CHAPTER 1

INTRODUCTION

1.1 What is Process Mining?

Process mining is a process management technique. It aims to discover, monitor and improve process flows by extracting readily available knowledge from information systems event logs. Process mining provides companies with complete visibility into how processes really work.The developing need of getting to know greater about how the technique executes inner real international inner a corporation has superior, there can be boom inside the usage of gadget mining techniques.

Process mining factors out the hassle which maximum ‘method owners’ has very restricted know-how about what's truly taking place their organization. it's far a pretty today's developing studies area handling the method modelling & approach assessment, as nicely intelligence and information mining. motives that verify the effectiveness of the method mining. Process mining starts from event data. Each event in the log should contain a unique identifier for a particular process instance, an activity and a timestamp. Input for process mining is an event log. An event log views a process from a particular angle.

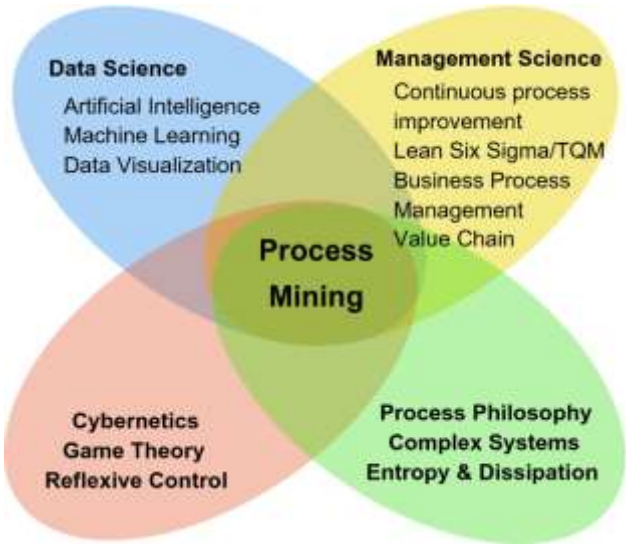


Fig. 1.1: Process Mining Organization

The researchers approximately the data of system mining. It studies location, it consists of manner modeling and method evaluation, along with company intelligence & records mining. It is also used as even a tool that offers that offers information techniques, one-ofa-kind technique mining algorithms, challenges and location of software program had been described. An event can be described as a bypass time just like the vicinity to start of the manner mining. A chronological relation among occasions is wanted in manner mining strategies. every hobby is a totally particular method instance, i.e it is a part of particular event, moreover, extra statistics collectively with the supply starting or vehicle hobby (someone or a tool), the prevalence and finishing time of activities (may be interest statistics elements enlisted with the incident) consisting of the scale of an order), this is needed that lets in you to generate a realistic version.

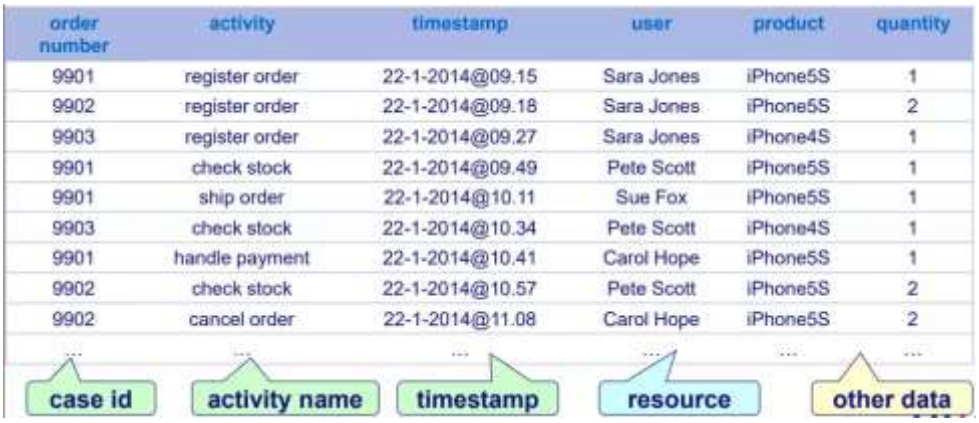
1.2 Main stages of process mining:

As people (and software) interact with business IT systems, their actions are captured by these systems and can then be transformed into event logs and visualized with the help of process mining. That's how it happens.

Fig. 1.2: Stages of Process Mining

- The activity or interaction with the system takes place, creating a digital record. Some examples of such activities are receiving an order, submitting a piece of documentation, approving a loan, entering information into a health record, etc.
- Process mining software transforms the digital records into event logs. The most common format for these event logs is an XML-based format XES (eXtensible Event Stream) which was adopted by IEEE Task Force on Process

Mining. Event logs have at least three main attributes: case ID, activity, and timestamp.



order number	activity	timestamp	user	product	quantity
9901	register order	22-1-2014@09.15	Sara Jones	iPhone5S	1
9902	register order	22-1-2014@09.18	Sara Jones	iPhone5S	2
9903	register order	22-1-2014@09.27	Sara Jones	iPhone4S	1
9901	check stock	22-1-2014@09.49	Pete Scott	iPhone5S	1
9901	ship order	22-1-2014@10.11	Sue Fox	iPhone5S	1
9903	check stock	22-1-2014@10.34	Pete Scott	iPhone4S	1
9901	handle payment	22-1-2014@10.41	Carol Hope	iPhone5S	1
9902	check stock	22-1-2014@10.57	Pete Scott	iPhone5S	2
9902	cancel order	22-1-2014@11.08	Carol Hope	iPhone5S	2
...	...	...	...	...	...

Fig. 1.3: A sample event log of order handling

- The visualization of a process is automatically created using event logs. It's important to understand that unlike traditional BPM techniques, process mining shows the real process as it's actually done, not the ideal model as it was meant to be.
- Process analytics takes place. 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.

1.3 History of Process Mining:

Process mining is a young technology that celebrates its 20th birthday in 2019. The creator of process mining is a Dutchman, Wil van der Aalst (Professor at RWTH Archen University), who is known as the "God Father of Process Mining".A world-renowned computer scientist, Mr. Aalst's main areas of expertise are information systems (IT), workflow management, and process mining, and he leads the Process and Data Science group at Archen University.

In the late 1990s, while studying workflow and workflow management at the Eindhoven University of Technology (TUe) in the Netherlands, Mr. Aalst realized that existing methods for understanding current business processes, such as interviews with

personnel and workshops, could only draw incomplete process models based on subjective and fragmented information. In the process of researching workflows and workflow management at TUe, I realized that existing methods for understanding current business processes, such as interviews and workshops, could only draw incomplete process models based on subjective and fragmented information.On the other hand, in the 1990s, business systems such as SAP's ERP operations in various departments of companies and organizations were being conducted on IT systems.

According to Aalst, the first time he used the term "process mining" was in a research proposal he wrote in 1998. According to Aalst, he first used the term "process mining" in a research proposal he wrote in 1998.Aalst began his research on process mining in earnest in 1999. Therefore, 1999 is the birth year of process mining, and the Netherlands is the birthplace. Since the early 2000s, academic research has been actively conducted at universities in Europe, especially at TUe, where Aalst was a full professor then.

After obtaining a PhD at TUe, Anne Rozinat and Christian W. Gunter founded Fluxicon in 2010 and developed a process mining tool, "Disco". Thus, while new process mining tools have appeared on the market one after another since 2009, the people who have contributed the most to increasing the awareness and understanding of process mining in Europe are not only the godfather of process mining, Mr. Aalst, but also Anne Rozinat and Christian W. Gunther of Fluxicon, who have been organizing the annual "Process Mining Camp" since 2012.

CHAPTER 2

TECHNOLOGY

2.1 Process Mining Technologies :

Process mining applies data science to discover, validate and improve workflows. By combining data mining and process analytics, organizations can mine log data from their information systems to understand the performance of their processes, revealing bottlenecks and other areas of improvement.

Process mining technology is a data-driven approach to analyze, monitor, and optimize business processes using event data stored in various information systems. It aims to extract valuable insights and knowledge from these data to improve process efficiency, compliance, and overall performance. Process mining involves the following key steps:

1. **Data Extraction**:

   Relevant event data is collected from various sources, such as enterprise resource planning (ERP) systems, customer relationship management (CRM) systems, and other transactional databases. These events capture the actions taken in the context of a business process, such as orders placed, payments made, or tasks completed.

2. **Data Preprocessing**:

   The collected event data is cleaned, transformed, and organized into a suitable format for analysis. This step involves handling missing data, removing outliers, and ensuring data consistency.

3. **Event Log Creation**:

   The cleaned and preprocessed data is transformed into an event log, which is a chronological record of events that occurred during the execution of a process. Each event in the log contains information about the activity performed, the timestamp, the case or instance it belongs to, and any additional attributes.

4. **Process Discovery**:

   Process mining tools analyze the event log to automatically generate process models that visualize the flow of activities, decisions, and interactions within the business process. These models can take the form of flowcharts, Petri nets, or other visual representations.

5. **Conformance Checking**:

   The generated process models are compared to the actual event data to identify deviations and discrepancies. This helps in assessing how well the actual process execution aligns with the intended process model, highlighting potential inefficiencies or non-compliance.

6. **Performance Analysis**:

   Process mining allows for the quantitative analysis of process performance metrics, such as cycle times, bottlenecks, and resource utilization. These insights help organizations identify areas for improvement and optimization.

7. **Enhancement and Optimization**:

   Based on the insights gained from process discovery and performance analysis, organizations can make informed decisions to optimize their processes. This might involve streamlining workflows, reallocating resources, or implementing automation.

8. **Process Monitoring**:

   Process mining tools can be used for continuous monitoring of ongoing process execution. Real-time data is compared against process models to detect deviations and issues as they occur, allowing for prompt corrective actions.

9. **Predictive Analysis**:

   Some advanced process mining tools incorporate predictive analytics to forecast future process behavior based on historical data. This can assist in proactive decision-making and planning.

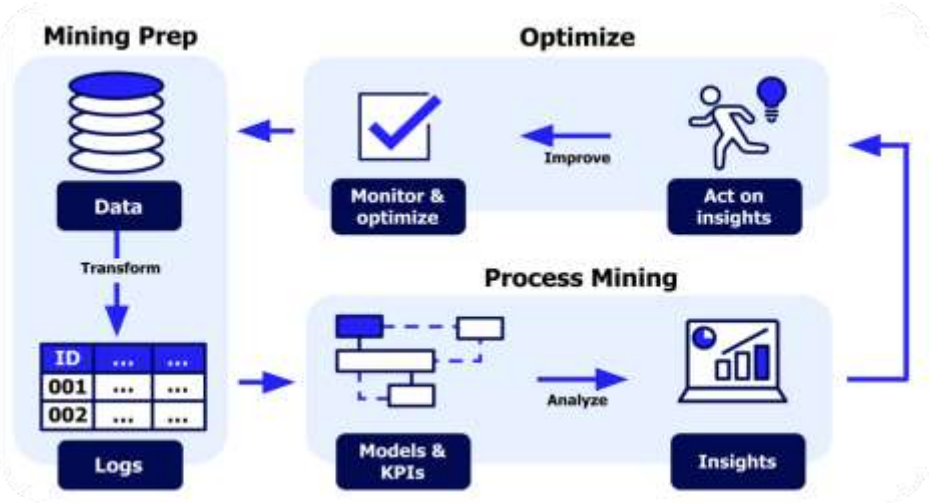


Fig. 2.1: Process Mining Technology

2.2 Working of process Mining:

Business processes are the lifeblood of your company. There's a process behind everything your organization does: buying, selling, paying, collecting, shipping, and so on. When these processes run better, your business runs better. This is where process mining jumps in!

2.3 Why companies need process mining:

Industry leaders are realizing that superior processes are a competitive differentiator. So it's no surprise that investments in process improvement tools and initiatives are skyrocketing. This is especially true for process mining technology, which has grown from a $90 million market in 2018 to a $340 million one in 2020, according to the Everest Group.Process mining creates an "MRI" of a business process that helps you gain visibility and uncover value opportunities hiding within core operations. Celonis process mining® has quickly become the backbone of many companies' efforts to streamline and optimize processes.

2.4 How does process mining work?

Since the rise of databases and transactional systems like ERPs, companies have invested in digitizing processes and optimizing them to run more efficiently.In most cases, companies have outlined the way that these processes should run in an ideal

world. But the way they actually run in the real world... can be a very different story.The problem is many organizations aren't able to see and understand what's happening in these processes on a day-to-day basis, so they can't identify the difference between the process "as is" and "as expected."

2.5 The four stages of Process Mining:

The Celonis Intelligent Business Cloud delivers Process Mining in four key stages. In this section we're going to break down the different concepts, technologies, activities and people at work in each stage.

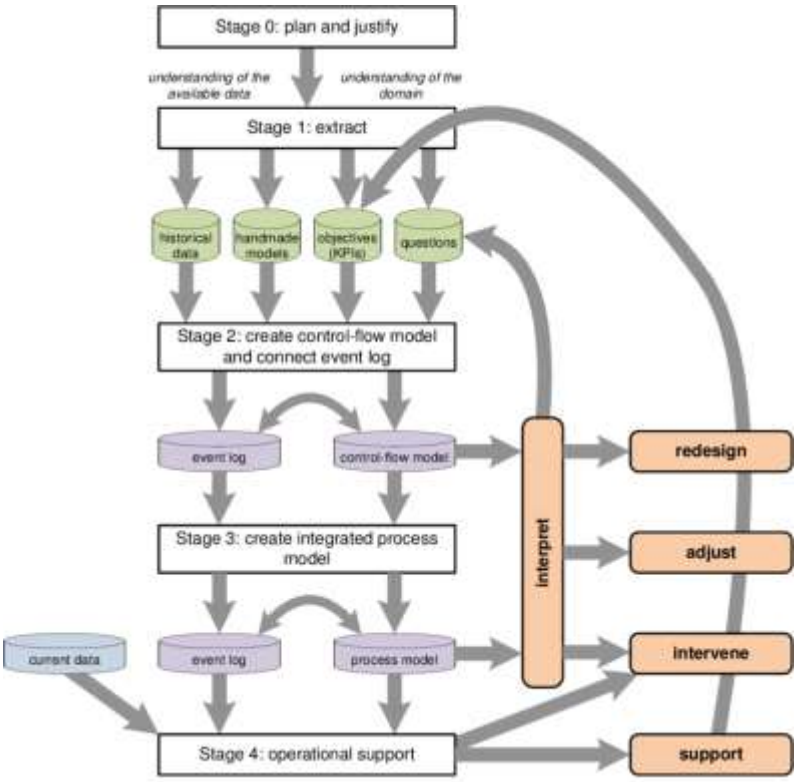


Fig. 2.2: Life Cycle of Process Mining

- **Collect:**

  Raw data from source systems to create event logs.Every interaction inside the transactional systems your business runs on (like SAP, Oracle, Salesforce, ServiceNow, etc.*) leaves digital footprints—raw data that can be turned into a record of actions The first stage of Process Mining is for data

engineers to establish a real-time link to those key data sources (through pre-built connectors and APIs), extract that raw data and turn it into an event log.

- **Discover:**

Analysing event logs at scale renders your whole process environment in a level of detail that whiteboards, interviews and process mapping software could never provide—every step of every process, every time it's ever been executed. In the second stage of Process Mining, data analysts methodically quantify the sum total of your process environment: every case, pathway, variation and error, as well as their business impacts.

- On-time delivery
- Working capital
- Customer satisfaction
- Risk reduction
- Operating costs

- **Enhance:**

The variations and root causes identified during the Discover phase form the basis of enhancement opportunities—practical actions that remove friction and automate flow for your human and digital workforces.In the third stage of Process Mining business users leverage AI and machinelearning models to execute these enhancement actions across all relevant transactional systems within the same Process Mining interface.

These actions could be in service of:

- Correcting errors
- Removing erroneous steps (or adding new ones)
- Reducing manual effort

- **Monitor:**

Continual improvement is central to Process Mining—discovery, analysis and enhancement are on-going activities that keep your processes in tight lockstep with your evolving business needs.

- Hold teams accountable to progress against targets
- Course-correct in real time

CHAPTER 3

APPLICATIONS

3.1 Applications:

Financial services, telecommunications, healthcare, and retail are just a few examples of industries where process mining can be used for business process management and process improvement. These sectors have a wealth of data that can be used as a starting point, and process deviations from their intended behavior can have expensive repercussions.

Fig. 3.1: Applications of Process Mining

- **Financial Services:**

  Because of the rise in transaction volume and the digitization of more industries, aberrant activity is harder to detect using manual methods. Companies in the financial services sector have the chance to continually and thoroughly identify issues within high-volume processes thanks to process mining, which is a solution to the increased regulatory and audit requirements.

- **Telecommunications:**

  As subscriber quantities increase and activations become more and more automated, there is a greater danger of unsuccessful activations. When telecom companies get more orders, process mining gives them the chance to identify pricey issues and client blowback in their Order-to-Activation processes.

- **Healthcare:**

  The risks associated with preserving population health and achieving individual patient journey objectives rise as data about patient experiences and results keep growing. Process mining supports the delivery of effective and high-quality end-to-end patient journeys for healthcare organizations dealing with the exponential growth of data, from before a first doctor appointment through treatment regimens to closed treatment cases.

- **Retail:**

  Due to technology or process problems, retail businesses have seen expensive consumer fallout from complicated e-commerce operations. Process mining assists merchants in ensuring that consumers can complete transactions efficiently and without issues despite rising transaction volumes.

- **Digital Transformation:**

  Process mining is frequently used in larger-scale digital transformation initiatives because it can give you the precise insights needed for process improvement, allowing systems to run more quickly, smoothly, and efficiently, as well as objective data-driven insights into the causes of delays and inefficiencies within business processes.

As a result, process mining may assist in identifying the digital transformation opportunities with the greatest potential for value addition and determining whether or not transformation activities have really produced the desired results. To optimize returns on investments in projects for digital transformation, process mining becomes a crucial instrument.

3.2 Process Mining Tools:

Tools often include process discovery, process analysis, process design, and process recovery. Process analysis takes a look at log files to identify potential problems, while process design provides feedback and suggestions for improving those processes. Process reenactment goes one step further to improve processes dynamically.

Fig. 3.2: Process Mining Tools

1. **ABBYY Timeline:**

TimelinePI (now ABBYY Timeline) was founded in 2015 by Scott Opitz and Alex Elkin, based on their many years of work with business intelligence and BPM tools. The tool focuses on key areas of process discovery, diverse analytics, real-time robotic monitoring, and neural network predictive and alerting capabilities. ABBYY Timeline not only looks at current processes digitally but also predicts the future performance of those processes, giving organizations the ability to improve their BPM. This intelligent solution includes features such as a transparent pricing process, analytics, data integration, and the ability to scale quickly. Compared to the usual process graph visualization of other tools, ABBYY Timeline distinguishes itself with its timeline visualization approach. Another notable component is its cloud-integrated ETL feature for advanced and Big Data uploads with various transformation operations. TimelinePI was acquired by ABBYY in 2019.

2. **Apromore:**

The open-source software is available as a free CommunityEdition and a subscription-based Enterprise Edition that includes commercial add-ons, connectors, and services. Apromore provides robust process discovery capabilities, process comparisons, conformance checks, and an authoring environment for editing BPMN process models - all easily accessed and

illustrated digitally. Predictive process monitoring is also available and can be fine-tuned with sophisticated settings by experienced users. Apromore has applications in the public sector, banking, insurance, telecommunications, and more. The vendor raised nearly $5 million in a Series A funding round in mid-2020 and plans to further expand and enhance the functionality of its platform.

3. **ARIS Process Mining:**

ARIS is a comprehensive tool that enables fully managed large-scale business process transformation. The product includes traditional process discovery capabilities, conformance checking, highly customizable dashboards, and automatic root cause detection, while the light version ARIS Process Mining Elements is available for free. The focus on cross-organizational mining encourages collaboration between all necessary stakeholders with the help of change requests and shareable bookmarks - perfect, in other words, for good BPM. ARIS has strong SAP Solution Manager integration and supports numerous SaaS applications for data extraction via its own webMethods Integration Platform. ARIS Cloud is a process-driven management solution that includes process mining services. ARIS Cloud features include process design, modeling conventions, method filters, content languages, process versioning, release cycle management, content merge, social collaboration, document management, and customer journey mapping. There are tiered package services: trial, advanced cloud, and cloud enterprise. Aris is a Software AG solution. This has many years of experience with such implementations and serves customers in over 70 countries digitally and around the globe with an extensive partner network.

4. **BusinessOptix:**

BusinessOptix provides a fully cloud-based platform with end-to-end process transformation tools for use cases such as customer experience (CX), operational efficienc, and business process visibility. The BusinessOptix Process Transformation Suite includes tools for scenario modeling, documentation, transformation planning, BPM, and more. Functionality is integrated into the suite to help users discover and improve processes. In addition to conformance testing, the tool offers sophisticated scenario

modeling and simulation capabilities. Cross-organizational mining of processes s realized using various collaboration features for sharing content, documentation, and work instructions. The vendor serves customers from various industries, including finance and insurance, engineering and construction, retail, and also the government.

5. **Celonis:**

Founded in 2011 by three university students, Celonis platform helps companies achieve process excellence by eliminating operational friction points with their Intelligent Business Cloud platform. In addition to easy-to-use process discovery, analysis and compliance testing capabilities, the platform offers a dedicated Transformation Center for KPI monitoring. A key strength is Celonis' comprehensive approach to process improvement, which includes a Python- based machine learning workbench for predictive insights, an AI-powered action engine for intelligent process recommendations, and process automation to automate workflows. Celonis provides a highly scalable and secure platform, offers multiple deployment options, and supports many databases and systems for data extraction. Celonis recently launched Operational Applications. These are role-based applications that automate tasks, prioritize workflows and provide guidance for achieving business goals by leveraging business context, artificial intelligence, and the central process mining engine.

6. **Disco by Fluxicon:**

Fluxicon was founded in 2009 by Dr. Anne Rozinat and Dr. Christian W. Günther after their Ph.D. in the Process Mining group of Prof. Wil van der Aalst at the Eindhoven University of Technology. After working on the academic process mining tool ProM, the software Disco was developed with the goal of making process mining accessible to business users. The Disco framework is based on proven scientific research and is used in various industries with use cases such as customer journey analysis, audit, process improvement, and optimization. The tool enables easy and flexible discovery of processes through its visualization and filtering capabilities.

Fig. 3.3: Different Types of Tools

7. **Minit:**

With the first version released in 2015, Minit has developed a powerful process mining tool with advanced process improvement features. Features such as hierarchical visualization, simulation of "what-if" scenarios, and interactive Qlik-based dashboards deserve special attention. The software offers a user-friendly UI. Minit use cases include projects in banking, logistics, e-commerce, and telecommunications with common processes such as purchase to pay (P2P), order to cash (O2C), and IT service management (ITSM).

CHAPTER 4

MODULES

4.1 Process Mining:

Process mining applies data science to discover, validate and improve workflows. By combining data mining and process analytics, organizations can mine log data from their information systems to understand the performance of their processes, revealing bottlenecks and other areas of improvement. Process mining leverages a data-driven approach to process optimization, allowing managers to remain objective in their decision-making around resource allocation for existing processes.Process mining focuses on different perspectives, such as control-flow, organizational, case, and time. While much of the work around process mining focuses on the sequence of activities—i.e. control-flow—the other perspectives also provide valuable information for management teams.

4.2 Process Mining Cloud:

With the Process Mining service in Automation Cloud, you can create new process apps based on process-specific app templates. An app template contains a predefined set of dashboards and KPIs for process analysis and can be used as the starting point for creating your process apps. It offers out-of-the box app templates for several processes and source systems that you can use as the starting point for creating your process apps. You can customize these app templates to your business needs and publish them with a set of dashboards and KPIs to enable business users to monitor and analyze the processes in detail.When creating a process app, you can upload data from .csv or .tsv files, or you can set up a connection to a source system using the extractiotools CData Sync or Theobald Xtract Universal.

4.3 Processes Mining transparency:

Process mining is a process management technique. It aims to discover, monitor and improve process flows by extracting readily available knowledge from information systems event logs. Process mining provides companies with complete visibility into

how processes really work. With these insights, companies can then identify opportunities for process optimization. Process mining involves several steps

The automated process discovery - extraction of process models from an eventlog.

&

The conformity check - monitoring deviations by comparing model and protocol.

4.4 Process Mining is the MRI for processes:

Process mining technology could also be compared to magnetic resonance imaging (MRI) technology, which collects information from the body's cells to create an image - only in a business environment. Doctors then use this MRI image to diagnose health conditions. Process mining works on a similar principle: It collects data from the smallest part of process activities and assembles it into a picture that companies can use to diagnose the state of their workflows. Process mining is changing the way companies operate and manage their business operations. In their quest for process quality, companies can use process mining to really get to know their process, evaluate it against the ideal process model, and optimize it as needed.

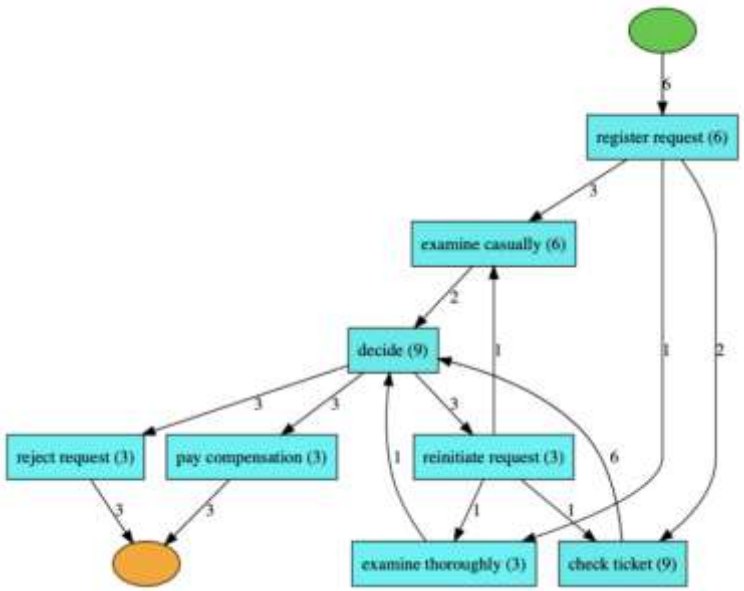


Fig. 4.1 Module Seperation

4.5 Mining Algorithms:

The mining algorithm determines how process models are created. The best known categories are:

- **Deterministic algorithms:** Determinism means that an algorithm produces only defined and reproducible results. It always delivers the same result for the same input. The deterministic algorithm was one of the first algorithms capable of handling concurrency. It takes an event log as input and computes the order relation of the events contained in the log.
- **Heuristic Algorithms:** Heuristic mining also uses deterministic algorithms. However, they refer to the frequency of events and traces to reconstruct a process model. A common problem in process mining is that real-world processes are very complex and their discovery leads to complex models. This complexity can be reduced by neglecting rare paths in the models.
- **Genetic Algorithms:** They use an evolutionary approach that mimics the process of natural evolution. They are not deterministic. Genetic mining algorithms follow four steps: Initialization, Selection, Reproduction, and Termination.

4.6 Starting Project in Mining:

To start a project in the stream of process mining one need to follow some basic requirements they are classified as follows.

- **Determine Problem**: Identify the problem of importance to the business that can realistically be addressed with process mining.
- **Identify the Data**: Identify the data sources that need to be fully understood to address the business process issues under consideration.
- **Setting Pilot Project**: Set up a pilot project to prove the potential value of a process mining solution.
- **Accept Truth**: Accepting the results of the analysis, as process mining provides, among other things, a clear picture based on facts.

Fig. 4.2: Process Mining Stages

4.7 Industrial Usage of Mining:

- **Production :**

  In the manufacturing industry, timely and accurate delivery to a customer is the goal. When a company has multiple factories in different regions, there are usually differences between the reliability of deliveries. It is fairly easy to see that they exist, but it is more difficult to understand exactly where or why they are happening. Process mining can be used to compare the performance of different locations, down to individual process steps, including duration, cost, and the person performing the step.

- **Banking and finance :**

  In the financial sector, it is important to comply with rules and regulations and to be able to provide evidence of this. By using the event data from the systems, individual cases can also be visualized as a process flow.

- **Telecommunication :**

  Telecommunications is a highly competitive sector worldwide. The ability to improve operational processes is key to success and profitability. Process mining helps telecom companies gain visibility into geographically dispersed operations, identify bottlenecks, and ensure that customers receive products and services on time.

4.8 Process Mining Software's:

A process mining solution should have strong detection capabilities. It should be able to search event logs to track what employees are actually doing and then create an appropriate process model by generating process maps of the entire business flow.In addition, the solution should have robust conformance checking that analyzes event

logs to ensure that actions match process models. Third, a process mining solution needs performance analysis and improvement capabilities that analyze potential inefficiencies within an event log to determine if and how they can be improved, and then make improvements based on real process data. Ultimately, though, which software is right for the job depends on the size of the company, its business needs, and its goals.

4.9 Process Mining Software Key :

If your selected process mining software fulfills these key functions, then you have already made a good choice. However, you should always keep in mind that your company's ability to measure, monitor and optimize business processes has a direct impact on revenue and customer satisfaction. If necessary, an expert can also be consulted.Identify bottlenecks & process optimization opportunities Provide insights into failed process steps Ensure end-to-end view of the entire process Monitor performance indicators in real time Perform data cleansing Compliance analysis & gap analysis Provide continuous business process monitoring in realtime Improve process model.

4.10 Process Mining Software Providers:

The following are the Process Mining Software Providers in the Market

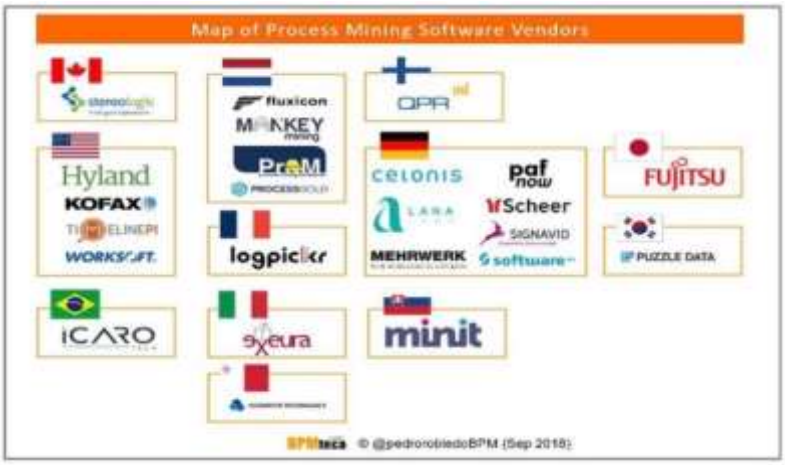


Fig. 4.3: Process Mining Software Providers

CHAPTER 5

REAL TIME EXAMPLES

Process mining involves the analysis of event data generated during the execution of various processes within an organization. It aims to discover, monitor, and improve processes based on the actual data rather than relying solely on models or assumptions. Here are some real-time examples of process mining applications:

1. Order Processing in E-commerce:

Process mining can be used to analyze the order processing workflow in an e-commerce platform. By tracking each step of the order fulfillment process, including order creation, payment processing, inventory management, and shipping, companies can identify bottlenecks, delays, and areas for optimization.

2. Healthcare Patient Journey:

Hospitals and healthcare facilities can use process mining to map out the patient journey from admission to discharge. This helps in identifying inefficiencies, such as prolonged wait times, unnecessary tests, or communication gaps between departments, leading to improved patient care and resource allocation.

Fig. 5.1: Healthcare Patient Journey

3. Supply Chain Management:

Process mining can be applied to analyze the end-to-end supply chain process. This includes tracking the movement of goods from suppliers to manufacturers to

distributors and retailers. Insights gained from process mining can help optimize inventory levels, reduce lead times, and improve overall supply chain efficiency.

4. IT Incident Management:

IT departments can utilize process mining to understand how incidents are handled and resolved. By visualizing the incident response process, organizations can identify patterns of successful and unsuccessful resolutions, leading to better incident management practices and reduced downtime.

5. Loan Approval in Banking:

Banks can analyze the loan approval process using process mining. By tracking each step, from application submission to final decision, they can pinpoint delays, redundant steps, or areas where customers drop out of the process. This can lead to quicker loan processing and improved customer satisfaction.

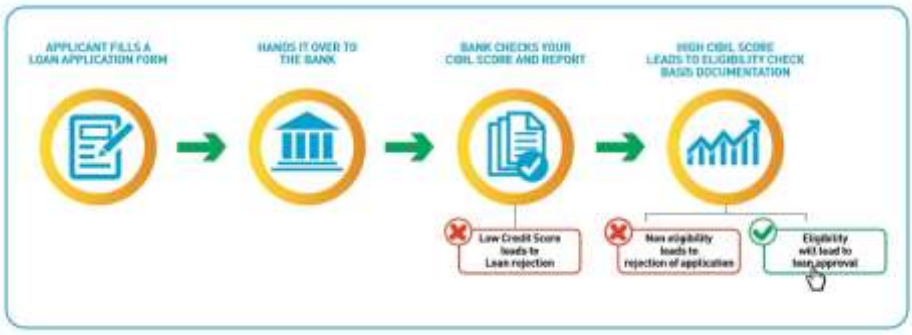


Fig. 5.2: Loan Approval in Banking

6. Manufacturing Quality Control:

In manufacturing, process mining can help monitor and optimize quality control procedures. By analyzing data related to production steps, inspections, and defect rates, manufacturers can identify factors contributing to defects and implement corrective actions.

7. Customer Support Workflow:

Process mining can be applied to customer support interactions. By analyzing the journey of customer inquiries, from initial contact through resolution, organizations can identify opportunities to streamline responses, improve agent performance, and enhance customer satisfaction.

8. Travel Expense Reimbursement:

Companies can use process mining to streamline the travel expense reimbursement process. By tracking the submission, approval, and reimbursement steps, organizations can identify bottlenecks and inefficiencies, leading to faster reimbursements and reduced administrative burden.

9. Logistics and Delivery Management:

Process mining can help logistics companies optimize their delivery processes. By analyzing data related to order processing, route planning, and delivery times, organizations can identify ways to improve delivery accuracy, reduce transit times, and enhance customer experience.

Fig. 5.3: Logistics and Delivery Management

10. Public Services: Permit Application Process:

Government agencies can use process mining to analyze permit application processes. By visualizing the steps involved in obtaining permits, agencies can identify areas where delays occur, streamline the application process, and provide better services to citizens and businesses.

These examples demonstrate the versatility of process mining across various industries and processes. By leveraging real-time data, organizations can uncover insights to make informed decisions and drive continuous improvements.

CHAPTER 6

LEARNING OUTCOMES

- Process mining involves the analysis of event data generated during the execution of various processes within an organization. It aims to discover, monitor, and improve processes based on the actual data rather than relying solely on models or assumptions.
- Understand the Process Mining budget and pricing philosophy.
- Learn the architectural principles of the process Mining.
- **Problem Solving:** Become adept at tracing process variations back to their root causes, enabling effective troubleshooting.
- **Enhanced Collaboration:** Provide a common language for cross-departmental discussions and collaboration.
- **Process Discovery:** Automatically uncover existing processes from event data for deeper insights.
- **Quality Assurance:** Ensure adherence to documented processes by identifying and addressing deviations through data-driven insights.
- **Data Driven Decisions:** Make well-grounded choices by assessing key performance indicators (KPIs) through analysis.
- **Process Understanding:** Gain a comprehensive view of end-to-end process flows through visual representations.

These learning outcomes capture the essential benefits and insights that process mining offers to organizations.

CONCLUSION

In conclusion, process mining emerges as a powerful and transformative approach that unlocks the hidden potential within an organization's operational landscape. By delving deep into the data generated during process execution, process mining offers a dynamic lens through which processes can be understood, analyzed, and optimized. This revolutionary technique enables a shift from assumptions and theoretical models to a reality-based understanding of how processes truly function.Process mining doesn't merely provide insights; it empowers organizations to take proactive steps towards improvement.

From identifying bottlenecks and inefficiencies to tracing deviations back to their origins, process mining equips decision-makers with the knowledge needed to drive meaningful change. The outcomes extend beyond enhanced efficiency – they encompass a broader culture of continuous improvement and data-driven decision-making.This journey through process mining fosters collaboration across departments, enlightening teams with a shared language for process discussions. Moreover, the ability to predict process behavior from historical data ensures organizations stay ahead of potential issues and embrace a proactive approach.

REFERENCES

[1] https://www.botsandpeople.com/blog/process-mining-the-16-best-software-tools-in-the-world

[2] https://www.altexsoft.com/blog/process-mining/

[3] https://www.celonis.com/process-mining/how-does-process-mining-work/

[4] https://en.wikipedia.org/wiki/Process_mining