Now on Now:
How we’re using in-platform process mining to make ServiceNow an intelligent enterprise

At ServiceNow, we’re orchestrating over 900 business process workflows that bring our systems, people, assets, and places together. See how we’re using our own solution, ServiceNow® Process Optimization, to identify bottlenecks and inefficiencies and quickly make adjustments that improve performance.

—
ServiceNow Analytics Team
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Introduction

The purpose of this white paper is to share how we're using our own technology to mine processes across ServiceNow.

We'll walk you through the fundamentals of process mining and how it compares to traditional analytics. Next, we'll share how we’ve found it to be incredibly powerful when unleashed within our own organization.

We'll shed light on how we’re using our own in-platform process mining solution, ServiceNow Process Optimization, to easily find hidden inefficiencies across the company that we can immediately address.

See how we use machine learning and automation to examine our processes, discover bottlenecks, and actually fix those process loops in real-time.

Whether we’re using our own technology to mine a three-step process in HR, a fifteen-step process in finance, or a seven-step process that reaches across HR, finance, IT, and legal, the goal of process mining remains the same: Discover inefficiencies, take action, and improve performance.

Process mining has become a new spark for the digital enterprise that’s helping us make ServiceNow processes flow faster and easier. The outcome: better results for our employees and better results for our customers.

After reading this white paper, we hope you walk away with a deeper understanding of and curiosity about what process mining can do when unleashed in your organization.

Process mining 101

So, what exactly is process mining?

At its core, process mining is an approach that when applied, helps companies discover hidden inefficiencies and bottlenecks in their business processes.

Organizations can use process mining to look under the hood at any process across any department to see what’s really happening and how they can improve it. The goal of process mining is to go beyond the results of the business process and take a detailed look at every step it takes to get to the finish line.
Think of process mining as a confluence of two incredible quantitative fields coming together: **process engineering** and **data mining/machine learning**.

![Diagram showing intersection of process engineering and data mining/machine learning]

Whenever a process is executed, it begins to generate a ton of data. Every action that’s taken within that process is recorded and stored in an event log.

The two most important data points in any process are:

1. **Steps and transition**
2. **Time**

With these two data points in hand, we can use process mining technology and several algorithms to construct a process map. This map will immediately help us **know** so we can **do**.

**Process mining enables both knowing and doing**

In process mining, **knowing** means finding the bottleneck in the process, whatever it may be. For example, within one particular process, a bottleneck could appear when the demand outweighs the supply of a particular good. A bottleneck could also mean the demand for work may be too much for available resources.

When we talk about **doing** within process mining, we’re referring to the steps we need to take to remove the bottleneck and optimize the efficiency of the process. That could mean, for instance, allocating more resources to a particular step of the process to match the real demand.

**So, how does process mining actually work?**

To understand a bit more about process mining, let’s look at something familiar. Take this city park. Someone designed and developed the path you see below for community members to enjoy.
Despite the designer’s best efforts, when the park is open to the public, we see this after about three months:

Let’s examine what might be causing a deviation in the path for a moment. We can see that because there are railings on either side of the steps, people are walking down them, as the designer had planned. But after a person gets to the bottom of the stairs, they’re immediately faced with this decision:

**Option 1:** Follow the concrete path ahead of them  
**Option 2:** Follow the quickest path between point A and point B (i.e. the grass).
The same things tend to happen when we’re executing business processes.

In our everyday work at ServiceNow, we experience the same city park path phenomenon. When we take a closer look at our business processes across every department, we see a designed path and then, there’s the reality of what’s actually happening when executing a specific workflow.

Therein lies the power of process mining, giving us the ability to see exactly how the process is being executed, day in and day out, in real-life conditions, with real-life employees and customers.

Process mining gives us a snapshot of the reality of what is actually happening in a process. We can then use this data to address pain points by making adjustments within specific steps.

We go to great lengths, as we should, to create process diagrams that guide our employees and our customers through a set of structured steps to achieve a specific result. We document our designed path using our own ServiceNow products, Process Automation Designer and Flow Designer.

But despite our best intentions, we recognize that when the flow chart is put into practice in a real business environment, things don’t always go as planned. We soon realize we need to revisit certain business processes that aren’t working as well as they should.

Below, we’ll share how we’re examining reality and adjusting accordingly thanks to the power of real-time process maps. The best part is that we’re making it happen using our very own in-platform process mining product: Process Optimization.

Discovering process inefficiencies

At all levels of ServiceNow, we participate in and execute business processes to deliver products and services to both employees and customers.

And while we strive hard to bring the carefully designed flow chart to life, the actual process, when executed in real-time, may look a bit different.
In the process mining world, discovering bottlenecks and inefficiencies is a good thing in the sense that through awareness, we at ServiceNow can go from knowing to doing. It means we know exactly what’s happening behind the scenes, beneath the high-level metrics we see on our dashboards.

**Process mining gives us the information we need to prioritize digitization and automation.**

Once we identify pain points in the process through in-platform process mining, we can tackle specific challenge points head-on.

Perhaps to remove the bottleneck, more resources need to be allocated to that step in the process. Or maybe the entire step itself can be automated using our own ServiceNow products, like [Virtual Agent](#) or [Robotic Process Automation (RPA)](#).

Whatever the solution may be, process mining lets us openly identify opportunities to free up our employees to perform more creative tasks.

At ServiceNow, when we embrace the joy of discovery through in-platform process mining, we can take corrective action (continuous improvement) to help achieve our business goals even faster.

### Traditional analytics versus process mining

When we embrace discovery mode and evaluate our processes through the lens of **traditional analytics**, we look at the resulting metrics, or KPIs. Dashboards give us a clear vision of the output of specific workflows, or in other words, the WHAT.

Take the hiring process, for example. Thanks to traditional analytics, we can answer very specific questions to see how we’re doing.
When we’re in discovery mode through the lens of process mining, on the other hand, we’re able to look beneath the iceberg to figure out the why behind the KPI.

Using technology to mine the hiring process like hiring a new employee, we can easily uncover very specific answers to the how and why questions:

The big distinction between process mining and traditional analytics: Process mining makes it very easy for us to answer those questions so we can take action.

Now that we’ve walked you through process mining 101, how it works, and why it drives value for organizations, let’s take a candid look at our own real experiences implementing and using ServiceNow Process Optimization.
Drinking our own champagne

Before we said yes to using our own process mining technology, we had to confirm the solution could let us:

• Instantly monitor and analyze performance
• Find conformance issues
• Continually optimize and improve

Whether the structured set of tasks is related to IT, finance, customer success, customer operations, security, legal, or marketing, we wanted complete visibility into how our processes are working across ServiceNow.

Based on those requirements, selecting ServiceNow Process Optimization as our process mining technology seemed like a logical choice for a few reasons.

It’s all about the data

Before we could dive into using process mining technology, we had to make sure we had the right data. Because we run our business on the Now Platform®, finding data would never be an issue.

On one platform, we had everything we needed to get started.

Being on the Now Platform made implementing Process Optimization easy and quick with native capabilities. It was designed to create business process flows from the data in audit trails for quick, in-depth analysis of business processes, which is exactly what we needed.

We would now be able to take a specific repeatable process within ServiceNow and easily compare the ideal process to the reality of what was actually happening.

Process Optimization also highlights common patterns of inefficiencies. Using the Process Optimization app provides us with the root cause analysis to find the drivers of these inefficiencies within ServiceNow. We can then strategically automate using our own Virtual Agent and Robotic Process Automation (RPA) technology on the same platform.

“Process mining is a technique designed to discover, monitor and improve real processes (i.e., not assumed processes) by extracting readily available knowledge from the event logs of information systems."

Gartner IT Glossary, Process Mining as on 14th July 2022.
Our analytics team embarked on a process mining experiment using our own technology. Five different process owners at ServiceNow piloted Process Optimization for two weeks to see what they could uncover within these processes:

1. Incident management
2. Asset management
3. Problem management
4. HR case management
5. Request management

Below, we’ll share what we found during this experiment. You’ll get a glimpse of how process mining is helping each ServiceNow process owner discover process inefficiencies, reduce bottlenecks, and identify opportunities where automating certain tasks drives higher performance.
Process mining at ServiceNow

Before diving into the results of this pilot, it’s important to note that our five ServiceNow process owners had no previous experience using our in-platform process mining product, Process Optimization. After taking the Process Optimization Essentials training session, we put our product to the test. We kicked off a two-week process mining sprint to see what we could uncover.

**HR case management process**

Any time a ServiceNow employee has a question, needs a task completed, or needs help from HR, an HR case management workflow begins. Using Process Optimization, our HR process owner created a process map of the steps involved:

- Top inefficiencies she found:
  - 74% of HR cases were re-categorized.
  - 60% of the HR cases in a particular segment took longer than six days to resolve.
  - Case resolution was delayed, resulting in a lower employee NPS score.

**Asset management process**

Whenever ServiceNow employees ask for something to be installed on their computers, an asset management workflow begins. Using Process Optimization, our asset management process owner was able to view a process map of the steps involved:

- Top inefficiencies she found:
  - 22% of requests took additional steps, adding an average of three days to the resolution.
  - 30% of requests waited four days for approval, while only 2% of requests were rejected by managers.
  - 22% of requests took 10 days for license allocation after approvals.
### Request management process

Any time ServiceNow employees create requests across IT backend infrastructure services, a request management workflow begins. Using Process Optimization, our request management process owner was able to view a process map of the steps involved:

#### Top inefficiencies he found:

- Delay in server access request fulfillment required considerable manual effort.
- High volume reported for active directory group lifecycle management.
- Manual intervention required to fulfill server reboot request.

### Incident management process

Any time an incident is generated across ServiceNow IT services, whether it’s user-created (reactive) or created through monitoring (proactive), an incident management workflow begins. Using Process Optimization, our incident management process owner was able to view a process map:

#### Top inefficiencies he found:

- High CPU alerts were consuming IT operations team bandwidth (automation opportunity).
- IT operations team manually triaged the microsegmentation heartbeat failure INC.
- Too many escalations occurred from L1/L2 to L3 teams.
**Problem management process**

Using Process Optimization, our problem management process owner was able to view a process map:

![Problem Management Process Map]

**Top inefficiencies she found:**

- Problem coordinator did not assess the problem fast enough.
- The task assignee did not close the root cause analysis quickly enough.
- The task assignee was delayed in starting the remediation task.
We’re constantly documenting and fixing inefficiencies

To continue ServiceNow’s growth, we have to make our own processes flow smoothly. That’s why we’re examining our processes using ServiceNow Process Optimization. Below you’ll see a sample of how we’re recording the inefficiencies we discover and the corresponding actions we’re taking to resolve them using our own in-platform product.

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Questions to ask</th>
<th>Pattern of the inefficiency</th>
<th>Impact (speed, productivity, etc.)</th>
<th>Recommended solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Bad intake quality: records that go immediately from New to On hold/Waiting for user info</td>
<td>How many cases go to the On hold state? How many cases are moved back to Waiting for user info? What are the drivers behind On hold/cases? Waiting for user info?</td>
<td>The case goes to On hold when the request is not clear or when it doesn’t have all the relevant information to proceed with fulfilling the request. When the requestor and the agent are not available at the same time, in real-time, there is a higher chance of the case being moved to On hold.</td>
<td>The On hold cases increase the response time and the rejected cases lead to lost time and missed user expectations.</td>
<td>Evaluate if this is a process issue or an agent training/coaching opportunity.</td>
</tr>
<tr>
<td>Case</td>
<td>Miseategorization of the case: classification issue</td>
<td>What is the misclassification rate? Which types of cases are frequently misclassified?</td>
<td>The cases can be categorized by the requestor or using the automated scans of the case description by the workflow system. When the case is misclassified the fullfiller of the request processes the case and reassigns it to a different assignment group and the process continues.</td>
<td>Regardless of the path, misclassification leads to lost time and poor customer experience.</td>
<td>Analyze the root cause and apply the suggested fix.</td>
</tr>
<tr>
<td>Case</td>
<td>Case triaging quality issue</td>
<td>Are incidents being categorized manually or changed after they are categorized?</td>
<td>Manual categorization of all cases is a time-consuming task. Even if it takes 30 seconds, the number adds up as the number of cases grows by thousands.</td>
<td>Manual triaging is a repetitive and time-consuming task. It increases the burden and cost on the support team.</td>
<td>Implement ServiceNow Predictive Intelligence auto-categorization ML solution.</td>
</tr>
<tr>
<td>Case</td>
<td>Duplicate cases</td>
<td>How many cases are duplicates? What are the likely conditions for duplicate cases? Do users create new tickets even if there are old incidents that are related to the new incidents? How quickly are duplicates being detected and consolidated?</td>
<td>When there is no acknowledgement of the case being created, the requestor might inadvertently or intentionally create another case.</td>
<td>The duplicative cases add additional expenses to the process owner and creates a poor customer experience.</td>
<td>Use ML to detect such cases and auto mark as duplicate.</td>
</tr>
<tr>
<td>Case</td>
<td>Solution rejected issue: Incident resolution rejected by the customer one or more times</td>
<td>What are the drivers behind solution rejection cases?</td>
<td>A process where the solution is rejected most likely has a high negative impact on CSAT. Furthermore, the incident data review state change to the MTTR and in between counts falsely in overview of SLA performance.</td>
<td>Rejection leads to lost time and a poor customer experience.</td>
<td>Performance Analytics Dashboards, procedural guidelines, Continual Improvement, Predictive Intelligence Clustering.</td>
</tr>
<tr>
<td>Case</td>
<td>High re-open rate: Cases move back from Closed state</td>
<td>How many cases go from resolved to re-opened? (per our benchmarks, more than 2% is bad).</td>
<td>The case goes to Re-open when the provided solution does not solve the end-user issue. This driver could be that the agent misunderstood the case and provided the wrong solution.</td>
<td>Reopened cases increase the response time and the rejected cases lead to lost time and missed user expectations.</td>
<td>Evaluate if this is a process issue or an agent training/coaching opportunity.</td>
</tr>
</tbody>
</table>

To learn more about how we’re optimizing business processes, review Now on Now: The book of inefficiencies.
What’s next for us with process mining

For our Now on Now pilot, we mined five specific processes within ServiceNow. So, what’s next for us?

As a cloud company, our operating model is really made of processes (900, to be exact). To continue our never-ending journey to improve the way these processes flow across every department, we plan to take advantage of and realize the full promise of process mining.

What if we can continuously improve the results of all 900 processes inside ServiceNow?

We’ll continue to unleash more of our own technology, ServiceNow Process Optimization, into the entire organization. Beyond IT, we’ll be examining processes like HR onboarding, legal reviews, financial auditing, and more to see where we can streamline steps and drive more productivity.

Plus, we’re excited to start using new capabilities that will become available in future releases.

Process mining creates the single biggest opportunity to improve our operating model.

Vijay Kotu
SVP, Analytics
ServiceNow
Summary

We kicked off this white paper by reviewing the fundamentals of process mining and touched upon how it compares to and can partner with traditional analytics to improve performance.

Next, we shared our real experiences using our own in-platform process mining product, Process Optimization, to see where we could improve and automate repeatable business processes. By sharing our journey using our own in-platform product for process mining, we want to bring to light the tangible results we’re experiencing thanks to this powerful technology.

We hope this white paper encourages you to kickstart or continue your process mining journey within your own organization.

How to get Process Optimization from ServiceNow

After reading this white paper, we hope you see the value we’re experiencing as a result of using our own in-platform product for process mining, ServiceNow Process Optimization.

It’s made available as part of ServiceNow’s Enterprise packages for IT Service Management (ITSM), Customer Service Management (CSM), Telecommunications Service Management, and Financial Services Operations (FSO).

Additional resources

Got questions? We have answers.

Post to the Process Optimization community

Interested in seeing ServiceNow Process Optimization in action?

Check out the FAQ

Interested in seeing ServiceNow Process Optimization in action?

Check out this post which includes a live DEMO

Want to learn best practices from product experts?

Sign up for our bi-weekly academy sessions

About ServiceNow

ServiceNow is making the world work better for people. Our cloud-based Now Platform and solutions deliver digital workflows that create great experiences and unlock productivity for employees and the enterprise. For more information, visit: www.servicenow.com.

Now on Now is about how we use our own ServiceNow solutions to work faster, smarter, and better. With Now on Now, we’re achieving true end-to-end digital transformation. To learn more, go to: servicenow.com/howonnow.
Appendix

Definitions
For the purposes of this document, process mining definitions and terms are defined as follows:

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>A selection of captured tasks or actions from the audit log that are used for visualizing the process map model, including tracked fields. An activity consists of one step within a process, or which occurred within a route. A connection runs between activities.</td>
</tr>
<tr>
<td>Audit log</td>
<td>The record of operational system events or activities that occur when a task is performed, such as date, time, and activity</td>
</tr>
<tr>
<td>Connection</td>
<td>Line joining two activities, or process steps, in a map. A connection reflects a part of a process with two sequential, connected steps.</td>
</tr>
<tr>
<td>Finding</td>
<td>Key performance insights discovered for a business process. Findings help you review areas that need further attention.</td>
</tr>
<tr>
<td>Generate</td>
<td>The process of extracting or mining data from an operational system's event logs and applying algorithms that reveal trends and a detailed picture of how a business process flows.</td>
</tr>
<tr>
<td>Linked process</td>
<td>A connected, or subprocess linked to a main process</td>
</tr>
<tr>
<td>Process map</td>
<td>A model generated after a data extraction has been performed that visually represents events gathered from a system's audit log which are part of a defined business process. The map represents actual events, or routes, consisting of a series of steps taken from a defined start to finish. A process map also compares the actual routes to a defined target route to provide a view of business process performance.</td>
</tr>
<tr>
<td>Project</td>
<td>Process Optimization term for a configured process model</td>
</tr>
<tr>
<td>Record</td>
<td>A business record of a process cycle (project) that runs through a route. Many records can run through a route. In Process Optimization, the number of records can change when filters are applied.</td>
</tr>
<tr>
<td>Repetitions</td>
<td>Repeated steps (activities) or step sets (connections)</td>
</tr>
<tr>
<td>Route</td>
<td>An occurrence of a process where at least one activity within the sequence of steps differs from all other occurrences of the process. Routes can include an optimally defined successful route, as well as variant or possible routes that may be alternate success paths or faulty exception paths. Several routes can be simultaneously represented on a process map.</td>
</tr>
<tr>
<td>Term</td>
<td>Metric name</td>
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<td>--------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sliders</td>
<td>Activity and connection slider tools on the process map screen for showing process steps. Using the sliders can show sequential connections between them in a more or less detailed view.</td>
</tr>
<tr>
<td>Transition</td>
<td>A change of activity state</td>
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</table>