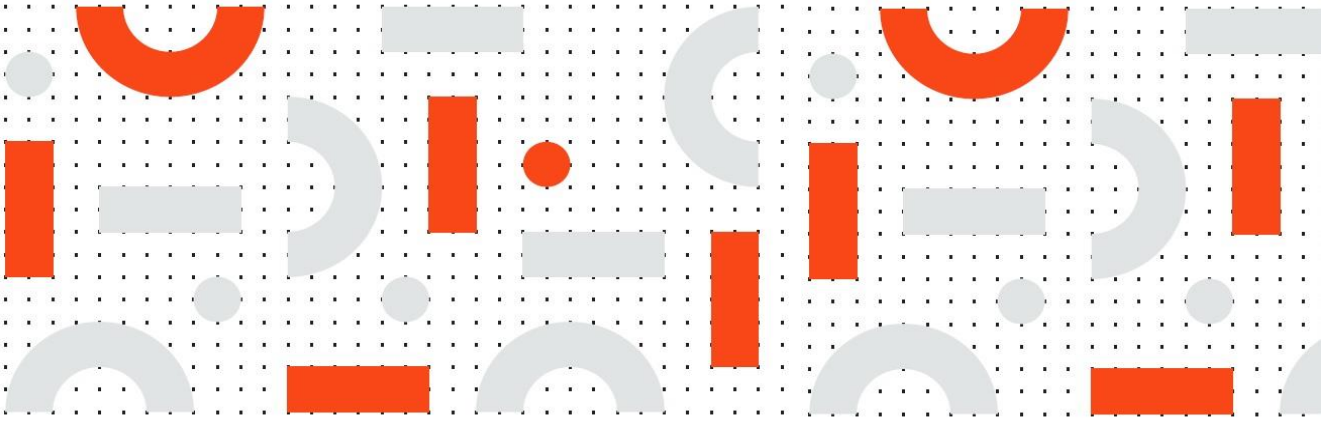

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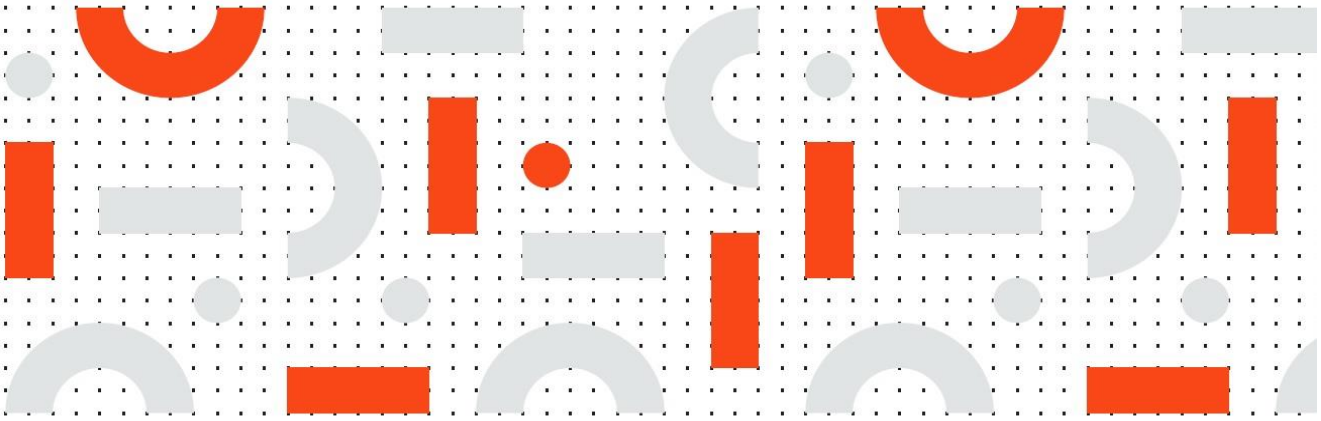
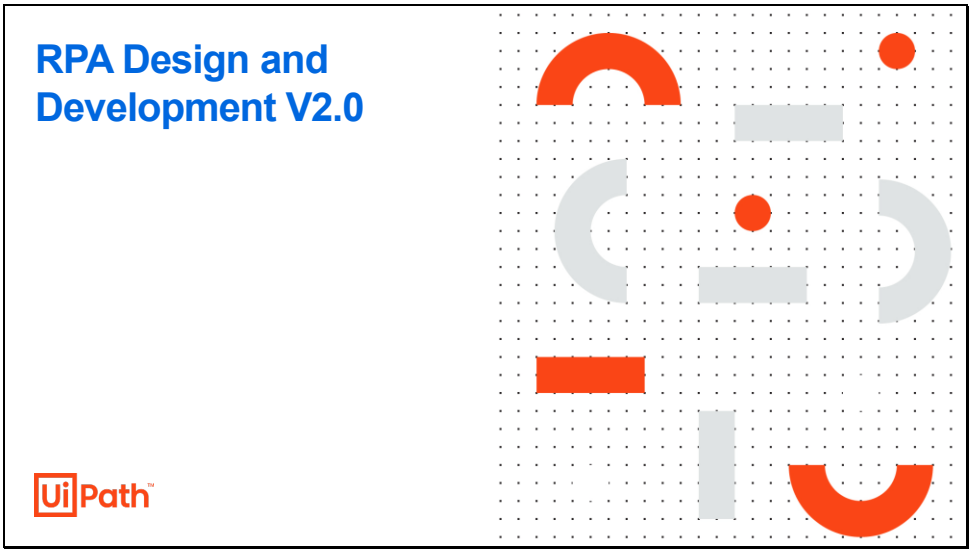
# RPA Design & Development V2.0

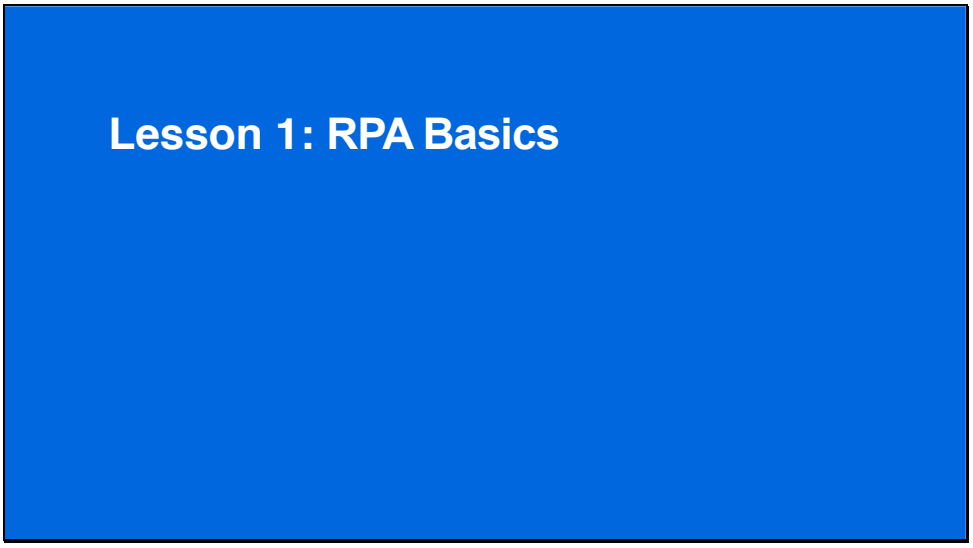
## Student Manual



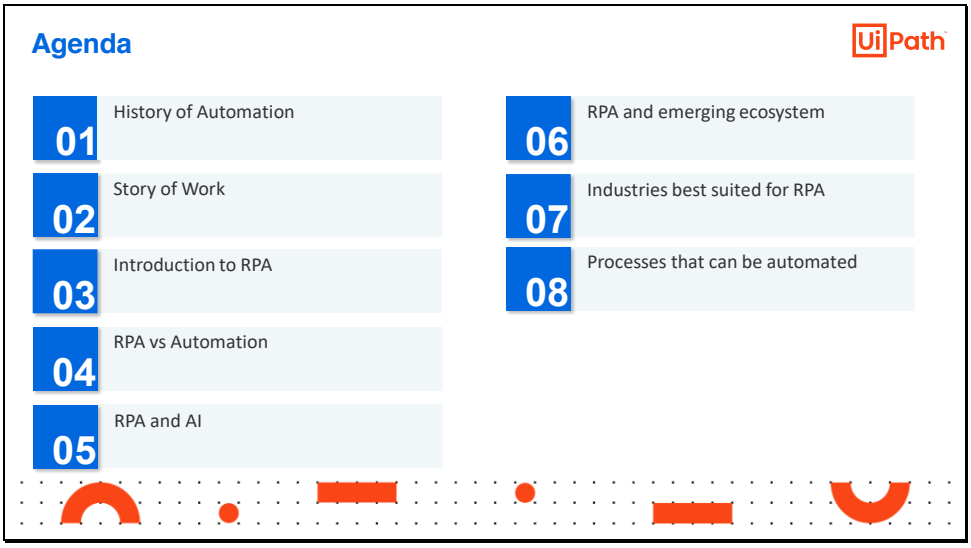
UiPath™ Learning Partner




Welcome to ‘RPA Design and Development Course’.

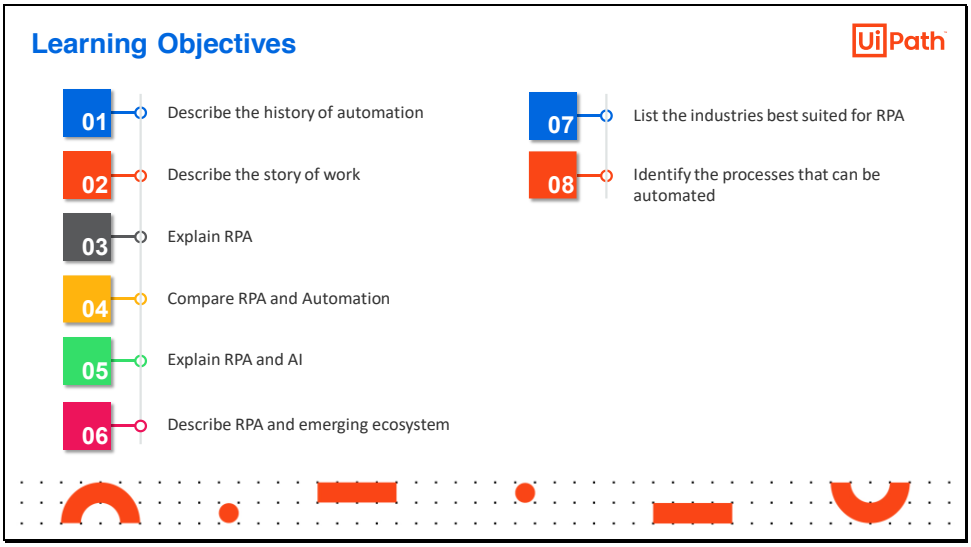



The first lesson of this course is RPA Basics.



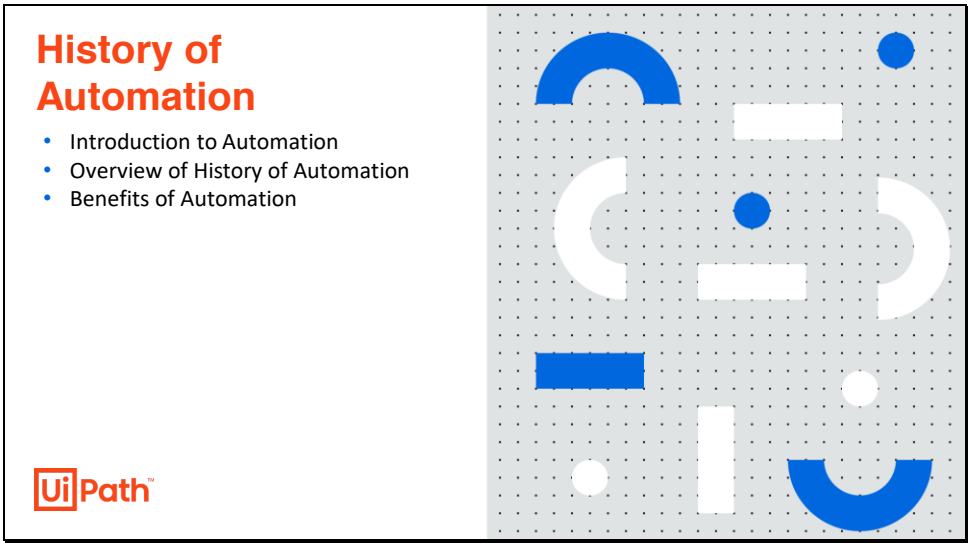

The agenda is:

- 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 that can be automated

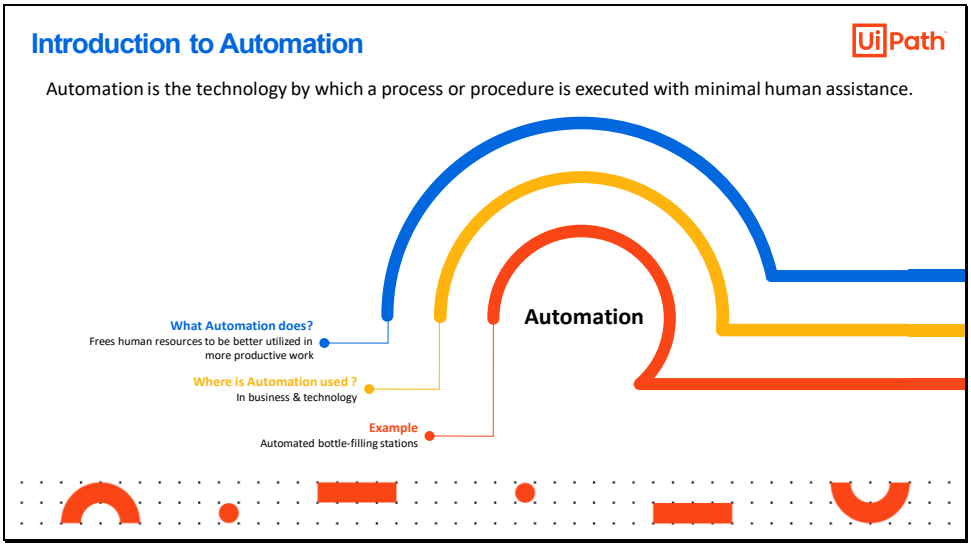



By the end of this lesson, you will be able to:

- Describe the history of automation
- Describe the story of work
- Explain RPA
- Compare RPA and Automation
- Explain RPA and AI
- Describe RPA and emerging ecosystem
- List the industries best suited for RPA
- Identify the processes that can be automated



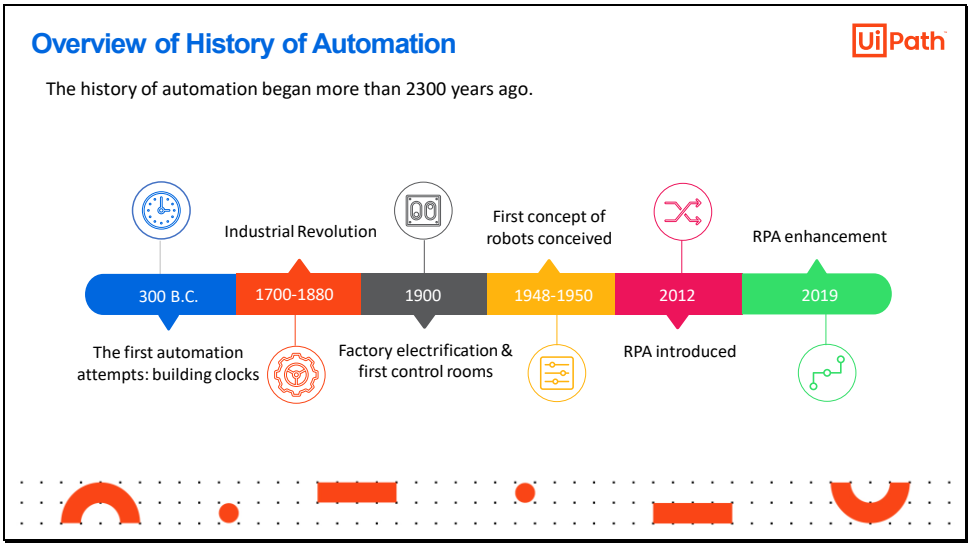

This section gives an overview of automation with a brief on its history and benefits.




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 the unwanted or repetitive tasks so that the overall performance is enhanced. Automation impacts the gross efficiency and productivity of any business process 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.

The best instance of automation in the business and technology field is manufacturing process, which was totally dependent on human labor earlier, but is now becoming fully automated.

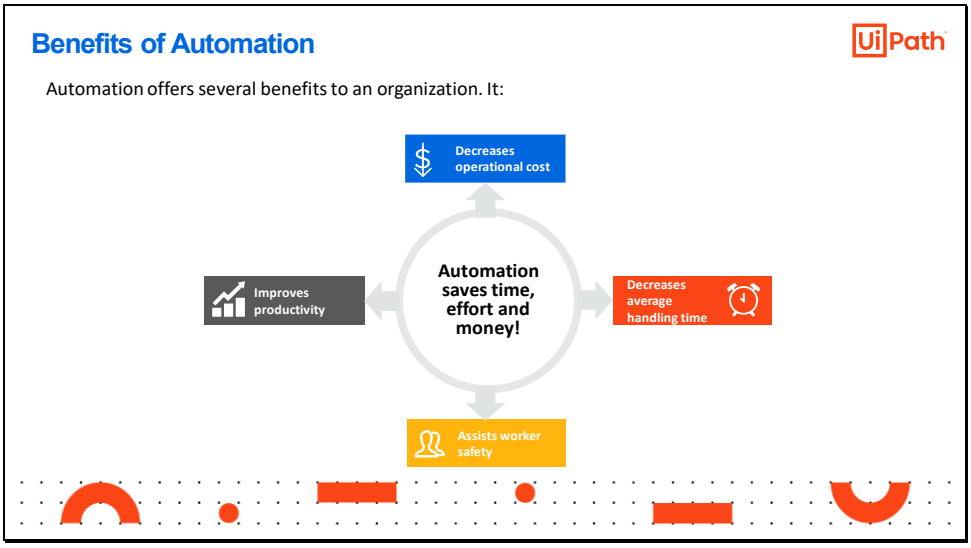
One such example of automation is automated bottle-filling stations.



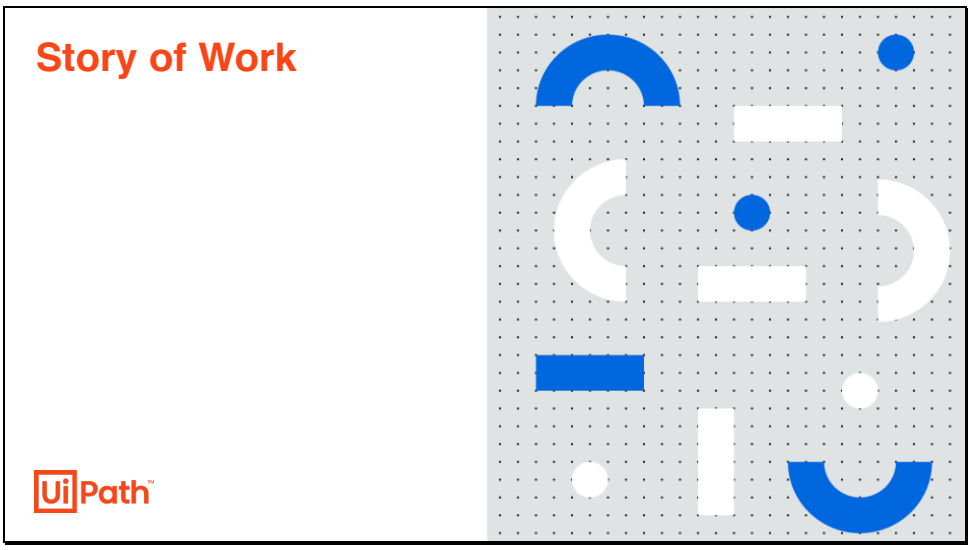

The term Automation was coined by DS Harder, an engineer working for Ford Motors. The term described the increased use of automatic devices and controls in mechanized production lines. However, the history of automation began more than 2300 years ago and with technological advancements, the development of this technology became increasingly dependent on the use of computers and computer-related technologies.

- Around 300 B.C., the first attempts at automation are linked to the idea of measuring time. Mechanical clocks began to appear in Europe towards the end of the 13th century. The Greeks, the Arabs, and the Egyptians made several attempts to automate water clocks (or clepsydras, used from the 16$^{th}$ century BC). These were followed by introducing automation into windmills, steam engine, etc.
- With industrial revolution in the 1800's, there came many advancements like introduction of telegraph, telephone and the concept of programmable machines. The 19th century witnessed the electrification of many factories, creating the need for a centralized control. The first attempts were simple on/off mechanisms. In 1937, the first electronic digital computer was designed followed by personal computers and Internet in 1974. Further in the 20$^{th}$ century, improvements in data-storage technology, software to write computer programs, advances in sensor technology, etc. contributed to the progress in automation technology. The concept of robots was also developed which was followed by the introduction of Robotic Process Automation in the 21$^{st}$ century.

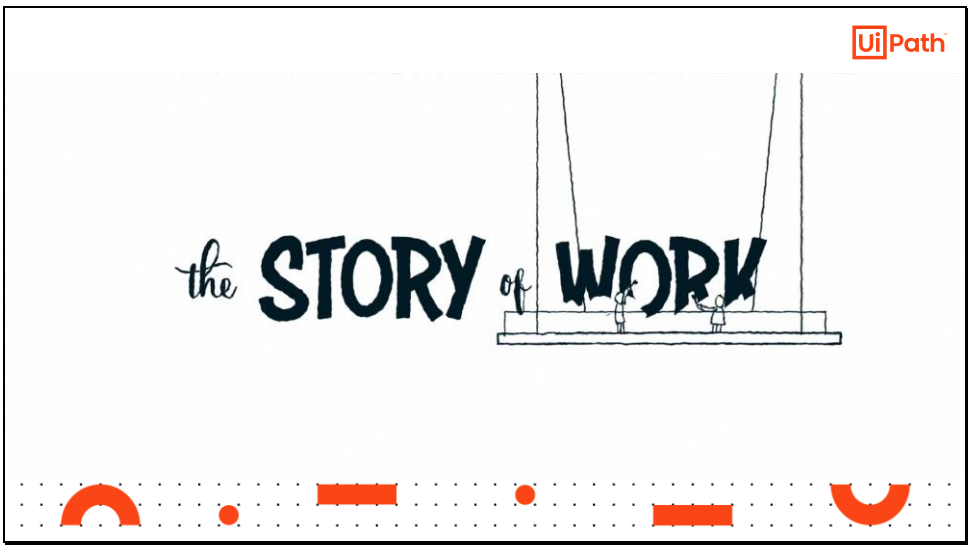
• In the recent times, the field of RPA has grown with the integration of latest IT technologies, such as Artificial Intelligence and Machine Learning. Robots are already able to automate simple, repetitive processes, and through the combination of RPA with these intelligent platforms, they will soon be able to improve their own performance and make complex decisions with little intervention or programming.



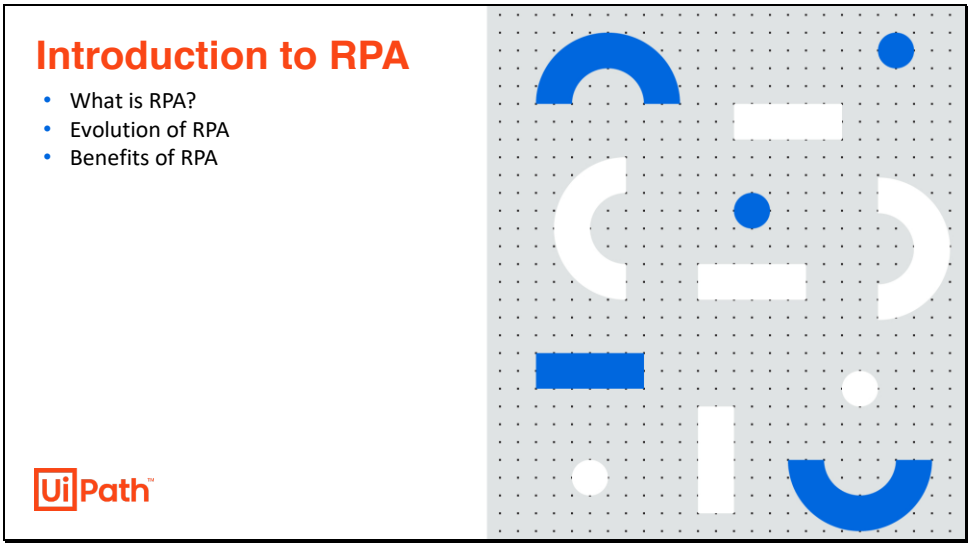

Automation leads to an improvement in the productivity of any system thereby decreasing operational cost and average handling time for executing any activity. Also, there are certain activities which involve a risk factor, making human life vulnerable to danger. Automated systems often remove workers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



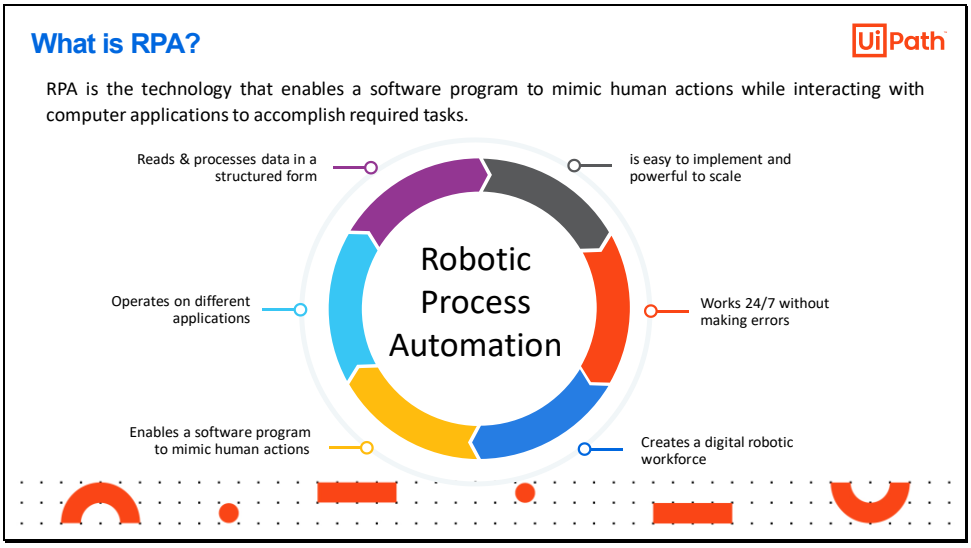

This section gives an overview of how work has evolved with the introduction of automation.




Video for the story of work.



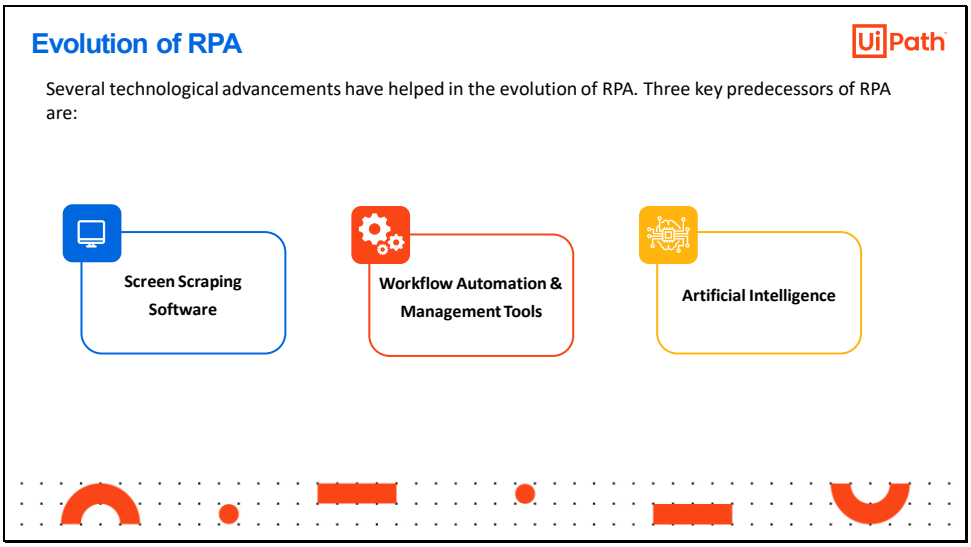

This section introduces the concept of Robotic Process Automation (RPA) and discusses its benefits.




RPA stands for Robotic Process Automation.

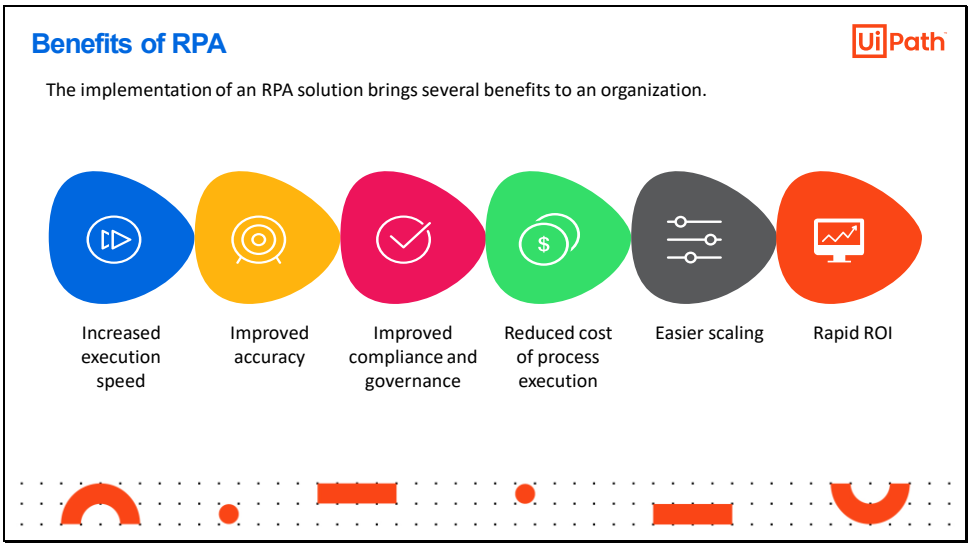
It is the technology that enables a software program to mimic human actions while interacting with computer applications to accomplish required tasks. This often requires reading, typing, or clicking on existing applications that are used to perform the given tasks. RPA can also replicate the actions 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, 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. Since the rules on which the robots are predefined thus increase the accuracy.
- RPA as a technology creates a digital robotic workforce which 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:

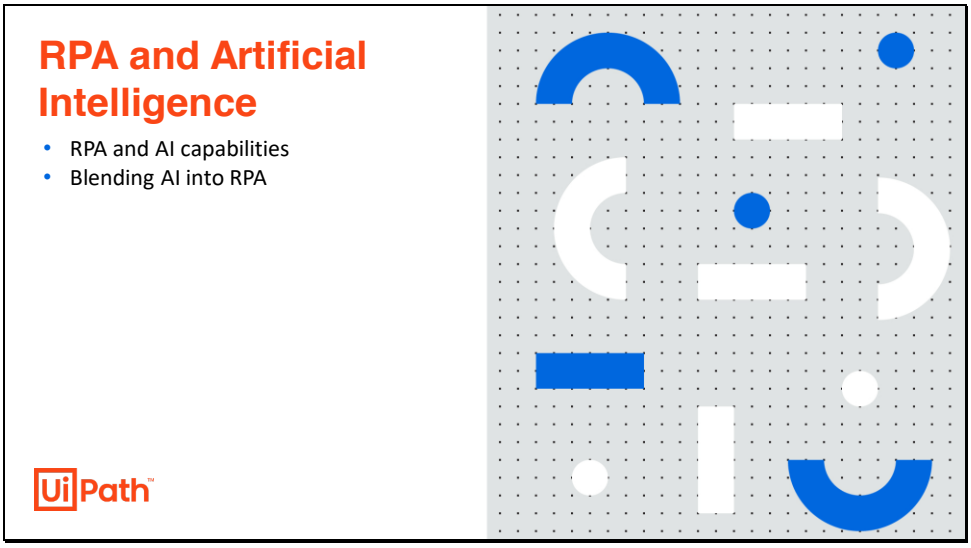
- **Screen Scraping software**: It enables the robots to interact with different user interface elements and documents, such as pdf files, to extract data for further processing.
- **Workflow Automation and Management Tools**: These provide visual representation of business or mechanical processes, minimize 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 normally require human intervention and intelligence. The tasks that were previously dependent on humans for their judgement and decision-making ability, can now be done by AI. For example, financial planning and fraud detection.



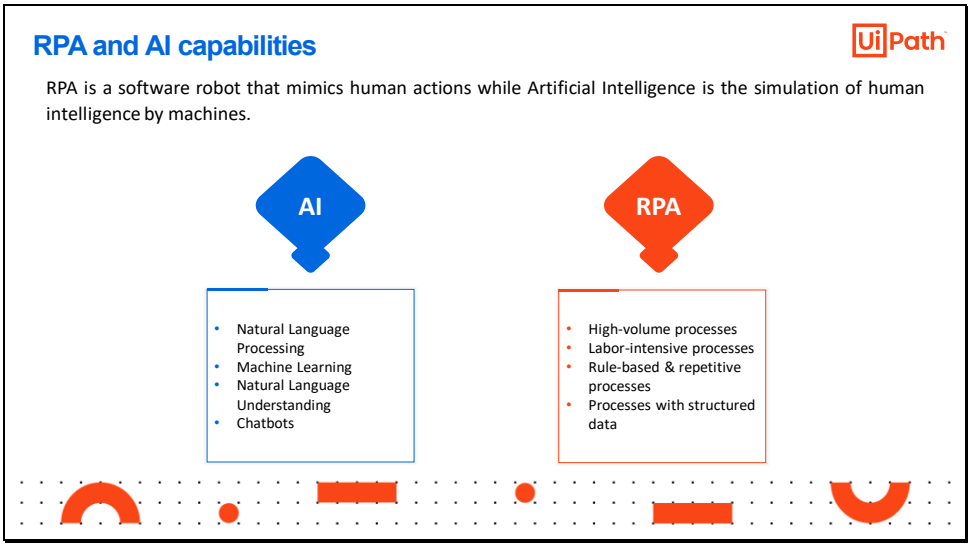

The implementation of an RPA solution brings several benefits to an organization. Some of the main advantages of adopting an RPA solution are as follows:

- **Increased execution speed:** Robots are quicker and more efficient than a human operator. Deploying RPA can drastically increase the speed of execution of repetitive or mundane 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.
- **Improved compliance and governance:** RPA solutions are adopted in accordance with 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.
- **Reduced cost of process execution:** The work capacity of robots is superior to that of human workers. By adopting an RPA solution, the 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.

- **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.
- **Rapid ROI:** All these factors like reduction in cost, improved accuracy, optimization of time and resources, result in extremely efficient operations for an organization. Thus, yielding a higher and faster return on investment by implementing an RPA solution.




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:

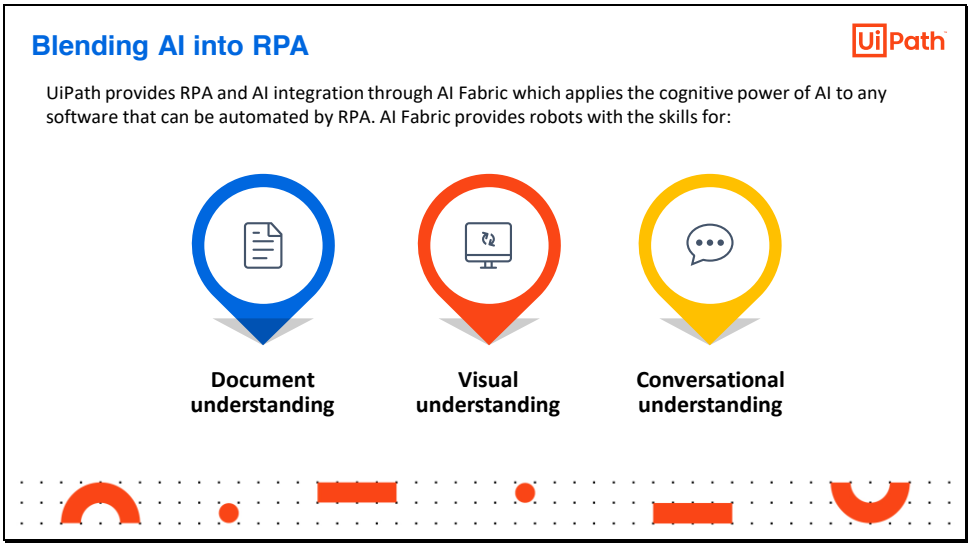
- AI constitutes:
    - Natural Language Processing
    - Machine Learning
    - Natural Language Understanding
    - Chatbots

- RPA is applicable for processes which are:
    - Voluminous
    - Labor-intensive
    - Rule-based and repetitive
    - With 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 bots to act more intelligently. The bots also interpret the interfaces they work across with better error handling capacity.

For example, using RPA, the user need the documents to be in a specific format to get them scanned. In this case, if an AI system is used along with the task, it will filter out the poorly formatted or unsuitable documents; hence the work of the RPA would be much easier.

AI and RPA combination will enable organizations to automate more complex end-to-end processes. AI and RPA are two distinguished technologies that industries can use to witness their organization's digital transformation in real-time. The combination of the two can prove to be extremely powerful.

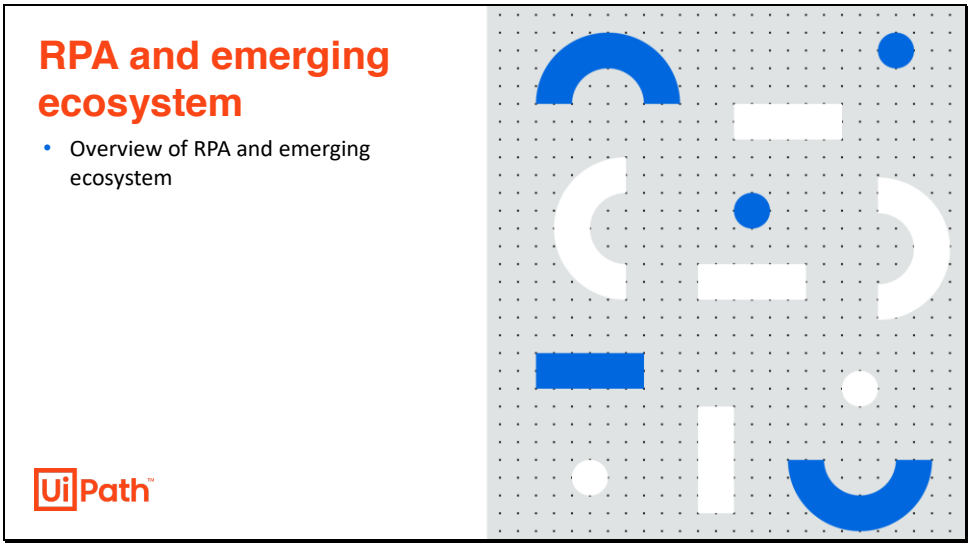



RPA is a continuously evolving technology and its integration with Artificial Intelligence helps to enhance the automation capabilities. UiPath provides RPA and AI integration through AI Fabric which applies the cognitive power of AI to any software that can be automated by RPA.

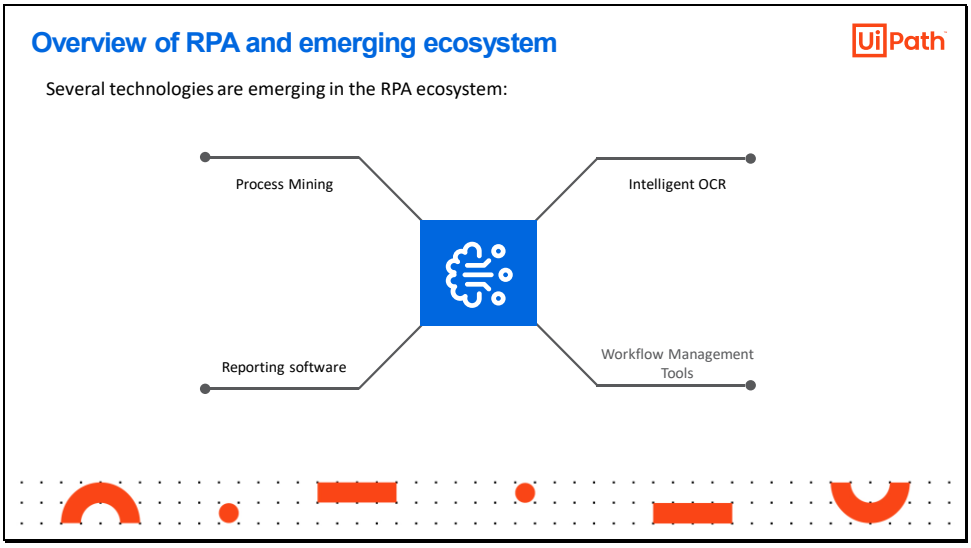
AI Fabric makes it easy to deploy AI and continually improve it. It provides the robots with the skills needed to process documents, recognize dynamic interfaces and make complex decisions. The skills are:

- Document understanding: Allows robots to process more documents faster as AI teaches the robots to read and understand different kinds of documents.
- Visual understanding: Allows robots to interact with screens, including VDI (Virtual desktop infrastructure) elements and dynamic interfaces to automate business processes that use virtual desktops.
- Conversational understanding: Allows robots to process and automate the text, chat, and voice inputs.

For more details visit the link: https://www.uipath.com/product/ai-rpa-capabilities




This section gives an overview of RPA and the emerging ecosystem.

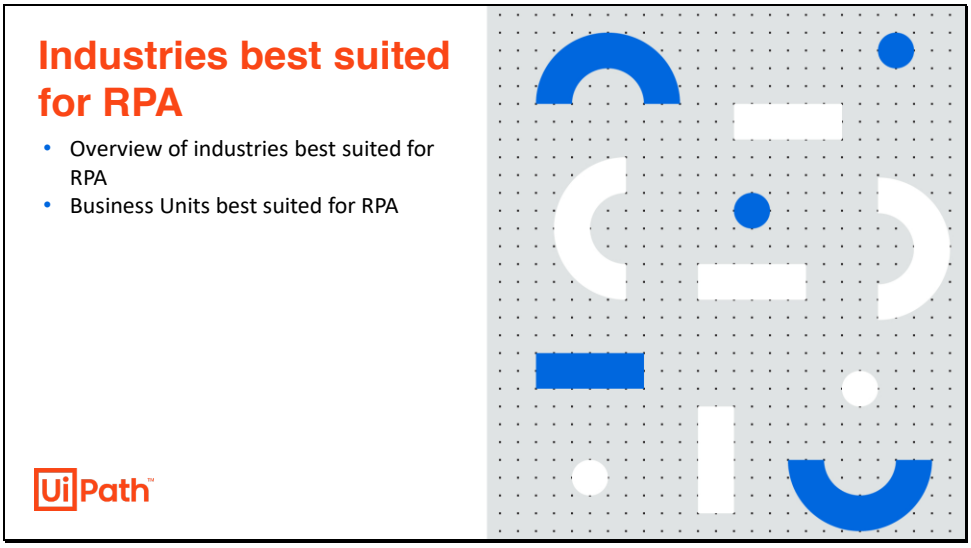



Several technologies are emerging in the RPA ecosystem:

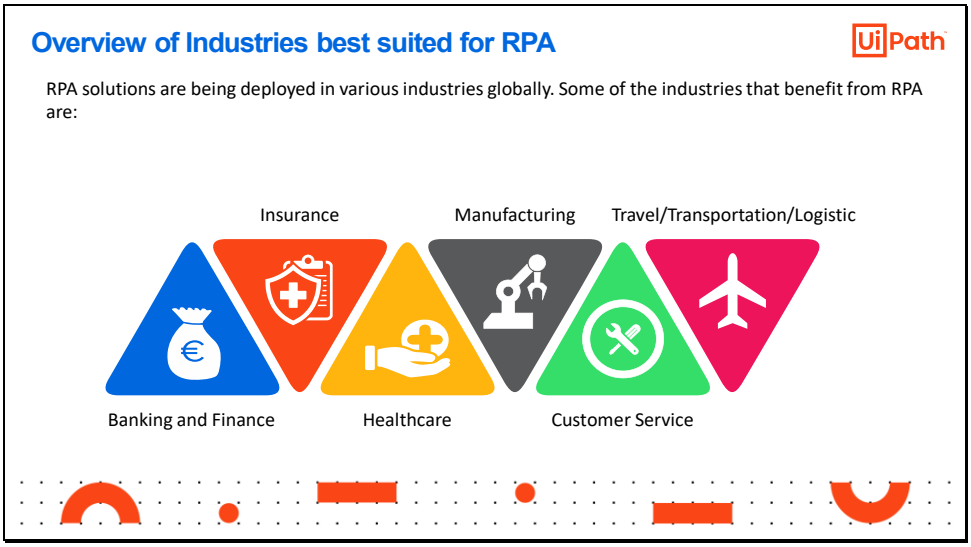
- Process mining: It refers to the analysis of business processes based on event logs. By using data from business applications
- Intelligent OCR: Intelligent character recognition is a derivative of the classic Optical Character Recognition and allows the user to extract data from documents. It equips RPA with the capability to automate the more difficult cases where unstructured and semi-structured content is involved.
- Reporting software: The reporting software gives insights on how robots perform. These are useful for Business Intelligence and Management Information System.
- Workflow management tools: These tools provide seamless workflow between human and robots. For example: Business Process Management tool

In addition to these, components are being developed and traded on platforms like UiPath such as UiPath Marketplace!

For more details visit the link: https://connect.uipath.com/marketplace for more information




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.

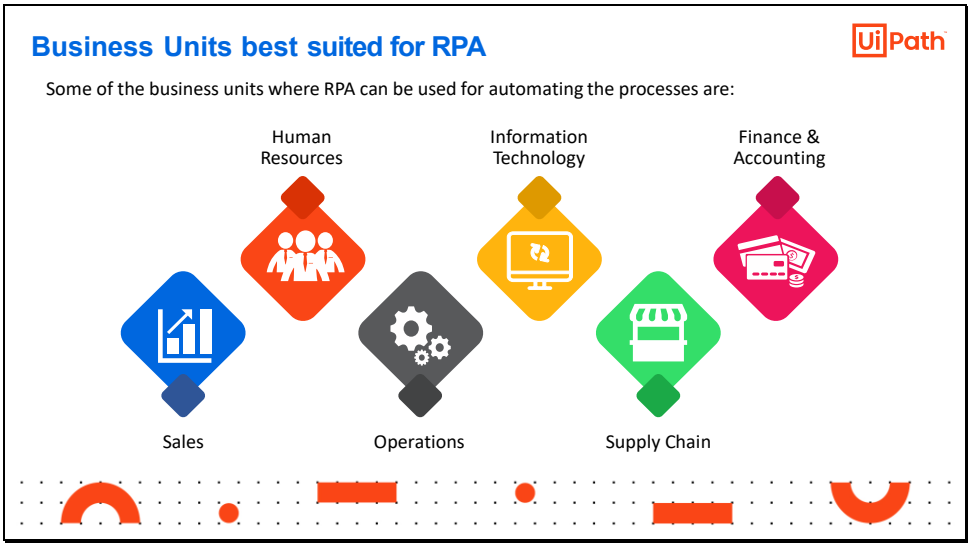
- **Insurance**: RPA solution provides streamlined compliance underwriting. The quick processing of tasks by robots has speeded up the claims management process thereby enhancing customer experience and satisfaction. The operational costs are also reduced accordingly. All this had enabled the organizations 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 in 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.

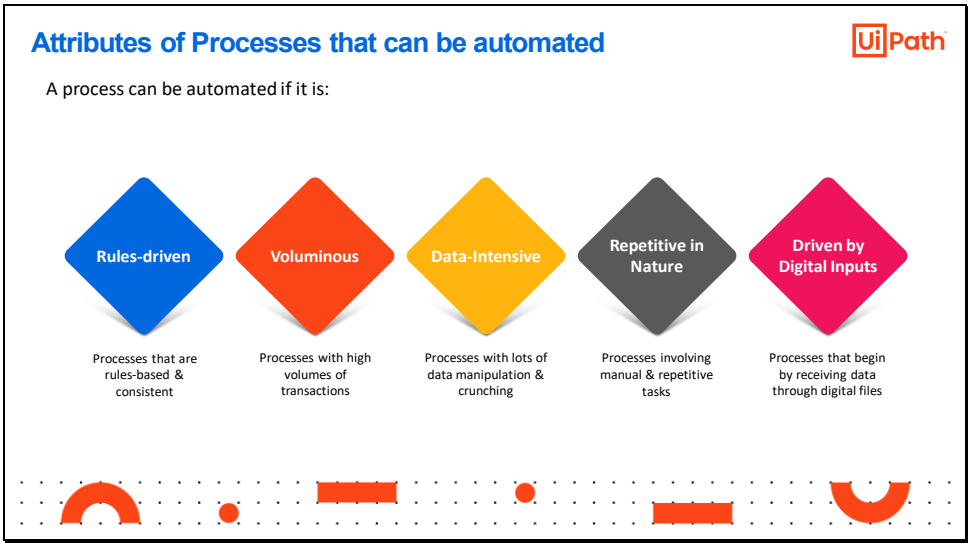
- **Travel/Transportation/Logistic**: RPA helps in streamlining the order management process, enabling real-time access to customer information and linking external supply chain applications to internal tools. RPA implementation optimizes the order distribution cycle and thus ensures seamless and error-free operations.




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

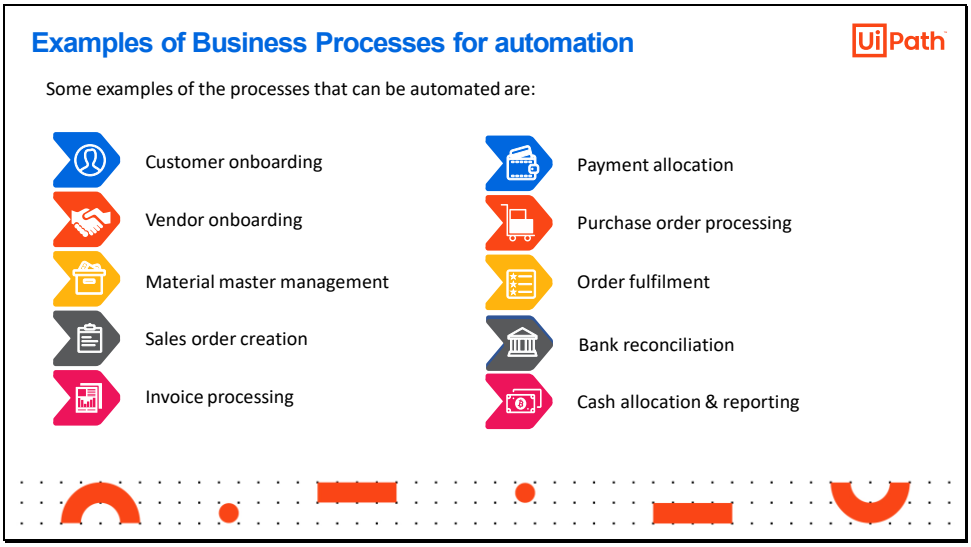
- Sales
- Human Resources
- Operations
- Information Technology
- Supply Chain
- Finance & Accounting


This section explains the features of processes that can be automated using RPA.




In order to choose a process for automation, identify whether a process follows certain attributes to make it fit for automation. A process can be automated if it is:

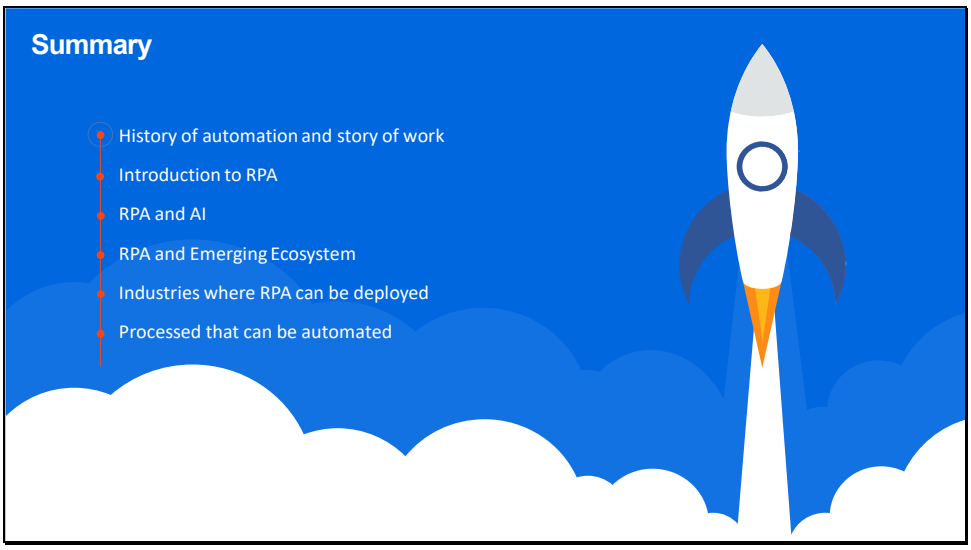
* **Rules-Driven:** Processes that are rules-based and consistent.
* **Voluminous:** Processes which have high volumes of transactions.
* **Data-Intensive**: Processes which require lots of data manipulation and crunching.
* **Repetitive in Nature**: Processes that involve manual and repetitive tasks.
* **Driven by Digital Inputs**: Processes that begin by receiving data through digital files.




After identifying the processes suitable for automation, here are some examples of the processes that can be automated:

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




To summarize, this lesson explained:

- History of automation and story of work
- Introduction to RPA
- RPA and AI
- RPA and emerging ecosystem
- Industries where RPA can be deployed
- Processes that can be automated