

Robotic Process Automation (RPA)

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Trainer Profile

Providing courses about:

- Intro to Artificial Intelligence
- Machine Learning using Microsoft Azure Studio
- Machine Learning using Python
- Deep learning
- Data Science
- Microsoft Power BI (Business Intelligence)
- Intro to Internet of things
- IoT using AWS
- Python Programming (Basics & Advanced)
- Creating Chatbot using Dialog Flow and Python
- Thingworx IoT Web Application development
- Robotics Process Automations (RPA) using UiPath



Outlines - Session 1

RPA Overview:

- RPA vs. Automation vs. ML
- Types of Software robots.
- Typical use for RPA.
- RPA deployment
- RPA skills
- Determining which process to automate.

RPA tool (UiPath- Hand's on):

- UiPath Installation
- UiPath tool overview
- Opening a website using Browser Activity
- Display a message using Message box activity
- Creating and assigning variables
- Using If statement

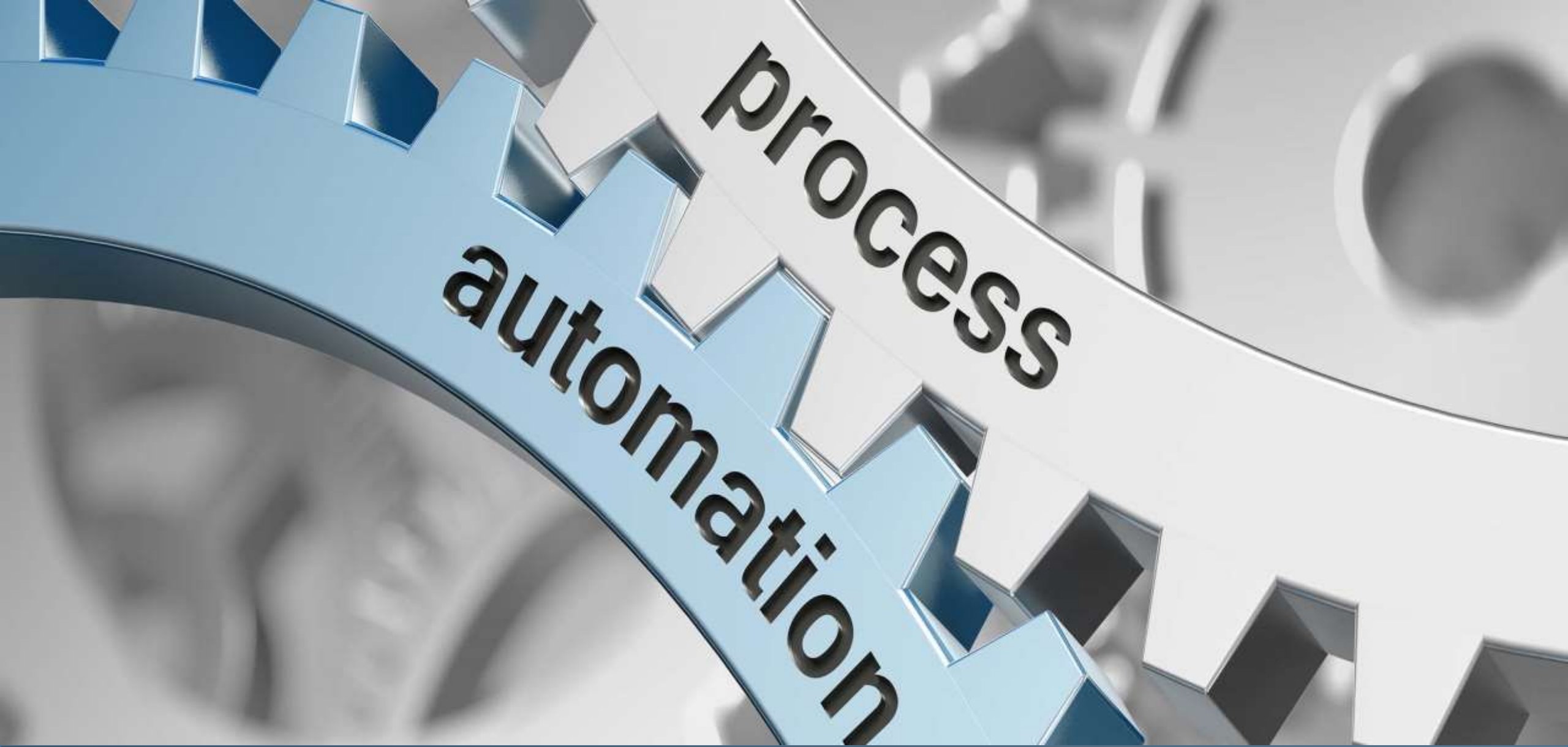


Outlines - Session 2

- Sending Email using SMTP protocol
- Taking a snapshot for trouble shooting or extract test message
- Reading Text from image using OCR
- Automation Scheduling

Session 3: Through iQra E-learning (Excel Automation using UiPath)





Differentiating RPA from Automation

Pharmacy Robot



Manual Calculations

Manual calculation takes a lot of time to solve complex problems.



$$\begin{aligned} \int_0^{\infty} \frac{e^{-(p+x)y}}{\pi(p+x)} \sin(a\sqrt{x}) dx &= -\sinh(a\sqrt{p}) \\ &+ \frac{e^{-a\sqrt{p}}}{2} \operatorname{erf}\left(\frac{a}{2\sqrt{y}} - \sqrt{p}y\right) + \frac{e^{a\sqrt{p}}}{2} \operatorname{erf}\left(\frac{a}{2\sqrt{y}} + \sqrt{p}y\right) \\ \int_0^{\infty} \frac{\sqrt{x} e^{-(p+x)y}}{\pi(p+x)} \cos(a\sqrt{x}) dx &= \frac{e^{-[py+a^2/(4y)]}}{\sqrt{\pi y}} + \\ &\sqrt{p} \left[-\cosh(a\sqrt{p}) - \frac{e^{-a\sqrt{p}}}{2} \operatorname{erf}\left(\frac{a}{2\sqrt{y}} - \sqrt{p}y\right) + \frac{e^{a\sqrt{p}}}{2} \operatorname{erf}\left(\frac{a}{2\sqrt{y}} + \sqrt{p}y\right) \right] \end{aligned}$$

Initial Practice – Calculate Manually



$$\begin{aligned}x &= \frac{2 \pm \sqrt{(-2)^2 - 4(-3)}}{2} \\&= \frac{2 \pm \sqrt{4+12}}{2} \\&= \frac{2 \pm \sqrt{16}}{2} = \frac{2 \pm 4}{2} \\&= \frac{-2}{2}, \frac{6}{2} = -1, 3\end{aligned}$$

Earlier, we used to calculate numbers manually

Gradually, complexity of the problems increased, also manual calculations took a lot of time.

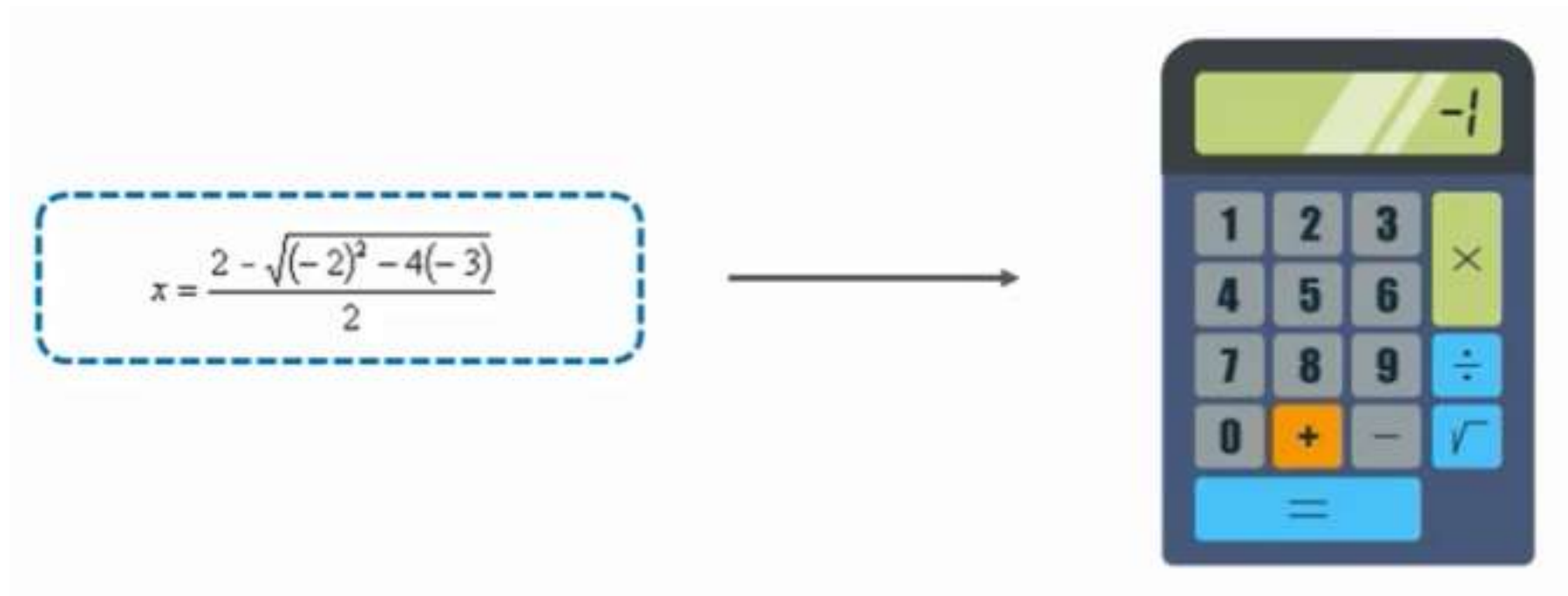
Invention of Calculators

Therefore, in 1966, Texas Instruments invented the hand-held pocket calculator which automated calculations



Use of Calculators – A way to Automate Calculations

Now, we just have to feed the problem into the calculator and it calculates the result in no time!!



Human Intervention still in the Picture

But we still had to feed these numbers manually in the calculators.



Automation vs RPA

Automation



Human

RPA

- RPA replaces Human Intervention by leveraging Software Robots (popularly known as Bots)
- Bot feeds these numbers and calculator performs the operation



Bot

Bot Mimics Human Actions

Data Entry Employee Job

A data entry employee repeatedly gets the data from different sources and aggregates them in an Excel file.



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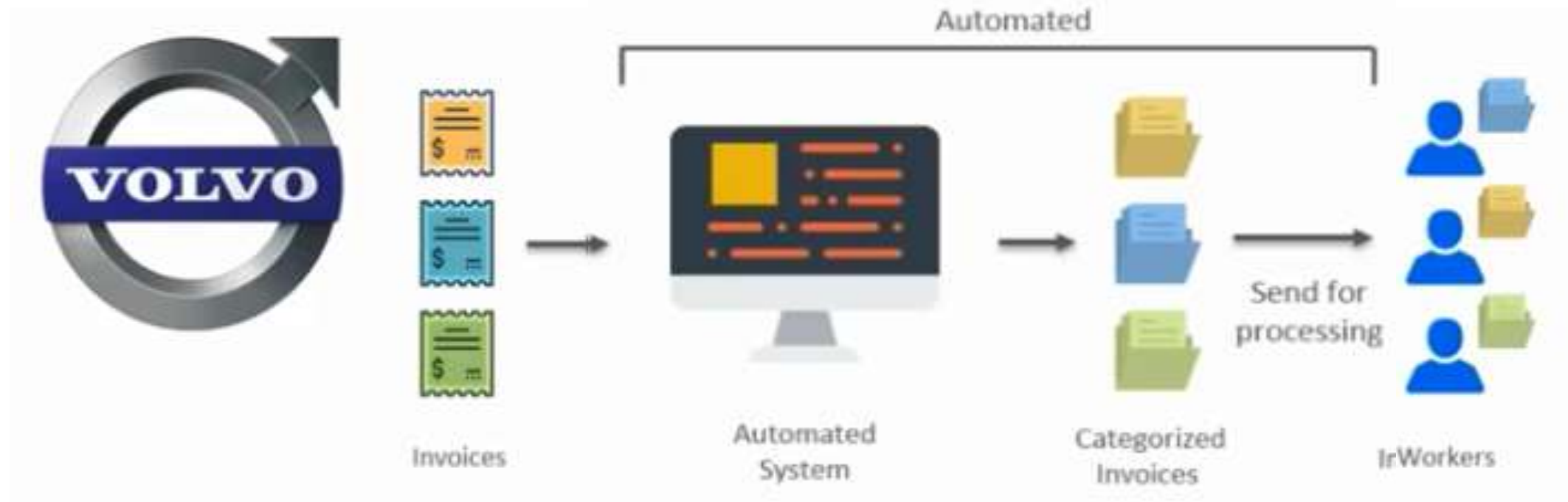
Volvo - Initial Practice

In earlier times, an Admin used to segregate the invoices based on the type of automobile it is related to. After this, it was forwarded to the workers, who used to process it further

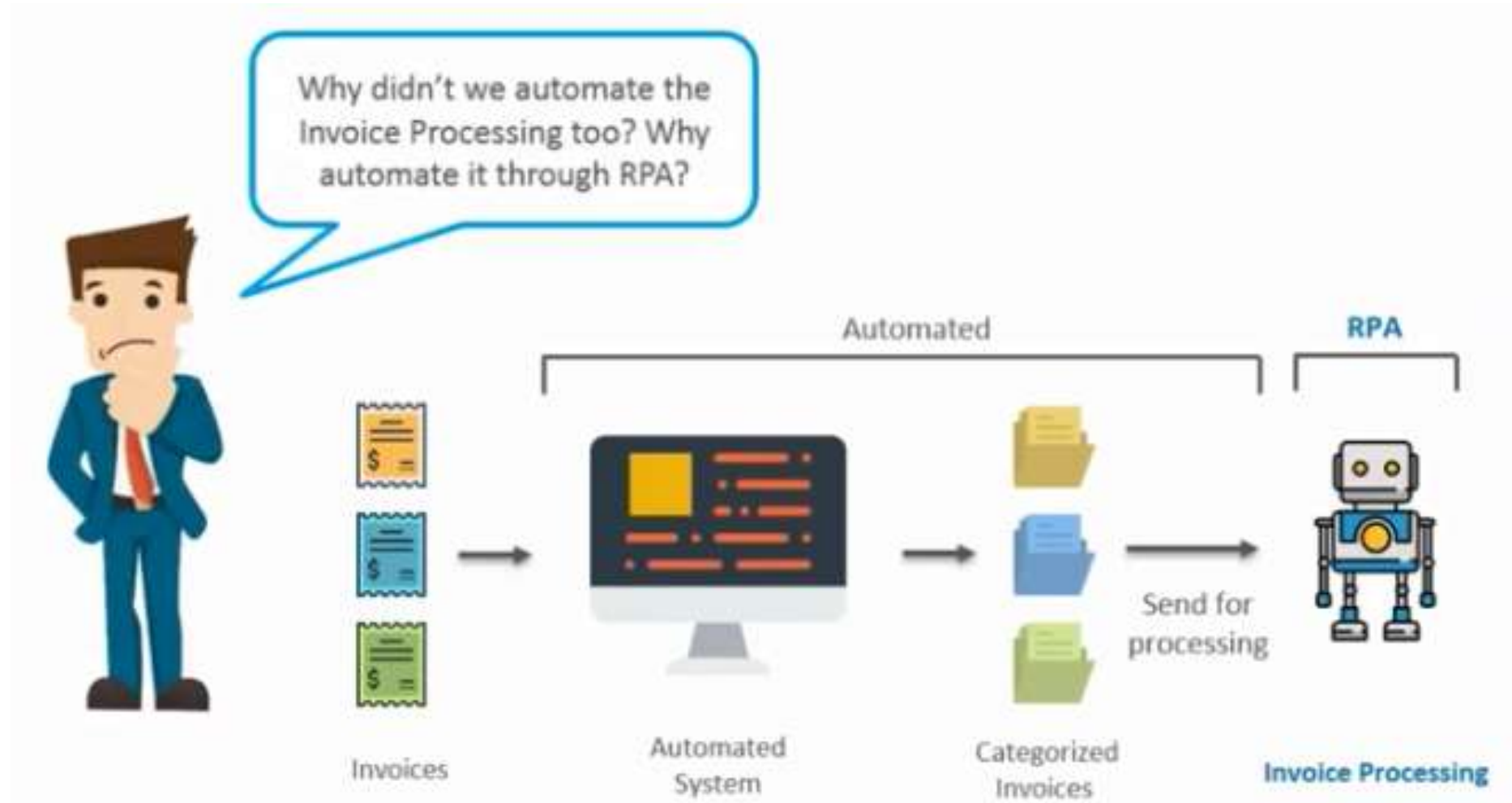


Automating the Admin Tasks

Volvo decided to automate the process of categorization of invoices by replacing the Admin with an **Automated System**



Why only RPA?



Why RPA? Why Not Automation?

DESCRIPTION	PRICE	AMOUNT
Custom computer program for Apollo 11 - Transfer to new location system and address for address labels. Also furnished and assembled 100 address labels with names to print area, if required.		\$10.00

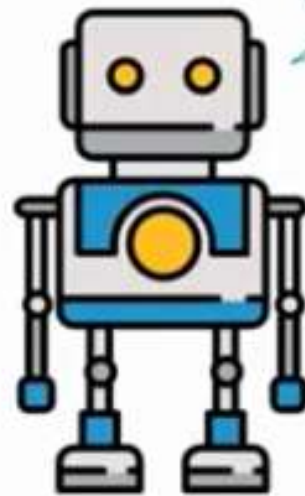
Scanned invoices were sent and received through emails. And simple **automation** couldn't read the scanned invoices.

Though **automation** could segregate the invoices by the reading the subject of the emails, we still needed human force to read these scanned invoices.

Hence we needed an automation solution which could read like a human.

How does RPA Read Images?

RPA has a feature called **OCR(Optical Character Recognition)** which reads and extracts texts from Image or PDF



I know OCR!

How does RPA Read Images?

OCR : Optical Character Recognition.

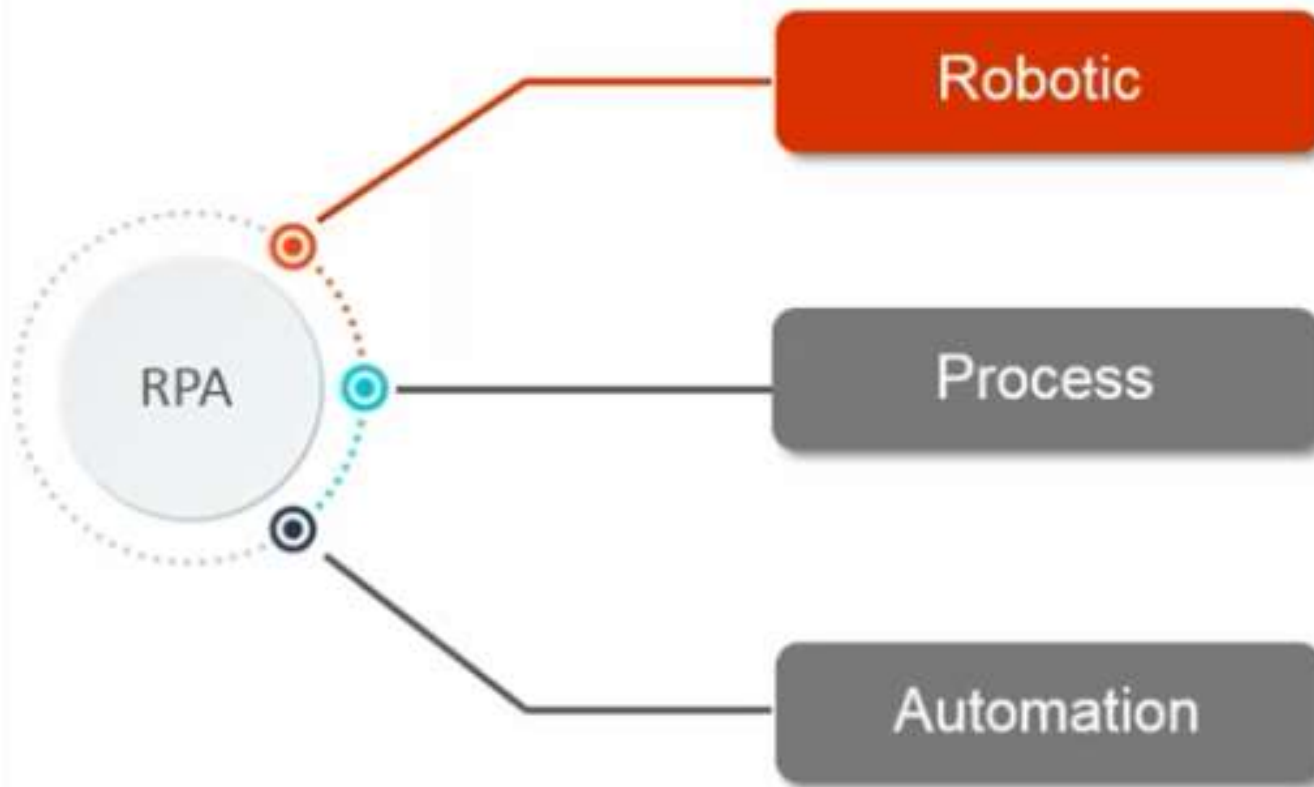
It is a widespread technology to recognize text inside images, such as scanned documents and photos. OCR technology is used to convert virtually any kind of images containing written text (typed, handwritten or printed) into machine-readable text data.





What is RPA?

What is RPA?



An entity which is capable of being programmed by a computer for doing complex tasks is known as a Robot. In terms of RPA, this task would be to **mimic human actions**.

A process is a **sequence of actions/activities or steps/tasks** taken in order to achieve a particular end

When a task/an activity happens automatically, i.e. **without human intervention**.

What is RPA?

Robotics Process Automation is the use of software robots, artificial intelligence (AI), and possibly machine learning to handle **high-volume, repeatable, rule-based enterprise** tasks that previously required a human to perform.

Employee can use a flowchart-based tool to create a software robots that are able to capture, interpret, and execute tedious office work typically performed by humans, ideally using existing systems (i.e. no new IT development & testing).

Goal: Mimic what humans do, using existing GUIs and processes.

Robotics Process Automation (RPA)



- **What is RPA? Why is it used?**

- ❑ Robotic Process Automation, automates the processes without human intervention.
- ❑ Software bots are used to mimic the human activities and perform desired task.
- ❑ RPA is used to automate the backend processes.

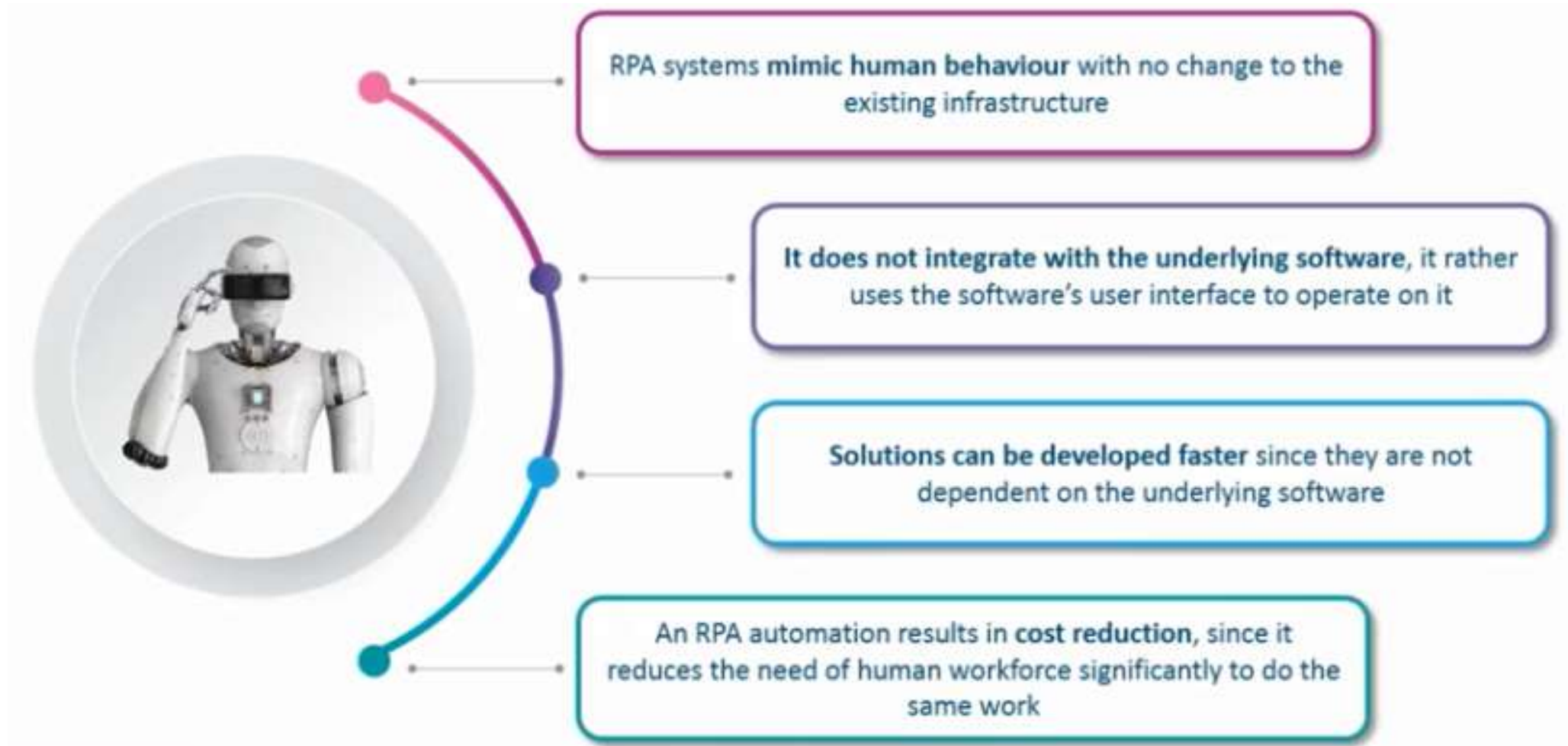


- **Coding knowledge is required?**

- ❑ Coding knowledge is not required to run any business processes.



RPA Benefit's



Mckinsey Research

"Knowledge in work automation could have economic impact of \$5-7 trillion by the year 2025 "

" It will touch more than 230 million knowledge workers, nine percent of the global workforce "



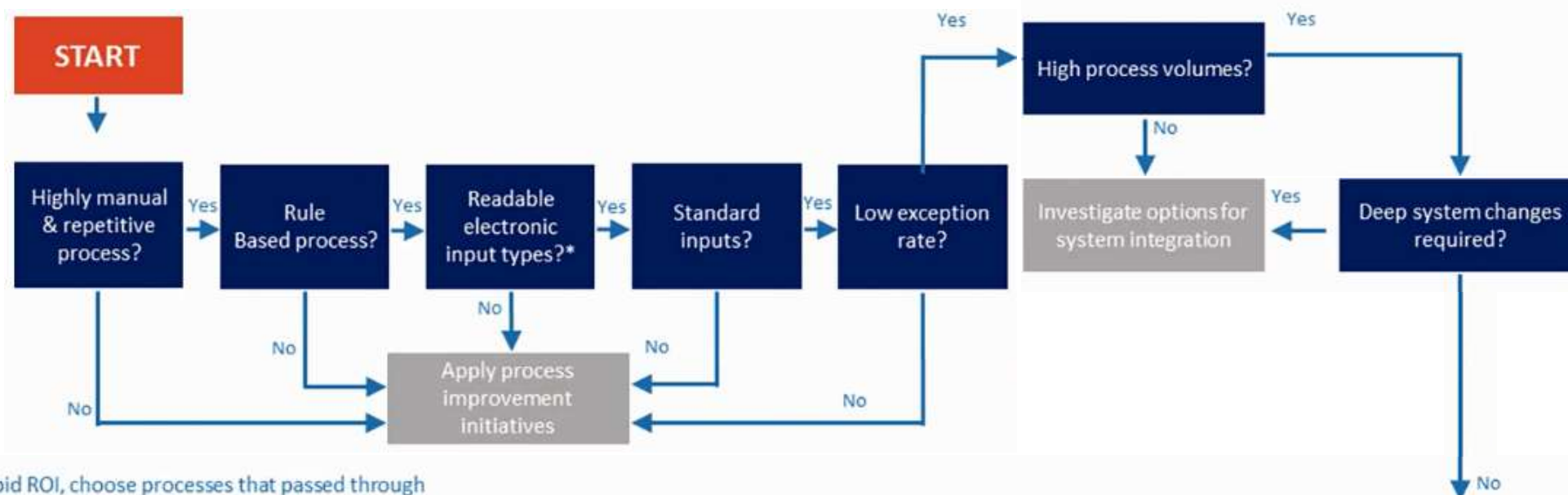
I will have an
opportunity to work
on higher value
items!!!



Typical Uses

- Frequent, repetitive, consistent data entry, or execution of a well-defined series of steps.
- Inputting/sharing data between multiple systems.
- Data Extracting.
- Rules-based decision making.

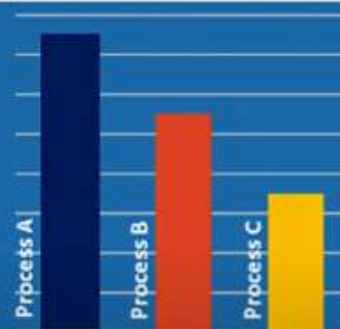
What process should I automate?



In order to benefit from a rapid ROI, choose processes that passed through a transformation initiative using the Lean Six Sigma methodology.

Process Characteristics	Process A	Process B	Process C
Highly Manual and Repetitive work			
Rule Based Processes			
Electronic Readable Input Types			
Standard Input Types			
Low Exceptions Rate			
High Volume Transactions			
System changes			

AUTOMATION SCALE



Process A is the best fit for automation, followed by Process B, while Process C should be subject to a Lean Six Sigma transformation approach prior to considering automating it.

RPA

RPA Adoption Survey

78% pf companies in a recent survey are in motion.

13%	No formal Strategy
11%	Considering but no formal plans
35%	In the planning stages, researching strategy
32%	Have a formal strategy and actively rolling out
9%	Don't know

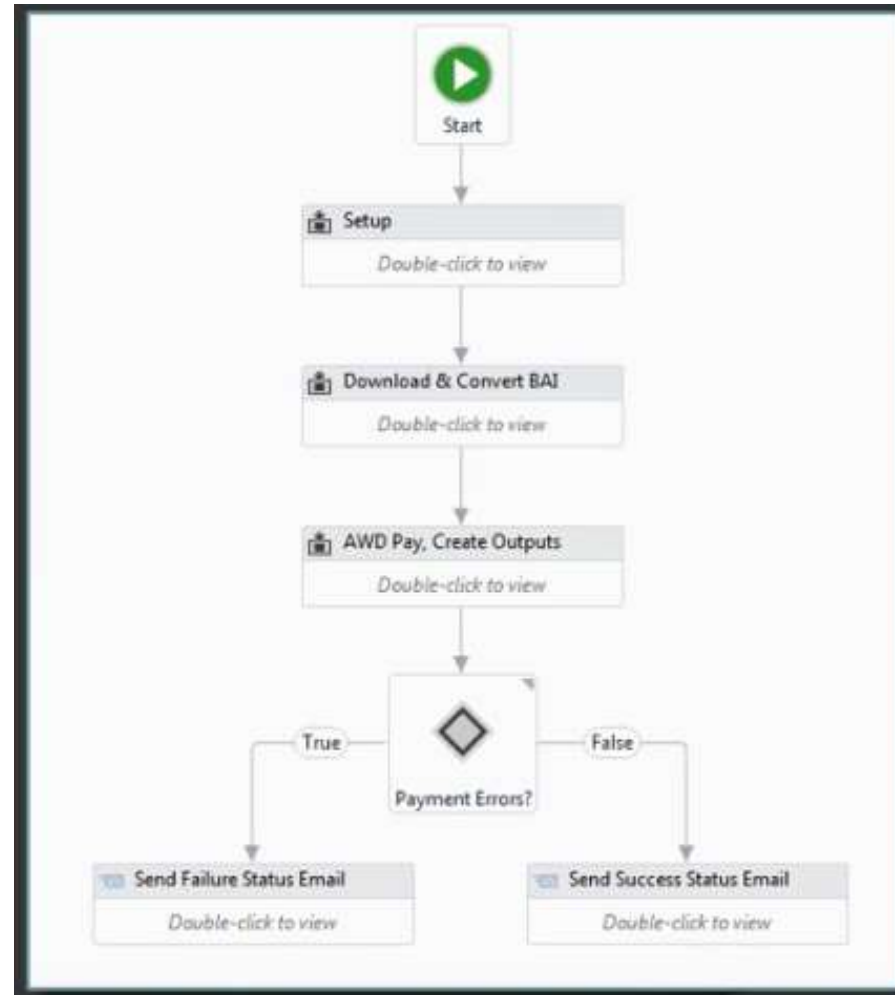
RPA Adoption Survey

Regulated industries with **high volume** and/or **transactional** business processes offer the most potential

	Accounting Accounts Receivable Accounts Payable General Ledger	Procurement Invoice Processing Requisition-to-Purchase Order	Human Resources Payroll, Hiring, Candidate Mgmt	Contact Center Customer Service	Industry Specific
Banking & Financial	Higher	Medium	Medium	Medium	Card Activation Discovery of Fraud
Insurance	Medium	Medium	Medium	Medium	Claims Processing New Business Prep
Healthcare	Medium	Medium	Medium	Medium	Report Automation System Reconciliation
Manufacturing	Higher	Medium	Medium	Medium	Bill of Materials Gen
High Tech & Telecom	Medium	Medium	Medium	Medium	Service Order Mgmt Quality Reporting
Energy & Utilities	Medium	Medium	Medium	Medium	Account Setup Meter Reading Validation

Higher	Higher
Medium	Medium
Lower	Lower

What Does it look like



Process Designer - Responsibilities

- ✓ The Process Designer is responsible for **understanding the current process**.
- ✓ He/she makes sure that the **people working on the RPA project are in sync**.
- ✓ He/She also **works monitoring the changes** happen after implementing the feedback during development or testing phase while keeping the project specifications intact.



Automation Architect – Responsibilities

- ✓ Automation Architect **builds the RPA project** using the RPA tooling.
- ✓ He/she is the member of core automation team and **may or may not have the developer level expertise** depending on the RPA tool the organization is using.
- ✓ The automation architect still **has some experience in the programming and solving the real world problem.**



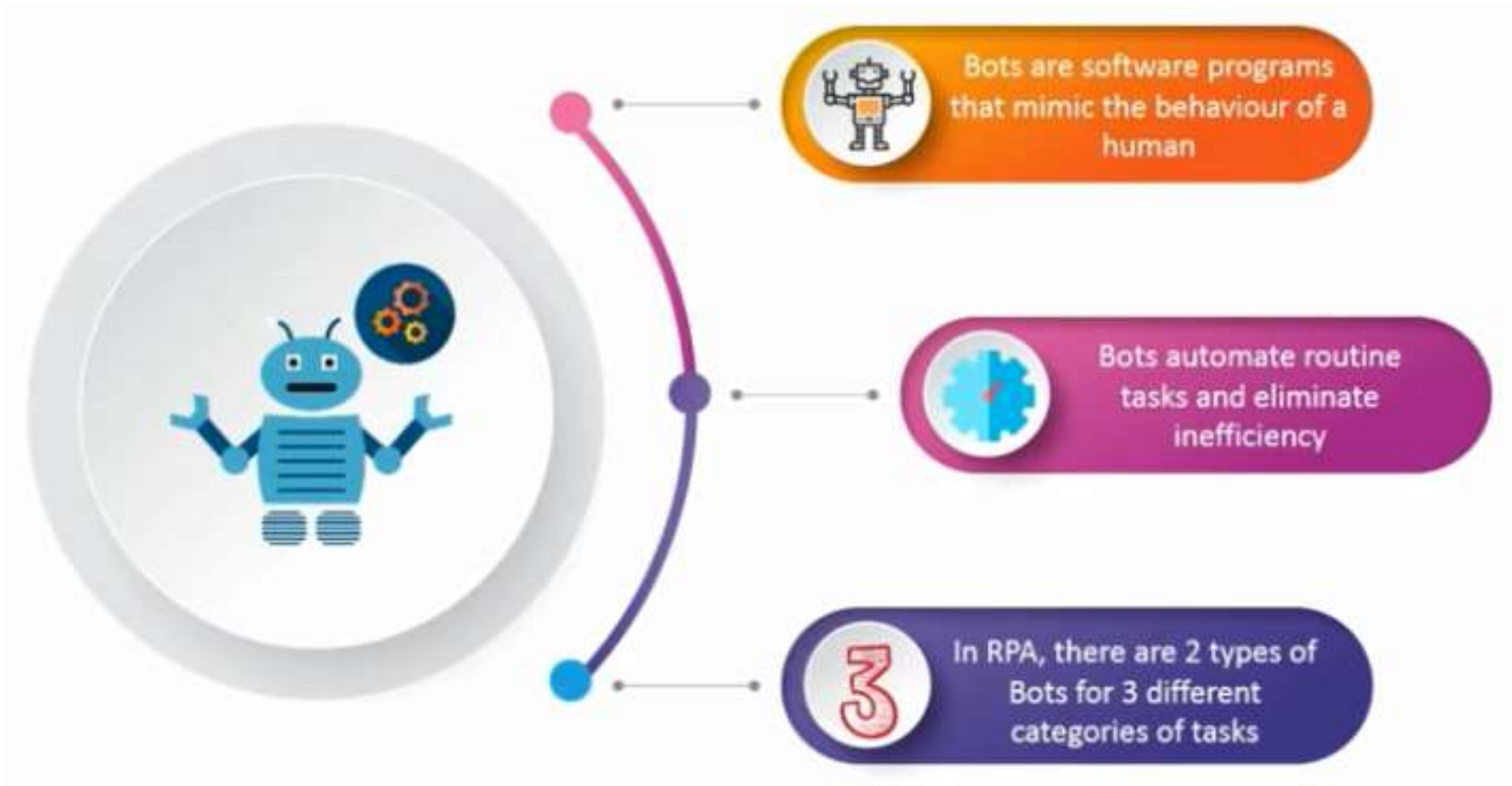
Production Manager - Responsibilities

After a project is tested and rolled into production, it then becomes the responsibility of the Production Manager. The Production Manager is responsible for the following:

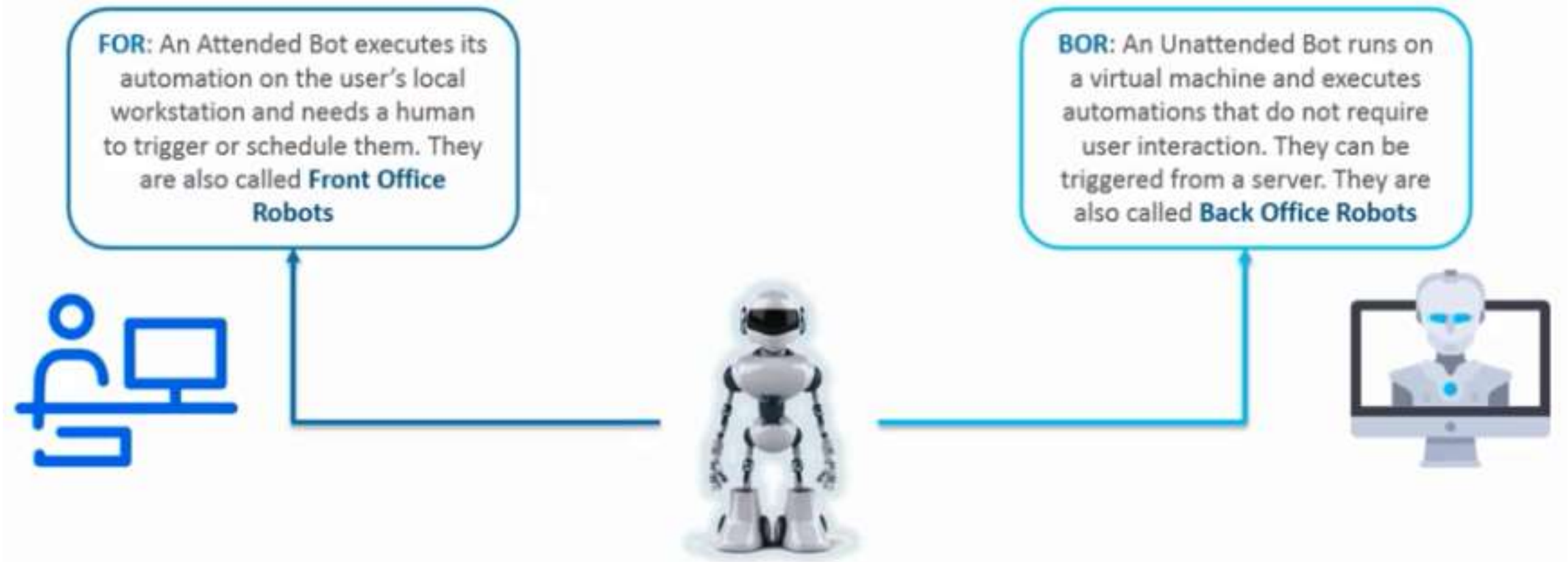
- ✓ Ensuring processes are being triggered as intended
- ✓ Addressing inline processing bot prompts (e.g. "Invoice amount exceeds PO amount but an order is a special order item – reject or accept?")
- ✓ Handling process exceptions – (e.g. "Invoice was rejected, now what?")
- ✓ Reporting bugs to the Automation Architect
- ✓ Reviewing analytics and providing process improvement information to the Process Designer



What are bot?



Types of Bots?



Types of Bots – Attended Bot

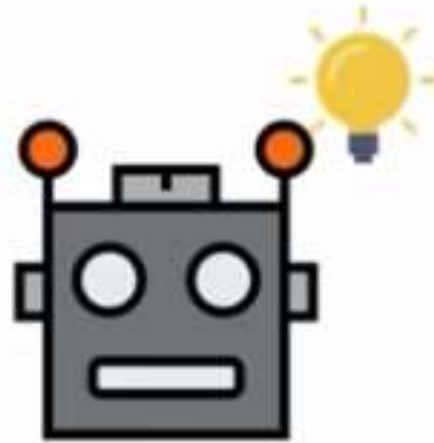


Used in Front-end automation

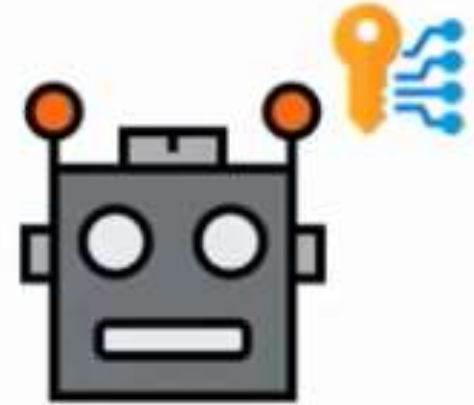


Performs **repetitive** and rule-based tasks that rely on structured data

Types of Bots – Unattended Bot



Actions in unattended automation
are self-triggered by the
automation robots themselves



It can be accessed remotely via
number of interfaces or platforms

Current RPA tools

Different RPA Tools Available

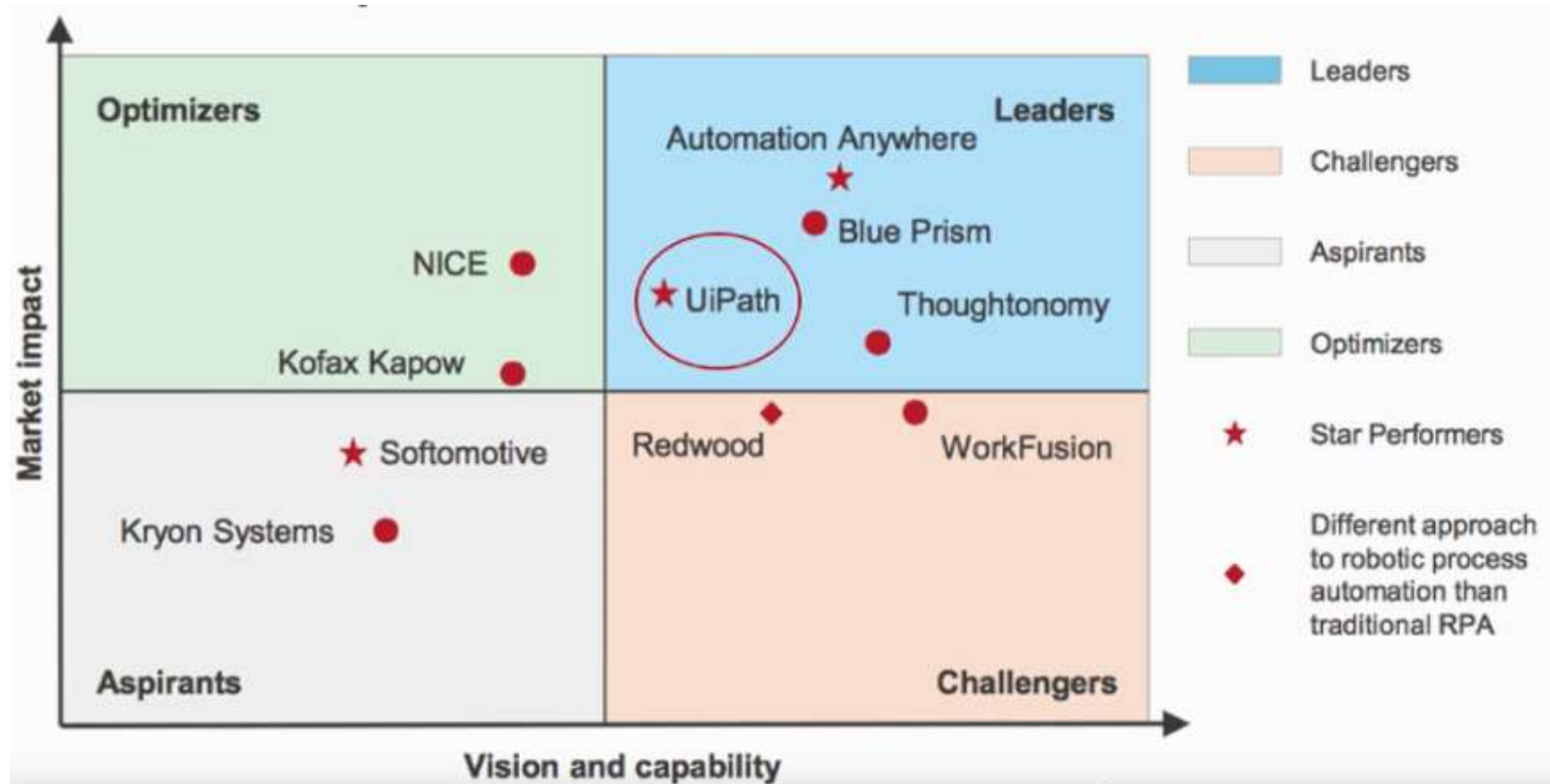


blueprism



And many more...

Current RPA Tools



Comparison between top tools

Features	UiPath	Blue Prism	Automation Anywhere
How will I practice?	Has a Community Edition/ Free Edition Available	No trial version available, have to purchase this tool to learn	Trial Version available, but expires after 30 days.
Learning Curve	Has a user friendly visual designer, hence easy to learn and implement	Has a visual designer, easier than Automation Anywhere	Developer Friendly- Requires Higher programming skills
Google Trends Popularity	Most Popular tool	More Popular than Automation Anywhere	Least Popular of the three

UiPath



UiPath is a leading RPA tool in the market. It is user friendly and have a free community edition

UiPath Overview

What is UiPath?



Robotic Process Automation

- UiPath is a GUI based Robotics Process Automation tool
- It provides a complete solution for application integration, automating third-party applications, administrative IT tasks and business IT processes

RPA Developer Advanced Certification

RPA Developer Advanced Certification

Build a solid career in RPA

FREE Advanced RPA Developer certification
until June 30th, 2019

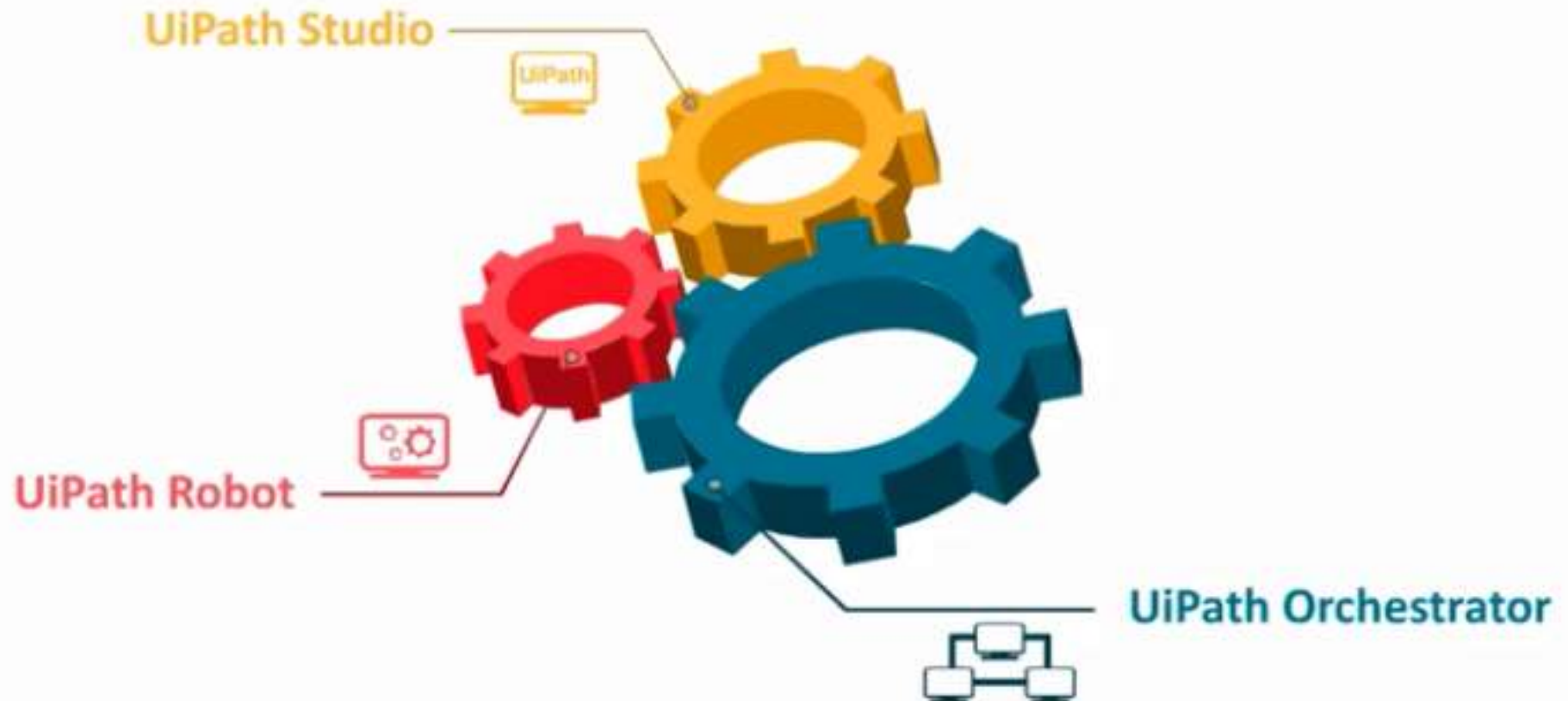
Sign Up



70% score to pass the test

UiPath Platform Components

UiPath Platform consists of three main components:



UiPath Platform Components

UiPath Studio

An advanced tool that enables you to design automation processes in a visual manner, using drag-and-drop functionality



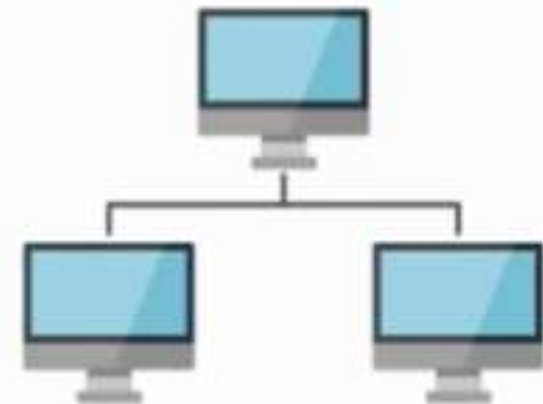
UiPath Robot

Robot executes the processes built in Studio, just like humans



UiPath Orchestrator

Orchestrator is a web application that enables us to deploy, schedule, monitor and manage Robots and Processes



Installing and Configuring UiPath Studio

Hardware and software Requirements

- Our system should have the following configuration: -



CPU:

- Minimum Requirement – 1.4GHz 32-bit(x86)
- Recommended – Dual Core 1.8Ghz 64-bit



Operating System:

- Minimum Version – Windows 7/Windows server 2008R2
- Maximum Version – Windows 10/Windows Server 2016



RAM:

- 4GB (minimum)



.Net Framework: 4.6

- Version 4.6 and above

- For Mac users:



- We will have to install UiPath on the Virtual Box with Windows OS, as UiPath is only supported on windows
- For Example: We can use the latest version of Oracle VM VirtualBox for Mac-OS X and download it from <https://www.virtualbox.org/wiki/Downloads>

Downloading UiPath Studio

- UiPath Studio can be downloaded from the following link:

<https://www.uipath.com/developers/community-edition-download>

- We can choose any one of the following versions, according to our requirement:

The UiPath Enterprise RPA Platform

Built for business and IT, designed for large companies to launch their RPA projects at scale.

GET ENTERPRISE RPA TRIAL



The UiPath Community Edition

Fully featured, extensible and FREE to use by individual developers, Enterprises and other Legal Entities.

GET COMMUNITY EDITION



Starting UiPath

On the first screen, we can see a list of four projects to choose from, as shown:



But first, Let's understand what is a Project in UiPath

What is a project?

- A Project is a pictorial representation of a business process
- It enables us to create **automation processes**, by giving us full control of the execution order and the relationship between a set of steps (also known as activities) in UiPath

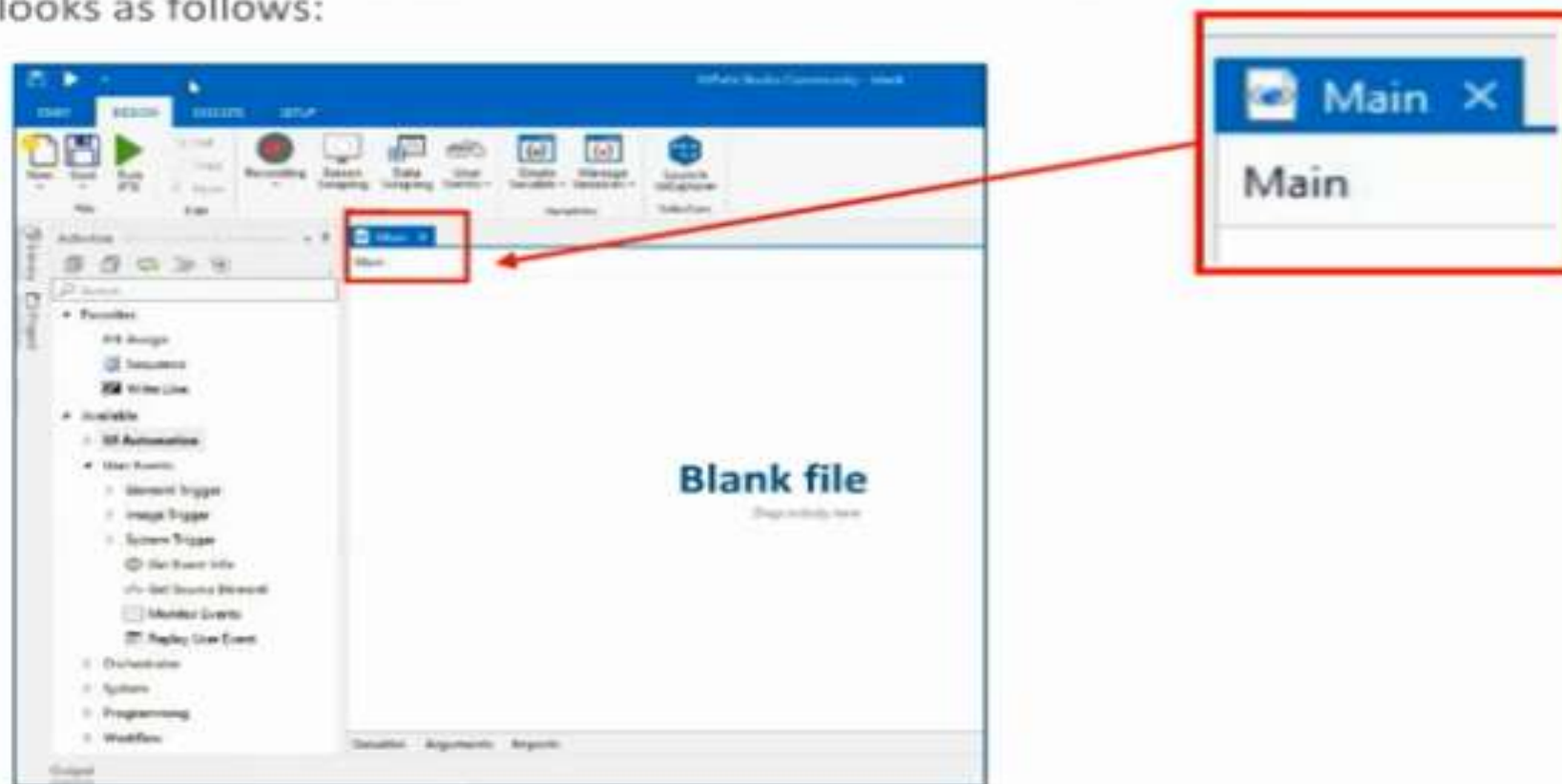


Types of Projects in UiPath

Type of Projects in UiPath Studio

- 1 Blank
- 2 Simple Process
- 3 Agent Process Improvement
- 4 Transactional Business Processes

- It's an empty project, i.e. the **Main** file is blank
- By selecting Blank project, we are able to create projects from scratch. A blank project looks as follows:



UiPath - Practical Session

THANK YOU