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AI–the new black? The final frontier of productivity

Artificial Intelligence appears to be the new holy grail or the "new black" of automation, as it was described by UiPath's Chief Robotics Officer, Boris Krumrey, at the 8th NASSCOM GIC Conclave 2017.

The quest for defining digital labor has been gaining speed during the past couple of years and integrating AI and cognitive capabilities to an RPA platform is the next step in the quest for increasing the productivity, agility, and efficiency of human workers. Businesses have already tapped into the immense potential that RPA has to offer, but adopting and integrating something as revolutionary as AI is a completely different story.

This paper aims to identify how AI-powered digital labor could be implemented, what the main challenges are, and how both companies and individuals can properly prepare to ensure these technologies are successfully deployed.

DIGITAL LABOR EXPLAINED

Automation is not a modern concept. Historically, it has been a part of the society for thousands of years, being first mentioned in Homer's Iliad. Its main meaning, that of using tools to increase human power and productivity, has not changed dramatically from then to now.

The difference consists of the way in which these "tools" work: it all started from those powered by humans (the wheel, the lever, etc.), to those powered by natural elements (waterwheels, windmills, etc.) to the machines of the Industrial Revolution (steam engines, mechanical machines etc.). Now, we are at a stage where automation is coded in software robots that perform repetitive, rule-based tasks through a technology called [Robotic Process Automation](#) (RPA).

Automation is constantly evolving and does not stop at RPA. Artificial Intelligence could potentially be a key element in creating digital labor. It has already started to be integrated into areas such as machine learning, cognitive and computer vision, conversational technologies, human-to-machine user interfaces, predictive data analytics, RPA, cybersecurity, IoT or intelligent monitoring. Nevertheless, its effects are not as invasive as they might potentially be in the future.
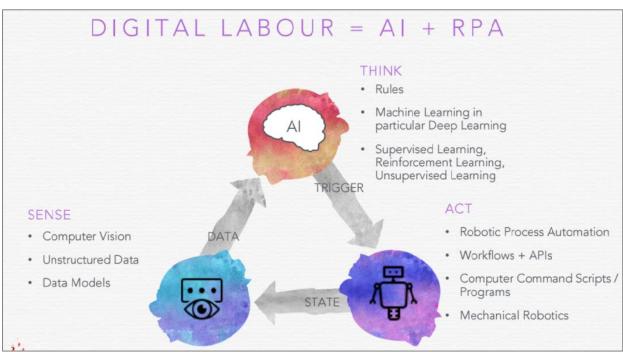
Even though RPA is only now starting to mature, adding AI to it will allow the creation of a true digital workforce that will automate activities typically characteristic to knowledge workers. An application such as [Intelligent Process Automation](#) converges AI, RPA and other cognitive tools to enhance productivity. The quality of work will provide service continuity and availability, and will reduce costs. AI will be responsible for the "thinking" component of the digital workforce. It will create the new rules for machine learning and will perform supervised learning, reinforcement learning, and unsupervised learning. AI will trigger RPA, which will be handle workflows and APIs, computer command scripts and mechanical robotics.

Thus, RPA will embody the component that "acts". Other elements such as computer vision, unstructured data or data models will embody the "sensing" component. All this data will be then fed into the AI, closing the circle, as illustrated in the image on the following page. Embedded automation or inbuilt AI are technologies that follow a structure similar to the one described above. These could work in both attended and unattended modes.

The key aspect is that AI cannot function on its own. It would be like a brain without the arms or the legs. To deliver at its full potential, AI needs RPA.

DIGITAL LABOUR = AI + RPA

THINK
- Rules
- Machine Learning in particular Deep Learning
- Supervised Learning, Reinforcement Learning, Unsupervised Learning

SENSE
- Computer Vision
- Unstructured Data
- Data Models

ACT
- Robotic Process Automation
- Workflows + APIs
- Computer Command Scripts / Programs
- Mechanical Robotics

TRIGGER

DATA

STATE

Nevertheless, we are still far from achieving fully fledged digital labor. Now, Artificial Intelligence acts as an smart tool that acquires new skills, but without providing a lot of change. In one to two years, AI will be in a more advanced stage and will act as a cognitive assistant, interacting with and servicing humans, and processing unstructured data. In three to five years, AI will have an identity. It will gain true self-learning capabilities and will be fully adaptable to perform reliably specific tasks. In terms of autonomy, it will be independent at a level permitted by a human.

AI IMPLEMENTATION CHALLENGES

There is an actual paradox in terms of trusting and controlling an AI solution. There is a constant struggle between retaining control of the AI and trusting its autonomy because humans want it to be highly predictable.

An employee can be trusted to perform as expected by trying to train him or her to deliver results as a robot and by doing personal performance controls. But how do humans trust a robot or any automated process, for that matter, to perform as expected?

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For one, there is a difference between an [RPA robot](#), as one of those developed by UiPath, and a robot as an AI solution. While the RPA robot is programmed to perform certain tasks, the AI solution is trained by observation. It is no longer a question of trusting an algorithm, but of trusting a machine. Treating the AI solution as a machine that acts as a human to react intelligently to exceptions or unexpected changes is key. Trusting AI machines will take time and requires transparency and analytics right from the implementation get go. Finding a transparent method that helps humans observe how the machines learn and use the knowledge the correct way and take the right decisions will be no easy feat.

Besides trust, another challenge to take into consideration when implementing Artificial Intelligence is devising the best reward system. There are three possible solutions for this issue: giving up the reward system—which would require a lot of data and time, creating a process-specific reward system or implementing a human supervision system.

On the one hand, there isn't any general reward system that can be applied to any situation. There are general rules, but the reward system needs to be very specific to the process it is applied to. The process-specific reward system could potentially allow the AI system self-

train within 48 hours. On the other hand, with human supervision, the system will need a lot more time until it learns how to act. Next, there is the matter of properly implementing AI to make it efficient.

Understanding that preparation and time are fundamental to successfully implementing AI is key.
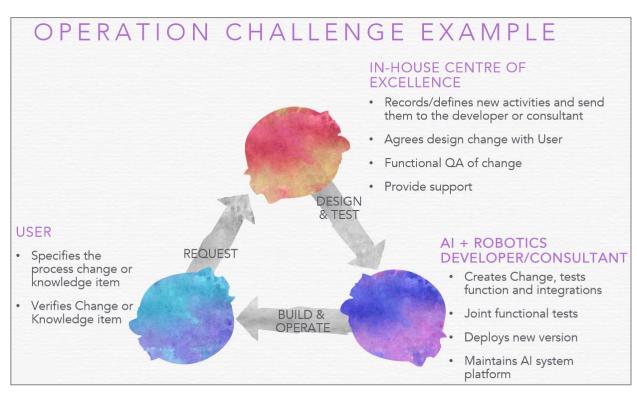
In terms of doing a business and process analysis, there needs to be an understanding of what processes can be automated using AI and RPA, because not all of them are suited to be automated.

Then, enterprises must set up target operating models that define the organizational change, implementation and communications plans that allow engaging with the key subject matter experts. They have to devise governance programs, manage communication to key stakeholders, define the right working methods, and track progress and transformation KPIs.

Next, organizations must define and implement the technology integration and infrastructure provision plans, as well as the robotic user authorizations. Finally, setting up [Centers of Excellence](#) (CoEs) in charge of implementing and managing automation as quickly and as efficiently as possible is also essential.

OPERATION CHALLENGE EXAMPLE

IN-HOUSE CENTRE OF EXCELLENCE

- Records/defines new activities and send them to the developer or consultant
- Agrees design change with User
- Functional QA of change
- Provide support

DESIGN & TEST

USER

- Specifies the process change or knowledge item
- Verifies Change or Knowledge item

REQUEST

AI + ROBOTICS DEVELOPER/CONSULTANT

- Creates Change, tests function and integrations
- Joint functional tests
- Deploys new version
- Maintains AI system platform

BUILD & OPERATE

AI OPERATING CHALLENGES

Organizations need to realize that fear of change and lack of personal employee motivation are real and can impact adopting automation successfully. Artificial Intelligence must not be viewed as a threat or as taking away work, but as a means for being more productive and for tapping new capabilities.

Other major risks reside in operating AI. Training can either take too long or can be too complex, and there is the fear that the technology cannot be trusted and controlled, as well as not knowing the full impact of AI taking the wrong decision.

Furthermore, AI capabilities can potentially be too narrow or too specialized to cover the full complexity of a human knowledge employee. Other challenges reside in defining who is responsible, from a legal standpoint, when AI causes damage due to bad decision-making and integrating AI in countries that, from a cultural standpoint, are less risk-averse or that view AI as a threat to their social status.

Finally, but just as important, a proper training of the AI system takes time and responsibility. Organizations must keep an eye on value misalignment.

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Training the AI system common sense to prevent it from taking fatal decisions is ultimately detrimental.

As seen in the previous illustration, operating Artificial Intelligence could function with the collaboration between the in-house Center of Excellence, AI and robotics consultants, developers and users.

The CoE records and defines new activities and sends them to the consultants or developers, while it also agrees to the design change with users and provides support.

Consultants or developers create, change and test the platform's functions and integrations, perform a joint functional test and maintain the AI system platform. The users specify the process changes or the knowledge items and then verify them.

A FEW FINAL WORDS...

A mix of AI and RPA, along with a full cooperation with humans is inevitable. But the organization must not take its success for granted. To fully benefit from the limitless potential of the future digital labor, enterprises need to grant its development and adoption the right amount of time, attention, analysis, preparation and thought.

If the Human-to-Machine conundrum is solved, applying AI to countless business processes will become simpler and faster, and it will be easier to accelerate and automate the transformation process.

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