

OPTIMIZING AUTOMATION WITH PROCESS AND TASK MINING

Process and task mining tools can identify
and eliminate process gaps and inefficiencies
delivering the full benefits of RPA



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Abstract

A collection of core processes lies at the heart of every business. Processes are the foundational infrastructure and form the basic element of business operations. In 1911, Frederick Taylor Winslow became the first person to study and optimize workplace productivity. His monograph, The Principles of Scientific Management, pioneered the idea that a business’s core operations should be analyzed, standardized, and improved on.

Now we have powerful technologies such as **process mining** and **task mining** to analyze, standardize, and improve complex business processes. It is impossible to optimize a core enterprise process for a specific **business** outcome without a holistic understanding of how the whole landscape of business processes are connected. Process mapping software and manual process discovery methods cannot cater to this requirement.

Introduction

Based on the recent trends shaping **digital transformation**, business leaders agree they must significantly accelerate the implementation of digital technologies such as robotic process automation (**RPA**) and intelligent automation (**IA**) powered by computer vision, natural language processing (**NLP**), machine learning (**AI-ML**), and low code no code (**LCNC**) platforms to effectively support the business. When implementing RPA, CXOs see investment in process mining and task mining as key to unlocking returns from the technology.

Despite ongoing investments in RPA, CXOs feel the need for **hyper automation** to fully realize their automation objectives. To realize higher value from their RPA investments,

they are turning to a suite of data mining technologies, such as process mining and task mining which are future drivers of growth for automation using **RPA** and **IPA** in the coming years.

Process mining allows business units to gain complete **transparency** into business processes to transform them with automation and **improvements** that drive continuous operational **efficiency**. Digital footprints left behind in ERP, CRM, and PLM systems have a story to tell about how work really gets done, which process transformation actions are most impactful, and where your best automation opportunities lie. It provides sharper insights to continuously optimize, automate, and monitor end-to-end processes.



Stages in Process Mining

As people interact with business IT systems, their actions are captured using the digital footprints left by human users. This data can be transformed into pre-formatted event

1. Collection



Involves collection of time-stamped event log data from key transactional systems such as SAP, Salesforce, Oracle, PLM, etc. The activity or interaction of humans with the system creates a digital record. Receiving a quote, creating a purchase order, submitting documentation for loan approval, approving a loan, entering information into a health EMR system are examples of activities that can be mined for data. Involves collection of time-stamped event log data from key transactional systems such as SAP, Salesforce, Oracle, PLM, etc. The activity or interaction of humans with the system creates a digital record. Receiving a quote, creating a purchase order, submitting documentation for loan approval, approving a loan, entering information into a health EMR system are examples of activities that can be mined for data.



2. Discovery



This stage involves discovery of real processes as they actually happened within the log file data. Process mining software transforms the digital records (log file data) into event logs. The most common format for these event logs is an XML-based format called XES (extensible event stream) which was adopted by the IEEE Task Force on Process Mining. Event logs have at least three main attributes: case **ID**, **activity**, and **timestamp**.

3. Enhancement



This involves enhancement of the process mining scope to optimize business outcomes. The enhancement can be a process re-design or re-engineering by eliminating duplicates, in effective process steps to eliminate rework, increase efficiencies, and for automating the manual rules-based steps using RPA. The visualization of a process is automatically created using event logs. It is important to understand that unlike traditional business process management (**BPM**) techniques, process mining shows the real process based on evidence residing in the log file data. The process mining tool can mine data of the last six months to six years depending upon the requirement and scope agreed upon with the process owner.

4. Monitoring and conformance checking



This stage involves monitoring of the process improvement changes that were made in Stage 3 for further improvement opportunities. Here, KPIs can be created and monitored to uncover potential improvement areas; data mining and/or ML algorithms can be used to detect hidden patterns and dependencies; or conformance checking techniques can be applied to compare the process to a certain ideal model. Conformance checking compares the actual process with a predefined model to discover deviations. So, it is used to check if the reality conforms to an existing pattern. Conformance checking is very useful to audit and for compliance teams to identify non-compliance and deviations from standard operating procedures.

Task Mining

Task mining is a technique to uncover business processes by recording user interactions with various systems, including enterprise solutions (ERP, CRM, BPM, ECM, etc.), personal productivity applications (Microsoft Excel, Outlook, Word, PowerPoint etc.), and terminal and virtual environments. Unlike process mining that reconstructs processes using the

data from event logs generated by enterprise systems, task mining captures user interactions with any application. It records necessary data such as keyboard actions, mouse movements, clicks, etc. for identifying RPA opportunities and automatic creation of process discovery documents (PDD) and RPA bots.



Stages in Task Mining

There are six stages in a task mining project:

1. Select user groups to analyze

This stage involves working with stakeholders to decide which user groups are fit for a task mining project. Some of the criteria to consider include:

- a. **Start with the right processes**
Select processes with repetitive patterns. For example, users in the back-office departments working with multiple applications and a routine process.
- b. **Avoid Citrix environments**
These are not recommended because the screen quality in Citrix environments may be low, thus impacting the results.
- c. **Avoid processes involving heavily mainframe-type applications (green screen)**
- d. **Select users who are involved in similar activities** (e.g., same role)
- e. **Select user groups who use application modules (screens) that look different from one another**
Moreover, look for employees who use different applications for different parts of processes. A counter example is Microsoft Word. If the user group spends all its time on writing proposals in Word, the model will not find good results because all the Word screens recorded during someone's work will look similar.

2. Collect data

This involves setting up the task mining project and making the necessary configurations. The recording process is started for the users identified in the prior stage. Ideally, we can involve two to three users for **two weeks**, or three to five users for **one week** for each task mining project.

3. Analyze data

In this stage, the ML model is run to perform analysis on the collected data using **UiPath AI Center**. It is recommended to collect at least **40** actions for any analysis, and **100-200** actions for more **optimal** results.

4. Visualize results

This involves working with subject matter experts (SME) and business analysts to identify processes most suitable for automation.

5. Export results

Here, results from the prior stage are exported in the form of process design documents (PDD) or XAML files based on which RPA developers can build the automation.

6. Develop automation

In this stage, RPA developers build automation using the RPA tools such as UiPath based on the .XAML files and PDD document. The PDD serves as a guide for analyzing the as-is state of the process, the steps, and the system used. It can also serve as a resource for identifying process optimization opportunities for other roles involved. The .XAML file helps quick-start building the automation. The file can be imported in any of the UiPath tools that automation developers use to build projects—Studio, Studio X, or Studio Pro.

Applications of Process and Task Mining

Process and task mining are not limited to any specific sector or domain-related processes. As long as there is a source system containing structured log file data, process mining can be used across business operations spanning sectors such as healthcare, telecom, aerospace, energy and utilities, and mining, and

functions such as finance, human resources, manufacturing, supply chain, IT, sales, procurement and audit. Typical systems used in process mining are ERP systems such as SAP and Oracle, CRM systems such as Salesforce, PLM systems, and supply chain systems developed in-house or commercial off-the-shelf (COTS) products.

Key areas of application



Process improvement

Process and task mining help identify inefficiencies, bottlenecks, and areas of improvement in business processes. By analyzing the captured data, organizations can gain insights into how tasks are performed, uncover deviations from the intended process, and optimize workflows to enhance efficiency and productivity.



Compliance and risk management

Process and task mining can assist in compliance monitoring and risk management by capturing and analyzing data related to regulatory processes. They enable organizations to identify compliance gaps, detect potential risks, and ensure adherence to regulations and internal policies.





Employee productivity and training

Process and task mining provides insights into how employees perform tasks, allowing organizations to assess individual and team productivity. By understanding how tasks are completed, organizations can identify training needs, develop targeted training programs, and provide personalized coaching to improve employee performance.



Automation and RPA

Process and task mining data can be used to identify suitable processes for automation. By analyzing repetitive and rule-based tasks, organizations can prioritize automation efforts, streamline processes, and leverage robotic process automation technologies to automate tasks, freeing up human resources for higher-value activities.



Customer experience optimization

Process and task mining can help organizations understand the customer journey by capturing and analyzing user interactions with digital platforms. By analyzing these interactions, organizations can identify pain points, optimize user interfaces, and enhance the overall customer experience.



IT operations and system optimization

Process and task mining can be applied to IT operations to monitor and optimize system performance. They can capture and analyze data related to software usage, system configurations, and user interactions, enabling organizations to identify performance issues, improve system efficiency, and make informed decisions regarding IT infrastructure.



Fraud detection

Process and task mining can be used as tools to identify potentially fraudulent activities within an organization. By analyzing user interactions and transactional data, organizations can detect anomalies, patterns, and suspicious behaviors, helping to prevent and mitigate fraud.

These are a but a few examples of the applications of process mining and task mining. The technology has the potential to provide valuable insights and drive improvements across various aspects of an organization's operations.

Conclusion

Identifying and understanding hidden inefficiencies in end-to-end processes is an important step toward a resilient and successful business. But small manual tasks are often overlooked when it comes to process improvements and process automation initiatives. This, however, can lead to long waiting times for customers, inefficient handovers, underutilized resources, non-compliant procedures, and failure of RPA and digitalization efforts.

Thus, combining process mining capabilities with task mining provides a comprehensive picture of core enterprise processes. It removes process gaps and eliminates hidden inefficiencies and non-compliance risks. It allows process owners to achieve full transparency with their processes, bridging the gap between task analysis and end-to-end process view.

About the Author



Prakash Narayanan is Solutions Head for RPA and intelligent automation solutions at Cyient. He has over 24 years of experience in IT and has delivered 1000+ bots across the banking, pharmaceuticals, telecom sectors, and has extensive experience in Intelligent process automation tools and platforms. He was named among the Top 16 Global Automation Rockstars by Dynamic CIO.



About Cyient

Cyient (Estd: 1991, NSE: CYIENT) is a global Engineering and Technology solutions company. We collaborate with our customers to design digital enterprises, build intelligent products and platforms and solve sustainability challenges. We are committed to designing tomorrow together with our stakeholders and being a culturally inclusive, socially responsible, and environmentally sustainable organization.

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