



RPA & CHATBOTS

Simplifying The Relationship Between RPA and Chatbots



SnatchBot

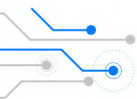
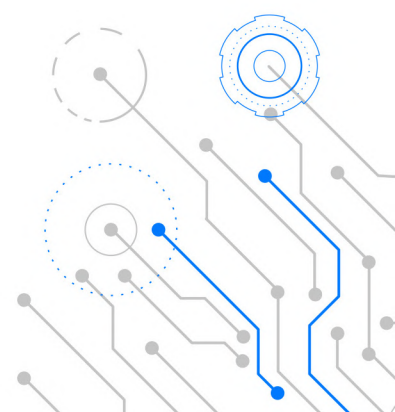
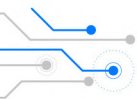


Table of Contents

Introduction.....	1
1. Moving towards Artificial Intelligence	2
2. Robotic Process Automation	4
3. How it Works	7
4. The Limitations of RPA	9
5. RPA Use Cases Per Industry	10
6. Chatbots.....	11
7. ChatBot Use Cases For Every Industry	16
8. Key Differences Between RPA Robots and Chatbots	17
9. Simplifying The Relationship Between RPA and Chatbots	18
10. What can Chabots and RPA achieve together?	19





Introduction

Robotic process automation (RPA) started in the 1990s and 2000s in conjunction with automation, quickly taking over industries such as manufacturing. RPA proves most useful for back-office functions. It focuses on deploying virtual workforces of software robots to process routine tasks. The ability to automate high-volume, repeatable tasks makes RPA attractive in various sectors.

A chatbot is an assistant that communicates through text or voice messages, a virtual companion that integrates into websites, applications or instant messengers and helps entrepreneurs get closer to customers. Advances in natural language processing (NLP) and artificial intelligence (AI) are leading the conversational revolution.

Smart chatbots are proving themselves highly useful for both frontend and backend use cases – from providing customers with great sales and service experiences, to simplifying and streamlining an organization's supply chain processes.

The core ideas behind RPA and chatbots are simple. However, rapid innovation in technology and capabilities in both fields demands greater awareness from enterprises and can lead to confusion in differences between robots, software bots and chatbots, which can sound very similar.

So, what's the key difference between RPA and chatbots? RPA seeks to mimic and replace human-driven workflows by assigning tasks and transactions (also known as processes) to a tool or script, also known as a "software bot", in a fully automated or semi-automated environment.

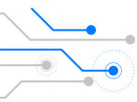
Chatbots are instead used to provide a conversational interface between systems and users, augment human workflows, and help streamline and simplify the completion of tasks. In brief: users talk to a chatbot, while they trigger an RPA to carry out a task without communicating with the software.

Chatbots, much like RPA today, can also be used to perform automated tasks for users. While the methods used by each technology appear to be at odds at first glance (RPAs are often used to replace workers, while chatbots assist workers), many of the end results are the same: lower costs, increased flexibility, and improved productivity.

While RPA, and by extension chatbots, may be transformational and can create compelling value for the enterprise – they can't do everything. This creates a new, previously impossible, opportunity for two emerging technologies to work together to revolutionize frontend and backend operations and deliver outstanding results.

This white paper seeks to clear up common misconceptions about RPA and chatbots; create a common frame of reference; define how they can be used; understand the benefits and limitations of each and provide practical ideas for how they can complement each other within organisations.





1. Moving towards Artificial Intelligence

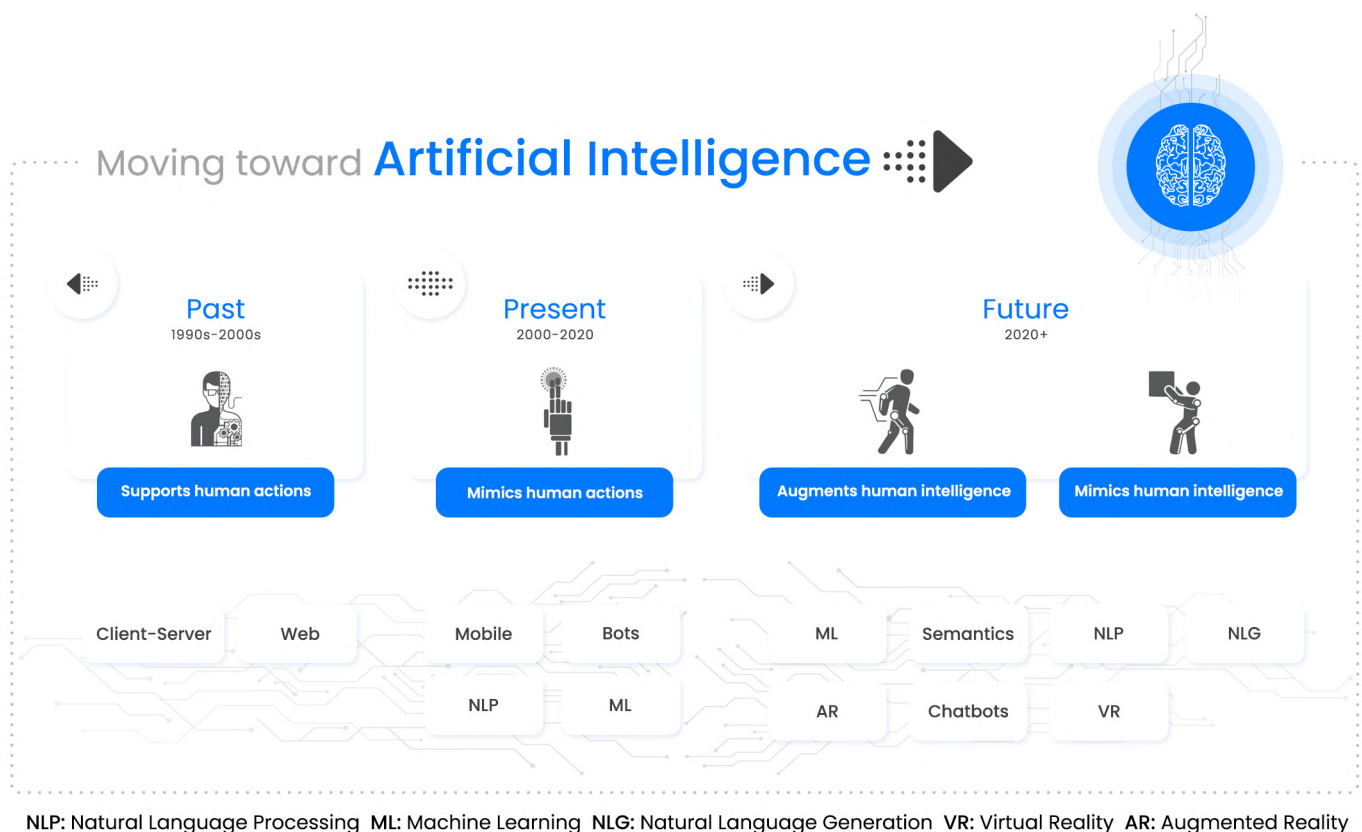
Two decades ago, enterprises relied upon monolithic client-server applications, written in a single language, running in an on-premises data center, accessed only through desktop computers inside the network firewall. By 2000, application developers started to build web-based applications.

In the past five to ten years, we have seen significantly improved application time-to-market, an elimination of device and location dependency, simplified workflows and enhanced user experiences.

Yet, an even brighter future lies ahead.

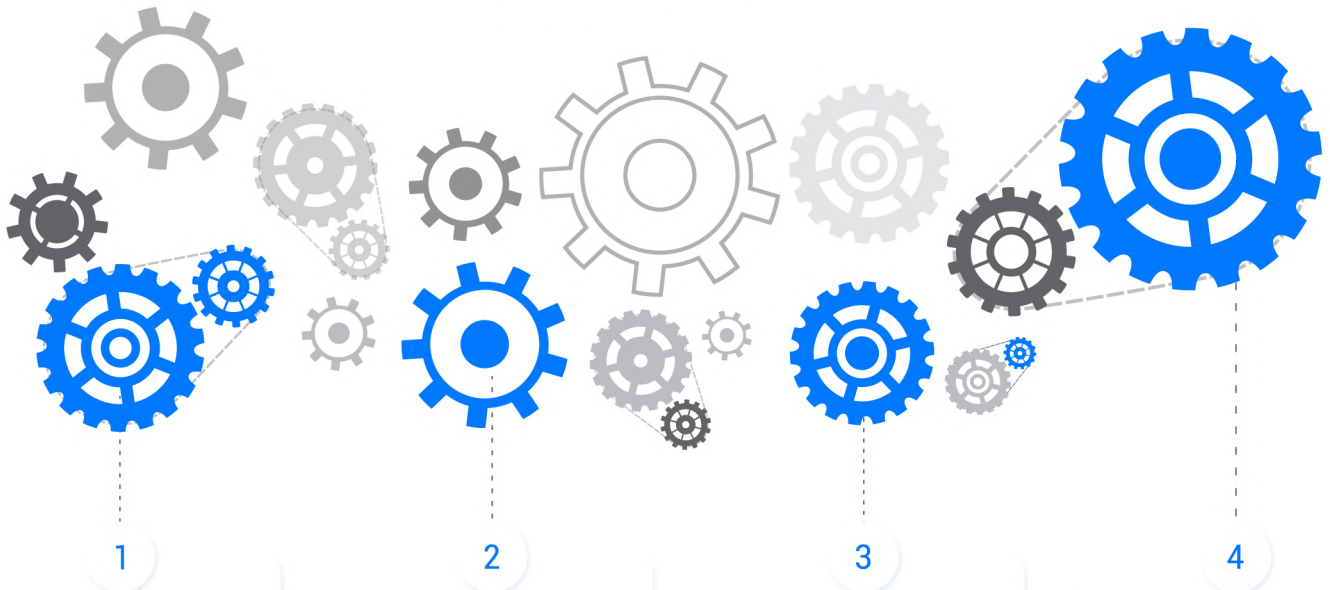
AI tools are set to evolve further as they become more able to mirror human intelligence. And as they become smarter, we will also see them undertake and perform more complex tasks. This will further spur the adoption of AI at new levels, across functions such as planning, budgeting, analysis and decision making that were perceived as ones that would always remain the preserve of humans only.

Organisations will continue to adopt more advanced automation technologies. As AI tools become smarter through the acquisition of more and more features of human intelligence and gain the ability to mimic human actions, AI will be applied across all levels of function, deeply impacting and transforming the way organisations work. Nonetheless, AI adoption calls for a well-deliberated, well-calibrated approach along with a receptivity to continuous learning and change.



Smart Automation technologies

Basic definitions



Chatbots & Virtual Agents

These are software constructions that can interpret voice/text in free form (chat) and respond with standard, predefined answers. A simple example is the customer service function, where a chatbot responds to queries. These chatbots can learn continuously and build vocabulary to interpret complex sentences being directed towards them.

Natural Language Processing (NLP)

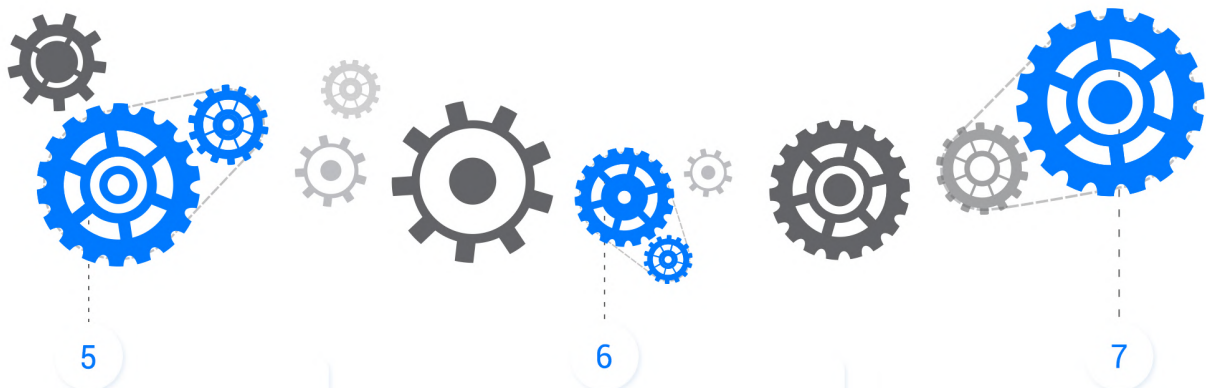
NLP uses statistical methods and learning algorithms to analyze text and complex sentences to understand their meaning, sentiment and intent. For example, in IT support a user might raise a ticket via the input of free text, which an NLP model analyzes in order to understand and determine the category of the problem along with the level of urgency and of frustration in the user. Using this NLP-driven analysis, a level of priority can be automatically assigned to the ticket.

Machine Learning (ML)

Machine Learning allows NLP models to become more accurate by repeated training against sentence variations that were not anticipated up front. Data from recent conversations, especially that indicating the conversation was not successful, is parsed and the meaning of the text re-attempted through predictions backed by algorithms

Robotic Process Automation (RPA)

RPA involves the automation of standardized and rules-driven system-based activities, using scripts and other methods to support efficient business processes. RPA is appropriate in situations where it is too expensive or inefficient for humans to execute a recurrent task or process.



Structured Data Interaction (SDI)

SDIs are traditional systems where an integration takes place through the exchange of information that is well structured.

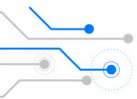
Examples include the integration of systems through relational database management tools and application programming interfaces (APIs) and web services.

Natural Language Generation (NLG)

NLG is a technology that helps generate text from structured information such as fields or numerals in conversation. It is typically applied where sections of financial analysis reports and insights are generated e.g. producing numbers reflecting a company's performance.

AI-Decision Systems

These are systems that employ an array of technologies, algorithms and models to solve complex and inter-related problems to make decisions. These may be driven by deep learning systems and cognitive capabilities to recognize patterns, and apply statistical models and algorithms to make choices and decisions. These could also potentially address multiple decision points, e.g., determining the demand for certain products for a geography/location based on weather forecasts, thereby helping decide the inventory to be housed in a store and determine the best possible fulfillment center location and route to be chosen for the fulfillment.



2. Robotic Process Automation

What is robotic process automation? RPA is a tool or method of automating manual, time-consuming, and complex, rule-based workflows using software robots.

These software robots, which are traditionally used for back-end administrative IT work, can perform various tasks and transactions in databases, enterprise systems, and websites more efficiently than humans and other automation solutions by reducing cycle times.

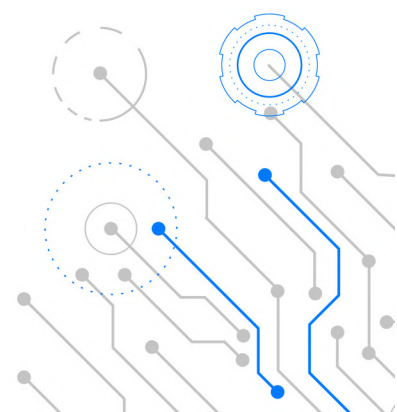
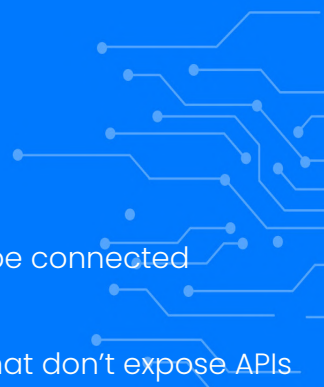
They are often used to either replace the people who interact these applications, or replace the responsibility to interact with them.

RPA Definitions

- Attended RPA is defined as: "Automation that interacts in real time with humans who initiate and control robot tasks, often embedding functions within apps., generally associated with front-office, agent-led activities."
- Unattended RPA is defined as: "Automation that replaces a complete human function in a 'lights-out' 'batch-oriented' manner, creating a virtual workforce, generally associated with back-office activities."
- Hybrid RPA is defined as: "Automation that combines attended and unattended tasks that work together, generally associated with processes that span front and back-office activities."

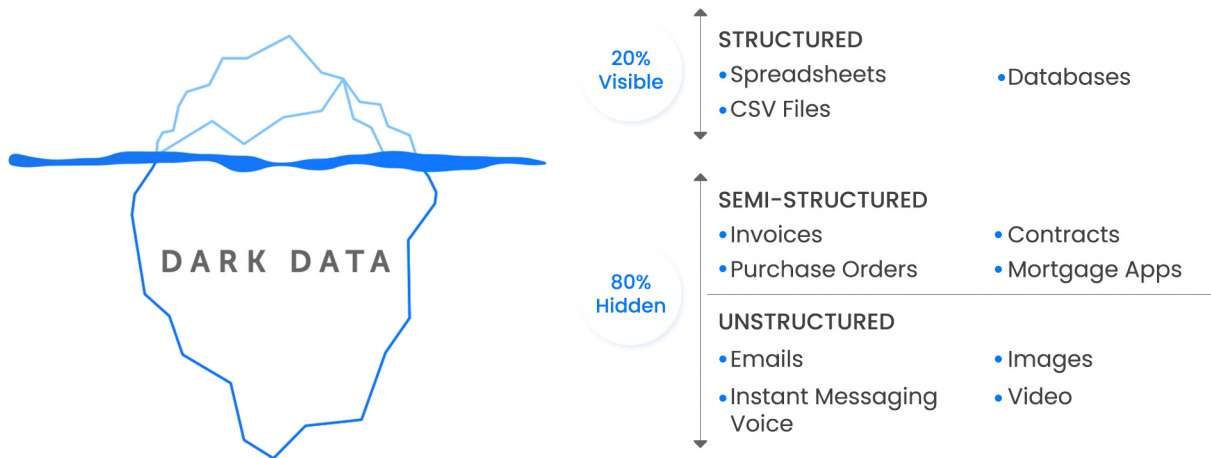
Why RPA Is Used by Enterprises

- To replace or reduce human labor
- To supplement and enhance existing human resources
- As an integration tool for legacy and future systems that can't be connected through traditional IT options
- To eliminate the need to build APIs or modify existing systems that don't expose APIs



Most companies want to automate processes that draw from structured data sources. However, 80% of such data is “Dark Data”: information that is difficult to access, undigitized and unextractable using traditional RPA-only solutions.

Large variations in document formats and the highly unstructured nature of communications (think emails and instant messages) have limited automation. As a result, companies continue to rely on knowledge workers to extract the relevant information to feed into otherwise automated processes.



RPA is ...

- Computer-coded
- Programs that perform repetitive rule-based tasks
- Cross-functional and cross-application macros

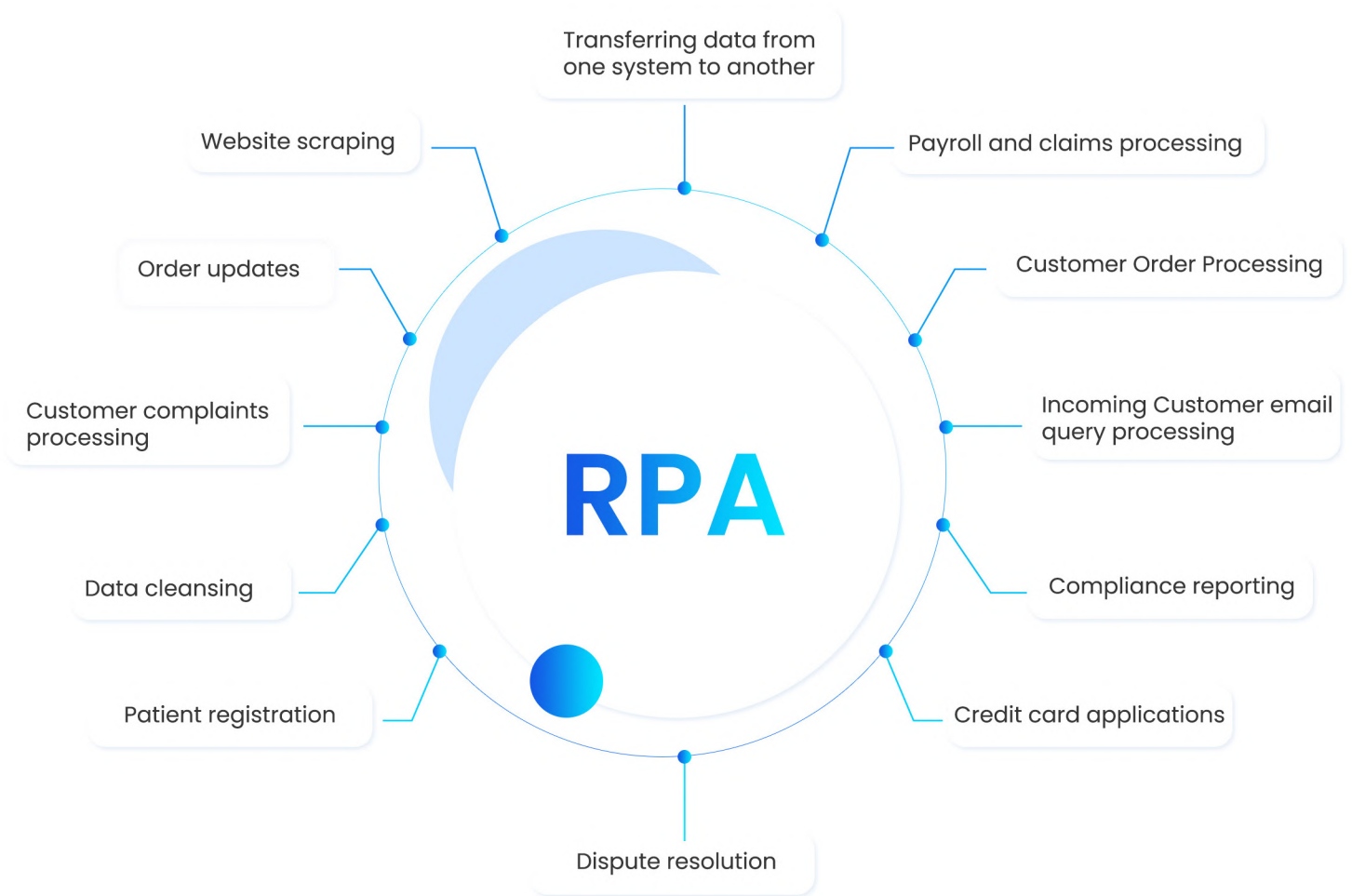
RPA isn't ...

- Walking, talking auto-bots
- Physically existing machines processing paper
- Artificial intelligence or voice recognition and reply software

What RPA is useful for

- | | | |
|--|--|---|
| Opening email and attachments | | Scraping data from the web |
| Logging into web/enterprise applications | | Connecting to system API |
| Moving files and folders | | Making calculations |
| Copying and pasting | | Extracting structured data from documents |
| Filling in forms | | Collecting social media statistics |
| Reading and writing to databases | | Following 'if/then' decisions/rules |

Examples of tasks alleviated by RPA robots



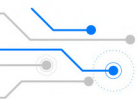
These logic-driven and algorithmic robots execute pre-programmed rules on structured and semi-structured data, although the former is still the most common. RPAs mimic humans and the manner in which they interact with applications, the decisions they make in relation to these applications, and the logical processes they follow.

Unlike chatbots, they do not require active human intelligence to manage, except in the case of exemptions or errors and during initial deployment. More complex implementations have focused on robots and employees working on semi-automated processes.

Traditionally, simple RPA robots run scripts on individual desktops and laptops, and can be started and stopped by the user. More recently enterprise RPA robots run in virtual machines hosted on servers in a data center, which removes the need to individually start, stop, or monitor every bot. These software robots can conduct important operations like conduct calculations, trigger down-stream activities, and more. They also tend to be technology-agnostic, meaning they can use most systems with a graphical or command line interface, and they interface well with an organization's technology.

Other common examples of RPA in action include the application of discounts automatically based on customer agreements and the checking of new purchase orders.





3. How it Works

RPA software products are typically composed of three fundamental elements:

- Developer tools to model business processes
- A robot controller to handle the prioritization of workflows
- A software robot template or framework to actually carry out the tasks and transactions.

Developer Tools

Most RPA products provide various tools that are used to model and define bot assignments or jobs at either the individual user level (via work desktop/ laptop) or enterprise level (via centralized dashboard). These assignments or jobs, which are recorded manually or automatically, consist of detailed step-by-step instructions that the bot must follow in order to successfully replicate the business process being modelled. The detailed instructions are composed of rules or conditional logic such as if/then or if/then/else statements and are often encapsulated within scripts, business objects, or other containers. Most developer tools for RPA provide visual decision tree editors, configuration wizards, and drag-and-drop controls.

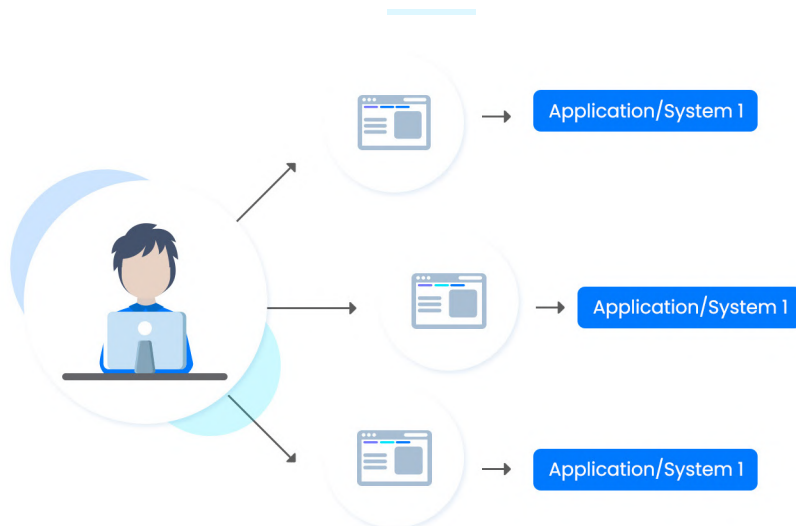
Robot Controller

The robot controller acts as the eyes and ears of your software robot by playing three roles. The controller serves as a repository for all bot assignments by storing performance data, history, and bot credentials. It provides built-in controls and workflows to help govern the creation, testing, approval, and deployment of new assignments and provides a versioning system to track ongoing configuration changes. The robot controller can also monitor and report on the status of bot activities and transactions to the operations manager or other designated employees.

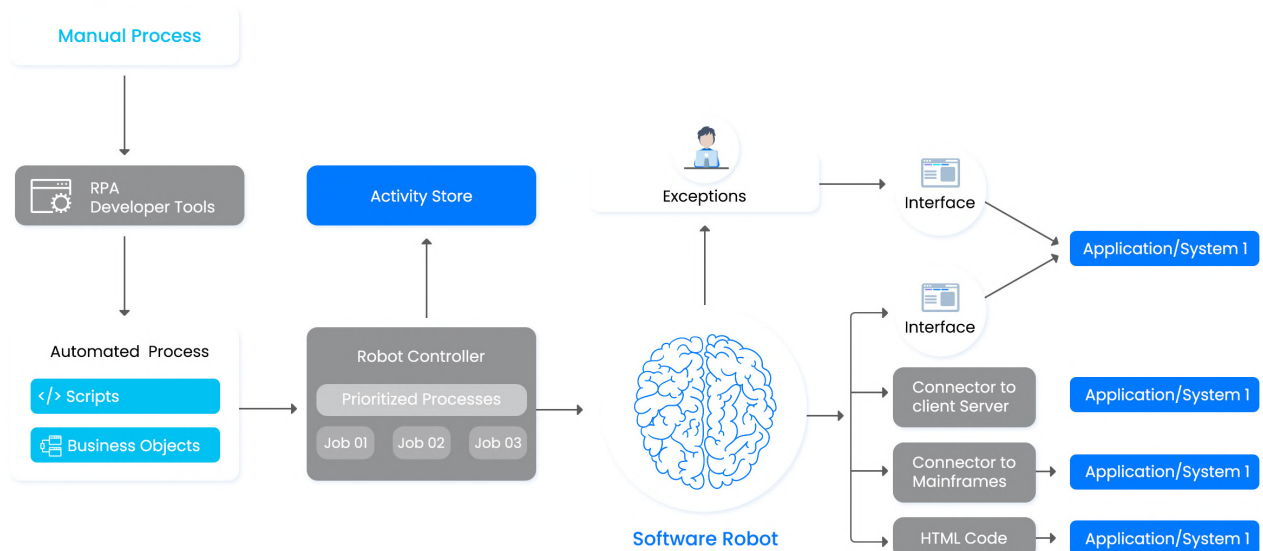
Software Robots

Software robots interact directly with enterprise back-end systems and applications to process transactions and other tasks. Most RPA products provide at least some pre-built bot functionality with the ability to custom-code additional capabilities. Software robots are also typically designed to automatically identify the important elements of a business system's user interface, such as buttons and input fields, by examining the application code in order to simplify the deployment process. For virtualized desktops, however, software robots must sometimes rely on less-effective techniques such as searching for pixel-based object locations.

Traditional Manual Process



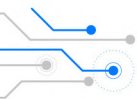
Automated Process via RPA – High-Level View



The Benefits of RPA

Like chatbots, RPA can be a powerful tool for digital transformation by providing the following benefits:

- **Reduce labor & operational costs:** Frees up employees to focus on higher-level work and optimizing resources.
- **Increase processing speed:** Reduces average transaction times by handling repetitive tasks across multiple systems.
- **Improve customer experiences:** Reduces avoidable errors that frustrate customers and can lead to faster service times. Enables employees to focus on complex issues that may require human intervention.
- **Extend service hours:** RPA bots, and processes, can be run 24/7 at a fraction of the cost of human workers. Software robots can also set aside exceptions for later human attention and continue working.
- **Reduce human errors:** Minimizes or eliminates common mistakes via the standardization of processes. Increases business continuity and enhances disaster recover since processes can be switched to other servers when needed.
- **Rapid, non-invasive integration & deployment:** RPA solutions can be integrated at the presentation level and deployed on your architecture with minimal need to change underlying systems or technology. They can ensure that client applications are not modified or enhanced by the solution and may sometimes automatically inherit access authorization concepts, reducing security concerns and avoiding traditional process integration challenges.
- **Provide comprehensive operational visibility:** Many RPA solutions provide detailed logs of transactions or actions performed within the enterprise, improving efficiency by automatically digitizing process data and history. This data can be used and manipulated to help identify flaws, slow areas, or bottlenecks.
- **Increase security & compliance:** Simplifies adherence to regulation via automated processes. Reduces auditing and reporting burden for security and compliance, reducing overall operational risk.



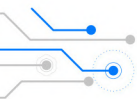
4. The Limitations of RPA

Despite the benefits of RPA and similar solutions for the enterprise, automation is not always the right choice.

Common disadvantages or weaknesses of RPA include:

- **Management challenges:** While some RPA solutions provide dashboards for supervising robot queues and workflows, managing thousands of bots executing transactions across an enterprise presents a challenge. Especially since it is common to have many robots executing the same business processes in different locations.
- **Employee support/morale:** Fear of layoffs and redundancy can hinder operations and increase employee and institutional knowledge attrition.
- **Additional governance:** Most RPA software bots, or at least those that take a script-based approach to automation, are designed to never deviate from established algorithms. Any changes to an internal or external aspect of an existing business process are thus likely; to cause the software bot to fail to perform the intended function. This often necessitates additional centralization, standardization, and optimization of processes prior to deployment or shortly after.
- **Complex nonlinear processes:** Automating processes that are too variable, unpredictable, or infrequent can raise the complexity and cost of associated robot algorithms and subsequent deployments. Human touch points may still be required, but not all products offer assisted or semi-automated processes.
- **Error creep:** Since most RPAs automatically execute the instructions found within scripts or business objects, errors can replicate hundreds or thousands of times before the problem is spotted and corrected.
- **Hidden costs:** Some RPA solutions require additional Virtual Machines (VM) or Virtual Desktop Infrastructures (VDI), which raises the virtualization/OS cost for each new bot or process after the initial go-live. Scaling may cost more than originally anticipated.





5. RPA Use Cases Per Industry

Financial Services, Insurance, & Accounting

- Streamlining basic data entry
- Checking order entry data
- Compliance reports
- Automating the auditing of expense reports
- Ordering replacements for lost/stolen cards
- Reversing charges and resubmitting failed payment requests
- Updating customer or business information across portals

Transportation

- Updating internal and external transportation management systems
- Auto scheduling of shipments
- Tracking updates on shipments
- Updating asset locations

RPA

IT Tasks

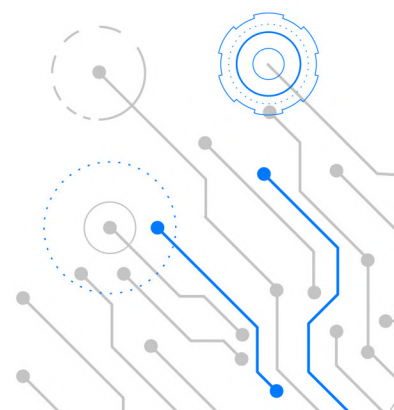
- Monitoring network devices
- Sending exception reports
- Auto creation of backups

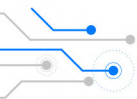
Customer Management

- Collecting customer data from systems
- Checking systems for new price and delivery offers (to alert customers)
- Automating the submission and handling of vendor inquiries or disputes (routing)

Common Pitfalls Associated with Traditional RPA Implementations

- Lacking a mature automation strategy
- Unrealistic expectation (automation won't solve dysfunctional business operations and processes)
- Automating either too soon or too late





6. Chatbots

What are chatbots and how do they differ from software robots? Unlike RPA solutions, chatbots are intermediaries between systems that you can talk to. They communicate with applications, and people to implement revenue generating activities immediately.

A chatbot is basically a program that's designed to talk to you and collect information from your conversation. Depending on how it's developed or how intelligently it's been built, a bot can use that information to perform tasks on your behalf, such as book you a flight, suggest personalized offers or promotions, or pass you along to a human in times of frustration. Common examples of chatbots for customer use include providing one-to-one guidance, triaging customer service and support requests, assisting in the completion of transactions or data entry, the delivery of right-time, right-fit offers and promotions, and much more.

And for businesses, similarly, chatbots can activate any number of tasks – ranging from routine to complex – or workflows across people, channel partners, applications, and systems. Imagine bots as messengers of actionable data to-and-from business critical systems in real time. Common examples of chatbots for internal employee use include password resets, providing incident reports to IT managers, receiving alerts on network outages, inputting sales pipeline data, updating purchase orders, and much more.

How it Works

Chatbots are typically composed of fundamental elements that serve to provide rich conversational interfaces for customers and employees:

- Bot Tasks
- Channels
- NLP & Speech (STT/TTS)
- Intelligence

Advanced chatbot platforms also provide the following fundamental elements:

- Bot Builder GUI
- Bot Dialog Build GUI
- Enterprise Capabilities (advanced encryption, administration, and compliance functionalities)
- Advanced analytics

Chatbot Tasks

Task Execution Framework

The type of task and how well the chatbot can perform it dictates the chatbot's immediate usefulness and long term value. A bot building platform provides a complete set of features and capabilities for building chatbots that can perform any task, whether simple or complex, to satisfy all enterprise requirements.

Users gain access to a single platform to design chatbots that can send simple notifications, pull reports, perform data entry, and answer questions, as well as taking on more rigorous tasks, like triggering multifaceted system-to-system workflows.



A platform where bots are built must be a secure-yet-flexible enterprise-ready, API-centric platform. One that is equipped to accommodate standard and custom integrations to nearly all existing systems in order to fit each unique workflow and requirements.

Channels

One thing that sets chatbots apart is that they can be channel agnostic – meaning people can engage a chatbot in the communication channels they use daily, such as on a website, in SMS, email, Skype, Telegram, Skype, Whatsapp Business, Messenger, Slack, and many others. Cutting-edge chatbot solutions provide pre-built bot connectors and SDKs that handle channel specific APIs and can automatically adapt messages to channel specific formats – allowing a single configuration to be used across multiple channels.

Natural Language Processing

A chatbot's ability to consistently understand and interact with a user is dictated by the robustness of the natural language processing (NLP) that powers the conversation. The bot platform utilizes a NLP strategy, combining fundamental meaning and machine learning engines for maximum conversational accuracy with little upfront training.

Bots can understand and process multi-sentence messages, multiple intents, contextual references made by the user, patterns and idiomatic sentences, and more. The NLP engine includes recognition support for a wide range of entities and provides the tools needed to further customize your bot's language understanding using additional patterns.

Machine Learning

The bot platform provides an engine that uses ML algorithms and queries training data to determine the best match for a user's intent, and search for patterns to train and tune the NLP engine. The engine allows clients with large sets of training data to leverage this information from the start. It also reviews user history to correct failed utterances and false positives.

The NLP approach recognizes simple yet critical nuances to a human's natural language to mitigate potential misinterpretation and spare developers from having to design conversation paths for every idiomatic variation.

Intent Recognition

Chatbot tasks can be broken down to a few words that describe what a user intends to do, usually a verb and a noun. For example: "Find an ATM." "Create an event." "Search for [item]." "Send an alert." "Transfer funds." The NLP engine analyzes the structure of a user's command to identify each word by meaning, position, conjugation, capitalization, plurality, and other factors. This helps the chatbot correctly interpret and understand obvious and non-obvious synonyms for these common "action" words. The goal of intent recognition isn't just to match an input with a task; it's to match an input with its correctly intended task. This is done by matching verbs and nouns with as many obvious and non-obvious synonyms as possible.

Synonyms & Patterns

The bot-building platform includes a built-in synonym library for common terms (words, phrases, and sentences).



Users can further optimize the accuracy of the NLP and connections engines by easily adding synonyms for bot names, words used in the names of your tasks and task fields, and any words associated with your dialog task entity node. The bot-building platform also lets you take into account slang, metaphors, and other idiomatic expressions by adding patterns to tasks, task fields, dialog task intent nodes, and dialog task entity nodes. A pattern, in this case, can be defined as a sentence that represents the task, but does not actually contain any of the words in the name of the task, task field, or associated dialog task.

When the NLP engine matches a synonym to one task or field, and a pattern to a different task or field, the pattern match is prioritized and used for positive recognition over the synonym match. The platform provides custom entry and exit hooks, available as API endpoints, in the NLP engine to enable the conversation flow to be taken in different directions based on processes and rules. Developers can control the behavior of the bot and the dialog and each of these points.

Automatic Speech Recognition Engine

The text-to-speech option allows users to play the chatbot's messages in audio format that can be a benefit for users who are visually impaired or prefer to listen to the chatbot's messages than strain their attention on a screen that might be quite small, depending on their device.

The bot-building platform incorporates natural language processing features into the process:

1. Initial pre-processing. Training of text-to-speech (and speech-to-text where it is available) systems is dependent on the availability of very specific sets of data which is not easy to find for all the languages. That's why, in addition to supporting several of the most common languages for text-to-speech, the system also provides functionality for converting words into the English alphabet via a transliteration model, and using the English text-to-speech model in that way makes text-to-speech functionality available for the rare languages.
2. Sometimes, in the text provided for text-to-speech for one language we can find texts written in other languages (like a company name written in English within a Spanish text). In this case an NLP model will not be able to process this word correctly. In order to solve this issue, the system executes detection of different languages and applies appropriate conversions.
3. A similar problem might appear when working with digits or other specific systems. That's why it is integrated via a conversion from digital to word form for numerals within the text-to-speech engine.

Chatbot Intelligence

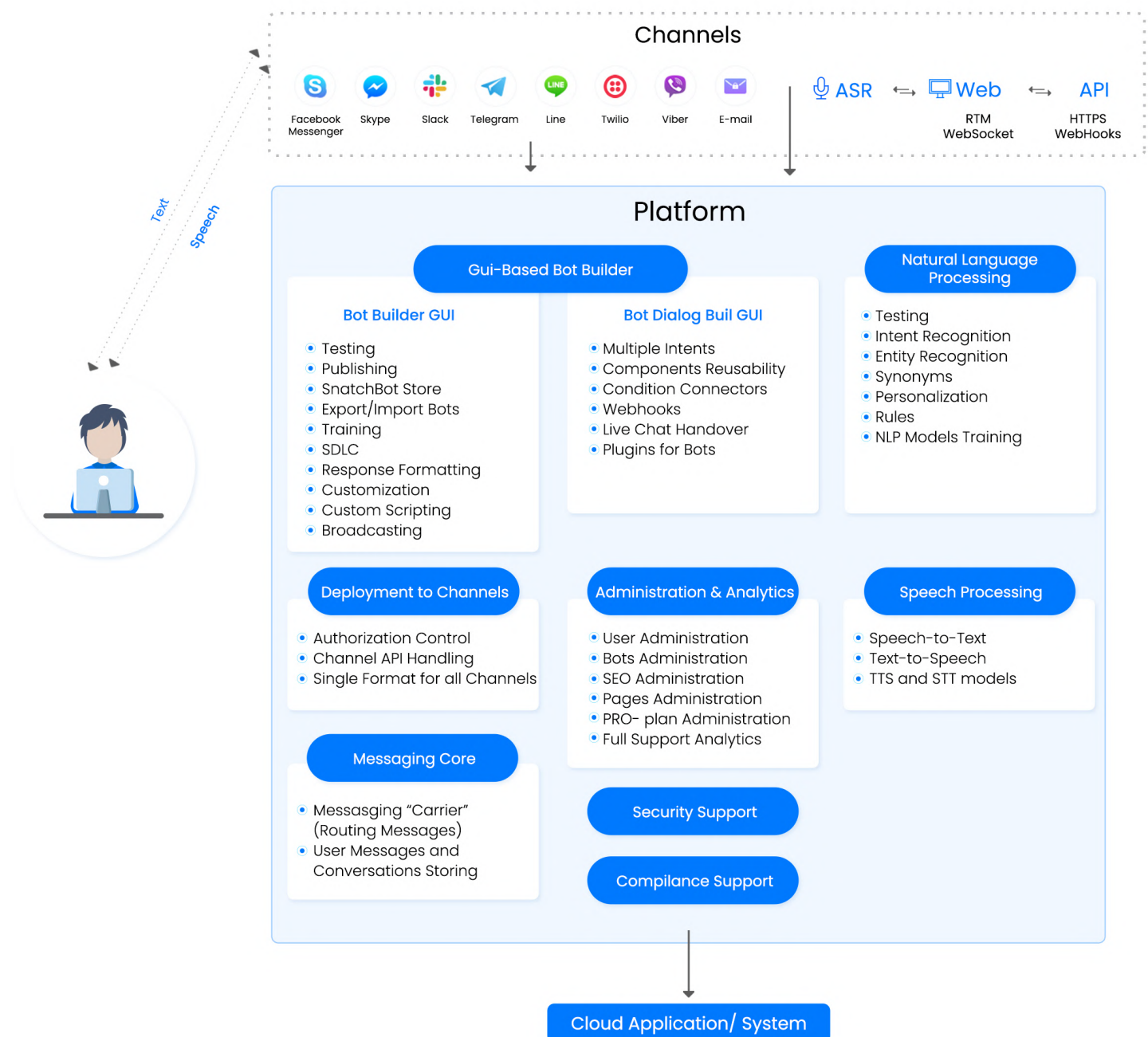
The most advanced chatbot solutions provide AI capabilities that make chatbots more intelligent and interactions more helpful and human-like. With an intelligence capability, chatbots can be designed to remember context, analyze human emotions, and learn from information gathered during each interaction. An intelligence engine allows the chatbots to maintain the context of a user's inquiry or request throughout a chat session. It also allows developers to use unsupervised and automated ML to perfect a chatbot's NLP configuration.

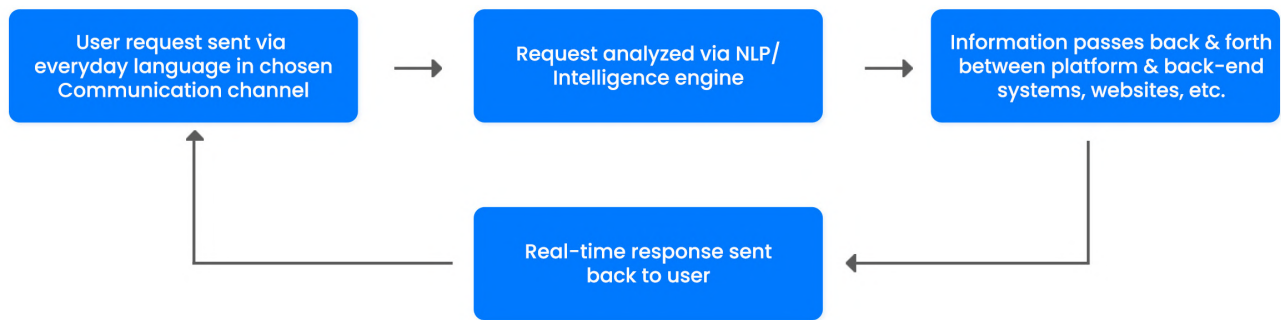


Traditional Process Without Chatbots



New Process With Chatbots- High-Level View





The Benefits of Chatbots



Improve customer acquisition

- Show your customers your advanced digital capabilities with AI technologies.
- Chat interfaces are everywhere. SnatchBot currently supports 11 channels.
- Ease leads generation & qualification.



Reduce churn

- 24/7 customer support with high degree of accuracy and high through-put.
- Provide high quality support, whenever the customer demands it.
- Increase customer satisfaction by effectively solving their issues.



Increase revenue per user

- Save human resources for qualitative tasks while chatbots can answer repetitive tasks.
- Understand your client base more efficiently by generating analytics.
- Analyze and act on the customer's preferences and irritations.



Minimize cost to serve

- Short payback period with low integration costs and high potential ROI.
- Mitigate security risks, scale up your operations, 24/7.
- Cost reduction opportunity.



Reduce app fatigue

- Sync brands and systems with the communication channels customers already use. Help customers by cutting down on the number of apps and interfaces that must be mastered.



Simplify complex interfaces

- Form-intensive interfaces can be broken down into easily digestible, natural language driven conversations via popular communication channels such as websites, email, SMS, messaging platforms, and more.



Streamline work

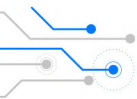
- Let employees get routine tasks done in less time – enhancing productivity and efficiency. Allows for better resource allocation and decreases calls and emails to support services.



Provide comprehensive visibility

- Analytics generated from chatbots can provide unmatched visibility into customer and employee behavior.

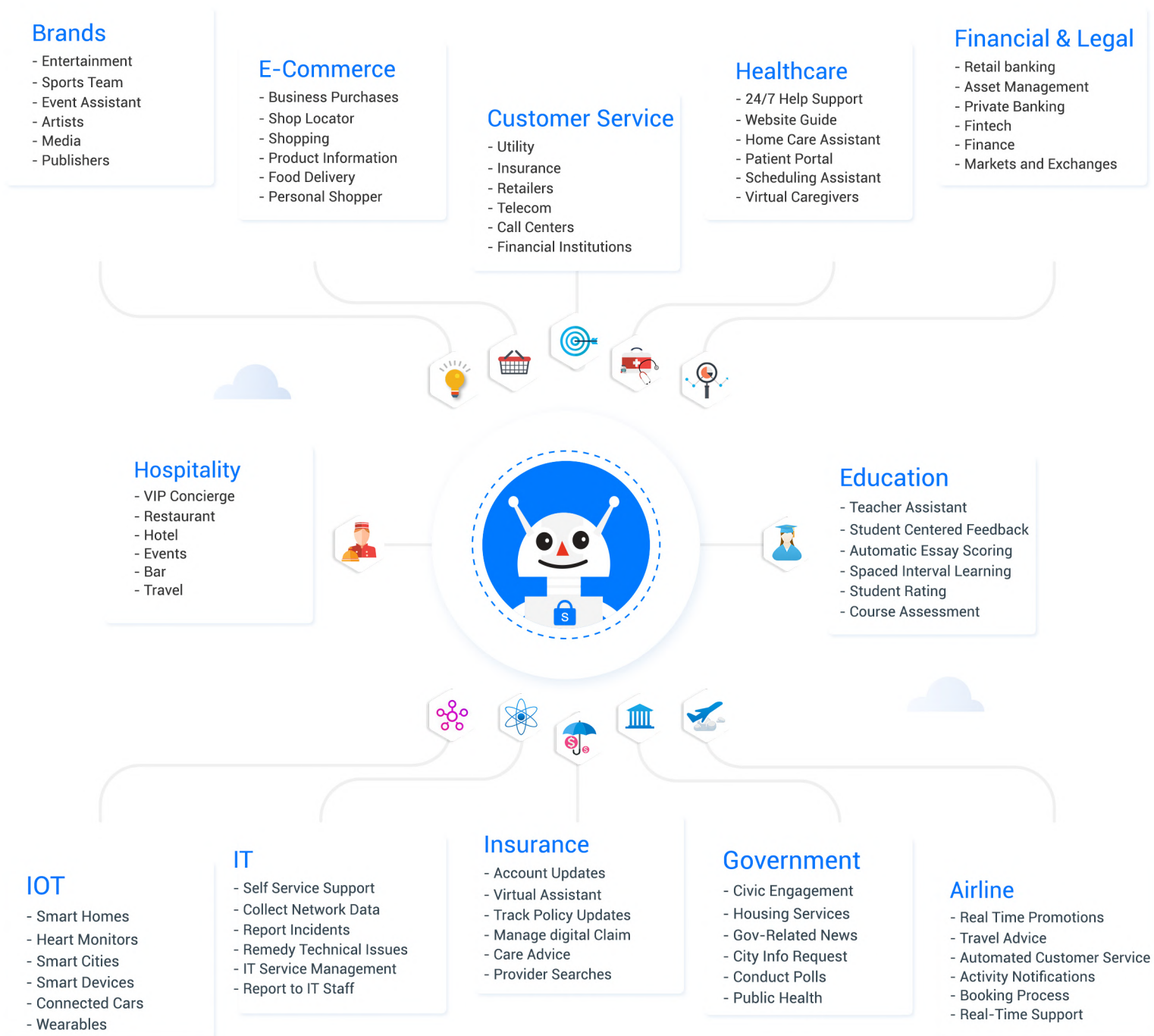


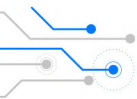


7. ChatBot Use Cases For Every Industry

See how chatbots can impact every industry and how bots help:

- They chat with customers to complete tasks, personally guide purchases, and deliver real-time service
- They engage 24/7 in all the communication channels customers already use
- No coding skills required and NLP capabilities solutions
- They learn over time, so the bot anticipates future needs, dynamically builds relationships, and uses data and insights to increase conversion and loyalty



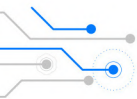


8. Key Differences Between RPA Robots and Chatbots

As mentioned above there are some big differences between RPA software robots and chatbots. Understanding these differences can be the key between a successful rollout that cuts costs, drives efficiency, and improves quality or a wrong problem-product solution fit. Let's break down the major differences:

Robotic Process Automation	Chatbots
Process Automation	
Used to fully automate workflows. Can partially automate processes (humans initiate or approve actions)	Used to simplify processes Used to more effectively handle processes that have some automation and some human elements Can be used to automate workflows Can drive smarter human decisions and proactively change human behavior
Best suited for processes that are perfectly understood and/or documented. Little-to-no room for deviation	Can connect, automate, or enable a more effective way to respond for processes that are ill-defined or documented, that are uncommon, or that involves deviation and/or human intervention
Human Involvement	
Primarily limited to initial configuration / scripting / implementation and error / exception handling	Humans engaging directly with systems
System Interaction	
Primarily limited to initial configuration / scripting / implementation and error / exception handling	Replaces existing (often complex) GUIs with conversational interfaces across channels
Intelligence	
Primarily limited to initial configuration / scripting / implementation and error / exception handling	Can add intelligence to a process via natural language. Has the ability to understand, remember and learn from the information gathered during each interaction





9. Simplifying The Relationship Between RPA and Chatbots

Enterprises are constantly faced with new threats to nearly every aspect of their businesses, from emerging technology to never ending media hype surrounding new products to tectonic shifts in consumer preferences and disposable income. Cutting-edge businesses and start-ups have always been at the forefront of innovation, with many choosing the role of the early adopter of promising, potentially paradigm shifting technology. But, like most new tech, high costs, long development times, functionality issues, and integration challenges from fragmented legacy systems often delay implementation and reduce the likelihood of a successful rollout.

Chatbots and automation solutions, such as RPA robots, largely avoid these stereotypes, and in many ways, exist as a direct result of these challenges. While chatbot technology and robotic process automation have advanced significantly in just a few short years, there are some limitations to the usability and impact of each.

With a focused and systemic approach, however, both solutions can act in concert to address and solve key pain points in back-end systems (RPA), such as Enterprise Resource Planning suites, front-end systems (chatbots), such as Customer Relationship Management applications, and on the front lines directly interacting with customers (chatbots). Both technologies are relatively low cost. Both can be deployed quickly, and both can offer both cost-savings and operational flexibility.

It's likely we will see more organizations deploy either chatbots or RPA tools to complement an existing legacy deployment of one of these solutions or even consider a dual-deployment in some fashion.

Chatbots with RPA

Chatbots can be integrated with CRM and CMS to better serve customers by pulling out the details of the person they are interacting with. Smart chatbots can quickly learn and make sense of data and context in real time. Many self-service channels can handle different portfolios replacing humans and taking over all tedious work.

It's About Data

When it comes to dealing with today's digital world's mammoth volume of data, machine learning algorithms are used to make chatbots smarter with every conversation they have with a customer.

Organizations can understand how customers ask questions and what answers they like better. Why customers drop and at what interactions make them close the chat window. Trend analysis in the queries can be useful in understanding insights into customer's behaviors and its relationship with geographies and timed events.

A simple use case is the updating of basic information about a customer and a complex one is that of having artificial intelligence examine the data and – after customer authentication – changing it. But, the key point is, to have a deep conversation with your customers, chatbot has to get a personality, and a personality has an attitude. Natural Language Programming is a requisite here to understand the contextual and real-human-life-type language and data.



10. What Chatbots and RPA Can Do Collectively?

With this in mind let's turn our attention to some Chatbot features that we can expect to see in the near future:

- Integration with facial recognition
- Integration with virtual reality and augmented reality
- Smooth switchover between text and voice
- Human level conversation and adding a fun element
- The chatbot adjusts its response time to the user's speed
- The chatbot adopts a personality based on the contextual information about the personality of the customer.

With machine vision and speech recognition, artificial intelligence powered by data, analytics and decision making abilities will become reliable enough to have RPA and chatbots execute a series of complex and advanced tasks. Crucial will be their ability to collect data that can constantly feed the machine learning algorithm and improve its performance over time.

Here are two example use cases to show how these technologies could work to help transform your organization, drive greater efficiencies, and improve your bottom-line:

Service & Support Sample Use Case

Problem

- Users report their experience does not exceed their expectations.
- Customers don't indicate that their attempt at self-service failed.
- Customers abandon an online purchase if they cannot find a quick answer to a question.
- Consumers generally switch providers if their time isn't valued or if they encounter rude agents.
- Most customers are more likely to stop spending with a company due to a bad service experience.

Chatbot Solution

- Chatbots provide personalized customer support 24/7 and answer common questions.
- By streamlining the purchase of products, chatbots can deliver real-time status updates.
- Chatbots can free up customer service agents and call center employees so their efforts can be directed towards more complex tasks and to deliver top-notch experiences.
- Upon detection of customer frustration, chatbots hand off the task to a human agent.
- Chatbots can streamline workflows and give agents more time to respond to service requests.

RPA solution

- RPA bots provide back-office IT support.
- RPA bots can provide back-office and front-end automation for accounting, inventory management, and high-volume help desk tasks.
- RPA bots and other automation tools could be used to give employees more time to focus on managing exceptions and optimizing current processes.

Potential Results

- Significant improvement in automation and self-service.
- Solid improvement in agent productivity.
- Important reduction in support personnel.
- Generate advanced analytics to further understand your client base and to act on it.

Potential Results

- Reduced probability that front-end or customer-facing services go down, ensuring that fewer issues come through to customer support.
- Reduced labor costs with less need to recruit highly trained back-office staff; RPA tools can be less expensive than full-time employees.

Sales Sample Use Case

Problem

- Staff are not spending enough time with customers.
- Too much time is spent on data entry.
- IT takes staff too long to reach full productivity.
- The average company loses a part of their customer base each year.

Chatbot Solution

- Deploy chatbots using a built-in integration with key systems to simplify complex data entry and more efficiently complete tasks.
- Provide instant lead and opportunity updates as deals progress. Keeping sales reps in the know at all times.
- Omni-channel capabilities allow sales reps to engage with systems and customers, maximizing productivity and ultimately enhancing prospect and customer experiences.
- Chatbots can also be used for sales rep education and onboarding by providing easy access to support, training manuals and documentation, and reducing the time needed to learn complex or Byzantine UIs.

Potential Results

- Improved access and faster processes.
- Revenue growth.
- An immense improved repeat transaction potential.

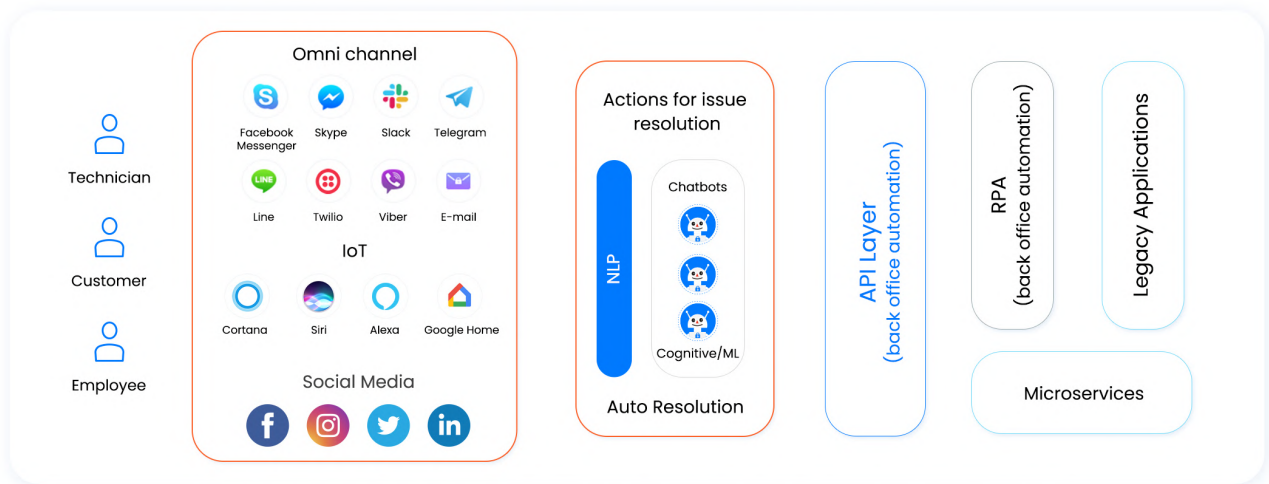
RPA solution

- RPA software robots could be used to convert the account information inputted by sales reps within key systems (e.g. Salesforce) into a readable format and automatically enter that information into back-end fulfillment systems.
 - ▶ This would create a more effective bridge between sales and supply chain operations.
 - ▶ Automation could then further reduce the time between closed won deals to ultimate delivery.

Potential Results

- Major reduction in time spent on manual data entry & data conversion activities.
- Increased operational flexibility.
- RPA software can generate additional insights on sales and supply chain operations.

Hybrid and intelligent RPA/Chatbot vision



The NLP engine provides context, intent and sentiment identification to carry forward meaningful conversation with customer, technician or employee

A smart workforce is leveraged for the digital transformation of business operations

