Now Intelligence For Dummies®, ServiceNow Special Edition

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Introduction

Enterprises are using artificial intelligence (AI) and analytics to drive digital transformation in their organizations. However, the value of AI and analytics isn’t in the technology itself, but rather in the business outcomes it enables: AI and analytics enable us to use data more effectively to make better decisions and improve performance across the enterprise.

ServiceNow embeds AI and analytics in the Now Platform with Now Intelligence, delivering easy-to-use capabilities — including performance management, data analytics, machine learning, and natural language processing — that anyone can use, regardless of their role within an organization. ServiceNow offerings such as Performance Analytics, Predictive Intelligence, and Virtual Agent use these capabilities to help customers solve real-world problems and boost performance across all their workflows.

About This Book

In this book, you discover how advanced technologies work together in the Now Platform to deliver better business outcomes, including getting work done easier and faster, predicting issues and automating action, and helping your organization make smarter business decisions. Now Intelligence For Dummies, ServiceNow Special Edition, consists of seven chapters that explore

- The foundational elements of Now Intelligence (Chapter 1)
- How to build chatbots for your business use cases — without writing code (Chapter 2)
- How natural language processing helps improve the human experience and deflect routine requests (Chapter 3)
- How to address your business needs with machine learning (Chapter 4)
- How to measure success, continuously improve, and drive adoption (Chapter 5)
How real-world customers in different industries are using Now Intelligence to deliver outcomes (Chapter 6)

Steps to get your organization started with Now Intelligence (Chapter 7)

Each chapter is written to stand on its own, so if you see a topic that piques your interest, feel free to jump ahead to that chapter. You can read this book in any order that suits you.

Foolish Assumptions

When writing this book, I assumed a few things about you, the reader. Mainly, I assume that you work for an organization that’s already using the ServiceNow platform, and you’re responsible for the implementation and adoption of ServiceNow within your organization. As such, I assume you already have a deep knowledge of the Now Platform and its capabilities but perhaps only limited practical experience with machine learning, chatbots, NLP, and/or analytics. Finally, I assume you want to learn more about the benefits of these Now Intelligence features, best practices for approaching an implementation, and how you can get buy-in within your organization.

Icons Used in This Book

Throughout this book, I occasionally use special icons to call attention to important information. Here’s what to expect:

- **REMEMBER**
  - This icon points out important information you should commit to your nonvolatile memory, your gray matter, or your noggin.

- **TECHNICAL STUFF**
  - This icon explains the jargon beneath the jargon and goes into more detail on some topics. If that nerdy jargon isn’t your cup of tea, feel free to skip this information.

- **TIP**
  - These useful nuggets of information help you save time, money, and more in your journey.
Beyond the Book

There’s only so much I can cover in this short book, so if you want to learn more, check out these resources:

- **servicenow.com**: The ServiceNow website has a lot of information about various products, technologies, solutions, tools and resources for customers, and training and certification opportunities.

- **blogs.servicenow.com**: The ServiceNow blog is full of articles about current topics, events, and news.

- **community.servicenow.com**: The Now Community provides access to discussion forums, including customer service management; IT service management; analytics, intelligence, and reporting; governance, risk, and compliance (GRC); developers and architects, security operations, and more.

- **nowlearning.service-now.com**: Accelerate your learning with on-demand and live classes taught by ServiceNow experts.
Organizations everywhere recognize the opportunities made possible by the proliferation of rich data and cloud computing. These enterprises are evolving their business and operational models through digital transformation and pervasive technologies such as artificial intelligence (AI) and analytics to harness data in new ways that increase speed and drive operational efficiency.

While the use of AI and analytics continues to evolve, enterprise leaders recognize that the value in these technologies isn’t in replacing, but rather augmenting, human capabilities, which empowers the human workforce to work smarter and be more productive.

In this chapter, you find out about AI and analytics, the building blocks of Now Intelligence, and how to achieve better business outcomes with Now Intelligence.

What Can You Do with AI and Analytics?

While technology is a critical enabler of innovation, people are the key to ultimate success. Most digital transformation initiatives focus on increasing productivity and improving human experiences through technology. However, new technologies must be
used in a manner that enhances or augments the natural intelligence and capabilities of humans. In turn, these technologies empower organizations to fundamentally improve the nature of work and create engaging experiences for their workforce.

Now Intelligence is AI and analytics built into the Now Platform to improve workflows and applications. It accelerates digital transformation by enabling greater human creativity, productivity, and innovation while reducing or eliminating routine, repetitive, manual, and error-prone tasks.

Machine learning, natural language processing (NLP), data analytics technologies, and performance management are embedded in the Now Platform. Together, these technologies are the “brains” of Now Intelligence, working together to create better experiences and interactions for everyone in your business with simple and secure access to data, and consistent, personalized user experiences.

With Now Intelligence in the Now Platform, you can

- **Deliver better self-service.** Make it easy for your users to get what they need, whenever they need it, with an always-on and available Virtual Agent that natively understands and acts on their requests.

- **Route and prioritize work.** Getting incidents, cases, and tasks to the right team and prioritizing them appropriately is a critical step in the triage process, but it can be subjective and error prone when performed manually. Now Intelligence automatically routes and prioritizes work to reduce errors and ensure the most important issues get addressed quickly.

- **Optimize knowledge bases.** A properly curated knowledge base can help reduce service requests and call volumes by empowering users to solve their own issues. But a knowledge base that’s missing solutions to common issues, is difficult to search and navigate, and full of duplicate or outdated content will frustrate users. Now Intelligence helps optimize and manage your knowledge bases to deliver better self-service capabilities for your users and customers.

- **Recommend actions and deliver answers.** Now Intelligence points your service desk agents in the right direction by suggesting relevant tasks and content that help them resolve issues faster.
Detect major incidents and discover trends. Now Intelligence helps you quickly identify and classify critical issues and problems by proactively identifying similarities across open incidents or cases. Continuously grouping related items helps you discover hidden patterns and anomalies and potential areas to focus your improvement efforts.

Looking Under the Hood

Now Intelligence includes a set of machine learning frameworks and natural language processing (NLP) techniques that work together in the Now Platform. NLP capabilities within ServiceNow include natural language understanding (NLU) and natural language query (NLQ). NLU enables users to make requests the same way they would ask another human. NLU inference services enable machines to comprehend each request by recognizing the intent (what the user wants to do) and entity (or supporting detail). NLQ leverages NLU capabilities to deliver immediate answers by converting plain language questions into database query code before returning results in user-friendly lists, numeric values, or charts.

In this section, you take a look at some of the features and capabilities these frameworks and techniques unlock.

Virtual Agent

ServiceNow Virtual Agent is an intelligent chatbot solution that helps to resolve common requests, increase user satisfaction, and frees your service desk agents to work on more critical issues.

Virtual Agent makes it quicker and easier to resolve routine IT, HR, and customer service requests through an integrated conversation window. By using Virtual Agent Designer, topic-based conversations can be easily modeled using a no-code interface, or the NLU Workbench can be employed to design interactions using simple, everyday language. In either case, employees and customers can kick off enterprise workflows to get exactly what they need, whenever they need it, from a single chat interaction.
Virtual Agent is natively available on the Now Platform and in your ServiceNow mobile apps, with the goal of meeting users in their preferred workspaces. It also includes out-of-the-box integration with Microsoft Teams, Slack, and Workplace and can be integrated with any other popular team communication and collaboration hub via application programming interfaces (APIs) so your users can get help from practically anywhere without switching applications.

**Predictive Intelligence**

ServiceNow Predictive Intelligence is a powerful combination of machine learning capabilities that integrates with your ServiceNow workflows to enhance business efficiency and improve service accuracy. Predictive Intelligence uses a patented machine learning engine to recommend relevant content to service desk agents based on logical connections between incidents, cases, alerts, and knowledge articles. Predictive Intelligence also accurately categorizes, assigns, and prioritizes incoming requests, which eliminates manual triage. These capabilities make adopting machine learning quick and attainable, thereby reducing manual tasks, improving user experience, and increasing workforce productivity.

**Performance Analytics**

ServiceNow Performance Analytics delivers real-time insight into business performance to help organizations proactively optimize business services, improve processes, and align with organizational goals. Performance Analytics includes predefined best practice key performance indicators (KPIs), as well as responsive and interactive dashboards, next-level drilldowns, and powerful analytics that are intuitive and customizable, delivering actionable insights needed to drive better business decisions.

ServiceNow IT Operations Management (ITOM) uses AI operations (AIOps) to reduce millions of events to a manageable volume of actionable alerts. AIOps cuts through the noise, pinpoints service issues, and helps you to rapidly identify and remediate root causes. Unlike static, rule-based event management systems, ITOM Health applies machine learning and advanced analytics to automatically correlate events. Learn more about AIOps and ServiceNow ITOM at [www.servicenow.com/solutions/aiops.html](http://www.servicenow.com/solutions/aiops.html).
Delivering Outcomes with Now Intelligence

Now Intelligence uses AI, machine learning, and advanced analytics to surface important information, make relevant predictions and actionable recommendations, and automate repetitive, mundane, and manual error-prone tasks. These capabilities give back more time to your employees and customers so they can focus on the things they excel at — strategic and creative thinking, complex decision making, customer interactions, and unpredictable work.

In this section you discover the outcomes that Now Intelligence delivers.

**Get work done easier and faster**

Now Intelligence frees your employees to get work done and your customers to resolve issues easier and faster. Employees and customers can kick off workflows and start dynamic conversations with intelligent virtual agents that automate routine requests for immediate resolutions — when and where your employees and customers need them. What’s the result? Better customer interactions and experiences and a significant reduction in request volumes.

**Predict issues and automate action**

Now Intelligence helps you deliver valuable services across your organization while reducing costs associated with manual work, downtime, and lost productivity. By running intelligent operations with actionable insights, you can easily pinpoint root causes and remediate issues faster. Workflow automation and self-service capabilities reduce call volumes and automate common requests to deliver faster resolution and improve user and customer satisfaction.

**Make smarter business decisions**

Now Intelligence helps you establish a foundation of metrics that drives transparency and alignment at all levels of your organization. This empowers your employees to make better decisions that have the most impact on your organizational goals.
Insight into real-time patterns and trends helps service delivery teams and process owners predict issues, make better and faster decisions, and proactively identify areas for improvement and ongoing process optimization.

## DATA GOVERNANCE AND HYGIENE

Like any other service management process or program, analytics requires certain tasks to be completed. A critical part of any program is determining answers to the following questions:

- What happens when teams and individuals want their own dashboard?
- Who should create dashboards?
- In which instances should analytics content be created and maintained?
- What roles are needed for a good practice dashboard program?

For advice and recommendations on how to develop an appropriate and effective data governance and hygiene program for your organization, visit [community.servicenow.com/community?id=community_article&sys_id=b569aaa8dbdee3002e8c2183ca9619c4](community.servicenow.com/community?id=community_article&sys_id=b569aaa8dbdee3002e8c2183ca9619c4).
Chatbots are an increasingly popular way to deliver a quick and convenient user or customer service experience — without the need for human interaction. When implemented correctly, chatbots can offer fast answers to common questions and even take certain actions without the user needing to interact with a live agent.

In this chapter, you discover how you can use the ServiceNow Virtual Agent Designer to design and build automated conversations that help your users quickly obtain information, make decisions, and perform common work tasks by using a chatbot to navigate a constantly changing work environment.

A *chatbot* is simply a service that allows you to interact with a conversational interface. Many chatbots are rules–based; others are powered by artificial intelligence (AI). But in either case, they transform our experiences from traditional web browsing to asking and telling like you would do in a natural human interaction. Better yet, chatbots are meeting people where they already are and are most comfortable, as embedded messaging within common applications.
Identifying Use Cases

Before you start building chatbots for your service desk, you need to identify some common use cases that are relevant to your organization. Review your support requests over time (including IT, Human Resource [HR], Finance, and other departments) and other available metrics to help you determine common issues, use cases, and requests or tasks. This process helps you identify the topics that are most relevant to your users and customers to help you get off to a great start.

Some good use cases may include various workflows or service requests within your organization that are already documented and well understood but may currently be performed manually. For example, password resets, vacation requests, benefits changes (such as getting married or increasing your retirement contribution), setting up conference room equipment, or requesting a new mobile device are all common use cases, but every organization has its own unique process.

As you start to build out the conversation flows for your chatbots, ponder the following questions:

» Who are the most likely users or customers for a given conversation topic, and what are they trying to achieve?
For example, is the user trying to solve a problem, ask a question, or submit a request?

» What's the goal of the conversation?
For example, provide the needed information to the user, collect information that's needed from the user, or trigger the appropriate workflow like an approval or provide an interactive knowledge article.

» What's the limitation of the topic? What should the topic handle and what should be handled by a live agent?
For example, should the conversation handle everything or, in some cases, should it connect the user to a live agent?

Some typical IT support tasks that a chatbot can perform include the following:
Answering frequently asked questions (FAQs)
Providing tutorial (“how to”) information
Querying or updating records (for example, getting the status on cases or incidents)
Gathering data (such as a file attachment for a live agent to review)
Performing a complicated task that requires multiple systems

Automating common support tasks with a chatbot helps your users and customers get the answers they need quickly to resolve issues and free your support team to focus on more complex issues. Think of your chatbot as a force multiplier that augments your support team and helps you scale your support requirements accordingly.

Virtual Agent Designer in the Now Platform is a graphical interface tool for creating and managing chatbot topics, which are the blueprints for Virtual Agent conversations. Virtual Agent Designer provides rich controls and reusable conversational elements to help you create the dialog for conversations between the Virtual Agent and your users and customers — all using engaging builders to get the job done.

Making Virtual Agent available on preferred channels familiar to your users, such as third-party messaging apps like Microsoft Teams or Slack, offers a convenient way for them to get work done quickly without switching applications.

Understanding the Basics of Conversational Design

After you identify which use cases make the most sense to move from service desk support to Virtual Agent, you can start developing the chatbot topics and conversation flows to support the goal you’ve identified for each use case. Remember to review your answers to the questions you addressed when identifying these potential use cases; specifically, who is your target audience for each topic and what will the topic achieve for the user?
For example, you may create a topic that enables users to see the status of incidents they’ve previously submitted. You may also decide to include an option for users to add comments or change the status of their incidents themselves (for example, if they were able to resolve the issue by using a self-service topic in the chatbot). This particular topic would need to include elements, such as the following:

- A prompt for the user or customer to select a specific incident
- An output showing the status of the incident
- A prompt to ask if the user wants to leave a comment or update the status
- A utility control to branch the conversation based on their answer (“Yes” or “No”) to the prompt
- A prompt for the user to enter a comment (if “Yes”) or offer assistance with another topic (if “No”)
- A utility control to add the user input as a comment or status change in the incident

Figure 2-1 shows the basic steps in the design process for creating a topic.

![Topic design process](image)

**FIGURE 2-1: Topic design process.**

Virtual Agent Designer provides reusable components known as topic blocks that you can create or customize for common tasks and conversational elements in your chatbot. A *topic block* is a subprocess within a workflow that performs a specific action or task within a topic. There are numerous prebuilt setup topics, conversation topics, and topic blocks that you can customize for your organization. Topic blocks are best utilized for complex, repeatable steps that naturally take place within a Virtual Agent topic, such as the option to search the knowledge base or contact a live agent.
Topic blocks simplify the process of creating and maintaining subprocesses within your Virtual Agent topics by enabling you to reuse standard procedures or actions across conversation topics. For example, you can build a topic block that creates or retrieves certain types of records. Topic blocks also ensure subprocesses within your Virtual Agent topics are consistent across your topic library, producing expected, repeatable chatbot experiences that help with user adoption.

### Designing Conversation Flows

As you think about the conversation flows in your chatbots, begin by identifying the direct path to resolution for a specific issue, task, or request. Then, consider all the different ways a conversation may flow (just like in a human conversation). For example, a user may have additional questions for the chatbot based on information provided by the chatbot, or vice versa (the chatbot may have additional questions for the user based on information provided by the user).

A simple conversation typically includes the following elements:

- A standard welcome message or greeting from the chatbot, followed by an initial prompt that asks the user to type a question or choose from a list of available topics.
- The user response to the initial prompt. For example, the user may choose a topic such as submitting a new service request or checking the status of an existing ticket.
- A series of prompts, acknowledgments, and responses that are exchanged between the chatbot and the user until the user achieves his goal or completes his task. You can also use different controls in the bot prompts, for example, a choice list with buttons or a carousel of images to select an item.
- A closing message asking the user if his issue has been satisfactorily resolved (possibly, asking the user to rate the experience or participate in a brief survey), if there are any other topics that the user needs to discuss and, if not, an appropriate ending to the conversation.
Figure 2-2 shows a simple conversation example using a web client.

Provide options for a user to transfer to a live agent and/or attach a file (such as an image, text, or PDF file) in the chatbot window.

**FIGURE 2-2:** A sample conversation in the ServiceNow Virtual Agent chatbot.
CHAPTER 3 Designing Conversational Experiences with Natural Language

ServiceNow Virtual Agent interacts with your employees and customers in the same natural conversational way that humans speak with each other. Natural language understanding (NLU) is artificial intelligence (AI) that works by understanding human language. Within Virtual Agent, NLU models are used to infer user intent, ask appropriate questions for additional context if needed, and then provide the appropriate information or take action.

In this chapter you find out how to leverage the Now Platform’s native NLU capability in Virtual Agent.
Understanding Intents and Entities

The Virtual Agent chatbot uses NLU models to understand user requests in a chat session. An NLU model provides the framework that the Virtual Agent uses to determine user intent — what the user wants to do. NLU enables Virtual Agent to provide a natural and engaging conversational experience with your users and customers.

NLU models need to be trained to understand the various utterances that a user may make during a conversation and correlate those statements to specific tasks that a user wants to perform. Virtual Agent uses utterances to extract intents and entities — each is defined as follows:

- **Utterances**: The different ways that a user may express (or type) her intent in a chatbot window
  
  For example, to check IT ticket status, a user may ask, “What is the status of my ticket?”, “Is my issue fixed yet?”, or “What is the status of my request?”

- **Intents**: What a user wants to do (the topic, I discuss this in Chapter 2)
  
  For example, a user may want to “Submit Service Request” or “Check IT Ticket Status.”

- **Entities**: The objective information (or context) that the NLU model needs to extract from the utterances and correlate to an intent to answer a question or perform an action
  
  For example, “tickets,” “issue,” and “request” are entities that the Virtual Agent can extract from any of the utterances in the example in Figure 3-1 and correlate to the intent (“Check IT Ticket Status”).

Figure 3-1 shows you the NLU model to understand and process user requests.
Building Natural Language Models

NLU enables Virtual Agent to learn and respond to intents and utterances. You use the NLU tools to enter words and phrases that a user may enter in a chatbot window (for example, “Something is wrong with my laptop”) and define specific entities (such as a user name, laptop model, or serial number) that Virtual Agent needs to extract from the utterances. Combining what a user says with what you know about the user (such as location, role, and department) and the user’s assigned device (such as model number, purchase date, and maintenance history) provides a great use case for the Virtual Agent. This process trains the NLU model to understand the meaning and context of common words and phrases (utterances) so that it can infer the appropriate responses or actions. You can see this process in Figure 3-2.

Figure 3-3 shows an example of how the ServiceNow NLU engine processes and renders utterances into intents and entities.
You can train models by typing a few sample sentences of what users may say (utterances), and then highlight the details and synonyms (entities) that the chatbot can use to intelligently answer questions and execute workflows.

Training and Testing Your Model

After building your NLU model, you need to train and test it in an iterative manner to verify that the intents and entities are correctly validated, compiled, and saved to your model. To test your model, follow these steps:

1. **Enter an utterance (or partial utterance) from the examples you created for your model.**

   The system then predicts the top intents and entities and shows you its matching confidence scores.

2. **Keep testing new utterances until the system assigns a satisfactory confidence score to your utterance inputs.**

   You can also manually adjust the confidence threshold value.

3. **Publish your NLU model.**

   After you’re satisfied with the results of your testing, publish your model.

After you’ve published your model, you can begin using it to build conversational experiences for your users with your Virtual Agent chatbot.
Chapter 4

Machine Learning Made Easy

In this chapter, you discover how Now Intelligence uses machine learning to instantly identify potential solutions to known problems, quickly find needles of relevant information in the proverbial data haystack, and make accurate predictions and suggestions so your employees can focus on doing what they do best.

Examining Use Cases

As the human mind has evolved over the millennia, so too has the nature of work, beginning with the Stone Age when humans first began using tools. During the Industrial Revolution in the 18th century, humans became proficient at performing manufacturing tasks with new machines. Today, in the modern Digital Revolution (sometimes referred to as the Fourth Industrial Revolution), businesses have unleashed the creativity of the human mind and empowered the knowledge worker with rapidly evolving technology and massive amounts of data. The nature of work has fundamentally changed.
Unfortunately, many manual, repetitive tasks still need to be performed in the modern digital workplace, and this work is too often relegated back to the human worker. Although important, humans often find these types of tasks to be mundane, leading to a loss of efficiency and productivity, low employee satisfaction, and potentially costly errors. At the other end of the work spectrum, many modern tasks require complex computational analysis to identify discrete patterns in gigabytes of data.

Both of these examples (manual repetitive tasks and complex analysis of massive amounts of data) are ideal use cases in which machine learning can augment human work, freeing humans to do what they do best while machines do what they do best.

Predictive Intelligence is an artificial intelligence (AI) technology that uses machine learning to accurately automate repetitive decisions, provide relevant contextual content, and uncover hidden insights in real time. Along with ServiceNow Virtual Agent (I discuss this in Chapter 2) and ServiceNow Performance Analytics (see Chapter 5), Predictive Intelligence is part of Now Intelligence — a native set of AI and analytics capabilities on the Now Platform.

### LEARNING A FEW THINGS ABOUT MACHINE LEARNING

Machine learning is a subset of artificial intelligence but is also its own category of techniques and technologies that enable computers to perform tasks and make decisions without human assistance. There are three primary types of machine learning models:

- **Supervised learning**: Humans create and train models using thousands of completed examples. The trained model can then predict results — either as a category label or numeric value.

- **Unsupervised learning**: This model sorts data and uncovers interesting patterns without teaching or guidance, and it’s typically used to cluster groups of records or identify interesting relationships.

- **Deep learning**: This model uses neural networks to imitate how the human brain thinks, so it can continuously learn and improve itself without additional training from humans.
Predictive Intelligence uses machine learning to analyze your operational data to identify patterns and similarities and make relevant predictions and recommendations in real time. Predictive Intelligence integrates seamlessly with ServiceNow workflows, enabling you to eliminate inefficient, repetitive, and error-prone manual tasks.

Predictive Intelligence is part of the Now Platform. It works with ServiceNow applications and workflows to boost the performance and abilities of your employees.

In the following sections, I describe some common use cases to help you get the most out of Predictive Intelligence in the Now Platform.

**Get the right work to the right place**

Getting incidents quickly classified and assigned to the right support team is critical to triaging issues and reducing mean time to resolution (MTTR). Users and customers often struggle to describe their issues, so incidents must be manually triaged and rerouted based on often limited information and a subjective decision-making process. This can cause critical incidents to bounce from team to team because they’re incorrectly categorized, or provide incomplete and/or inaccurate information. Support teams waste huge amounts of time, and incidents take far too long to resolve. As a result, high-priority incidents may be stuck at the end of the queue because they aren’t properly prioritized, which leads to user (or customer) frustration and lost productivity.

Predictive Intelligence uses machine learning to automatically categorize and prioritize incidents in the Now Platform and route and assign them to the right support team. Simply train Predictive Intelligence using your historical incident data, and it learns how to accurately categorize, prioritize, and route future incidents. This capability helps reduce manual error-prone work, eliminates service bottlenecks, and enables support teams to respond to incidents faster — saving time and money while delivering better service quality.

**Resolve issues faster**

Support teams often spend time trying to resolve known issues that have already been solved in the past. They look for relevant knowledge base articles, search for similar previous incidents in
the ticketing system, and scour online documentation trying to get to the bottom of an issue. Meanwhile, users and customers are idle and grow increasingly frustrated.

Predictive Intelligence is like a personal assistant for your service desk agents. As soon as an agent starts to work on an incident, Predictive Intelligence helps connect the dots by combing through all past incidents and knowledge-base articles to find relevant content and suggest tasks that help the agent resolve the issue faster.

**Quickly detect major incidents**

A major incident can bring an organization’s operations to a halt with rapidly escalating costs and intense pressure on support teams to resolve the incident as fast as possible. Unfortunately, some major incidents aren’t easy to detect. As support calls start to come in, it may be difficult to identify a root cause or common thread across all the different symptoms and issues being reported. Without complete information and a holistic view of the situation, service desk agents may be slow to react to a major incident as it unfolds.

Predictive Intelligence helps you quickly identify and respond to major incidents. It proactively identifies similar open incidents, automatically highlighting potential major incidents as they emerge. Instead of waiting for more information to come in and having multiple agents unwittingly working on the same incident for different users, Predictive Intelligence helps your support teams quickly identify the root cause and work together to triage and resolve the incident.

**Identify opportunities for operational improvement**

Predictive Intelligence can also be used to dynamically segment and group your operational data, identifying clusters of similar items and highlighting patterns in your operational data that may help you to proactively target areas for improvement.

Unlike static analysis, which requires you to specify what you’re looking for, Predictive Intelligence uses unsupervised machine learning (see the sidebar “Learning a few things about machine learning” earlier in this chapter) to automatically identify and
show what’s important. It also adapts as your operational data evolves, highlighting new data patterns as they emerge — for example, issues with a new hardware or software release, increasing resolution times for specific types of incident, or knowledge gaps among specific user groups or departments that you can proactively address through additional training and documentation.

**Pinpoint use cases for incident/case deflection**

Another simple but valuable use case for Predictive Intelligence is to leverage the clustering framework to identify areas where Virtual Agent topics can be deployed to improve performance and self-service and reduce costs. In this case, Predictive Intelligence uses machine learning to identify high-volume incidents or cases that can be deflected through automation.

**Planning, Testing, and Execution**

Predictive Intelligence uses machine learning technology, which by definition is *learning*. It’s an assistive technology that requires governance, testing, and internal indoctrination for wide adoption within your organization. You need to

- Properly plan your various use cases and applications for Predictive Intelligence
- Test the various inputs and outputs
- Accept or reject action recommendations
- Retrain the machine learning models by adjusting confidence levels as appropriate

After a specific recommendation reaches a satisfactory confidence level, in many cases you can automate the recommended action.
Measuring Progress, Predicting Results, and Guiding Improvement

In business, you can’t improve what you don’t measure. In this chapter, you find out how to use ServiceNow Performance Analytics to not only help you define key performance indicators (KPIs) for your organization but also to predict outcomes, anticipate trends, prioritize resources, and enable continuous improvement.

What Makes a Good Indicator?

Not only do you need to measure things to improve, but also you need to measure the right things that impact business performance. Indicators define a performance measurement taken at regular intervals of a business service, an activity, or organizational behavior. Good indicators meet the following requirements:

» Simple: The indicator should be easy to understand. For example, first-call resolution rate is the percentage of
incidents that are resolved by the first assigned group without being escalated or reassigned.

- **Objective**: Indicators need to be unambiguous, based on indisputable facts and drawn from a large amount of data. For example, the first-call resolution rate is 87 percent, or the average wait time before speaking with a live agent is 50 seconds.

- **Actionable**: For example, first-call resolution rates can be improved by training Tier 1 support personnel. Average wait time can be improved by adding more staff during peak periods or mitigated by using chatbots to engage the user or customer quickly and collect relevant information for the live agent or potentially resolve the issue without needing to transfer to a live agent.

- **Relevant**: The indicator should be aligned to the organization’s or team’s overall goals and objectives.

Performance Analytics can collect indicator scores from a set of records defined in an indicator source, entered manually, or calculated from other indicators.

### KPIs, Breakdowns, and Widgets Explained

Performance Analytics comes with over 1,600 predefined KPIs for measuring platform processes and includes responsive and interactive dashboards, next-level drilldowns, and powerful analytics that deliver insight into how to improve the quality of business services and processes.

Breakdowns enable you to group or filter indicator scores by an attribute, such as Priority, Category, or Assignment Group. You can apply a breakdown on the ServiceNow Analytics Hub and on dashboards. Breakdown elements are the values for each breakdown. For example, the Priority breakdown may have the elements critical, high, and low. Breakdowns are categorized as automated, manual, or external, depending on the source of the element:

- **Automated breakdown elements are specified in breakdown sources.**
Manual breakdowns have their elements entered manually to define an organization.

External breakdown elements come from third-party sources, such as data stored in an external database system outside of the ServiceNow instance.

Finally, widgets provide visualizations for indicator scores. Widgets are shown on dashboards. A widget ties an indicator to a visualization, such as a trend line, a set of columns, or a pie chart. Within the widget, you can filter or group indicator scores by breakdowns. You can also apply time series functions, such as 7-day sums, to the scores.

Indicator scores can be viewed or analyzed in the Analytics Hub or Analytics Center, or presented, via widgets, on dashboards.

**Data Visualization**

Today's business environment is incredibly complex and competitive. We have access to more data than ever before, yet most organizations don’t understand how to derive maximum value from their data. Static reports with stale information and no context are presented in weekly status meetings while participants question the validity of the source data. Business and performance analytics, when they do exist, are often siloed away from departments and stakeholders who need those insights to drive meaningful change.

Instead, analytics needs to be easily understood by different people in different roles throughout the organization — not just your data scientists. But analyzing thousands of rows of data in spreadsheets isn’t something most people can do, have the time to do, or care to do. Instead, people consume information easiest when it’s visual. For example:

» When a new incident comes in, an IT manager can use a dashboard to see who’s available (with presence and availability information — like a modern in/out board) to resolve it and estimate time to completion.
A front-line manager can quickly review the incident queue for the team and quickly identify where the workload needs to be reallocated or reprioritize the work being done.

A portfolio manager can review the status of all the active projects being worked on and identify where to focus on struggling projects.

Driving Adoption

Performance Analytics enables organizations to set, track, and analyze progress against defined business goals, connecting decision makers with better data when they need it. Performance Analytics helps drive adoption of digital transformation initiatives with “quick wins” by helping organizations identify important metrics and trends and address potential challenges and areas for improvement.

The benefits of Performance Analytics include

» **Providing real-time insights**: Key decision makers can get relevant, personalized insights by simply clicking a button instead of exporting data from databases and spreadsheets and manually creating static reports that quickly become stale and outdated. Front-line workers have the visibility to drive them to meet the objectives that are aligned to overall business goals.

» **Establishing a single version of truth**: By defining visualizations and ensuring they’re based on consistent and accurate data, you provide a single version of reality that teams can confidently use to drive positive change throughout the organization.

» **Accelerating time to value**: ServiceNow Performance Analytics can be implemented in weeks instead of months so your organization can quickly take advantage of data insights.

» **Driving toward continual improvement**: Performance Analytics can help you pinpoint areas for improvement and take action by using key indicators, scorecards, time charts, drilldowns, and dashboards that are automatically updated as established goals and objectives are achieved and new goals and objectives are defined.
Chapter 6

Looking at Real-World Success Stories

In this chapter, you find out how ServiceNow customers are using Now Intelligence to solve real-world challenges and build smarter workflows.

Virtual Agent

ServiceNow’s Virtual Agent provides a fully conversational experience for your end-users to quickly resolve common service requests, help increase employee and customer satisfaction, and allow your service desk agents to focus on more complex user issues to maximize productivity and value to the organization.

Key Virtual Agent features include

**Tip**

**Personalized experiences**: With information such as which IT assets (and their service history) are assigned to users, where they’re located, and who they work with, the Now Platform has a full picture of each user in the organization. This knowledge helps Virtual Agent have more meaningful,
contextual conversations with your users to help them resolve issues.

- **Pre-built conversational topics:** You can quickly deploy chatbot conversations using templates that can be customized for the most common scenarios, such as IT, HR, and customer service requests.

- **NLU:** By using simple, everyday language, your users can get their work done quickly and easily. NLU actions can be orchestrated to take care of individual requests based on interpreted text.

- **Virtual Agent Designer:** By using drag-and-drop elements in a graphical interface, you can build and test conversations and see the entire flow — all without scripting or advanced development skills.

- **Live agent hand-off:** At some point in a Virtual Agent conversation, a user or customer may want to speak with a live agent, or the Virtual Agent may not be able to resolve a specific issue. Live agent hand-off seamlessly transfers the entire conversation history and context to the right human agent so any escalations or user issues can be quickly addressed and resolved. The Advanced Work Assignment feature adds to this efficiency by ensuring that work items are assigned to the right agent based on availability, capacity, and skillset.

Read the nearby sidebar “MGM doubles productivity and transforms IT service desk” to learn how Virtual Agent quickly doubled productivity and drastically improved customer service responsiveness.

### MGM DOUBLES PRODUCTIVITY AND TRANSFORMS IT SERVICE DESK

Information technology permeates every aspect of MGM’s operations. As one of the premier integrated resort operators in Macau with two properties, MGM Macau and MGM Cotai, MGM’s business is linked with technology. From gaming floors to hotel rooms, IT powers guest experiences, hotel operations, security, and more. Effective and
responsive IT support is mission critical, with every second of downtime directly affecting both guests and revenues.

MGM faced a significant challenge — one that is shared by other hotel operators in the region. IT professionals are in high demand in Macau, and unemployment is low. This, combined with the repetitive and stressful nature of IT support work, made it incredibly difficult to hire and retain IT support staff. At the same time, MGM still relied primarily on phone support, placing a major burden on its service desk.

To address these issues, MGM decided to adopt chat as its primary support channel with ServiceNow Connect Support. Chat was just the first step. Now that the channel was in place, MGM decided to add ServiceNow Virtual Agent chatbot. Within two months of launch, the deflection rate was already up to 16 percent, and users were getting a response within five seconds — instead of waiting impatiently on the phone.

Deflection wasn't the only driver. In fact, supporting guest rooms was perhaps the single biggest reason why MGM adopted Virtual Agent. However, MGM employed more than 2,000 housekeepers, and many of these couldn't type in English or Chinese. Because of this, they couldn't use live chat to report a guest room issue. Instead, they had to phone a back-of-house team, which then reported these issues to IT. The back-office team was costly and overloaded. Worse still, waiting for them to relay incidents caused significant delays.

With ServiceNow Virtual Agent, MGM built an ingenious solution. Rather than having housekeepers call in guest room issues, Virtual Agent lets housekeepers simply choose items from a menu, using a standard language and number focused entry. They click on the affected device in the list — for example, the TV or air conditioning unit — and enter the number of the room. It takes minimal computer skills, and they only have to type numbers. Virtual Agent creates an incident right away, and response time is much quicker.

Now, ServiceNow Virtual Agent is MGM's primary target support channel for more than 10,000 users. Users even go through Virtual Agent to request live support. Looking forward, the integrated resort operator is focusing on increasing Virtual Agent use by driving mobile adoption, with more than 4,000 users already using the mobile app today. As usage and the services offered increase, MGM forecasts that 50 percent of its incidents and requests will come via Virtual Agent.
Predictive Intelligence

ServiceNow Predictive Intelligence uses machine learning to enhance business efficiency and improve service in your ServiceNow workflows.

Key Predictive Intelligence features include

- **Major incident detection**: Predictive Intelligence can proactively correlate similarities and trends across your open incidents or cases, enabling your service desk agents to quickly identify and triage critical issues and problems.

- **Action and content recommendations**: Service desk agents can resolve issues faster with relevant tasks and knowledge articles suggested by Predictive Intelligence.

- **Categorization, routing, and prioritization**: Supervised machine learning uses your historical data to automatically classify tasks, incidents, and cases, helping to reduce manual work and entry errors across your organization.

- **Cluster analysis**: Unsupervised machine learning identifies patterns by continuously segmenting and grouping similar items that help you uncover potential opportunities for improvement.

Read the nearby sidebar for the Novant Health customer success story to learn how Predictive Intelligence helps eliminate 28 hours of redundant support work per week, reduces workload by 50 percent through self-service, and leads to 30 percent fewer ticket reassignments.

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**NOVANT HEALTH CREATES MORE TIME FOR PATIENT CARE**

At 15 hospitals and more than 350 physician practices, Novant Health’s clinicians deliver remarkable experiences for patients. Digital Products and Services (DPS) is the company’s IT team. One example of how DPS helps its frontline employees (healthcare practitioners) is by minimizing the effort required to resolve work issues. Previously, IT support staff had to consult several different applications to get the...
information needed to resolve issues that impeded patient services. This drastically slowed time to resolution.

When Novant Health clinicians submitted tickets through the self-service portal, they would sit in a queue until the issues in front of it got resolved. IT required a full-time service desk technician to read the description and route it to the most appropriate team.

If the company implemented a single platform to streamline and automate this process, the manual workload of the IT support staff would be lighter, allowing them to resolve more issues faster. But Novant Health didn’t have that capability — until it deployed the Now Platform to bring unity, transparency, simplicity, and automation to its IT support workflows.

As the intelligence layer of the Now Platform, Now Intelligence delivers insight and automation to make workflows smarter and faster by anticipating trends, predicting future outcomes, automatically categorizing and routing work, solving the most prevalent issues, and more. Novant Health initially deployed ServiceNow to automate the IT ticketing system, then added ServiceNow Predictive Intelligence to bring a layer of machine learning to automatically categorize and assign tickets and set priority levels. Predictive Intelligence also helps Novant Health technicians predict new major incidents and recommends the best action to resolve the issue.

About 50 percent of the 25,000 incidents DPS receives each month go through Predictive Intelligence, including all the non-self-service tickets. Novant Health uses ServiceNow Performance Analytics to track how team members are using Predictive Intelligence and how it is impacting ticket assignments and resolution times. This allows the team to continuously tweak Predictive Intelligence to improve response times.

ServiceNow Knowledge Management is providing standardized templates, formats, and a simple process so team members can easily publish knowledge articles to the self-service portal to promote employee self-help. ServiceNow Virtual Agent also empowers employees with a self-service chatbot that has significantly decreased previously long on-hold times with DPS.

About 40 percent of self-service tickets go through Predictive Intelligence, which has cut the agent workload in half. In the first five months, Predictive Intelligence made more than 100,000 predictions

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with 79 percent accuracy. That accuracy helps reduce human errors in assignments, which also means decreasing resolution times. After the implementation, ticket reassignments dropped by 30 percent.

Automation, Predictive Intelligence, and Virtual Agent capabilities save the DPS service desk about 28 hours a week in redundant work. Then, there’s the as-yet-uncalculated savings that comes from incident deflection delivered by the self-service portal and Predictive Intelligence.

## Performance Analytics

ServiceNow Performance Analytics is an easy-to-use, integrated application designed for reporting and analyzing business performance. Performance Analytics comes with over 1,600 predefined key performance indicators (KPIs) for measuring platform processes and includes responsive and interactive dashboards, next-level drilldowns, and powerful analytics that deliver insight into how to improve the quality of your business services and processes.

Key Performance Analytics features include

- **Best practice KPIs and dashboards**: Measure the KPIs that matter most to your organization and compare your performance against industry-leading metrics and benchmarks using out-of-the-box content tuned for your ServiceNow processes and apps.
- **Real-time visibility**: Instant access to current, live data rather than stale historical data helps you make better business decisions and answer questions on the spot.
- **Spotlight**: Prioritize important work based on actual business requirements rather than relying on “gut feeling” to rank tasks or records.

Check out the nearby sidebar on the KAR Auction Services customer success story to learn how KAR uses Performance Analytics to create a single source of truth for consistent, standardized performance metrics driving significantly improved incident response times and service delivery.
KAR TRANSFORMS SERVICE DELIVERY

KAR Auction Services provides innovative remarketing solutions for the wholesale used vehicle industry. As a technology-driven company, KAR depends on IT to maintain its market leadership. As a global enterprise, that technology must work 24/7. That’s why KAR chose ServiceNow IT Service Management (ITSM), built on the Now Platform, to manage its IT services and infrastructure, creating a single system of record for all its operational data.

KAR was relying on manual processes to measure service performance. Individual teams laboriously extracted and analyzed their own data, creating significant overhead and delays. This disconnected approach also created trust issues because everyone was looking at the data from different angles. The company had no centralized ownership of metrics, so there was no consistency. It had multiple ways of defining when an incident was resolved or closed, which was a major issue.

KAR chose ServiceNow Performance Analytics to automatically calculate consistent, standardized metrics using ServiceNow operational data. Not only has this created a consistent data foundation, it also reduced KAR’s metric maintenance efforts by an impressive 94 percent. And, because of the flexibility of Performance Analytics, it’s just as easy to add new metrics.

For KAR, creating executive visibility was a top priority. The company has also created performance analytics dashboards for its IT managers and service managers, giving them a real-time performance view. Managers can now predict future events and take corrective actions before issues impact their service-level commitments. Importantly, they can also identify opportunities to further optimize service performance.

Individual IT staff are also benefiting from Performance Analytics. KAR has given each frontline IT employee its own personalized dashboard, containing all the information needed to do the job.

Since going live with ServiceNow Performance Analytics, KAR has dramatically enhanced its service delivery capabilities. By creating a

(continued)
Bringing Now Intelligence All Together in the Now Platform

The Virtual Agent, Predictive Intelligence, and Performance Analytics components in the Now Platform can be implemented individually at a pace that suits your organization’s needs. When fully implemented, these components work together in the Now Platform to deliver the full capabilities and benefits of Now Intelligence.

The nearby sidebar on the University of Maryland’s customer success story informs you on how the full suite of features and capabilities in the Now Platform helped the university reduce incident volumes by 25 percent and cut incident resolution times by 75 percent.

THE UNIVERSITY OF MARYLAND TRANSFORMS IT SERVICE DELIVERY

As one of America’s preeminent public research universities, the University of Maryland is dedicated to the fearless pursuit of ideas. At the leading edge of education, entrepreneurship, and innovation, it depends on state-of-the-art technology to support faculty, staff, and students as they work to advance knowledge for the benefit of students, the state, the nation, and the world.
The university’s Division of Information Technology delivers a wide range of communications, computing, instructional technology, and consulting services that help faculty, administrators, and researchers achieve their goals. The division allows university staff and students to easily access new services, get issues resolved quickly, and have their questions answered.

That’s why the division chose ServiceNow IT Service Management (ITSM). It wanted to deliver a fantastic experience for university staff and students. That meant giving them intuitive self-service backed up by responsive support. The University couldn’t do that with thousands of emails and a dozen disconnected tools. ServiceNow gives the University the intelligent platform needed to deliver great service and drive innovation.

Since starting out with ServiceNow ITSM, the Division of Information Technology has transformed how it delivers service. A unified IT Support Center portal allows university staff and students to report issues, access services, find solutions, and share questions and answers with other members of the university community. And the services this portal provides go far beyond traditional IT. For instance, users can ask ServiceNow to automatically create a website for a new research project or other initiative, or to schedule delivery of audiovisual equipment for specific classes or entire courses.

With Now Intelligence, the division is taking responsiveness and innovation to the next level. By leveraging native AI and analytics capabilities on the Now Platform, the team is further enhancing the user experience, slashing service delivery times, and significantly increasing service desk productivity.

ServiceNow Virtual Agent was next on the agenda. By having Virtual Agent answer common questions and direct users to the right resources — for example, knowledge base articles — the division has reduced incident volumes by nearly 25 percent. With Now Intelligence, the division has also slashed incident resolution times by 75 percent. In part, this is because of more accurate incident routing with Predictive Intelligence, but it’s more than that. The service desk team is now using ITSM Agent Workspace, giving agents an intuitive, connected, and intelligent environment that helps them to work on the right things and resolve issues more quickly.

Performance Analytics is also helping the division’s support teams to meet overall performance goals and drive continuous improvement.
Now Intelligence provides quick wins out of the box. However, to take full advantage of ServiceNow’s artificial intelligence (AI) and analytics capabilities to drive digital transformation, consider using this six-step approach:

1. **Establish a solid data foundation.**
   Analytics and machine learning help you make better decisions, but they rely on good data. Performance Analytics and other solutions in the Now Platform work seamlessly with ServiceNow workflows, so be sure to take advantage of these capabilities by using the Now Platform to instrument your processes.

   Make data integrity a priority for your teams, ensuring that they’re both empowered and accountable.
2. **Evaluate service performance baselines.**

After you have a solid data foundation in place, you need to accurately measure how your services are performing. Decide which key performance indicators (KPIs) matter most to your business and use Performance Analytics to create a baseline to provide context and track your progress.

Make your performance baselines accessible and actionable by creating dashboards for your executives, service owners, and fullfillers.

3. **Identify goals and pinpoint areas for improvement.**

After you know how your services are performing, you can set appropriate goals. Identify the KPIs you need to improve and set realistic targets with specific dates. Then, go into your operational data to pinpoint the top areas that will help you to achieve your targets. For example, if you're targeting a 15 percent decrease in costs, what are the top contributors to these costs? This information helps you prioritize where to focus your efforts for maximum impact.

4. **Deliver automation and self-service.**

Now Intelligence delivers impactful AI capabilities to automate work and deliver self-service to employees and customers — helping work to flow smoothly by instantly addressing or resolving the most basic issues so that support teams can focus their time on more critical challenges.

Tackle your top areas for improvement with automation, self-service, process redesign, and/or training as appropriate. For instance, if your HR team struggles with a high number of benefit information requests, one solution could be to add benefits support to Virtual Agent and update your benefit knowledge articles. Similarly, if IT is overwhelmed with multiple types of access requests, the answer could be to automatically route these requests using Predictive Intelligence and automate the fulfillment process with ServiceNow Flow Designer.

5. **Measure and monitor for continuous service improvement.**

Use Performance Analytics to measure your current results and predict future performance. This information helps you determine if you're on track and take appropriate steps if you're not. You can also monitor and drive adoption, which is a critical part of any successful digital transformation initiative.
6. **Repeat.**

Business performance improvement is a journey, not a destination. Close the continuous improvement cycle by using Performance Analytics to identify new service optimization opportunities and keep pace with changing service dynamics. As a simple example, monitoring your knowledge base articles can show you which ones are in high demand and which ones are outdated.
Making the world of work, work better for people.

Work matters. It’s where we spend a third of our lives. And we’re dedicated to making the workplaces of today and tomorrow better for everyone. That’s why we put people at the heart of everything we do, with a cloud-based platform and solutions that deliver digital experiences to help people do their best work.

Learn more at servicenow.com
Deliver outcomes with Now Intelligence

This book helps you discover how advanced technologies work together in the Now Platform. This union delivers better business outcomes, so you can get work done easier and faster, predict issues and automate action, and help make smarter business decisions. *Now Intelligence For Dummies, ServiceNow Special Edition*, explores the foundational elements of Now Intelligence, so jump into whatever chapter you like and get started today.

Inside...

- Introducing Now Intelligence
- Personalizing your chatbots
- Using natural language
- Understanding machine learning
- Looking at real-world success stories
- Steps to digital transformation

*Lawrence C. Miller* has worked in information technology in various industries for more than 25 years. He is the co-author of *CISSP For Dummies* and has written more than 150 *For Dummies* books on numerous technology and security topics.

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