

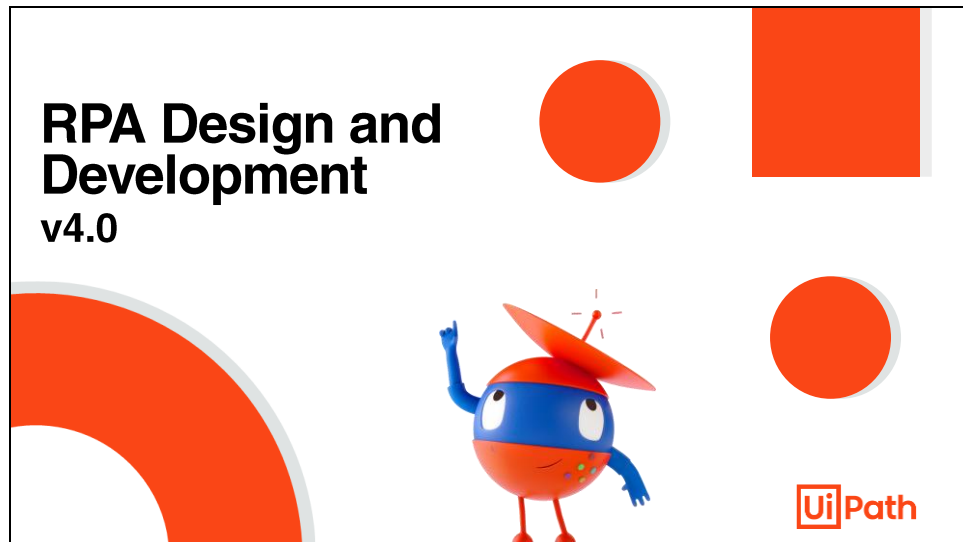
**RPA Design and Development
v4.0**

Student Manual

Lesson 1-RPA Basics

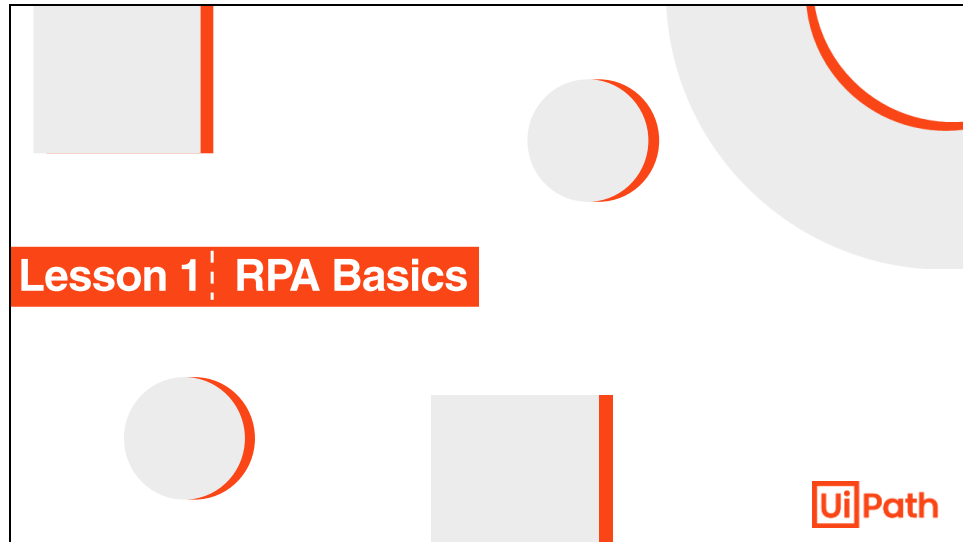


Slide 1



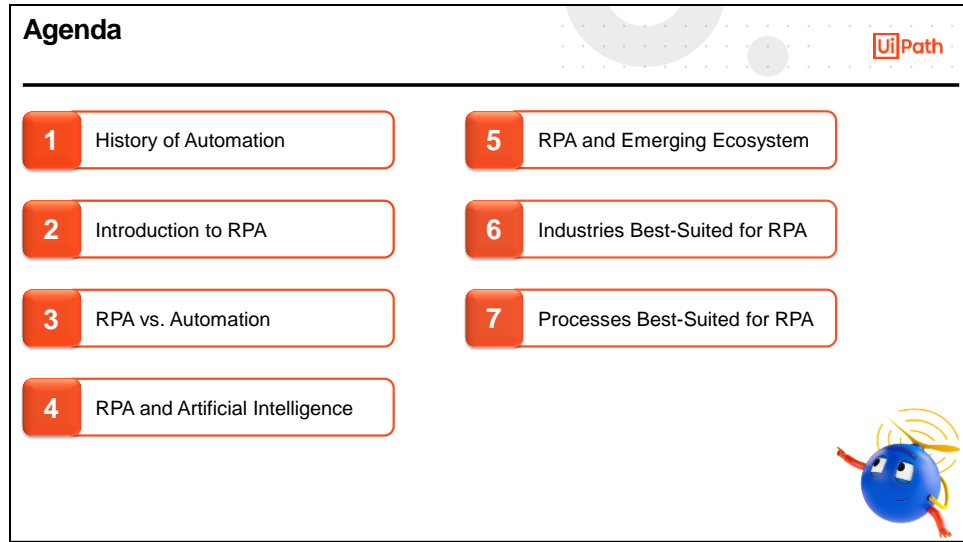
Welcome to 'RPA Design and Development Course'.

Slide 2



During this course, you will learn the basic concepts of Robotic Process Automation, commonly called RPA, and understand the capabilities of software robots.

Slide 3




The agenda is:


- History of Automation
- Story of Work
- Introduction to RPA
- RPA vs. Automation
- RPA and AI
- RPA and Emerging Ecosystem
- Industries Best-Suited for RPA
- Processes Best-Suited for RPA

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Learning Objectives



- 1 Describe the History of Automation
- 2 Explain RPA and AI
- 3 Compare RPA and Automation
- 4 Describe RPA and Emerging Ecosystem
- 5 List the Industries Best-Suited for RPA



By the end of this lesson, you will be able to:



- Describe the History of Automation
- Explain RPA and AI
- Compare RPA and Automation
- Describe RPA and Emerging Ecosystem
- List the Industries Best Suited for RPA

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Learning Objectives

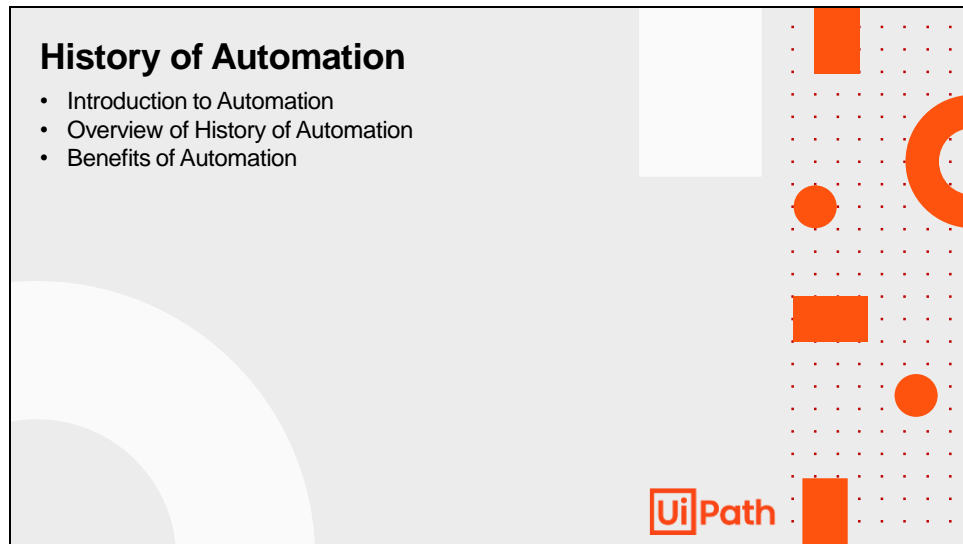
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Identify the Processes Best-Suited for RPA



- Identify the Processes Best-Suited for RPA

Slide 6



This section gives an overview of Automation with a brief on its History and Benefits.

Slide 7

Introduction to Automation

Automation is the technology by which a process or procedure is executed with minimal human assistance.

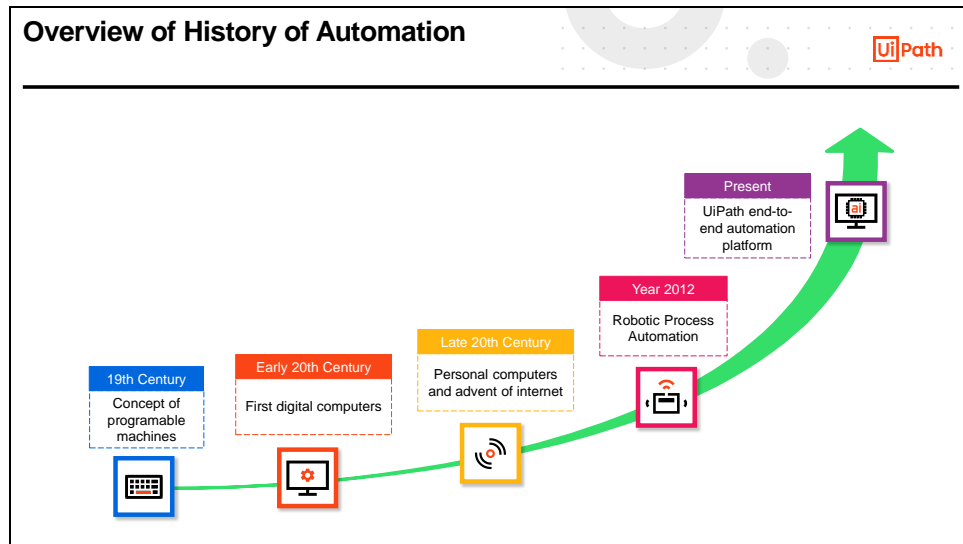
What does Automation do?	<ul style="list-style-type: none">• Removes repetitive and unwanted tasks to enhance performance• Frees human resources to be better utilized in more productive work
Where is Automation used?	<ul style="list-style-type: none">• It is used in mechanical production, assembly line production, etc• It is integral to business & IT sector to make them productive and profitable
Examples of Automation	<ul style="list-style-type: none">• Automated bottle filling stations• Automated Order-Entry and Customer service Chatbots

Automation is the technology by which a process or procedure is executed with minimal human assistance. It is a way of improving any process mechanism by removing unwanted or repetitive tasks so that the overall performance is enhanced. Automation impacts any business process's gross efficiency and productivity by freeing the human workers from the monotony of performing repetitive tasks. This, in turn, allows the human resources to be better utilized in more productive work.

Automation is used in manufacturing processes like mechanical production, assembly-line production, and in the field of business, technology, and IT, which were earlier dependent on human labor.

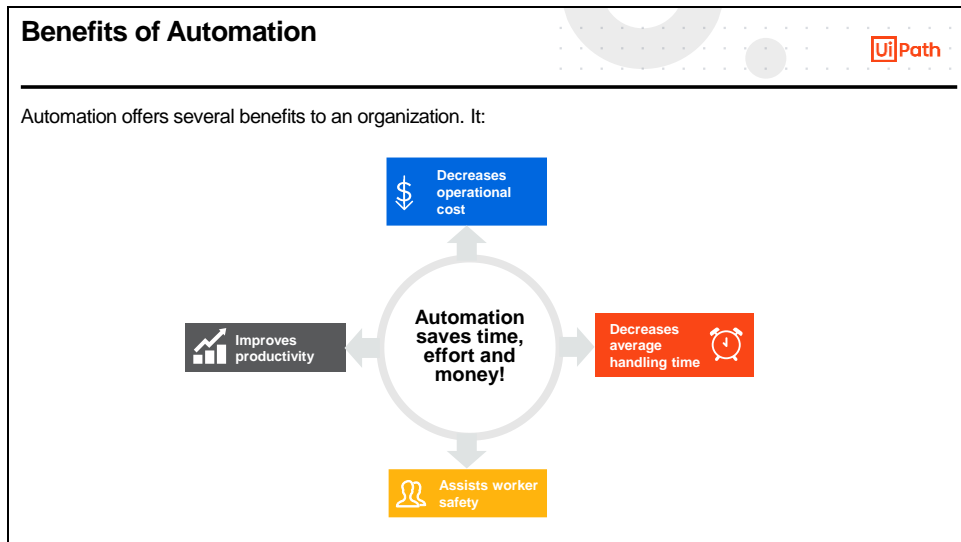
Some examples of automation are automated bottle-filling stations, automated order entry, and customer service chatbots.

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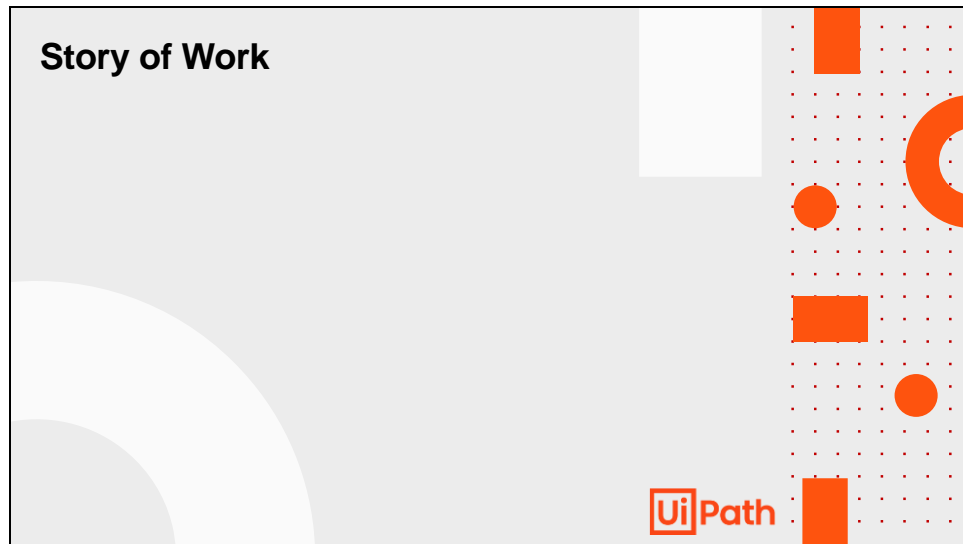
In the 19th century, the Industrial revolution brought along many advancements like the telegraph and telephone, and with them came the concept of programmable machines. This century witnessed the electrification of factories and the setting up of many production units, which created the need for centralized control. This need led to the fundamental steps of devising simple on/off mechanisms in the 20th century. This need later led to the development of the first electronic digital computer, followed by personal computers and the Internet. In the latter half of the 20th century, the advancements in data-storage technology, software to write computer programs, advances in sensor technology, etc., contributed to the progress in automation technology. In the 21st century, Robotic Process Automation, commonly known as RPA, was introduced. RPA, in its early stage, was focused on automating repetitive and rule-based, un-intelligent tasks. We are witnessing RPA evolve with AI to develop cognitive automation in contemporary times.

Slide 9



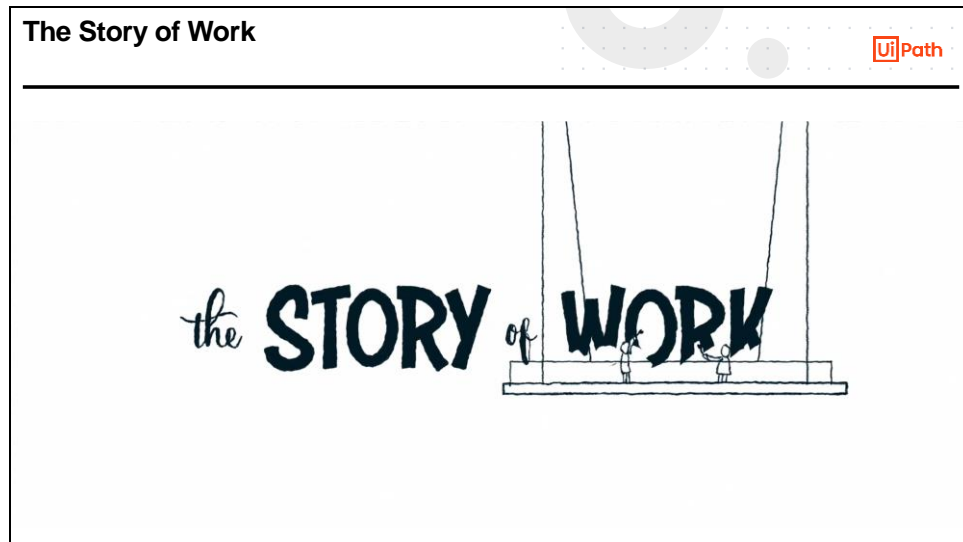
Automation leads to an improvement in the productivity of any system, thereby decreasing operational cost and average handling time for executing any activity. Also, certain activities involve a risk factor, making human life vulnerable to danger. Automated systems help in removing workers from the hazardous workplace, thus assisting in their safety.

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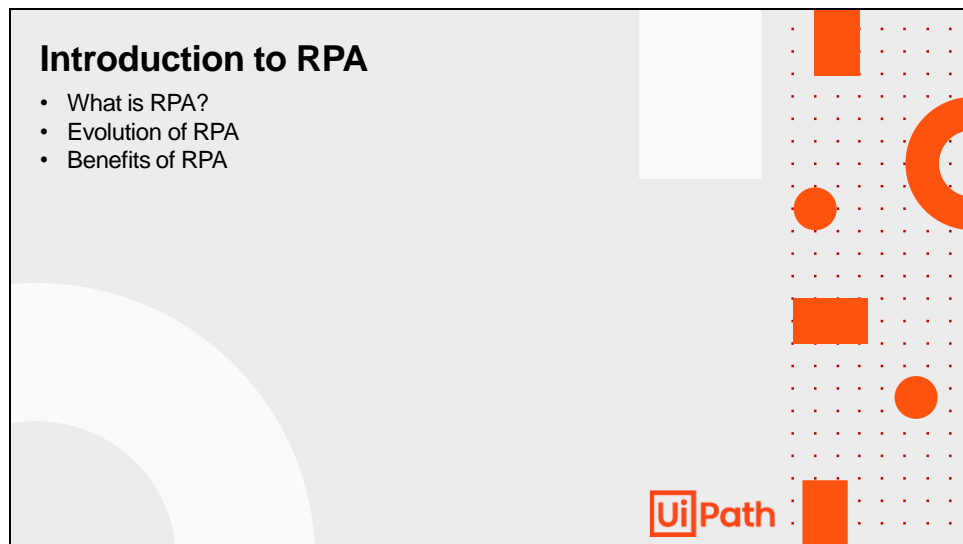
This section gives an overview of how work has evolved with the Introduction of Automation.

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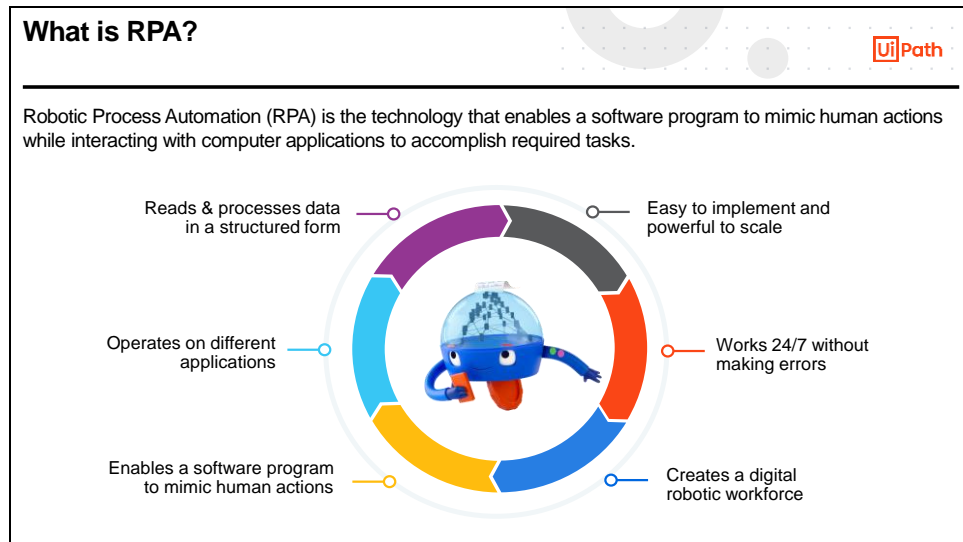
Video for the Story of Work.

Slide 12



This section introduces the concept of Robotic Process Automation (RPA) and discusses Its Benefits.

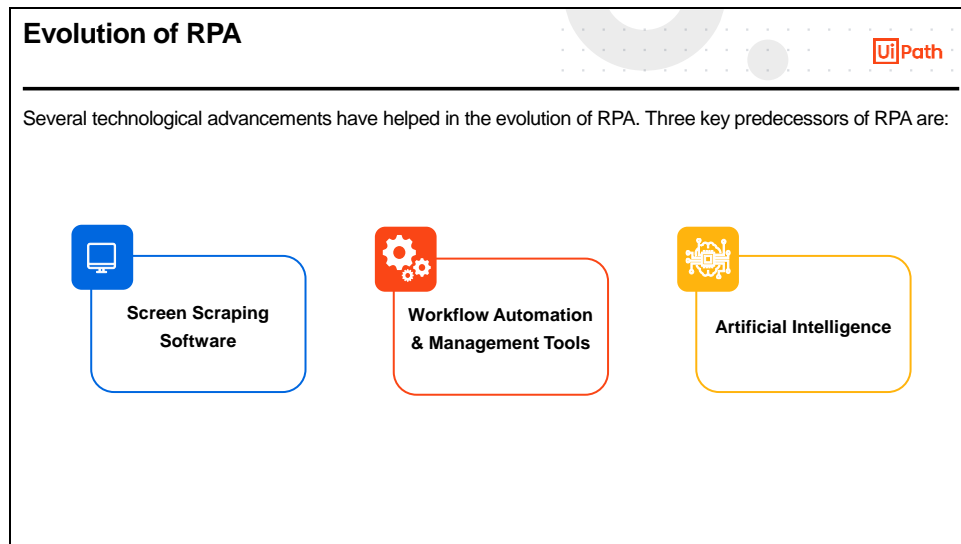
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RPA stands for Robotic Process Automation.

It is the technology that enables a software program to mimic human actions while interacting with computer applications to accomplish required tasks. This often requires reading, typing, or clicking on existing applications that are used to perform the given tasks. RPA can also replicate the actions performed by a user in the graphical user interface of an application.

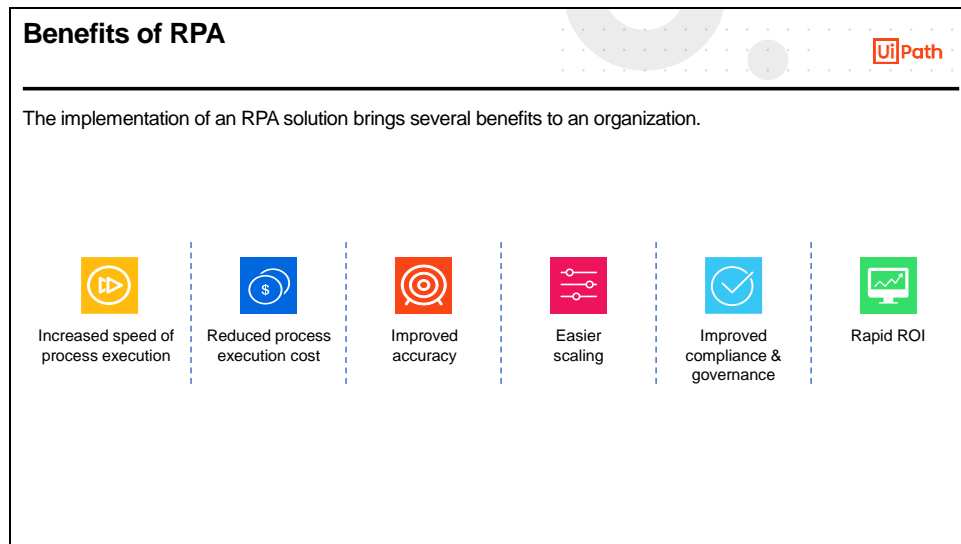
- It reads and processes data in a structured form from various applications. It can extract information from pdf, word, and excel documents and process it as per the requirement
- It operates on different computer applications (e.g. browser, Excel). It is non-invasive and can access the applications like CRM, websites, MS office applications which are used to perform repetitive tasks
- It is easy to implement and powerful to scale as per the requirement. RPA solutions can be easily developed and deployed. The number of robots can be increased or decreased depending upon the requirement
- It works 24/7 without making errors as it works on predefined rules. The robots can work continuously without taking a break. As the rules for the robots are predefined, it also increases their accuracy
- RPA as a technology creates a digital robotic workforce that performs manual operations for completing a task



Several technological advancements have helped in the evolution of RPA. Three key predecessors of Robotic Process Automation are:

- **Screen Scraping software:** It enables the robots to interact with different user interface elements and documents, such as pdf files, to extract data for further processing
- **Workflow Automation and Management Tools:** These provide a visual representation of a business or mechanical processes, minimize the human intervention required in their execution, and eliminate the redundant steps. For example, workflow automation software can aid in order processing by capturing certain fields of interest, translating them into the company's database, and notifying the corresponding employee. This eliminates the need for manual data entry and increases order fulfillment rates, thereby increasing speed, efficiency, and accuracy
- **Artificial Intelligence:** It refers to the capability of computer systems to perform tasks that usually require human intervention and intelligence. The tasks that were previously dependent on humans for their judgment and decision-making ability can now be done by A.I. For example, financial planning and fraud detection

The evolution and deployment of RPA and its ability to combine, refine, and reimagine certain aspects of each of these technologies make RPA an impactful technological platform.



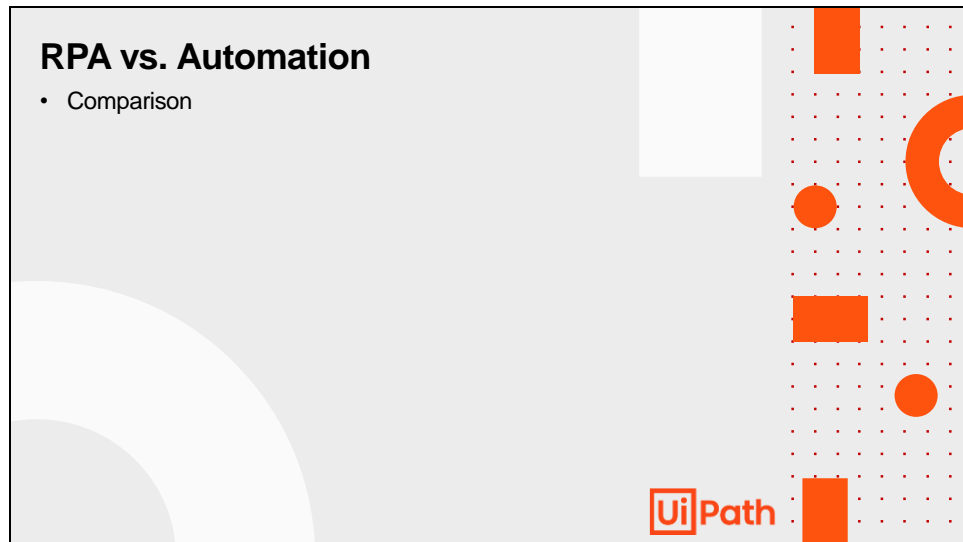
The implementation of an RPA solution brings several benefits to an organization. Some of the main advantages of adopting an RPA solution are as follows:

- **Increased speed of process execution:** Robots are quicker and more efficient than human operators. Deploying RPA can drastically increase the speed of execution of repetitive or mundane tasks
- **Reduced cost of process execution:** The work capacity of robots is superior to that of human workers. By adopting an RPA solution, organizations can significantly reduce their operational costs. When an RPA solution is implemented, the task execution rate is considerably increased, and the corresponding costs are decreased. A robot can work 24/7, and there is no time constraint. This increases productivity and improves the output which in turn releases the human workforce capacity for performing creative and high-value tasks
- **Improved accuracy:** RPA implementation leads to an increase in system accuracy. This is because RPA works on a predefined set of rules and instructions, minimizing the errors of omission and commission
- **Easier scaling:** The amount of work involved in a process can vary, as unexpected changes are likely to occur in most business environments. An RPA solution is highly adaptable as it can be scaled up or down as per the fluctuations in the business environment. For performing a particular task, you can easily increase or decrease the number of robots in the system without compromising on the quality of work
- **Improved compliance and governance:** RPA solutions are adopted following regulatory compliance. For example, in the banking sector, since the Robot Login

details are secure and unique, the activity carried out is well controlled and supervised. This leads to improved regulatory compliance which creates transparency and allows the user to identify any issue or defect easily

- **Rapid ROI:** All these factors, like cost reduction, improved accuracy, and optimization of time and resources, result in highly efficient operations, thus, yielding a higher and faster return on investment

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This section gives a comparison between RPA and Automation.

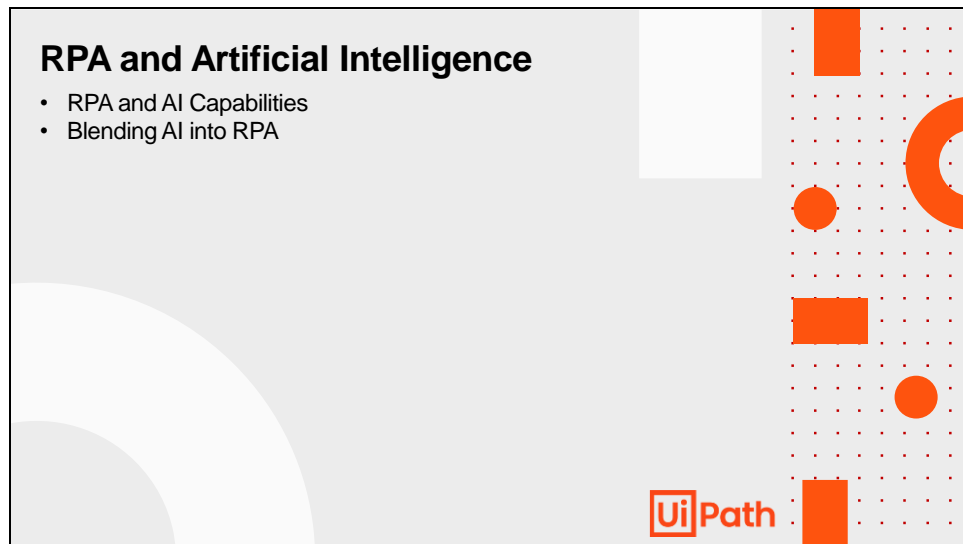
RPA vs. Automation	
RPA	Automation
It is used to automate any business process or functionality.	It is used to automate a specific type of process.
It is platform independent.	It is platform dependent.
It mimics user actions and can cognitively take decisions to perform actions.	It does not mimic user actions and only executes the given program instructions.
Example: Help Desk, etc.	Example: Calculators, Washing machines, etc.

At this point, it becomes important to understand the difference between RPA and Automation.

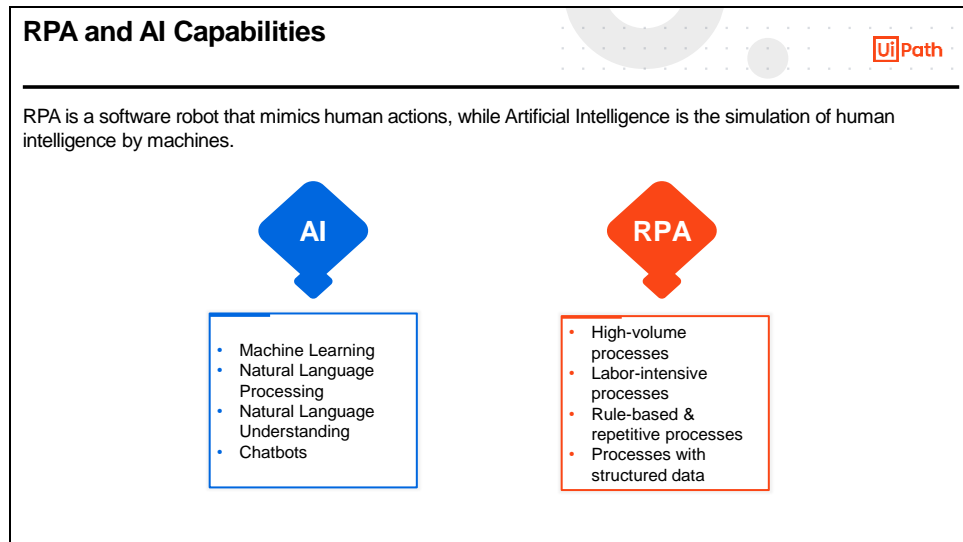
In a nutshell:

- **Robotics Process Automation** is used to automate any business processes that are repetitive and rule-based. The RPA solutions are non-invasive and are compatible with all platforms and applications. They are platform-independent. RPA mimics user actions and can cognitively take decisions to perform actions. It is suitable for industries like Finance, Healthcare, Insurance, etc. where tasks are performed in an office environment on computers. Help Desk can be an example of RPA wherein an automated system supports a customer support personnel in automating repetitive activities such as finding one type of information for every customer call
- **Automation** is used to automate specific type of processes that were earlier performed by humans. Automation helps in improving the speed and efficiency of processes. It is used in various areas like manufacturing, transport, utilities, defense, facilities, operations and information technology. Examples of automation are calculators, washing machines, etc.

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This section briefly explains the capabilities of RPA and Artificial Intelligence.



RPA is a software robot that mimics human actions, while Artificial Intelligence is the simulation of human intelligence by machines.

In a nutshell:

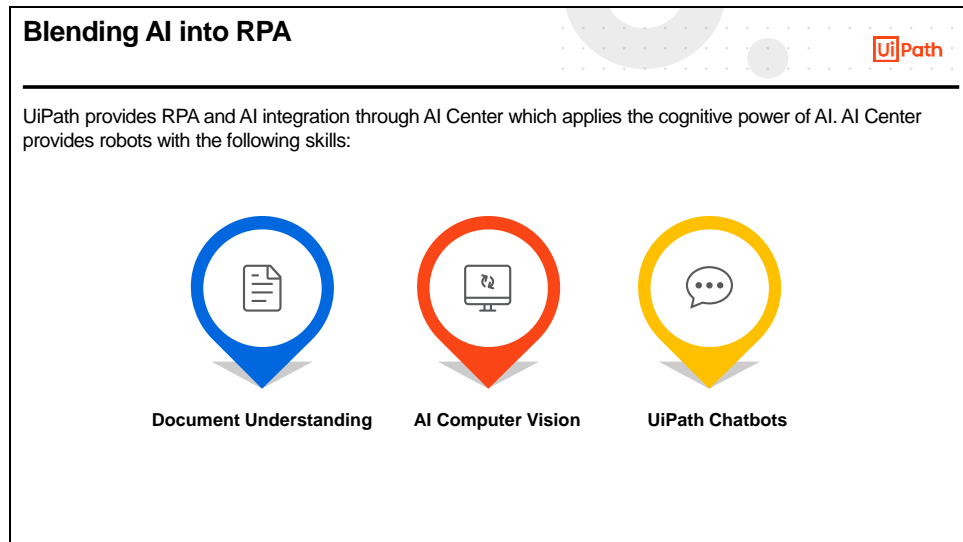
- AI constitutes:
 - Machine Learning
 - Natural Language Processing
 - Natural Language Understanding
 - Chatbots
- RPA is applicable for processes which are:
 - Voluminous
 - Labor-intensive
 - Rule-based and repetitive
 - Using structured data

The automation capabilities can be improved by combining artificial intelligence with RPA, resulting in much faster automation processes. RPA combined with advanced cognitive capabilities such as Artificial Intelligence allows robots to act more intelligently. The robots also interpret the interfaces they work across with better error handling capacity.

The automation capabilities can be improved by combining artificial intelligence with RPA, resulting in much faster automation processes. RPA combined with advanced cognitive

capabilities such as Artificial Intelligence allows robots to act more intelligently. The robots also interpret the interfaces they work across with better error handling capacity. AI and RPA combination can help organizations to automate more complex processes.

For example, using RPA, the user needs the documents to be in a specific format to get them scanned. In this case, an AI system can be used along with the task to filter out the poorly formatted or unsuitable documents.



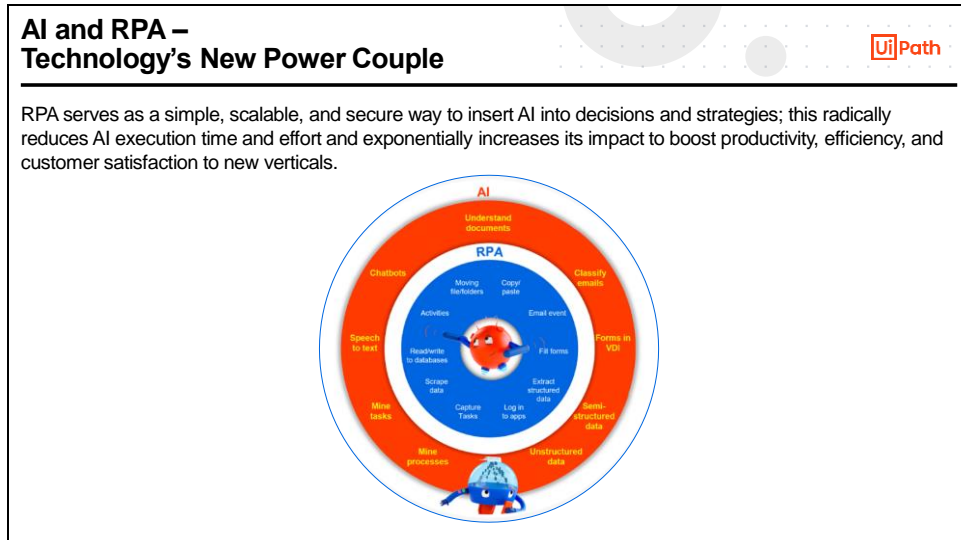
RPA is a continuously evolving technology, and its integration with Artificial Intelligence helps to enhance automation capabilities. UiPath provides RPA and AI integration through AI Center.

AI Center makes it easy to deploy AI and continually improve it. It provides the robots with the skills needed to process documents, recognize dynamic interfaces and make complex decisions. The skills are:

- **Document Understanding**: Allows robots to process documents faster as AI teaches the robots to read and understand different kinds of documents like PDFs, images, handwriting, and scans
- **AI Computer Vision**: Allows robots to interact with screens, including VDI (Virtual desktop infrastructure) elements and dynamic interfaces to automate business processes that use virtual desktops
- **UiPath Chatbots**: Allows robots to process and automate the text, chat, and voice inputs

To know more, visit: <https://www.uipath.com/product/ai-rpa-capabilities>

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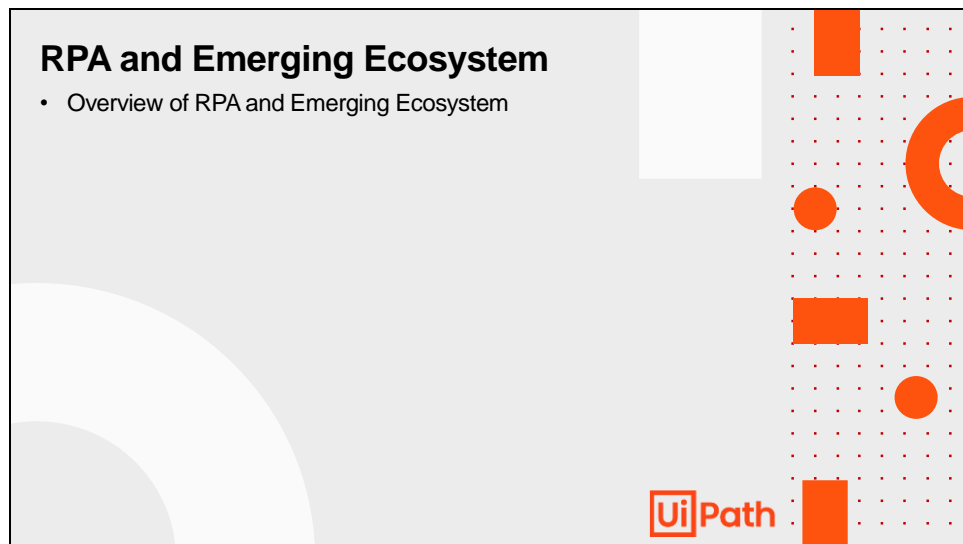


Infusing AI into RPA opens up the opportunity to automate various intelligent cognitive processes. RPA serves as a simple, scalable, and secure way to insert AI into decisions and strategies; this radically reduces AI execution time and effort and exponentially increases its impact to boost productivity, efficiency, and customer satisfaction to new verticals.

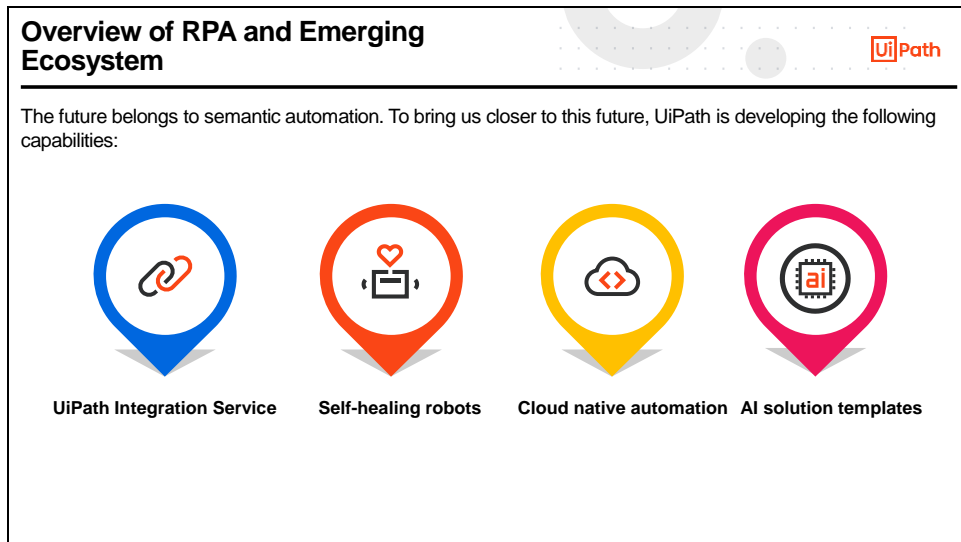
RPA robots jump from automating repetitive and rule-based tasks to automating cognitive ones. Tasks like process mining and document understanding- and far beyond, will fall into the grasp of automation robots if they are clad with advanced AI skills that allow them to process unstructured data, recognize speech, or apply machine learning and NLP.

UiPath is the global leader in automation. It has embedded AI into its products and platform. UiPath customers leverage this capability to automate their processes.

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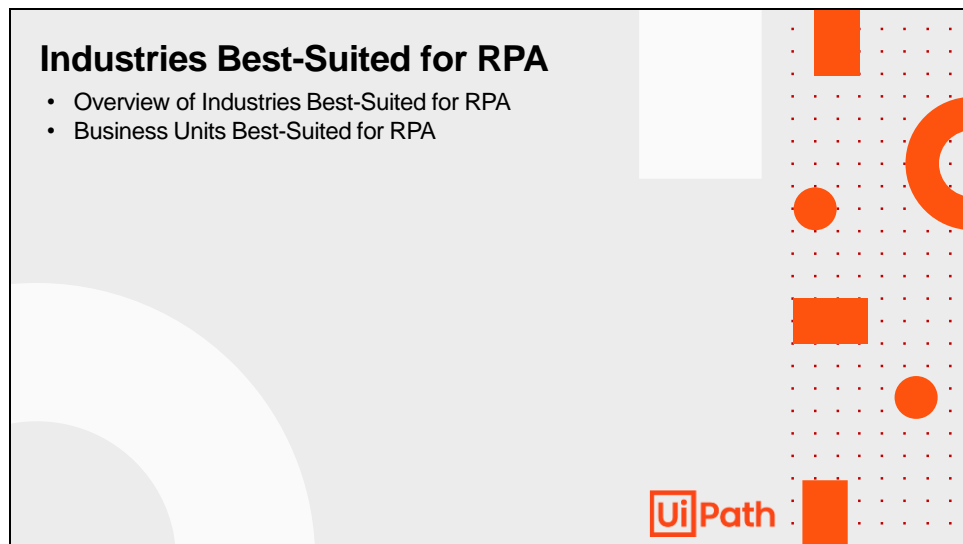
This section gives an overview of RPA and Emerging Ecosystem.



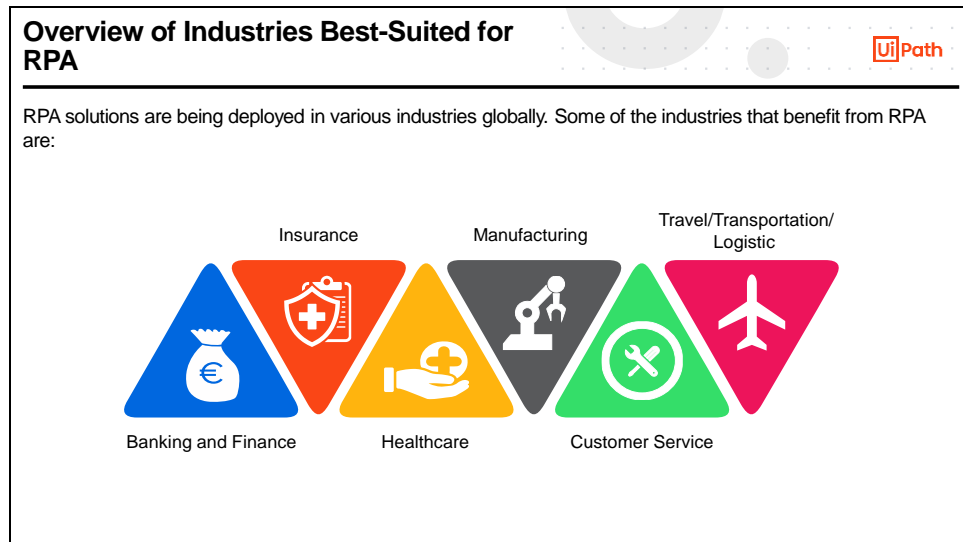
The future belongs to semantic automation. To bring us closer to this future, UiPath has the following capabilities emerging in its ecosystem:

- **UiPath Integration Service:** A unique integration of API and UI automation-based capabilities delivered together
- **Self-healing robots:** The UiPath Platform understands robot dependencies to stay ahead of changes and their impact (without requiring human intervention)
- **Cloud native automation:** Automation Cloud includes a host of new cloud services. And the new UiPath Automation Suite allows those who prefer on-premises, public cloud, or third-party hosted options to go cloud native
- **AI solution templates:** These new templates make it easier for developers to incorporate artificial intelligence (AI) into their automations

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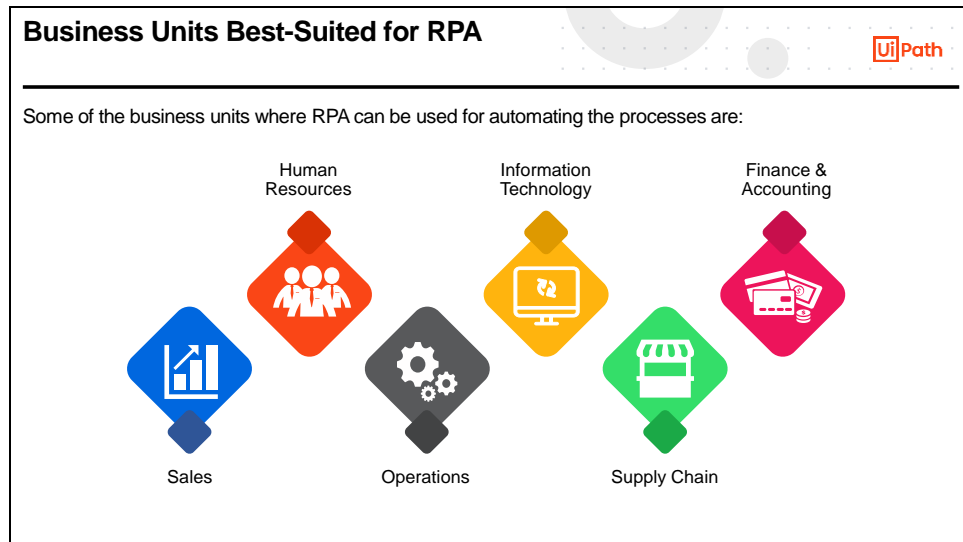
This section discusses the Industries and Business Units where RPA can be deployed.



RPA solutions are being deployed in various industries globally. Some of the industries that benefit from RPA are:

- **Banking and Finance:** This industry benefits considerably from RPA as it helps them to strengthen their compliance processes. RPA deployment helps in achieving operational efficiency and provides better analytical insights. Processes such as retail credit assessment & fraud prevention and account settlement & payment clearance are already automated
- **Insurance:** RPA solution provides streamlined compliance underwriting. The quick processing of tasks by robots has speeded up the claims management process thereby enhancing customer experience and satisfaction. The operational costs are also reduced accordingly. All this has enabled the organizations to get better customer insights and analysis from the RPA solutions
- **Healthcare:** RPA solutions are used to streamline the front and back-end office operations. As the applications are integrated into RPA solutions, the processes can work seamlessly without any manual intervention. This leads to enhanced patient record confidentiality
- **Manufacturing:** RPA solution facilitates reporting and administrative tasks. It provides benefits in areas like Bills of Materials, front office experience, back-office operations, etcetera, thereby lowering the operational costs

- **Customer Service:** RPA provides numerous benefits like better data integration and security and enhanced visibility of service provision. It also enables the organization to handle seasonal volume spikes and combine services with flexible integration. All this leads to streamlined collections processes
- **Travel/Transportation/Logistic:** RPA helps in streamlining the order management process, enabling real-time access to customer information and linking external supply chain applications to internal tools. RPA implementation optimizes the order distribution cycle and thus ensures seamless and error-free operations



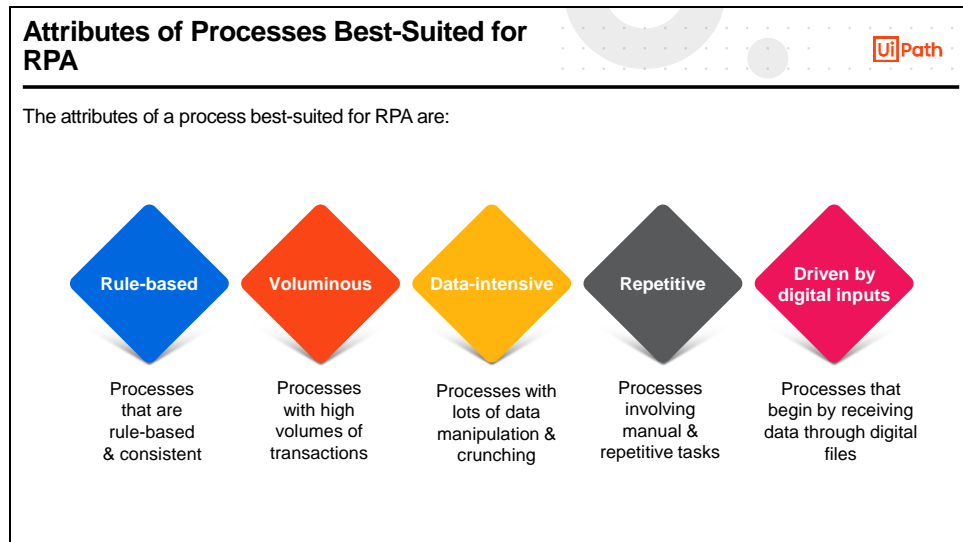
Every organization comprises various business units and each unit follows multiple processes. Some of the business units where RPA can be used for automating the processes are:

- Sales
- Human Resources
- Operations
- Information Technology
- Supply Chain
- Finance & Accounting

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This section explains the Attributes of Processes Best-Suited for RPA.













In order to choose a process for automation, identify whether a process follows certain attributes to make it a good fit. A process is best-suited for RPA if it is:

- **Rule-based:** Processes that are rules-based and consistent
- **Voluminous:** Processes that have high volumes of transactions
- **Data-intensive:** Processes that require lots of data manipulation and crunching
- **Repetitive:** Processes that involve manual and repetitive tasks
- **Driven by digital inputs:** Processes that begin by receiving data through digital files

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Examples of Business Processes for RPA

Some examples of the processes that can be automated are:

	Customer onboarding		Payment allocation
	Vendor onboarding		Purchase order processing
	Material master management		Order fulfilment
	Sales order creation		Bank reconciliation
	Invoice processing		Cash allocation & reporting




Some examples of the processes that can be automated are:

- Customer onboarding
- Vendor onboarding
- Material master management (creating/updating)
- Sales order creation
- Invoice processing
- Payment allocation
- Purchase order processing
- Order fulfilment
- Bank reconciliation
- Cash allocation and reporting

All these processes exhibit some or all the features of processes suitable for automation as discussed and can easily be automated using RPA.

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Summary



- 1 History of Automation
- 2 Introduction to RPA
- 3 RPA and Artificial Intelligence
- 4 RPA and Emerging Ecosystem
- 5 Industries Best-Suited for RPA
- 6 Processes Best-Suited for RPA

To summarize, this lesson explained:

- History of Automation
- Introduction to RPA
- RPA and Artificial Intelligence
- RPA and Emerging Ecosystem
- Industries Best-Suited for RPA
- Processes Best-Suited for RPA