Robotic Process Automation using UiPath StudioX

A Citizen Developer's Guide to Hyperautomation

Adeel Javed
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To my daughter Alaia, the light of my life.

—Adeel

To my father Ahmed and my family, for the invaluable support and inspiration.

—Anum

To my father, for always loving and mentoring me.

—Nadia

To my siblings, I'm forever blessed to be your big sister. And to that little girl with the big glasses, keep dreaming and achieving.

—Sidney

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About the Authors

Adeel Javed is an intelligent automation architect, an author, and a speaker. He helps organizations automate work using low-code, business process management (BPM), robotic process automation (RPA), analytics, integrations, and ML. He loves exploring new technologies and writing about them. He published his first book, *Building Arduino Projects for the Internet of Things*, with Apress back in 2015. He shares his thoughts on various technology trends on his personal blog (adeeljaved.com).

Anum Sundrani is a business systems analyst and technology enthusiast who specializes in business process management and robotic process automation. Anum is a Certified Appian Analyst, Tableau Author, Six Sigma Green Belt, and Scrum Master, alongside her several trainings in the areas of RPA development and the automation delivery life cycle. She has an inquisitive eye for simplifying complex business processes and has focused on implementing automation solutions for business users since 2017.

Nadia Malik is a presales engineer with a background in software development. She started her journey as a software engineer at IBM developing cloud storage applications and then joined the UiPath rocketship in June of 2018 helping in designing, implementing, and providing training to customers in robotic process automation. Today, she continues to evangelize RPA and mentor young women in STEM.

Sidney Madison Prescott is a senior technology leader, keynote speaker, and robotics evangelist specializing in the creation of Robotic Process Automation Centers of Excellence for Fortune 500 companies. Sidney currently heads up the Global Intelligent Automation initiative at the music streaming powerhouse Spotify. In addition to her enterprise technology expertise, Sidney is an executive board member for three global nonprofit organizations, where she contributes valuable automation insights to enhance overall program objectives. To round out her career accolades, Sidney was also named a global recipient of the 2020 Top 50 Technology Visionaries award.

About the Technical Reviewer

Rayudu Addagarla has 20 years of experience in web/mobile application development, the cloud, and solution architecture. He has been programming with Microsoft and LAMP stack since 1998. He has always been a full-stack technologist. His passion is toward digital transformation and business process automation, and he is a certified specialist in UiPath RPA. Along with Level 3 Advanced Certification in UiPath, he holds certifications in Pega RPA, WorkFusion, Tricentis TOSCA, Appian, and Pega BPM.

He holds a master of science degree in computer science from the University of Louisville, Kentucky, USA, and a bachelor of technology degree from JNTUACEA, Ananthapuramu, India. He has worked in the roles of Software Engineer, Business Process Consultant, Senior Manager, Industry Principal, Delivery Manager, and Senior Solution Architect. He has expertise in Healthcare, Manufacturing, Banking and Financial Services, Retail, Ecommerce, and Telecommunications domains.

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PART I

Overview

CHAPTER 1

Robotic Process Automation: Overview

To remain competitive in today's hyper-automated world, digital transformation initiatives have become a primary focus across various industries. Traditionally, C-suite executives are increasingly interested in lowering operational expenditures, particularly costs associated with the human workforce. In addition, business leaders are simultaneously focused on driving increased efficiencies and employee satisfaction across the enterprise. As a result, companies are undergoing a higher level of scrutiny surrounding existing business processes to seek out opportunities for automation at a global scale. One area of process optimization is that which exists for desk-level procedures typically executed by business stakeholders. With such a high percentage of automation opportunities executed by the business stakeholders, a bottom-up approach is commonly seen in which the workforce chooses tasks to automate based on their individual needs. Not only can they help in identifying opportunities to automate but also create automations themselves so that they may focus on high-value tasks. With the advent of intelligent automation, specifically Robotic Process Automation (RPA), companies now have a proven way to automate business processes at the keystroke level.

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UiPath provides a technology that enables the automation of business processes traditionally performed by business users, using configurable software referred to as "robots." UiPath's development platform, StudioX, is extremely flexible and user-friendly as it is a low-code/no-code solution. The software allows users the ability to interact with systems via a robot which leverages the users' own credentials or can be configured with distinct credentials and specific permissions. Robotic Process Automation tools interact with an application in the same way as end users do, through interactions with the user interface (UI), as well as through the back end of a system.

From a compliance and risk perspective, robots can only execute tasks that are specifically designed with the virtual robot worker in mind. The robot's access to both internal and external systems is limited to the design of the robot workflow, which demonstrates the rules-based nature of the software. The robot can also be designed to prompt the user for input or incorporate artificial intelligence (AI) to handle more cognitive tasks. As a result, Robotic Process Automation enables automation of the manual, repetitive tasks that are typically a fundamental component of a business user's daily job responsibilities.

A fundamental premise of Robotic Process Automation software is the belief that robotic software is designed to complement the human workforce, by empowering organizations with the ability to upskill employees to build simple automations or route more complex automations to a set of developers reporting into a core automation team. Adding Robotic Process Automation functionality into a business department can maximize the efficiency of employee outputs, minimize the risk of human error, and mitigate the number of tedious, manual processes employees are expected to execute, thus increasing the potential for a higher level of employee satisfaction.

Return on Investment (ROI)

In addition to enabling the automation of repetitive tasks, Robotic Process Automation software can provide substantial return on investment to both business process owners and the enterprise at large. Robotic Process Automation software allows firms to automate manual processes in a cost-efficient manner, due to the fact the price point of the RPA software is typically lower than that of traditional business applications. Robots are beneficial in minimizing the costs typically incurred in automation projects, as Robotic Process Automation tools can leverage existing infrastructure architecture without impacting live systems.

The infrastructure necessary to support robots is considerably minimal when compared to other tools, as robots can either run on an end user's desktop (attended automation) or a virtual machine (unattended automation). One of the many benefits of Robotic Process Automation is the ability users to dictate whether a human or a robot will be responsible for executing a particular step of the process within a given workflow. In addition, workflows can be customized to indicate when robots encounter changes in each system including routine software upgrades whereby elements of the user interface might deviate from previous versions. A significant benefit of Robotic Process Automation is the ability users to create workflows to support a dynamically changing environment with minimal impact to underlying infrastructure capabilities.

Automation Types

Moving forward, we will dive into the nuances of unattended robots and attended robots, to understand how the distinction between the two types of automation is driving a new approach to enabling business process automation through citizen development (business users with the ability to build automations). Robotic Process Automation can be

leveraged to automate a wide variety of processes including but not limited to payroll processing, customer service, advertising operations, report aggregation, and vendor onboarding. Robotic Process Automation also offers a wide variety of automation deployment models which can be used interchangeably to automate processes across the business including

- Attended robots that reside on the end user's computer or virtual machine for the purpose of automating simple manual processes that can be triggered by the actions of the user.
- Unattended robots that can be provisioned to reside on machines based on-premises (physical server based) or off-premises (virtual machines/cloud based) for the purpose of automating more complex back-office functions commonly scheduled to run based on a time or queue. Typically, unattended automation lends itself to more data-intensive tasks and processes with higher transaction volumes such as batch jobs.
- Hybrid robots that reside on a combination of end user and on-premises/off-premises solutions to enable a combination of attended and unattended style processing to enable the end-to-end automation of processes that require both human support and back-end functionality.

Each automation deployment model allows the end user the ability to determine the best way to interact with a robot based on the task at hand, alongside careful consideration of the existing variables in each environment. The various automation deployment models can be leveraged interchangeably as a part of a holistic enterprise-level automation platform and digital transformation strategy. As we move

forward, we'll focus on features and hands-on exercises specific to the Robotic Process Automation industry leader, UiPath, to discuss the unique value proposition the company offers citizen developers through the use of StudioX.

UiPath StudioX

UiPath is a global Robotic Process Automation software company based out of Romania. The company was founded in 2005 by Daniel Dines. The company originally offered automation libraries and software as an outsourced service, but quickly positioned itself to become an industry leader through a customer-centric model designed to democratize access to Robotic Process Automation capabilities. Through a robust product road map and unique approach to empower business users with the ability to automate simple business processes via StudioX, UiPath's enterprise platform demonstrates the seamless fusion that exists between business processes and automation capabilities.

StudioX is one product of UiPath's Robotic Process Automation platform designed to enable business users to build automation without the need for a traditional development background. The StudioX functionality includes a no-code interface with out-of-the-box drag-and-drop functionality to facilitate ease of use. In addition, StudioX contains predesigned templates and native integrations with common business applications such as the Microsoft Office suite to facilitate faster development of automation workflows. Business users can deploy a robot directly to a local machine, such as a desktop which removes the need for traditional IT deployment support. In addition, governance functionality is also built into the StudioX framework to allow auditing capabilities to ensure that existing company compliance protocols remain intact. Regarding the scheduling and sharing of automations, users can complete both tasks through the UiPath Assistant and Orchestrator components of UiPath.

One of the key elements that demonstrates the flexibility of StudioX is the fact the tool allows business users a user-friendly way to learn how to build automations that are beneficial to their job functions while simultaneously learning a new technical skill. In a world where technical prowess has become increasingly important, providing employees an opportunity to leverage Robotic Process Automation tools can help individuals to feel empowered and more satisfied, potentially leading to less attrition. The citizen developer model is the methodology by which business users are trained on the skills required to build automations while also being provisioned access to RPA tools to begin the development of robot workflows. As Robotic Process Automation continues to expand across a wide variety of industries, it will be important to continue to expand the knowledge of business users with tools such as StudioX to provide a wealth of benefits at an organizational level.

In the rest of the book, we will explore hands-on exercises with detailed reference guides for various activities and sample files to help you as you work to build your first RPA robots in StudioX. The goal of each chapter is to provide real-world business process scenarios for readers to reference as Robotic Process Automation learning tools. As you work through the exercises, make a note of any challenges you encounter to allow time to reflect on possible ways to solve any roadblocks you may have. This book is intended for both the business user looking to learn how to leverage StudioX for the first time and the experienced RPA developer looking to build upon existing knowledge to automate manual, repetitive tasks across your organization. As you step into the future of working with robots, remember that you have taken an important step in the journey to democratize automation and heighten your technical skill set. So, let us get started.

CHAPTER 2

UiPath StudioX

UiPath's StudioX tool offers a no-code approach to automation, providing citizen developers with the tools necessary to configure and run their automations.

Learning Objectives

At the end of this chapter, you will learn how to

- Download and install UiPath StudioX
- Access and use common interface components in UiPath StudioX

System Requirements

This section provides hardware and software requirements for UiPath StudioX.

Note This book uses **UiPath Studio Community v2020.10.2**. At the time of installation, you might find a slightly different version, and that will not affect the exercises.

The Community version is free and is not limited to a trial period. It is a great starting point for anyone just starting with UiPath or for organizations that are looking to evaluate it for enterprise use.

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Hardware Requirements

Table 2-1 lists the minimum and recommended hardware requirements.

Table 2-1. *Hardware requirements*

	Minimum	Recommended
CPU	2 x 1.8GHz 32-bit (x86)	4 x 2.4GHz 64-bit (x64)
RAM	4 GB	8 GB

Software Requirements

Table 2-2 lists software versions supported by the current version of UiPath StudioX.

Note UiPath does not support resolutions below 1024 x 768.

Table 2-2. *Software requirements*

	Supported Versions
Operating System	Windows (7, 7 N, 7 SP1, 8.1, 8.1 N, 10, 10 N)
	Windows Server (2012 R2, 2016, 2019)
.NET Framework	Version 4.6.1 or higher
Web Browsers	Internet Explorer v8.0 or greater
	Google Chrome version 64 or greater
	Mozilla Firefox version 52.0 or greater
	Microsoft Edge on Windows 10 version 1803 or greater

Installation and Setup

This section will provide you with step-by-step instructions for downloading and installing UiPath StudioX.

Register

Before you can download and install UiPath StudioX, you will need to register with UiPath.

Note If your company has purchased licenses for UiPath, then you should request this from your IT department.

---

1. Open the UiPath website (`www.uipath.com`) and click the `Try UiPath Free` button, as shown in Figure 2-1.

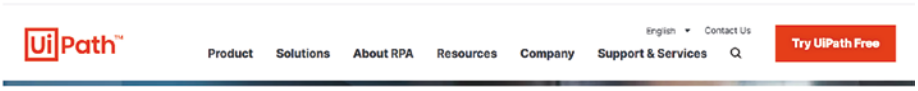

Figure 2-1. *UiPath trial option*

2. If this is the first time you are accessing the UiPath site, you will need to `Sign Up` using one of the provided options. Once you have registered, click the `Log In` link to enter your credentials.

Download

Next, we are going to download the UiPath StudioX installer:

1. Once you have logged in to the UiPath Automation Cloud portal, `https://cloud.uipath.com/`, you will see a `Download Studio/StudioX` button on the right under the `Home` tab, as shown in Figure 2-2. The location can change with updates to the UiPath Automation Cloud portal.

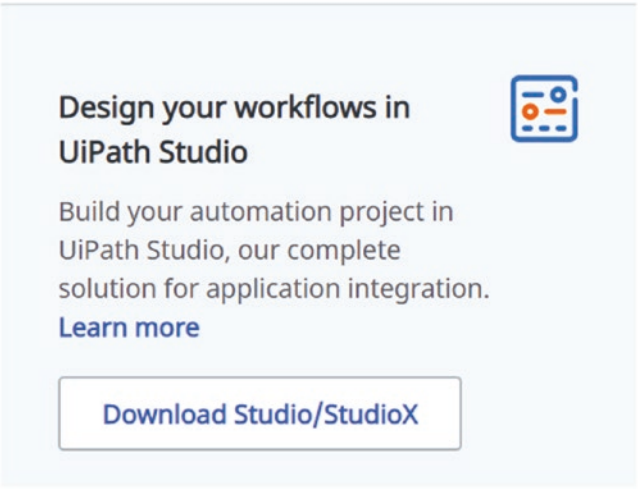

Figure 2-2. *Download the link for UiPath StudioX*

2. Click the `Download Studio/StudioX` button; this will download the installer on your computer. Figure 2-3 shows the name of the installer once it has been downloaded.

Figure 2-3. *Installation package for UiPath StudioX*

Install

Once the UiPath StudioX download is complete, you can start the installation process:

1. To start the installation, double-click the installer, that is, `UiPathStudioSetup.exe`, that you downloaded in the previous section. This will launch the UiPath StudioX installation window, as shown in Figure 2-4.

Figure 2-4. *Start the UiPath StudioX installation process*