Robotic Process Automation:

Why to Implement and How to Do It Effectively

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RPA (robotic process automation) is one of the business process automation technologies. If to describe it shortly, RPA bots learn what people do to solve working tasks and replicate those actions, which allows delegating monotonous repetitive work to bots. But now we will take a closer look at the RPA to see how it works, why is it useful for businesses, and how to implement it.

Why to implement

RPA allows

Along with the mentioned advantages, the RPA system is also scalable, flexible, and can easily interact with different systems via integrations and screen scraping.

The Implementation Process

Step 1: Data Gathering

The most important steps of process automation are data gathering and data analysis. The quality of repeated processes detection and accuracy of this job depends on how big the volume of your data gathered is, how it is encompassing the subject area, and how deeply you perform analysis.

Data gathering can be done by a specialist by diving into the subject area and finding patterns of user behavior. But when it comes to multiple numbers of working places (10 computers or more) time costs begin to prevail. And here automation of data gathering comes into play.

We created computer utility the main target of which is to run smoothly, gather all key metrics, and store them into the hard drive. It is run by a specialist at a specific time period when computer activity must be captured. For the grace of security, it doesn't transfer gathered data to remote servers. Our approach is to keep data safe and anonymized.

Here is what we capture:

- Computer identificator;
- Capture timeframe;
- States of system processes;
- Starts and quits of programs;
- Application/window titles;
- Timestamps of all events listed above;
- Width and height of the applications/windows;
- Mouse clicks and mouse button types;
- Mouse click coordinates;
- Keyboard strokes with support of combinations;
- Screenshots of mouse and keyboard events;

Also, it's important to have a description of jobs done by computer operators on this step. It will greatly help to identify activity patterns on the next step.

Please note that some significant space on a hard drive can be needed depending on the working activity and a number of screenshots capturing utility takes.

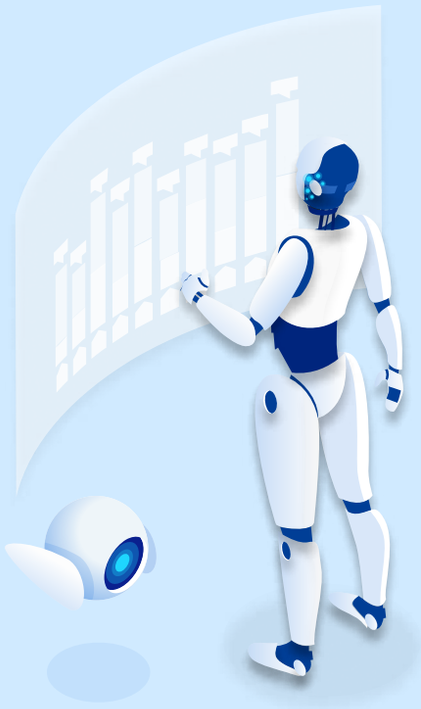
Step 2: Data Analysis

After data has been gathered it's time for a solid and accurate data analysis. Let's explain how we do it by details and by what means.

1. The first goal is to determine activity timeframes. It can be done by a quick scan of the logs gathered together by examining the description operators provide. By doing that we cut data in big data activity portions on the first iteration.

2. After that these portions are compared with the help of machine learning techniques to get a set of patterns with a similarity map. In short, we define uniques patterns both as big ones and small ones. Small patterns can be a component part of complex ones. Also, the similarity probabilities created for all patterns.

3. The next step is building visualization based on data from the previous point. This visualization helps to identify all the processes; to find the percent of similarities, differences between analogs; to setup what processes need to be automated with higher priority.



Data analysis helps to identify and set up priorities. It consults the customer if unusual rare patterns can be normalized to the patterns with bigger similarities. In this case, a high percentage of such patterns would be as automated as possible.

Automated data analysis solution is done on Python and uses the following data scientific libraries:

- Numpy and Pandas for manipulating data arrays;
- Difflib.SequenceMatcher for finding similarities;
- Sklearn for building machine learning models to help on the structuring of data;
- Seaborn for visualization of statistical data.

Step 3: Automation

The most fundamental unit of automation is a bot. Robots can be run from employees' desktops or from the cloud. Here are their key features:

Integrations

They are necessary for bot to work with your enterprise applications. It is also possible for the bot to screen scrape and still perform tasks. However, it is more reliable to have app integration as screen scraping tends to have a higher probability of causing errors. Most bots in the market work with legacy applications (though coverage depends from vendor to vendor), web applications, desktop applications and other major enterprise software including SAP, Citrix, Java and mainframe applications.

Programming interfaces

They are required because bots need to be programmed. RPA programming is relatively simple compared to other types of programming and there are code-free ways to program RPA bots. We have an RPA tools article in which we explain different ways of programming RPA bots in detail. Contact us to get it if you are interested.

There are also orchestration modules that facilitate the management of bots and processes. It allows you to start/stop or schedule bots and analyze bot activity. Orchestrators highlight issues that bots encounter and provide a dashboard for the processes that are managed by RPA.

Step 4: Result

RPA bots can use the operating system applications like a human user. RPA is too flexible for us to provide a full list of bot actions but here are some of the main things bots can do:

1.Launching and using various applications including:

- Opening emails and attachments
- Logging into applications
- Moving files and folders

2.Integrating with enterprise tools by:

- Connecting to system APIs
- Reading and writing to databases

3.Augmenting your database by scraping data from the web including social media

4.Data processing:

- Numpy and Pandas for manipulating data arrays;
- Difflib.SequenceMatcher for finding similarities;
- Sklearn for building machine learning models to help on the structuring of data;
- Seaborn for visualization of statistical data.

Bots can do these functions on virtualization solutions like Citrix or on the Windows environment. Most vendors do not support other OS environments like Mac OS or Linux. This is because most office work is conducted on PCs.

The benefits for businesses

Reports are prepared 3 times faster

Document processing gets 5 times faster

50% — cost savings on accounting document processing

90% of manual operations are performed automatically

The use of robotic processes in different industries

Here are just several ideas on how to utilize the RPA system to show its flexibility and suitability for the business processes of different industries.

Financial industry

- Verification acts automation
- Tracking the occurrence of overdue receivables and notifying counterparties
- Creation and distribution of reports
- Data transfer between different information systems

Sales

- Creation, confirmation, and correction of the customers' orders
- Stock check
- Sending confirmation letters to the customers

HR

- Application and documents processing
- Searching for candidates online
- Filling in timesheets
- Sending notifications

How do you think, which of your business processes can be automated by RPA technology to increase productivity and save costs? Let’s find the answers together! SCAND is here to help you improve your business and get new opportunities.

Feel free to contact us and ask any questions: info@scand.com