RAMAIAH Institute of Technology

Department of Computer Science and Engineering

RPA Design and Development
(CSE552)-(3-0-0-0)

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RIT

UNIT I

- PROGRAMMING BASICS
- Software Application and Software Development Life
- AUTOMATION AND RPA:
  - Introduction to RPA
    - Automation vs RPA,
    - Process and Flowchart ,
    - RPA Programming Constructs,
  - Robots in RPA
    - Introduction to Robots,
    - Types of Robots,
    - Benefits and Implementation of RPA

Automation

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

- Operating equipment such as machinery, processes in factories, boilers.
- Switching on telephone networks, steering and stabilization of ships, aircraft and

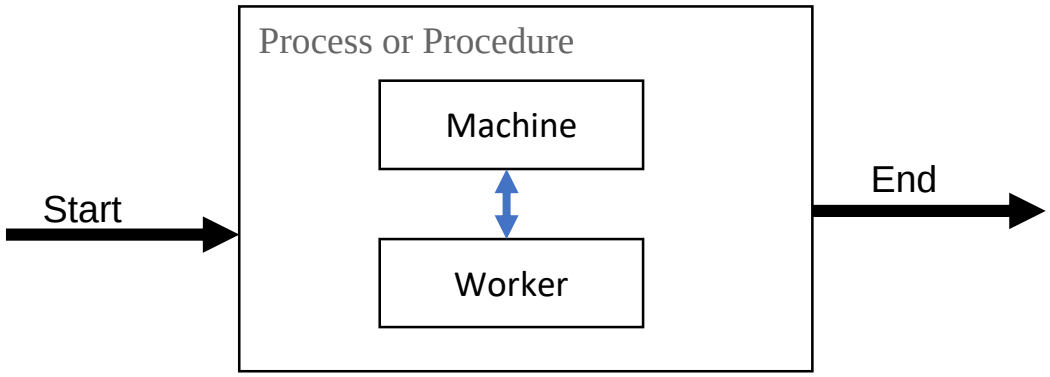


Fig: 1.a General execution of process

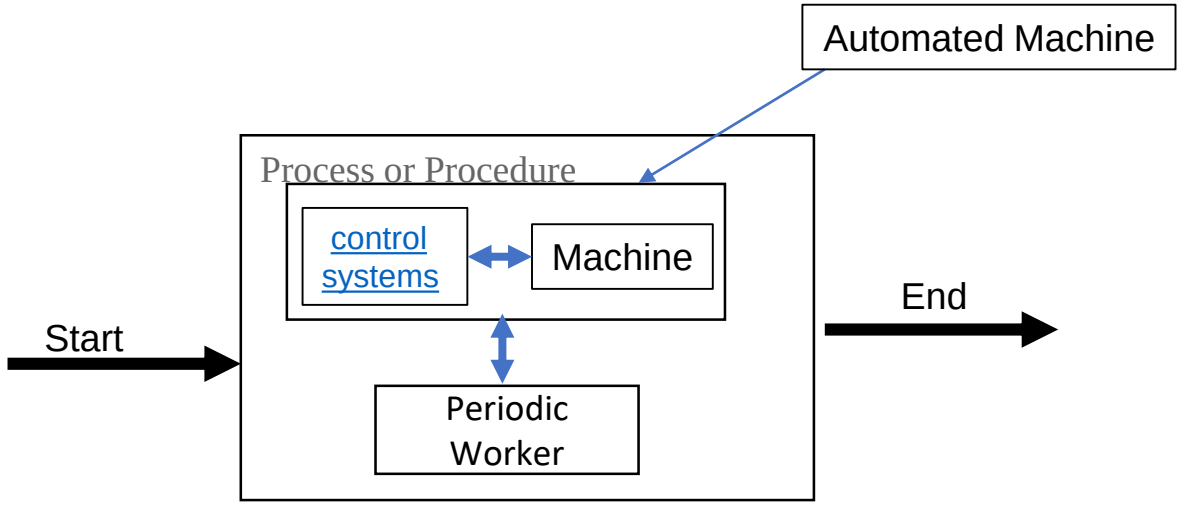
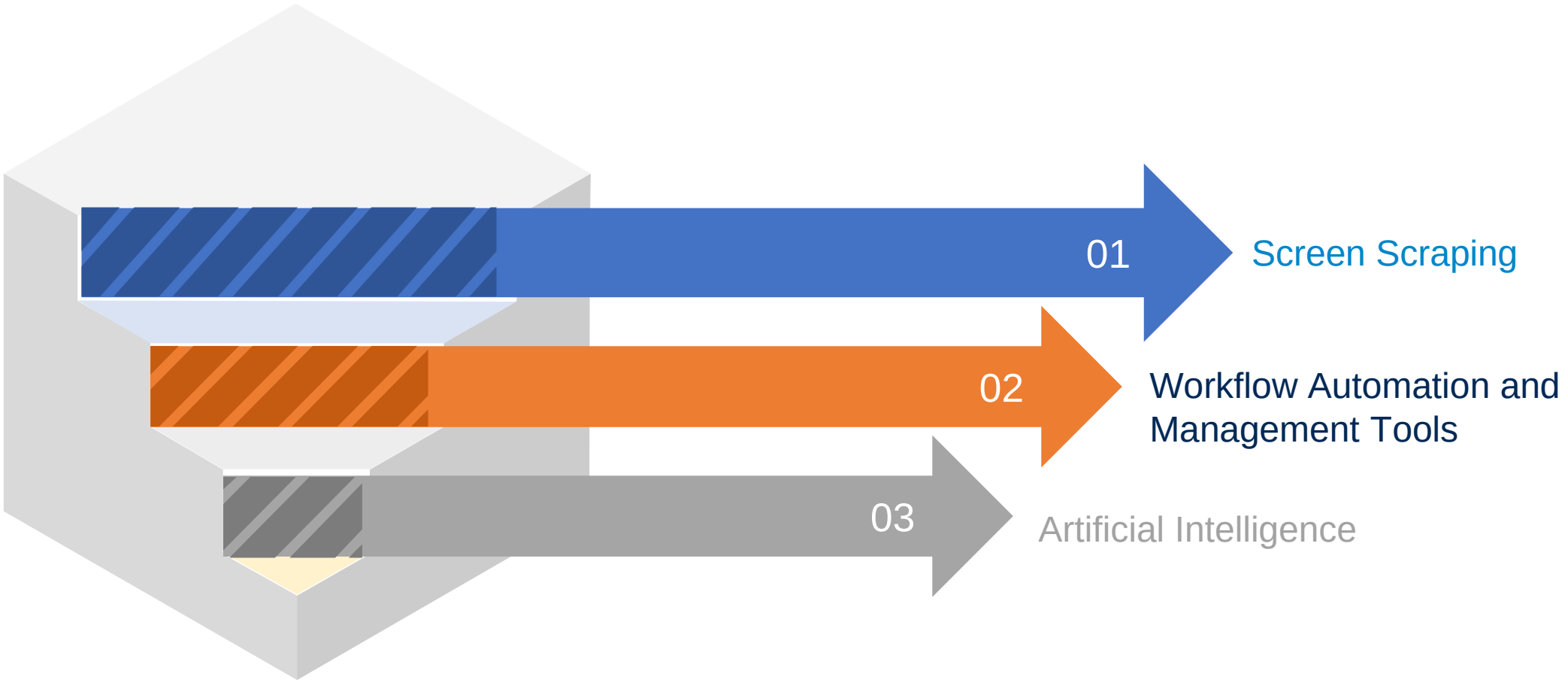


Fig: 1.b Execution of process using Automation

Journey from Automation to RPA



Introduction to RPA

What is RPA?

- Robotic process automation (RPA) is the process of automating process or operations using robots (bots) in order to reduce human intervention
  - Imitates human actions.
  - Interact with a computer application.
  - Accomplishing the automation of repetitive and rule-based processes.

Perform a sequence of steps without any human intervention

With the evolution of technology, the concept of automation improved and evolved as Robotics Process Automation.

RPA

Robotic: Represents a machine which mimics human actions
Process: A step-by-step sequence which can complete a task
Automation: Without any human intervention

Characteristics of RPA

- **User-Friendly:**. RPA projects require less IT skills and less investment. Eventually, the automation is lowered at a substantial rate.
- No programming code required: RPA doesn't require programming skills. Employees with any subject expertise can be trained to automate RPA tools instantly.
  flowchart designer to graphically link, drag and drop icons to represent steps in a process.
- **Non- Disruptive:** RPA avoids complexity and risk. The software robots access to end user's systems via a controlled user interface, hence reducing the necessity of underlying systems programming.

Advantages of RPA

The advantages of adopting an RPA solution into business are:

- Reduced cost of process execution
- Improved accuracy
- Easier scaling
- Increased execution speed
- Improved compliance and governance

Robotic Process Automation Tools

- RPA Blue Prism
- UiPath
- Automation Anywhere
- Kofax Kapow
- NICE

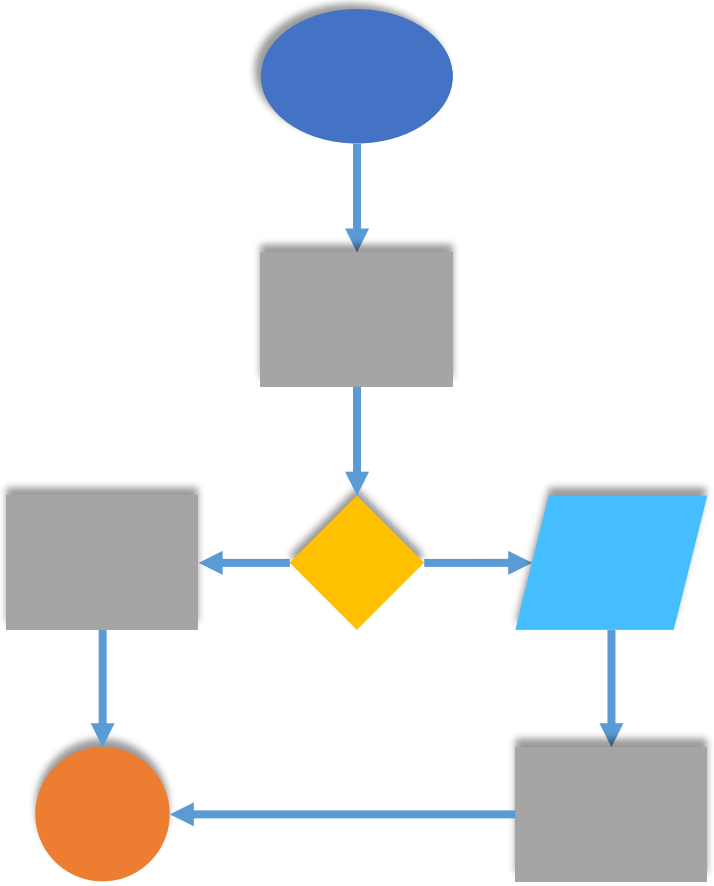
Automation vs RPA

These below features will help explore the characteristics of Automation and RPA:

Regular Automation	RPA
The user should have a deep understanding of the target application.	As long as RPA knows the right actions to perform, the user needn't bother about the complexity of the underlying application.
The method by which we improve the existing process and improve the efficiency is called automation	The advanced form of automation involving latest technology like screen scraping , workflow and Artificial intelligence
Regular Automation is completely dependent on coding and relies on methods to integrate different systems.	RPA involves little or no coding.
Automation requires the invention of a technology or a software program.	In RPA, we don't invent anything new; instead, we train the technology to perform the tasks that are done manually.
For example, when we had to automate the process of calculating numbers, we invented a calculator. Example: Heavy Industries like: Automobile, Manufacturing etc.	RPA can be used to enter the numbers automatically on a calculator and do the calculations. Example: Finance, Healthcare, Insurance etc.

Process

A process is defined as a series of steps, activities, and decisions involved in the way work is accomplished.



1. There are typically two ways to represent a process:
   - As a sequence, where actions come one after the other
   - As a flowchart, where there are multiple decision points and logical branches
2. The process chosen for automation is split into simple actions and mapped in the RPA tool.
3. The RPA developer analyzes and configures the mapped process by introducing decision points, variables, pre-defined operations, and other types of elements available in the RPA tool.
4. Once the logic is replicated in the workflow, the process is ready for automation.

RPA Programming Constructs

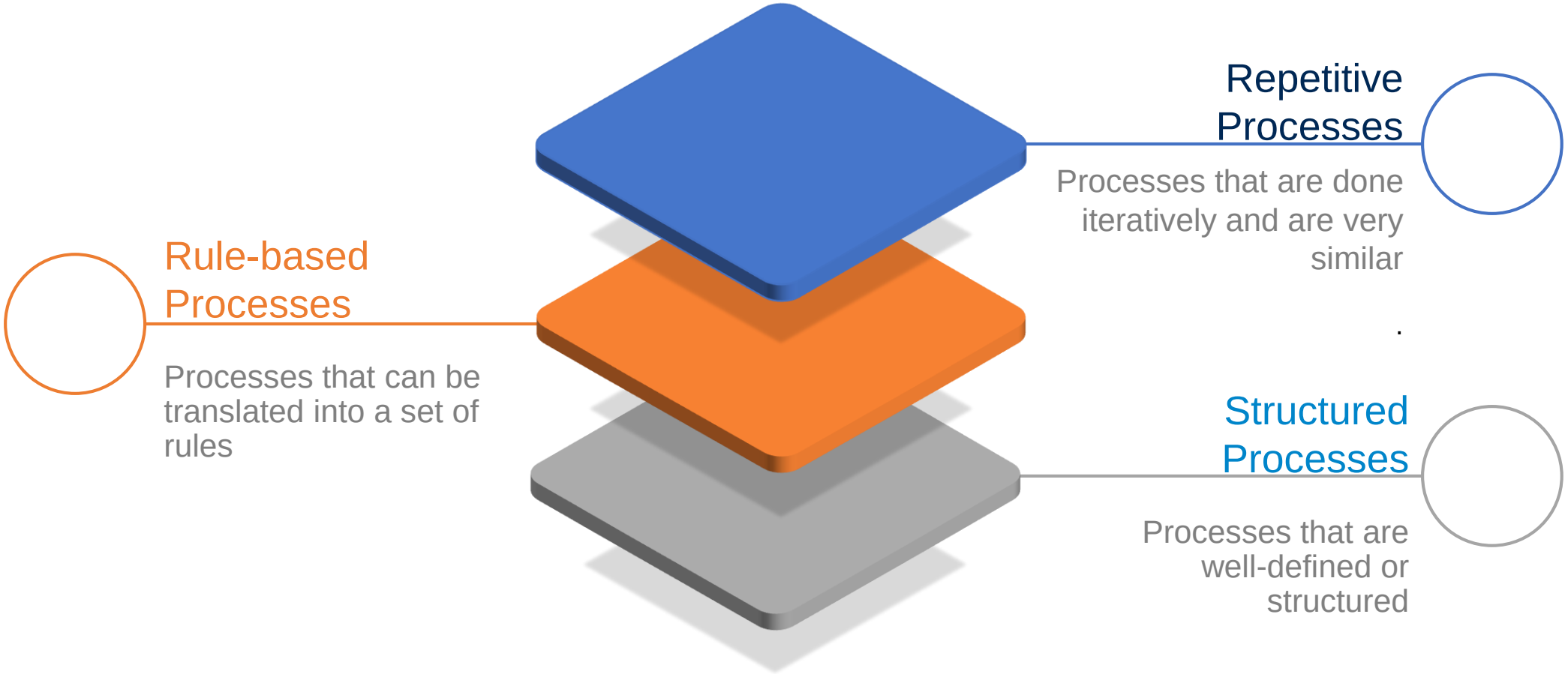
Programming constructs are the backbone of any programming language. Some important programming constructs are:

RPA Programming Constructs

Some important programming constructs are:

Processes Best Suited for RPA

Processes that are simple, structured and can be easily mimicked by a machine are best suited for RPA.



Repetitive Processes

Processes that are done iteratively and are very similar

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Rule-based Processes

Processes that can be translated into a set of rules

Structured Processes

Processes that are well-defined or structured

Robots in RPA

A robot is a software that can execute workflows containing multiple steps.

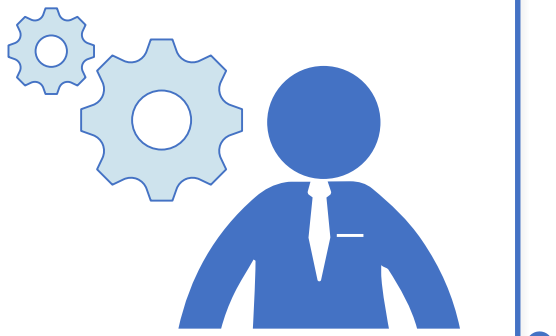
- It can mimic human actions such as type, click and read data
- It can perform complex calculations and decision making
- It can log into applications, move files/folders, and copy paste data

Types of RPA Robots

In RPA, robots are categorized on the basis of manual intervention required.

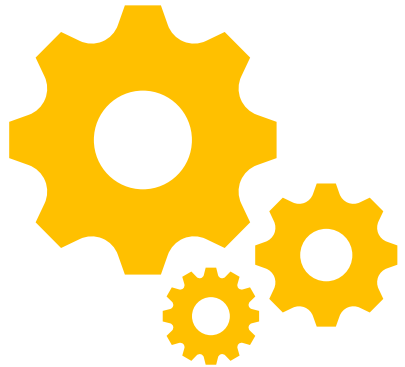
Attended

Robots that collaborate with a human worker.



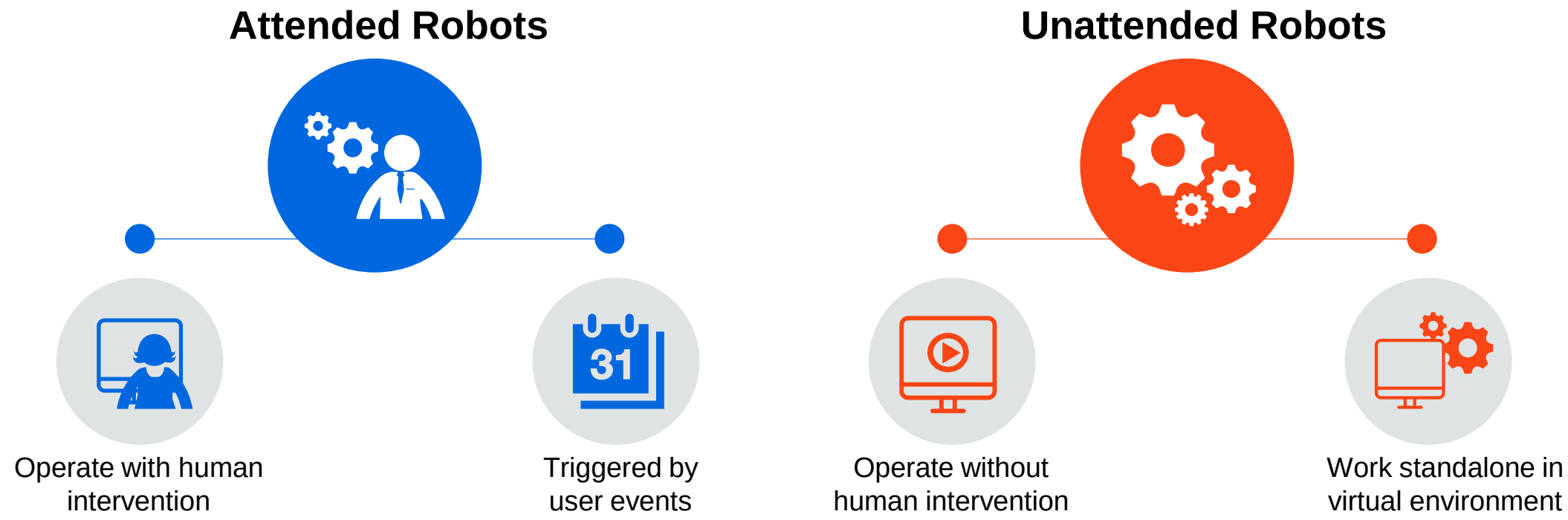
Unattended

Standalone robots that perform workflows.



Types of Robots

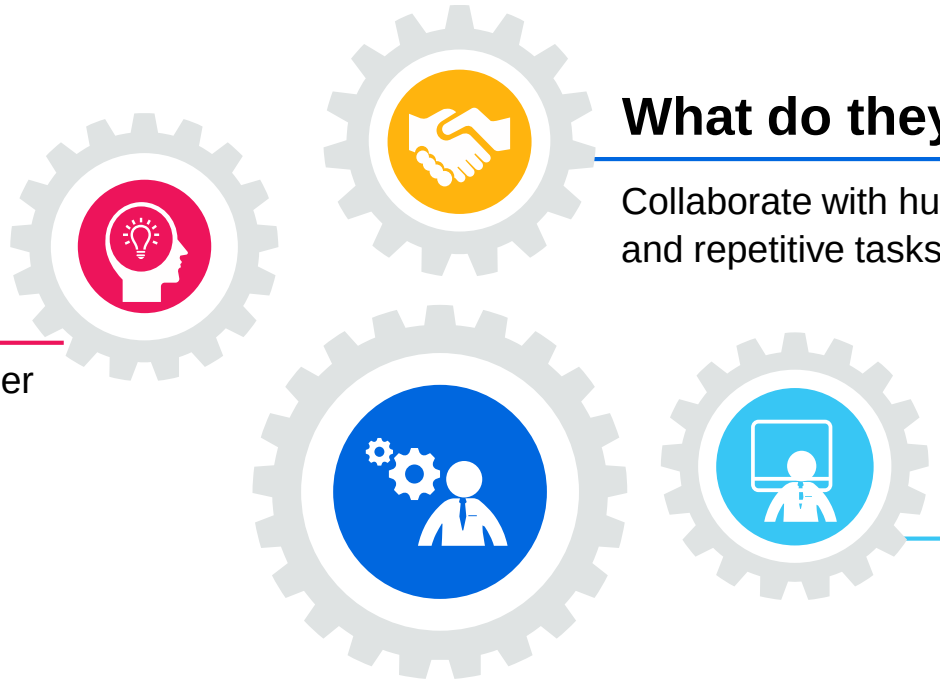
In UiPath, Robots are of two types:



Attended Robots

How do they work?

Triggered by users or specific user events



What do they do?

Collaborate with human worker for small and repetitive tasks

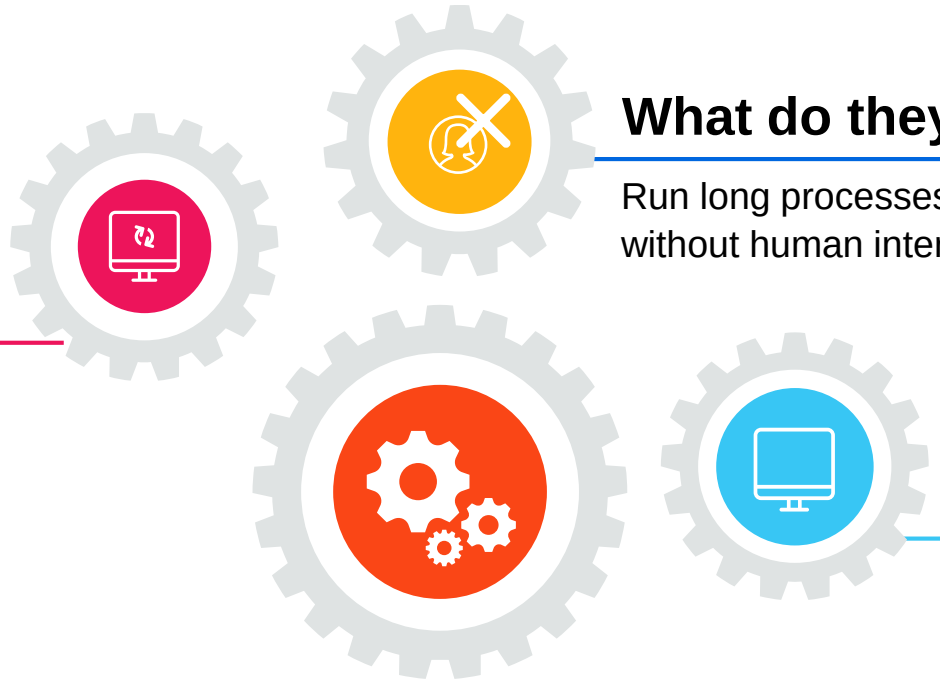
Where do they run?

On the same machine on which the user performs the day-to-day tasks

Unattended Robots

How do they work?

Controlled through Orchestrator



What do they do?

Run long processes or automations without human interaction

Where do they run?

Any machine connected to Orchestrator

Implementation of RPA

RPA has been implemented in various business areas to perform repetitive and time-consuming tasks.

HR Services

Process Examples:

- Recruitment
- Payroll
- Personnel administration

Finance and Accounting

Process Examples:

- Procurement to pay
- Order to cash
- Vendor management

IT Services

Process Examples:

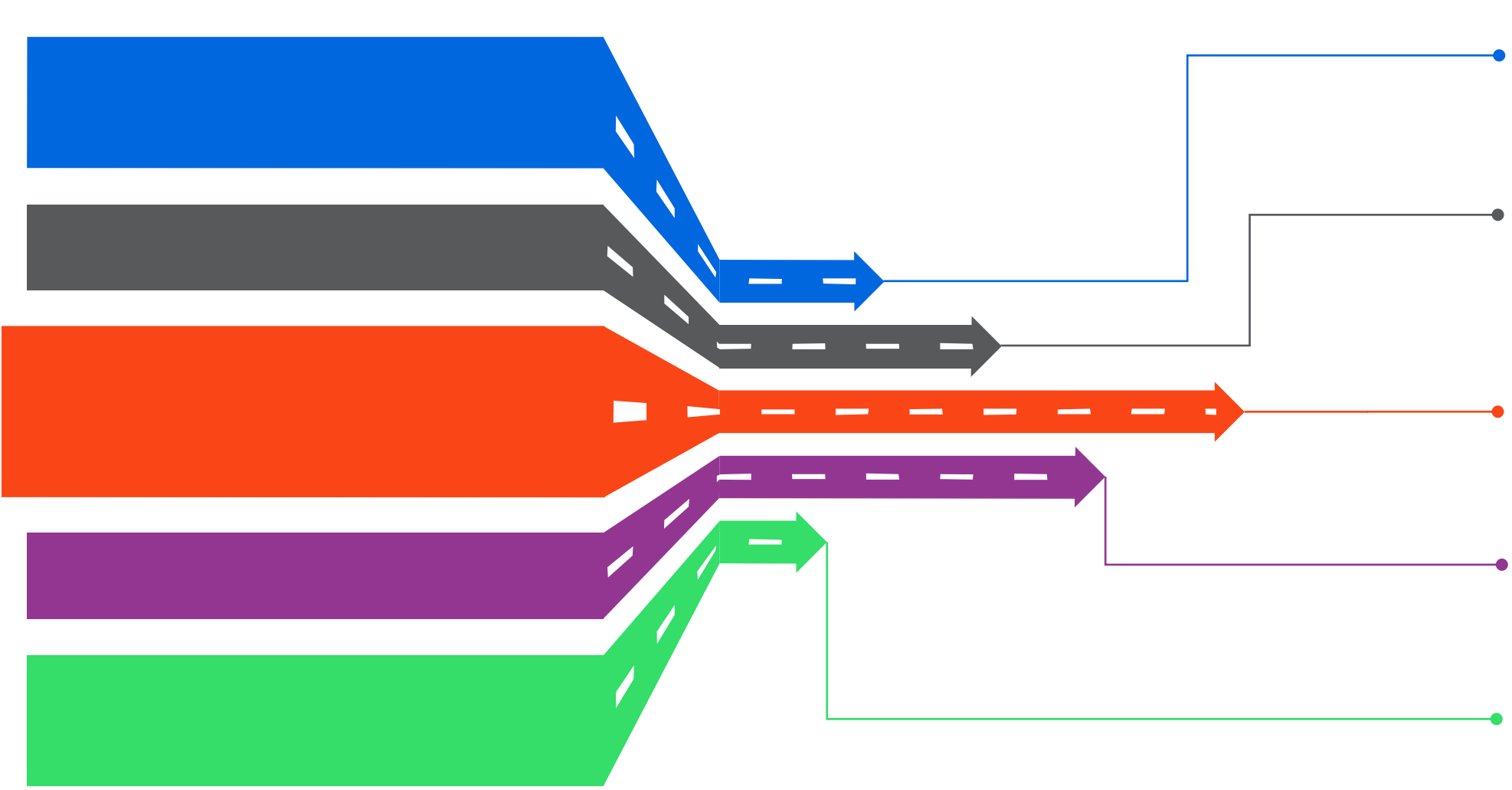
- Password reset
- Account unlock
- Chatbot integration

Supply Chain

Process Examples:

- Inventory Management
- Invoice/Contract Management
- Work Order Management

Introduction to UiPath



World’s leading RPA software company

Founded by Daniel Dines in 2005

Offices across 25+ countries

First company to offer end-to-end platform for Hyperautomation

5,000+ enterprise customers

Takeaways

- **RPA**
- **Programming constructs,**
- **Robots,**
- **Benefits of RPA**