalizing on robotics

Driving savings with digital labor

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Digital labor, a term that encompasses robotic process automation, is the application of software technology to automate business processes ranging from transactional swivel-chair activities to more complex strategic undertakings.

For most organizations, it is no longer a question of if, but more about when, where, and how fast they can apply digital labor as a differentiator. Answers to those questions often rely on understanding the financial investments required and setting expectations on the timing and magnitude of the associated returns.

Understanding the investments and expected returns for digital labor is complicated by the fact that no two automation opportunities are the same—i.e., your mileage WILL vary. Furthermore, digital labor can be categorized into three different classes—each requiring different investments and providing returns—varying not only in magnitude, but also in the drivers that impact those savings.

This paper suggests some answers to this financial puzzle by identifying and exploring those financial considerations that are common to all digital labor projects, as well as those that are more specific to each of the three classes of digital labor.

If you have not yet started implementing digital labor, it is time to catch up with your competitors. These days, it is pretty much a given that organizations will save money when automating business processes with digital labor. But even for those organizations that have begun the digital labor journey, the answer to one elusive question often remains—am I saving all that I can? How can organizations best position themselves to capitalize on the savings achievable through digital labor implementations? This paper identifies common savings drivers for digital labor initiatives in general, as well as identifying those savings drivers that are uniquely applicable to each of the various classes of digital labor.

Before setting out on this digital labor journey, it is beneficial to identify and address concepts than can impact overall savings—the foundational savings drivers:

1. Do we have clear executive sponsorship for the initiative?
2. Are we prepared for what could be a substantial impact to our organizational structure—organizational change management, training, etc.?
3. Are we thinking beyond the immediate? Do we have a well-defined plan and strategy for labor automation—both near term as well as long term?
4. Is there a defined approach to who and how we will govern:
   - —The resulting automation capabilities?
   - —The automation initiatives moving forward?
   - —The changes in our business and/or technology?
5. Have we gained a basic consensus on mitigating security and risk concerns?

As the journey begins, the considerations get more tactical and detailed:

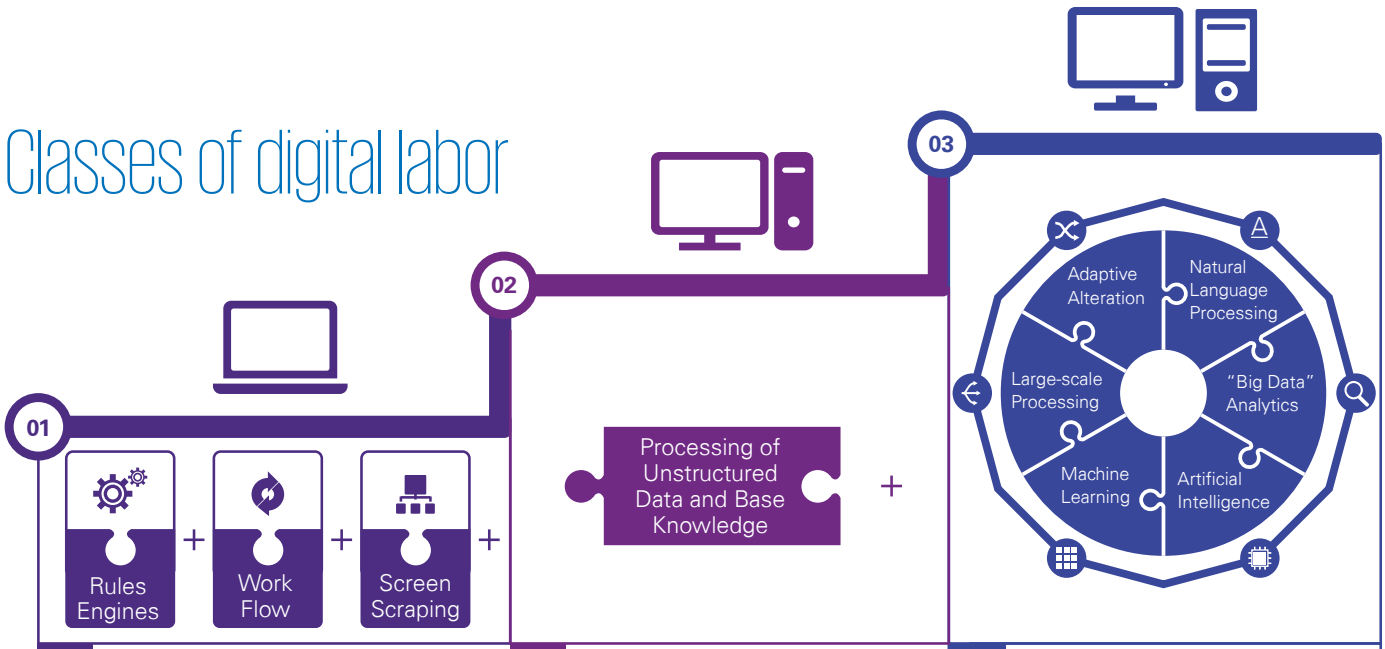
1. Have we limited our automations to a specific class of digital labor that aligns both with the opportunities for automation and the appetite for technology?
2. For each class of digital labor being leveraged, do we understand the key characteristics and savings drivers?
3. Given the specific savings drivers, do we have a strategic approach to identifying and prioritizing candidate processes for automation?
4. What steps might we take to increase these savings and/or accelerate the path to the savings?
5. When do we declare success and move on to the next automation initiative?

While there may be a lot to consider when first venturing into digital labor, it is these considerations that help provide a more strategic approach to ensuring an organization is appropriately benefiting from its digital labor initiatives. The temptation is great to simply "jump in" and get started, and indeed, taking action is far better than paralysis by analysis. At the same time, the proper amount of up-front planning will pay off in the long run, and digital labor, like any strategic initiative, is better viewed as a journey rather than a race.

The spectrum of digital labor automation

When discussing the sources of savings from digital labor automation, it is helpful to have a basic understanding of the three primary types of automation. Each addresses a different target opportunity and leverages tools with differing capabilities.[1]

Classes of digital labor



1 Basic Robotic Process Automation (RPA)

- Macro-based applets
- Screen scrapping data collection
- Work flow
- Vision-type building blocks
- Process mapping
- Business Process Management (BPM)

2 Enhanced Process Automation

- Built-in knowledge repository
- Learning capabilities (e.g., 'learning assist' by watching and recording)
- Ability to work with unstructured data
- Pattern recognition
- Reading source data manuals (e.g., Natural Language Processing (NLP)

3 Cognitive Automation

- Artificial Intelligence (AI)
- Teaching versus programming
- Natural language recognition and processing
- Self-optimization/self-learning
- Digestion of super data sets
- Predictive analytics
- Hypothesis generation
- Evidence-based learning

1 "Demystifying Digital Labor – the Layman's guide to the spectrum of robotics and automation," David B. Kirk, June 2016, http://www.kpmg-institutes.com/institutes/advisory-institute/articles/2016/06/demistifying-digital-labor.html

Basic robotic process automation

Class 1, which we refer to as "Basic Robotic Process Automation," leverages several "tried and true" technologies to automate rudimentary swivel-chair processes found in almost all organizations today. The tools leverage capabilities such as work flow, rules engines, and screen scraping/data capture to automate existing manual processes. An ideal process candidate for basic automation will have these types of characteristics: repetitive in nature; well-defined explicit activities that are easily organized and sequenced; requires little to no tacit knowledge or cognitive assessment; involves multiple systems with data entry and extraction; uses relatively structured and consistent data; and has something that can be used as an "electronic trigger" that would signal it is time to run/start the process.

Enhanced process automation

Class 2, which we refer to as "Enhanced Process Automation," leverages additional capabilities to those discussed in Class 1 to address automation of processes that are less structured and often more specialized. Tools and platforms supporting Enhanced Process Automation offer some combination of capabilities such as "out-of-the-box" (built-in) knowledge; an understanding of natural language and thereby the ability to consume and leverage unstructured data (such as e-mail, professional articles, etc.); an automated learning capability (e.g., "watch and learn"); and e-bonding capabilities (i.e., an out-of-the-box connector) to other well-established software platforms. With the abilities described above, candidate processes for automation will likely have all or some combination of the following characteristics: a process utilized by many or all organizations, thereby making it possible to leverage out-of-the-box knowledge; a reliance on a significant amount of unstructured data; a robust set of explicit processes/activities; and an environment that supports feedback and/or teaching the robot.

Cognitive automation

Class 3 is "Autonomic/Cognitive Automation." Cognitive systems are systems that combine advanced technologies such as natural language processing, artificial intelligence, machine learning, and data analytics to mimic human activities such as perceiving, inferring, gathering evidence, hypothesizing, reasoning, and interacting with human counterparts. Cognitive systems are "taught" rather than programmed —a process that can take months to years depending on the complexity of the problem domain. These solutions require the largest investment in time and dollars and simultaneously have the greatest potential to transform the way an organization operates and can provide a true competitive advantage.

Savings drivers

The three automation classes:

- **Address different target processes**
- **Leverage different tools and platforms to enable automation**
- **Have different considerations when determininig "how much should I expect to save, how significant is my initial investment, and how fast will I recover that investment?"**

There is no magic formula to determine how much every project will save or how fast the payback will occur. Successful digital labor automation projects typically see cost takeout in the range of 40 percent to 75 percent and have a payback that varies between several months and several years. Your mileage may vary—the nature of your organization and the culture of your company play a key role in the potential savings from Digital Labor Automation (DLA). An organization's traits and culture are just two of the common drivers that typically indicate the likeliness of receiving larger savings and faster paybacks. Some of these savings drivers are common across all classes of automation, while others are more class-specific. In the sections that follow, we cover the various types of indicative drivers that can impact the financial benefits of implementing digital labor.

Foundational savings drivers

Regardless of the size, complexity, or length of your automation initiative, there are common drivers, or perhaps better practices, which will impact overall success and financial returns. Some of the key drivers include:

Executive support

Higher levels of executive support and having an appropriate "culture" lead to increased savings. Executive vision, leadership, and communication are essential to create the appropriate culture to support successful process automation. The resulting culture includes a corporate-wide vision to embrace and improve automation and leverage best practices rather than piecemeal initiatives that duplicate efforts and individually experience their own level of "lessons learned." A "cultural" approach to automation includes actively rewarding individuals who show innovative support for automation and discourages an attitude that is combative to change. This support typically includes honest communication, which acknowledges that while some positions/roles will be eliminated, the elimination of the mundane repetitive task will allow the restructured workforce to focus on strategic and competitive initiatives to make the business more successful—thereby empowering their employees to "make a difference" and experience more job satisfaction.

Planning and strategy

Better quality of planning and a well-defined automation strategy lead to overall increased savings. Organizations that approach process automation with discipline and forethought achieve greater savings than organizations that do not. This kind of corporate-wide automation strategy allows for a unified approach to tool selection, best practices, governance, etc., and avoids a siloed approach by each business unit. This includes having a sourcing strategy on where to own (purchase), rent (SaaS/PaaS), or outsource the automation capabilities. It also includes selecting the right class of automation for a specific domain or process. Finally, it includes the up-front planning to help maximize the savings from each automation initiative and prioritize the automation portfolio based on overall return to the entity.

Automation governance

Better quality of automation governance leads to increased savings. This should not be translated to having a larger quantity of governance leads to increased savings (i.e., "quantity of governance" is not linearly proportional to savings). Leveraging digital labor, like any key business initiative, should be managed as a dynamic capability that can actively respond to changing business needs. Properly established governance practices can help ensure the digital labor is able to evolve in a controlled fashion as the organization and business requirements evolve. In addition, automation governance should provide a focus on continuous improvement of automation results—e.g., is the automation addressing the business to the full extent possible; is "business as usual" setting the bar too low; are we capturing the associated "learnings" into the automation on a regular basis? Finally, proper governance translates to periodically assessing the right level of retained staff "post-automation" and verification that shadow organizations do not continue to exist that perform the same work that has been automated.

Risk and security constraints

Risk and security constraints often reduce savings and increase the time to recover investments. This is particularly true when the risks and security concerns are identified after the fact. No one will argue the importance of diligent risk management and proper security protocols. However, it is vital to understand all of the risk and security constraints up front and have a mitigation plan that all stakeholders have agreed to before rolling out the process automation(s). Not having this agreement up-front can seriously undermine efforts that have already been started, result in a patchwork-type implementation, concerns about the level of "safety," and reduce or entirely remove the savings potential—in some cases even resulting in an unnecessary end to the automation initiative itself. This is especially important in high-risk adverse organizations and industries.

Automation integration

Integration with other automation efforts leads to increased savings. Just like business process optimization would suggest that the best process is a truly centralized end-to-end process with an identified process owner, automation also benefits from integration across the enterprise. While process automation (particularly within class 1) can indeed be implemented by automating "select" activities within a process, larger savings result from extending automations deeper into the process and even allowed to extend across business unit boundaries (i.e., the "hire to retire" single process viewpoint). Organizations should look for opportunities to leverage existing and planned automation efforts with other shared systems and processes. This integration can include internal as well as external partners.

Enterprise-wide approach

The ability to influence, or possibly mandate, the automation adoption approach reduces the payback time and leads to increased savings. If business units all buy in to automation individually, the multiple benefits of a centralized automation approach can be greatly reduced due to duplication in efforts across the various lines of business in areas such as tooling, training, lessons learned/best practices, governance, etc. When automation has enterprise-wide buy-in, the resulting model can allow each business line to implement automation at the pace that is appropriate. Each business unit can leverage shared resources in a centralized delivery center for technical support, specific automation expertise, market intelligence, risk and compliance, standardized tools, templates, and methodologies, etc. In such a model, the dependence of the various business lines on the centralized delivery center may actually decrease over time as the business resources gain increasing automation knowledge through direct hands-on experience. In such a scenario, automation can enjoy quicker adoption time frames and a faster return on investment.

Savings drivers (continued)

Basic process automation drivers

As a general rule, increased savings will occur faster with basic process automation than it will with the other types of automation. These are the leading savings drivers for basic process automation:

High-volume activities

Automation of processes that are high volume (i.e., executed frequently) result in higher savings when automated. The higher the volume, the more the costs of automation can be spread over the total number of transactions. Processes that are not high volume can still be good candidates for automation due to other qualifying issues such as the need for improved quality or simply the cost of executing the process on a one-time basis. But once an automation is created, the "volume factor" essentially acts as a multiplier for the per-transaction savings. Lower-volume processes that can be easily automated may be better candidates for automation once the higher-value processes have been exhausted.

Concentrated activities

Activities that are performed within a single organization tend to produce more "true" savings, depending on the organization's definition of savings. The ability to reduce head count and not just increase overall productivity is often key to many finance organizations' view of direct savings within a business model. As an example, automation that saves five minutes per week for employees filling out expense reports may improve morale and quality, but will typically not lead to a reduction in head count (specific FTEs) for the organization. That being said, overall improvements in process efficiency can often, and should often, be considered enough to justify the business case.

Inconsistent process execution

Processes that have suffered from a lack of consistent execution, and thereby lack of consistent results, will result in higher savings when the automation results in both a reduction in staff and an improvement in quality. These processes, once automated and when given the same inputs, will always result in the same outcomes—unlike a manual, inconsistently executed version of the same process. Inconsistency means poor quality, and poor quality typically manifests itself, sometimes only "down the line," in additional costs and complexity. The automated process will provide consistent results, and therefore a higher-quality outcome than having multiple individuals involved in running the process. This is due to the fact that as well trained as people are, they tend to have their own interpretations of process guidelines or "just plain old, how it really should be done." In the end, the increased quality resulting from automation leads to an associated cost savings.

Codifiable activities

Processes that involve codifiable explicit activities result in higher savings. Activities that lend themselves easily to being defined by business rules or laws, or are otherwise arranged systematically, can be automated with less effort. Processes that are not easily codifiable may be candidates for cognitive process automation or possibly reengineered into a more codifiable process.

Low cognitive assessment

Activities that involve low cognitive assessment result in higher savings. Activities that do not typically require human judgment are automated more easily at a basic process automation level and more easily allow for thorough process automation. In some cases, deeper analysis can deconstruct the human judgment into a handful of related decisions, which can then be reasonably automated at the basic process automation level. In other cases, the decision may be to use other types of automation or even no automation at all.

Structured/consistent data

Processes that use structured/consistent data result in higher savings. The automation of the processes with reliable data tend to have increased savings due to decreased requirements up front. In some cases, a data cleanup is necessary to implement digital labor. This will reduce the initial savings. Alternatively, robust error checking and correction can be implemented in cases in which input data cleansing is not possible, and the effort to develop the error detection and correction are warranted by the resulting quality and cost benefits.

Multiple systems

Processes that involve multiple systems often result in higher savings. Since there are multiple systems accessed and updated to acquire, process, and update all of the required information, there are likely to be more significant efforts associated with the process, and therefore greater savings potential in automating the process. Furthermore, since digital labor technology uses existing systems, there is no need for expensive systems modification or integration. Automation often results in greater data consistency between different systems since the same process is used to update the data in each system. And the "robot" does not get impatient with how long it takes to make a complete and accurate update.

Quality issues

Processes with quality issues often result in higher savings/financial improvement. If quality issues (e.g., human error) lead to lost sales or significant rework, there is a higher potential for savings/financial improvement with automation. Many quality issues are the result of current processes that are inadequately defined, interpreted, and implemented, or quite simply not well understood. A proper digital labor implementation will ensure the process has been well defined and that process variances have been resolved and documented. The resulting automation will essentially "codify" the redefined process, helping to ensure a higher quality outcome that aligns with the associate business requirements.

Savings drivers (continued)

Enhanced process automation drivers

Although some drivers for enhanced process automation build on the same drivers as basic process automation, the drivers start to evolve. Enhanced process automation tends to be more expensive than basic process automation, but as a result of built-in learning support, savings also tend to increase over time more with enhanced process automation than they will with basic process automation. The leading savings drivers for enhanced process automation are:

Industry/Process-specific starting points

The availability of industry/process-specific starting knowledge increases savings and reduces payback time. Systems that have an existing library of standard process automations provide a quicker road to savings for most organizations. Examples of this includes IPsoft[2] or Arago[3] that have an existing library of process automations for IT-related processes. This type of "out-of-the-box" knowledge is only applicable when a digital labor tool is targeting a specific functional area, such as IT, Finance and Accounting, etc.

Complex processes

Complex processes tend to have higher savings with enhanced process automation. Processes that require multiple iterations, or have complex branching logic, tend to be more prone to errors when conducted by human process owners. Because there is a higher chance of human error, there are therefore greater savings opportunities when automated through tools that can leverage built-in knowledge or learning technologies to capture work flows versus manual step-by-step process coding from scratch. In addition, these same learning capabilities of enhanced process automation tools will allow these processes to be refined and improved over time to further increase the savings.

Automation expertise

Organizations with a strong investment in automation expertise tend to have greater savings using enhanced process automation. This does not mean that simply hiring a large group of people leads to greater savings, but hiring the right amount of experienced people, providing reskilling opportunities for existing employees, and leveraging automation suppliers as appropriate, can lead to automation savings. Enhanced process automation requires a stronger feedback mechanism to leverage the learning capabilities to continually increase savings, so having the right skills on hand is essential to continuous improvement.

Rapidly evolving processes

Processes that are rapidly evolving will tend to have higher savings with enhanced process automation. Processes that change frequently can benefit from the autolearning capabilities rather than formally redesigning the solution each time as with basic process automation. Furthermore, updates to the automation bot to reflect process changes are immediately reflected in each such bot launched to perform the associated process, unlike the human model, which requires each human executing the process to be retrained to incorporate the updated requirements. As such, automated processes should result in reduced training expenditures as the number of people supporting the process decreases.

[2] http://www.ipsoft.com/ipcenter

[3] Arago shifts gears for growth, brands its artificial intelligence software HIRO, William Fellows, September 2, 2016

Higher overall automation

A higher amount of automation tends to increase overall savings. As the overall costs for automation tools and support increases with enhanced process automation, the ability to spread the fixed costs out over more processes, or more activities in a single process, increases the savings associated with each automation. These savings should be even greater for organizations with an automation strategy that selects a few strategic automation partners, rather than a new tool for each department or automation opportunity (i.e., some level of agreed-to standardization).

Poor documentation

Processes with poor documentation tend to have higher savings with the enhanced process automation tools that provide some degree of learning capability. Processes that are not well documented, but can be taught to the tools through observing individuals performing the process are likely to have greater savings from enhanced process automation due to the tool's ability to "watch and learn," as many of these tools can. The caveat is you need to be careful you are properly capturing the process you want to be implemented, as digital labor (bots) will fail at digital speeds when improperly configured.

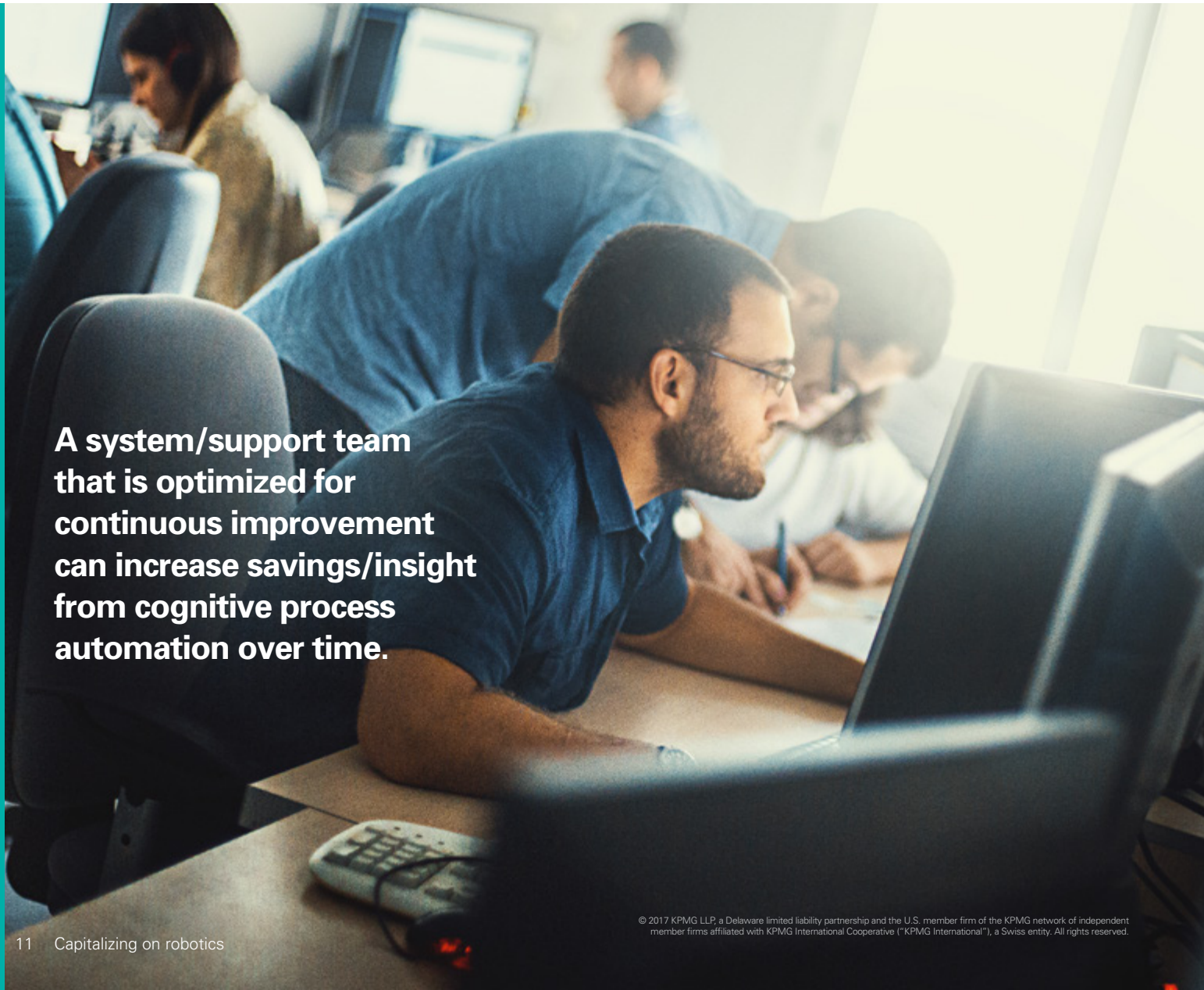
Savings drivers (continued)

Cognitive process automation drivers

Like enhanced process automation, the implementation of cognitive process automation is generally more expensive than the previous class, but also offers enhanced capabilities for providing savings and can be truly transformative. This type of automation relies on a different skill set and a different focus to attain these increased savings. The leading savings drivers for cognitive process automation are:

Natural language

Processes that rely on source documents that generally exist in an unstructured data format (i.e., natural language such as e-mails, text documents, etc.) will have greater success and savings using cognitive process automation. The abilities of cognitive systems to read and understand data from natural language documents increases the information available for analysis and evaluation. This can change the automation behaviors by increasing the system's underlying "knowledge," which leads to greater savings for appropriate applications compared to basic or enhanced process automation.



A system/support team that is optimized for continuous improvement can increase savings/insight from cognitive process automation over time.

Automation experience

As with enhanced process automation, organizations with a strong investment in automation expertise should expect to have greater savings opportunities supporting cognitive process automation. Cognitive systems, which are learning systems are significantly different from systems we program using languages such as C++ and Java—making them more difficult to integrate into our current thinking and business processes. The skills to effectively join business processes and cognitive process automation are necessary to maximize the return on investment in cognitive systems. Most organizations will not have in-house cognitive expertise, and this skill is not rapidly developed. As such, internally developing cognitive solutions will typically require new hires, or "rented" expertise.

Highly regulated domains

Domains that are highly regulated and/or have frequent changes in requirements should have higher savings using cognitive process automation. The ability for cognitive systems to assimilate and analyze new and proposed laws/rules/regulations in their natural language will reduce the time and cost of identifying impacts and potential alternatives to current processes.

Quality source documents

The availability of a sufficient amount of quality source documents will increase savings by enhancing the "teaching" of the cognitive system. Since the ability to quickly process large amounts of documents is one of the key strengths of cognitive process automation, the overall value and savings potential will be reduced if the amount of natural language documents and/or relevant data available to process is relatively small. Additionally, if the quality of the source documents is poor, the results will not be as conclusive as they would be with higher-quality documents, leading to a slower learning process. However, cognitive process automation systems are designed to evaluate data and document source quality over time based on past results and to improve the selection of documents necessary for results.

Continuous improvement

A system/support team that is optimized for continuous improvement can increase savings/insight from cognitive process automation over time. Cognitive process automation will likely take the most time to produce savings, but it also has the ability to provide the most profound insights when the continuous improvement capabilities of the system are properly tuned and supported. Without a proper feedback loop built into the system, the potential quality of results and resulting future value will never reach its full potential. It is critical that a cognitive system has the ability to interpret when outcomes are correct versus incorrect.

Contextual decisions

Processes that involve consultative work with embedded contextual decision making will benefit best from cognitive automation. In such scenarios, more of the process can be automated when the underlying tools are capable of supporting cognitive decisions in addition to the more explicit transactional activities. Other classes of digital labor automations would be incapable of automating these cognitive components of the process, thereby resulting in reduced savings as the process automation would require integrated handoffs between the automation bots and their human counterparts. That being said, there are indeed times where such a handoff is the best practice to achieve the appropriate level of "checks and balances" between human decision makers and the underlying automation bots.

Final thoughts

Now it is time to take action and realize your share of the automation savings:

1 Prepare your organization for automation:

– Verify the right executives are committed and have strongly communicated their support for a unified approach to automation.

– Ensure an automation strategy is in place including the initial approach, initial tools, and a streamlined approval process.

– Implement a high-level automation governance program focused on results, not restrictions. Leverage the appropriate amount of controls while simultaneously recognizing change is inevitable.

– Get risk and security involved as soon as possible. Understand the issues and develop appropriate mitigation strategies before diving head first into automation.

– Be prepared to use the appropriate tactics for your culture to motivate, mandate, influence, replace—whatever it takes to keep the momentum going in the right direction.

2 Pick a few solid pilots that are easy wins:

– Basic process automation is often a good first step.

– Take the time to implement the first few projects correctly, and always strive to keep the ball rolling forward.

– Do not force the wrong tool into an automation opportunity simply because you already "own the license." Use the right tool for the opportunity, but balance this with not having too many automation tools.

– Learn from mistakes and celebrate the successes.

– Communicate success from initial pilots to key executives throughout the company.

There has never been a better time to move forward with process automation. Every month delayed is a month's competitive advantage for your leading-edge rivals to implement and improve their digital labor automation advantage over you.

3 Pick up the pace:

- Look for new areas for automation that show the greatest savings and/or can leverage the approach used with the pilots.
- As your automation efforts blossom and demonstrate success, be prepared for the onslaught of requests. Have a clear approach to prioritizing opportunities across the enterprise.
- As automation initiatives expand across the enterprise, look for additional savings opportunities from wider systems integration and through process automation.
- Consider building an automation Center of Excellence to centralize automation expertise.
- Look for opportunities to increase your level of automation and increase your savings and quality of business information.
- Brainstorm ways that cognitive automation could give your organization a competitive advantage.
- Stay up-to-date on current trends and make certain that there is a spirit of continuous improvement in your automation efforts.

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