



Build a Self-Driving Business Model via Artificial Intelligence-Powered Automation

NTT DATA Business Process Outsourcing Services

With the right data, artificial intelligence and automation create intelligent systems that lead to enterprise success

From a seat in the cockpit of an airplane to a seat behind the wheel of your car, automation is ready to help. But what about giving it a seat in your boardroom? Automation, powered by artificial intelligence (AI), can help your organization make quicker and more accurate business decisions.

These self-driving business models can run business processes, and even perhaps business units, independently, all while reducing operating costs and increasing enterprise efficiency and productivity. With the right type of data, these intelligent AI-powered automation systems can guide smart decisions, and eventually even make autonomous ones. Take the case of supply chain management. In the hospitality space, these systems can analyze local upcoming events, seasonal tourism trends and weather patterns, and then dynamically adjust room rates to maximize a hotel's revenue. For manufacturing and commercial organizations, if a customer recently declared bankruptcy and placed a huge order, such a system would immediately trigger an alert — or better still, send the offender a rejection letter. If sales are down in a particular store but labor costs

are high, this system would flag the anomaly so the company would see and act on it. In healthcare, such intelligent systems are already helping radiologists and doctors diagnose cancer patients faster and more accurately. It does so by automatically analyzing and processing images from thousands of databases.

Automation has evolved from machines or software that can perform simple, repetitive tasks to intelligent systems that can solve complex business challenges requiring cognitive and perceptive functions. But are AI and automation ready for the C-suite? Can these intelligent systems help you run your business better, and even run some aspects of it independently, like making less complex decisions such as increasing product quantity during peak seasons? Can AI, powered by automation, completely transform your business model by making failsafe decisions about entering new markets, exiting a partnership or changing product attributes that, previously, were perhaps based on flawed or misguided human judgment or reasoning? And, more importantly, how can you build such a system?

“Our automation value chain comprises tactical, strategic and transformation automation. These can automate simple, repetitive and laborious tasks, or automate tasks that require perception and discernment, and even highly complex, abstract and composite tasks that cannot be done by humans alone.”

Tanvir Khan,
Executive Vice President,
Business Process Outsourcing,
NTT DATA Services

Solutions by NTT DATA that can “think,” independently making decisions and running processes

Why NTT DATA?

- As part of NTT, \$3.6 billion invested annually in R&D, with a focus on autonomies, business intelligence and data analytics, RPA, ML, and virtual and cognitive agents.
- Dedicated robotic labs in India, Europe, the Middle East and the U.S.
- Multiple AI and automation patents pending
- 50 productivity-based tools across platforms, systems and data forms
- Over 5,000 bots deployed globally
- Over 600 dedicated specialists across Japan, India, Spain and Latin America
- Affiliation with leading universities and labs around the globe

From machines to robots to cognitive agents, NTT DATA Business Process Outsourcing Services continues to push the boundaries of AI and automation. We can help you build self-driving business models by aligning data intelligence, advanced analytics, virtual agents and people to create a powerful and intelligent ecosystem that can transform your business.

Cognitive automation engines can review thousands of documents in a fraction of the time it takes humans. Bots can oversee and manage other bots. And intelligent platforms can predict business outcomes and apply insights to core business practices to ensure business growth. We have built these and other automation solutions that can accelerate your transformation journey.

Although AI and automation tools have imitated, mastered and even improved many aspects of human “intelligence,” creativity continues to exceed the robotic grasp. But when human creativity and ingenuity meet AI, it can help organizations realize their true potential.

An evolving ecosystem of automation offerings

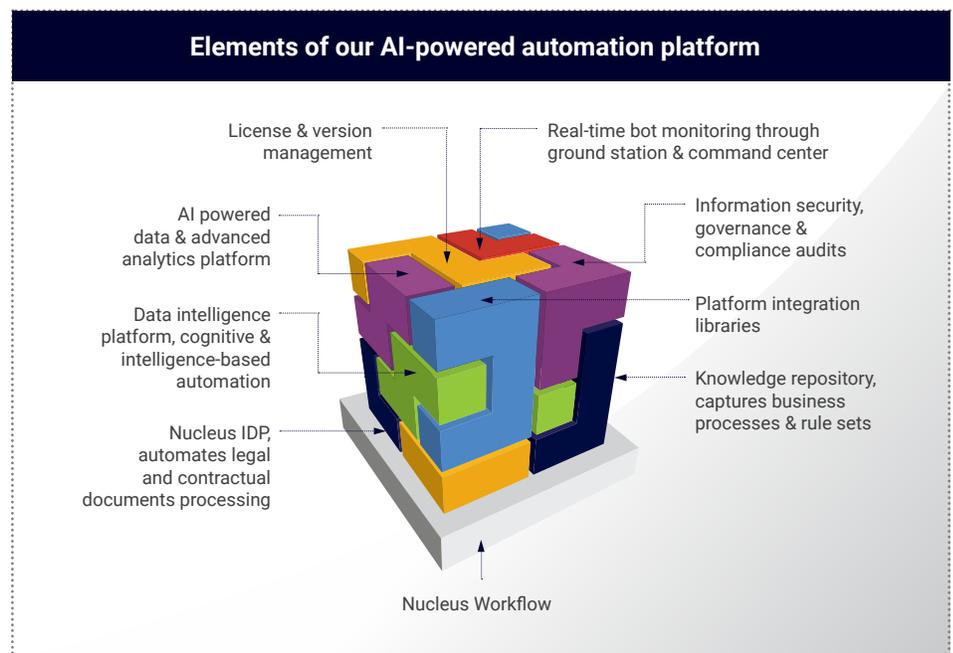
Our industry-leading automation solutions and tools – known as NTT DATA Nucleus Robotic Process Automation (RPA) – can

reduce, if not eliminate, human effort by automating repetitive, high-volume and rules-based tasks. This ecosystem of bots is a bot universe in itself – working as an extension of business process automation, where automated scripts and process tools eliminate the need to hire staff for repetitive tasks.

The ecosystem features the Nucleus RPA Generator. With its machine learning capabilities, built-in analytics and large cognitive automation libraries, the

Nucleus RPA Generator can build and deploy other bots, and manage them autonomously. Nucleus RPA is a perfect fit for processes that require both user intervention and robotic assistance. An IT systems administrator, for example, can schedule bots to run routine checks on servers, applications and other systems, and report and/or fix anomalies of certain grades or categories independently. If the issue can't be resolved by the bot, it passes the problem on to its human counterpart. During server and app monitoring processes, these bots can shut down, reconfigure or stop and restart various types of servers to avoid crashes or downtime.

The system can also self-check and rectify its legion of bots in case a process goes awry or fails. It can report back to a human in the event that it's unable to resolve an issue. Nucleus bots can be deployed across cloud instances, remote servers, FTP locations and desktops with complete process governance.



The bedrock of our AI-powered automation platform

NTT DATA Nucleus Workflow is the foundation of our AI-powered automation platform. Aided by a set of tools, it can run your business more efficiently by automating several processes and orchestrating a man-machine collaboration. Nucleus Workflow takes the complexity out of business process management and puts your processes on auto-pilot. All the events and the workflow are captured in the central Nucleus RPA Command Center, helping supervisors and clients audit quality of work and identify error trends, while monitoring productivity.

spikes and slow connectivity, to help your organization effectively plan resources. It's highly flexible and can be customized for various conditions and industries. Our team continues to explore and add more features and capabilities to this platform.

An automation platform that can assist decision-making at a business level

The NTT DATA Data Intelligence Platform, built around a dynamic learning engine, helps optimize business processes by deriving inferences through the correlation of a vast number of parameters. These inferences provide unprecedented insights into the future

Our Data Intelligence Platform at Work

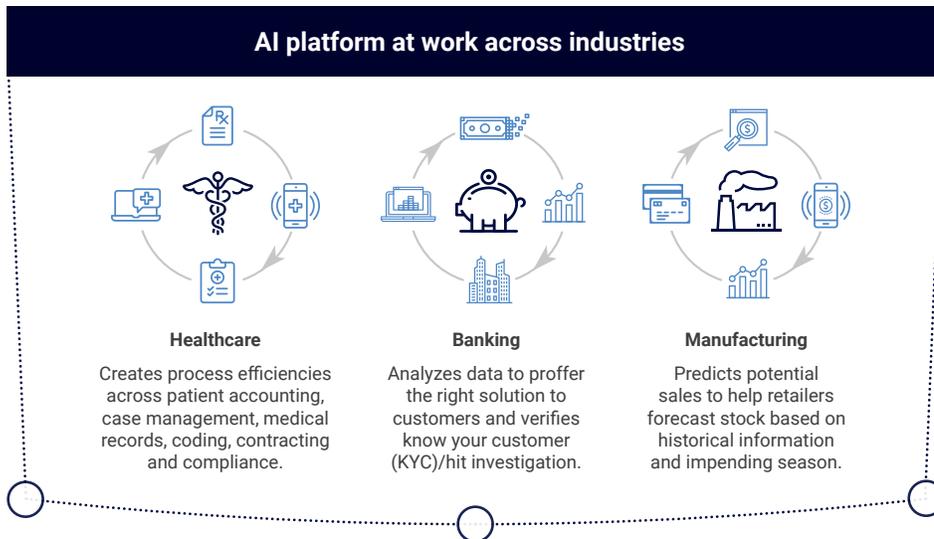
The healthcare industry typically averages a claims denial rate between 6% and 13%. For one NTT DATA client, this resulted in significant and expensive rework to lower its write-offs, materially impacting the bottom line.

Using the Data Intelligence Platform, NTT DATA built a cognitive denial prediction and prevention solution with a multi-layer, deep learning artificial neural network (ANN) and machine learning technologies to discover covert and overt patterns between related and unrelated data elements.

The resulting solution predicted a claims rejections rate, with reasons for rejection, with 98% accuracy. It assisted claims agents by analyzing data at various stages of the process and discovering the root cause of claim denials, providing detailed information on denial spread as well as analysis and inference on the processes that impacted the denials.

This man-machine partnership helped the organization improve its claims denial efficiency, reviewing claims up to 500% faster. The solution increased claims acceptance, significantly improving the organization's cash collection and reimbursements.

AI platform at work across industries



Nucleus Workflow extracts data from various inventory systems, including Citrix, as well as from Salesforce.com, clouds, images, mainframes, and optical character recognition (OCR), FTP, remote desktop and web-based systems. It then allocates this data and corresponding tasks to a bot or a human, depending on the complexity. The suite can also take on a role of an operations manager through its Virtual Resource Monitor, allocating tasks across both digital and human workforces based on the capabilities of each. In the event of a bot failure, Nucleus Workflow automatically redistributes task allocations to other bots or humans in the most optimal manner. What's more, the built-in analytics-driven intelligent staffing planner continually looks at several parameters to predict and correct for events, such as attrition, task volume

state and can enable you to anticipate any issues and take proactive actions. Like humans, this platform is capable of learning and applying what it has learned, so it's constantly adapting and evolving. Unlike humans, it never tires, and can work exponentially faster and with greater accuracy.

Using advanced machine learning algorithms, deep learning neural networks, and prescriptive and predictive modeling, the platform discovers insights from data sets and applies those insights to core business processes. The engine integrates data from heterogeneous sources, including manually entered data, images, and files and documents from multiple sources and systems. It can also incorporate other applications, frameworks and AI libraries to deliver a

complete automated process. Humans, in contrast, are often able to work with or deduce insights from only certain types of data, so they may lack a wider perspective.

The platform makes contextual predictions and forecasts based on historical data and future scenarios. Machine-discovered insights can be combined with machine and/or human actions and perceptions to deliver the most prudent business results. Such a platform helped one insurance company review claims exponentially faster, as well as increase its cash collections and reimbursements.

Nucleus Intelligent Document Processing (IDP): Bots that “think” and make decisions

The NTT DATA Nucleus IDP is a cognitive automation engine for document analysis. The bot reviews documents in a fraction of the time it takes humans. Using natural language processing (NLP) and built-in OCR, it reads thousands of documents and performs prescribed actions in a matter of minutes. The processor works best for business processes that involve legal and contractual work, and where the organizations must deal with multiple unstructured documents and other content.

Reading from a pool of unstructured documents in different file formats, including PDFs, images and Word files, the bot uses heuristic pattern matching to identify relevant sections within the content to extract the meaning from it. It then performs actions like “approve” or “reject” an application or a claim and triggers a predefined action per the clause. This tool takes over from the numerous auditors, legal reviewers, bookkeepers and reviewers who spend hundreds of hours pouring over and managing contractual documentation.

The Nucleus IDP proactively and intuitively guides humans in making optimal decisions. While other conventional NLP tools are not context-aware, our processor combines cognitive (NLP and heuristics) and computational engines (ANNs) in such a way that it can “think” for itself and adapt its decisions contextually. Some of its features include:

- **Advanced reading capability;** Its reading capability isn't limited to text-based material and can extend to image-based files.
- **User-friendly customization;** It can be configured and customized, depending on the industry and need.
- **Extendibility;** It can incorporate various technical specialty dictionaries, as opposed to generic dictionaries, supported in NLP tools.
- **Self-learning;** It has self-learning capabilities and extensive relationship mapping through ANNs.

How can we help you create self-driving business models?

About two decades ago, business process services were primarily manual tasks. They later progressed to a machine- or software-based delivery model, increasing a company's productivity and efficiency while reducing costs. With the evolution of computational power, as well as reduced computing costs, these processes became progressively more machine driven and required minimal human intervention.

Today, with the advent of AI, business processes are delivered with high quality, low cost and quick turnaround times. Over time, we believe these intelligent processes and systems can become a self-driving model capable of running autonomously and even making business decisions independently. And when a machine's precision, skill and efficiency meet inimitable human ingenuity and creativity, business transformations will truly know no bounds.

How can you take advantage of NTT DATA Services' deep understanding of where to apply AI and cognitive learning for maximum business benefits?

- [Learn more about self-driving business](#)
- [Discover what we provide in business process outsourcing](#)
- [Evaluate the solutions we offer for intelligent automation](#)

Visit nttdataservices.com to learn more.

NTT DATA Services is a recognized leader in IT and business services headquartered in Texas. A global division of NTT DATA – a part of NTT Group – we use consulting and deep industry expertise to help clients accelerate and sustain value throughout their digital journeys.

Onboarding made easy with the Nucleus Intelligent Document Processing (IDP)

The Nucleus IDP helped a healthcare client overcome multiple challenges in its provider onboarding process, including:

- Complex data contracts and multiple data formats
- Resource-intensive, expensive and time-consuming processes
- Slow and inefficient data loading process
- Inaccurate and poor data quality
- Inability to adhere to compliance and regulations

Our automation solution saved the company US\$2.2 million.

About the authors



Harsh Vinayak

Harsh Vinayak is a senior leader at NTT DATA Services, leading the Offshore Operations for the Business Process Services line of business and the Global Shared Services Division. Dr. Vinayak has extensive expertise in designing and executing innovative solutions for wide-ranging issues – from complex outsourcing architecture, collections and recovery operations – to rotary wing vehicles. His background in advanced research and development positions him uniquely to provide clients with informed solutions based on extensive data analysis and forecasting.



Dhurai Ganesan

Dhurai Ganesan leads the Intelligent Automation and R&D for the Business Process Services at NTT DATA Services. His interests include AI and cognitive automation. Dhurai has helped build an end-to-end RPA creation, deployment and management ecosystem for identifying automation opportunities, through an enterprise innovation program. Dhurai has scaled businesses, teams and operations and maximized opportunities using robotic process automation and has delivered over 5000 FTEs savings worth of automation (Healthcare Payer, Provider, Life Insurance, Hospitality, Life Sciences and Baking domains).