Camunda 8 - Overview

Process Orchestration and Automation

What is Process Orchestration and Automation?

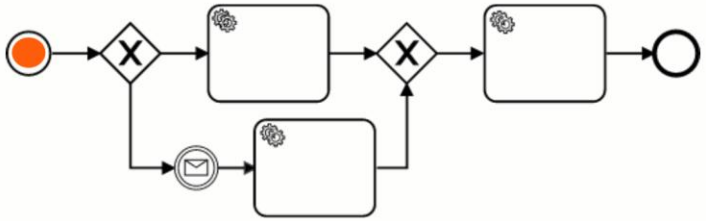
Process orchestration and automation refer to the systematic approach of streamlining and optimizing business processes through technology.

Process Orchestration

Process Orchestration ensures the seamless coordination of tasks within an end-to-end process.

It maintains continuous awareness of the status of each instance and the subsequent actions required.

This encompasses both automated and manual tasks.



Task Automation

Task automation is the process of using software tools or systems to perform repetitive tasks without human intervention, increasing efficiency and consistency.

This typically involves software or robots, such as RPA(Robotic Process Automation), IDP (Intelligent document processing), integration with legacy systems, automated decision-making, and AI to carry out predefined actions within a process.

Automation helps reduce manual effort, minimize errors, increase efficiency, and speed up the overall process.

Process Automation

Process automation is a mix of process orchestration and task automation to automate a process where the degree of automation can vary.

Think Of It Like This

Task automation refers to the use of technology to execute specific tasks automatically, eliminating the need for human intervention.

Process orchestration involves coordinating various tasks within a process, **encompassing both** automated and manual activities.

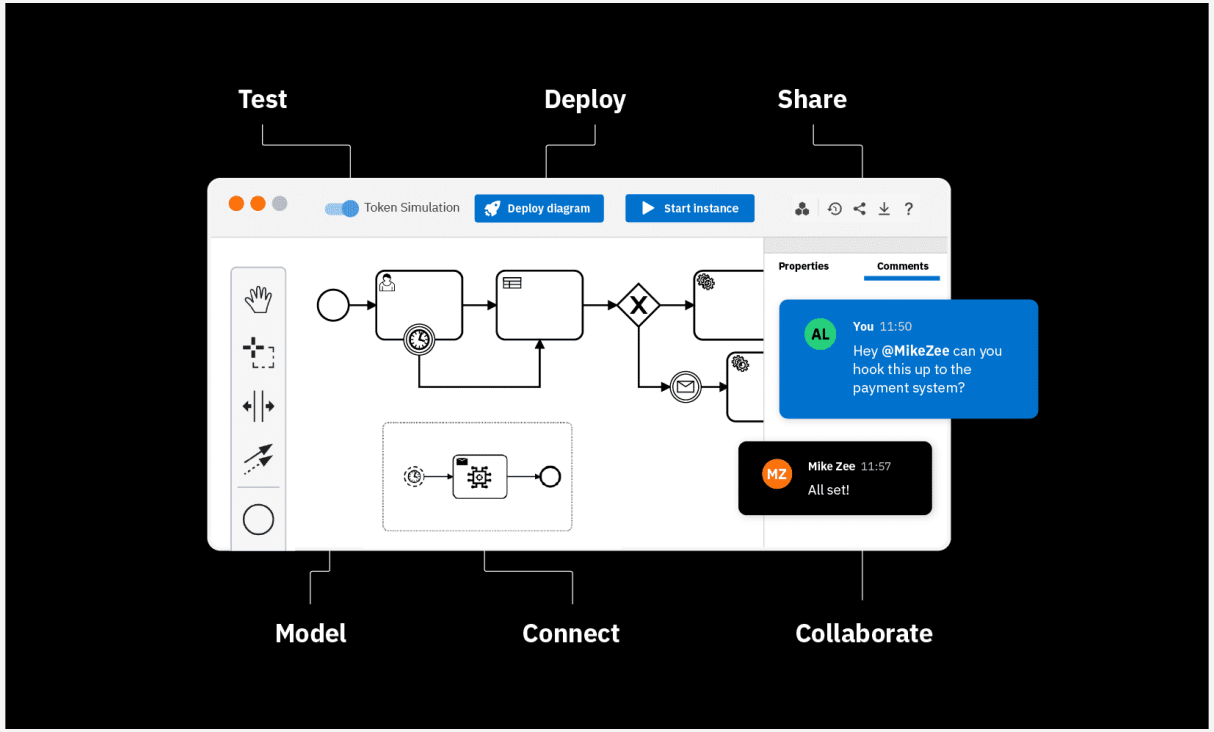
Process automation combines elements of both process orchestration and task automation to streamline an entire process, with varying degrees of automation possible.

So, What is Camunda?

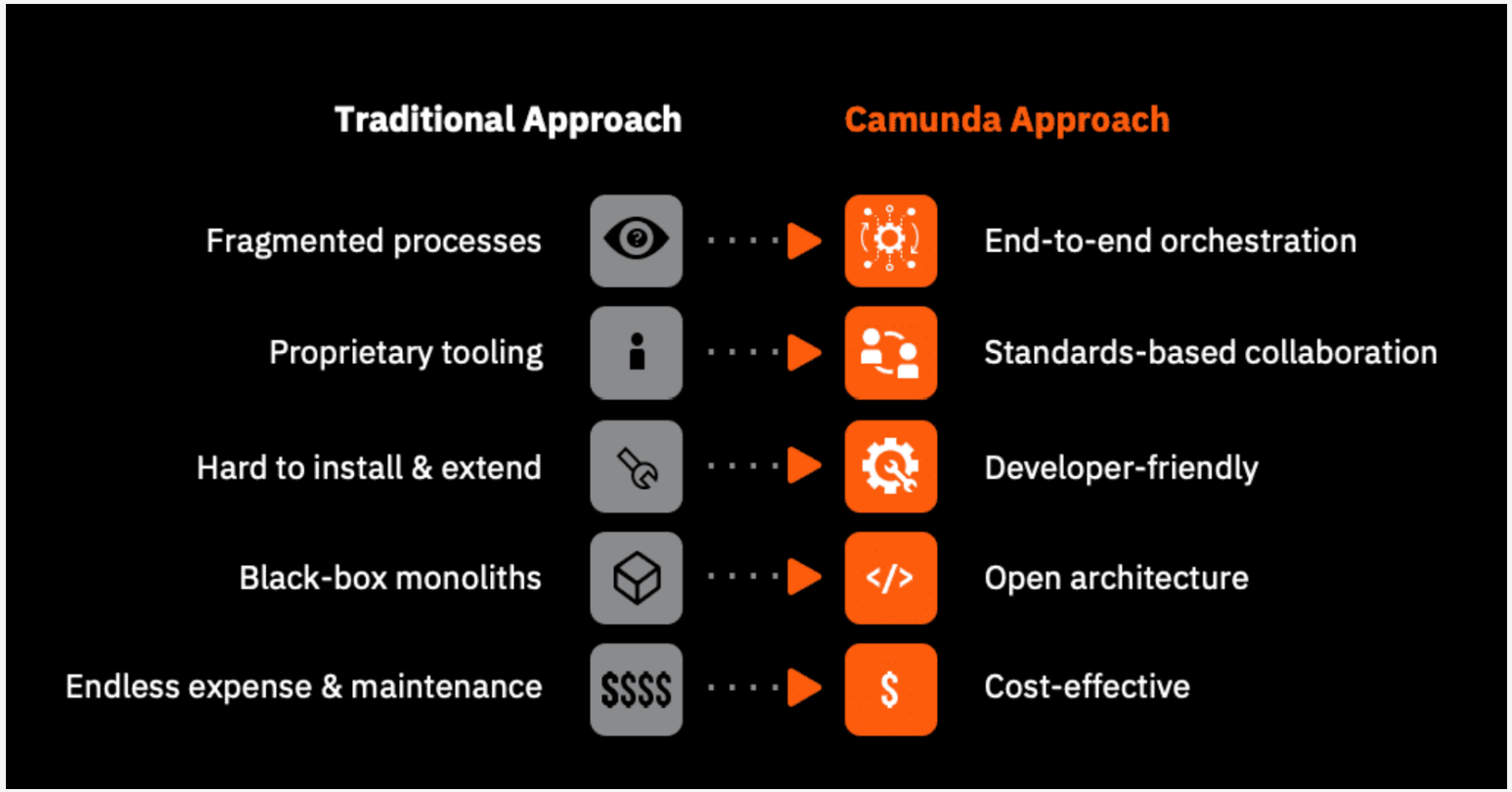
Camunda is a process orchestration and automation platform that supports the entire lifecycle of business processes.

It's an **open-source** workflow and decision automation platform that enables developers to design, automate, and streamline processes and business rule management.

It provides tools for modeling, executing, and monitoring business processes and decisions across on-premise and cloud environments, often used for orchestrating microservices, improving business operations, and connecting disparate systems within an organization



So, What is Camunda?



Hosting Options

Camunda | SaaS

Technical Setup

Camunda 8's SaaS offering eliminates the need for teams to handle technical setup and ongoing infrastructure maintenance.

This allows teams to focus on developing and optimizing business processes without worrying about the underlying technical complexities.

The managed service ensures that all necessary updates, patches, and configurations are handled by Camunda, providing a seamless and hassle-free experience.

This significantly reduces the time and effort required to get started with process automation.

High Resilience

Camunda 8's SaaS offering is optimized for high resilience and low latency, ensuring fast and reliable process execution under high load conditions.

With built-in redundancy and failover mechanisms, the platform guarantees minimal downtime and quick recovery, crucial for maintaining business continuity and consistent performance.

ISO 27001

Security is a top priority for Camunda, which has been ISO 27001 certified since 2021.

This certification demonstrates Camunda's commitment to the highest standards of information security management, ensuring your data is protected against unauthorized access, breaches, and other threats.

This provides confidence that your sensitive information is in safe hands.

Flexible Packages

Camunda offers flexible SaaS packages that accommodate any volume of process instances, automated decisions, and users.

This scalability allows you to tailor the service to your specific requirements, ensuring optimal performance and cost-efficiency.

Whether you are a small business or a large enterprise, Camunda's packages can be customized to fit your unique situation, making it easier to scale your operations as your business grows.

Development Clusters

Camunda offers development clusters for teams to develop applications, run integration tests, build functional test environments, and perform load testing in a safe and controlled environment.

By using these clusters, teams can ensure that all processes and integrations are thoroughly tested before deployment to production, helping to identify and resolve issues early and ensuring a smooth transition to live operations.

Hosting Options

Camunda | Self Managed

Camunda | Self Managed

Camunda’s self-managed option is ideal for organizations that prefer to host on their own infrastructure, either on-premises within their data center or in the cloud.

With this option, organizations are responsible for setup, performance, security, redundancy, and maintenance.

A working knowledge of Docker and Kubernetes is also necessary.

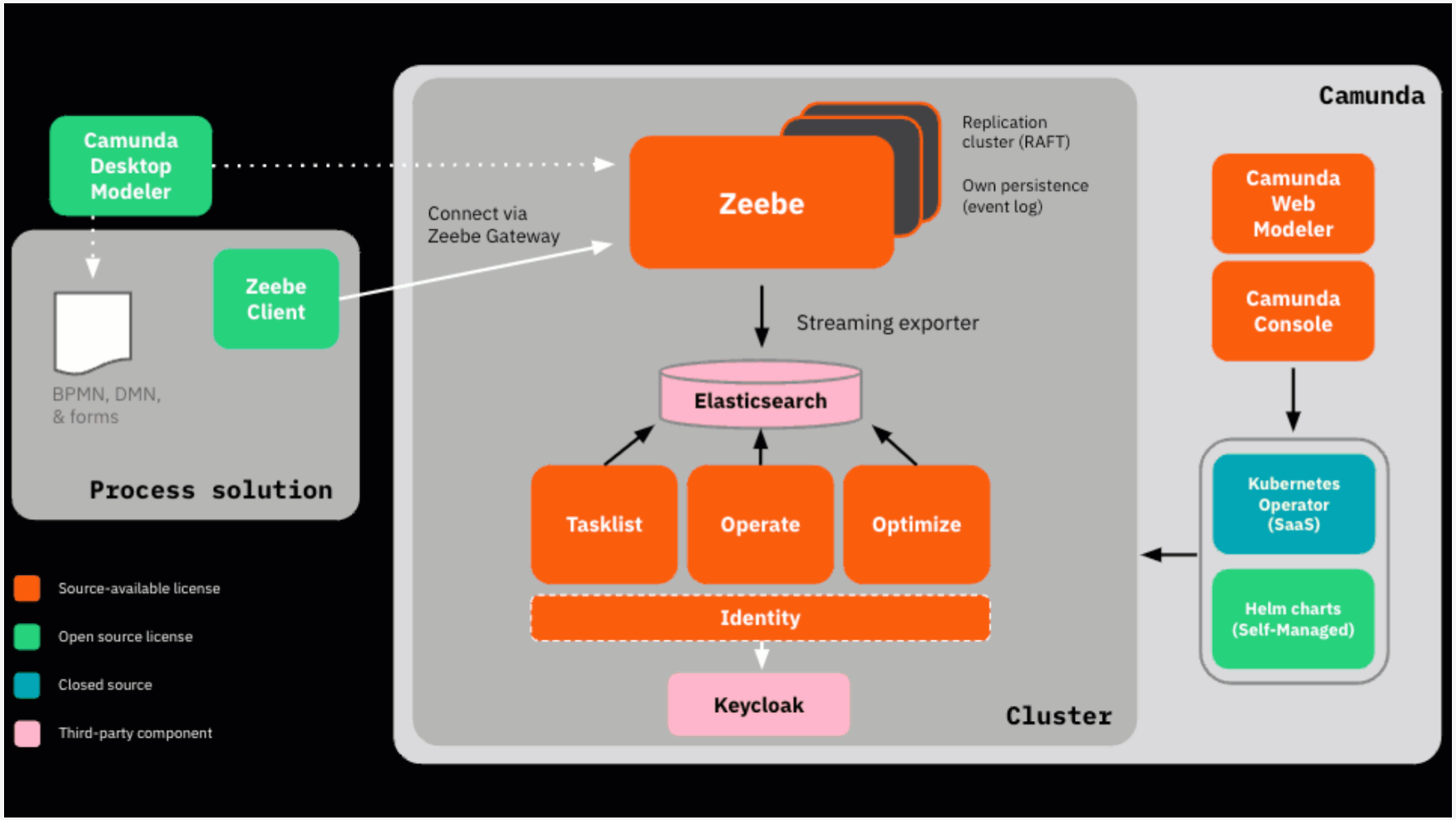
Platform Components and Licenses

The components that make up the Camunda Platform and the type of license required to use them include various elements.

Components highlighted in **orange** have a source-available license, whereas those in **green** are open-source, and components in **teal** are closed-source.

Additionally, Camunda utilize some third-party components, including Elasticsearch and Keycloak that are highlighted in **pink**.

Platform Components and Licenses



Lesson Takeaways

Process orchestration and automation are significant in enhancing business processes through technology.

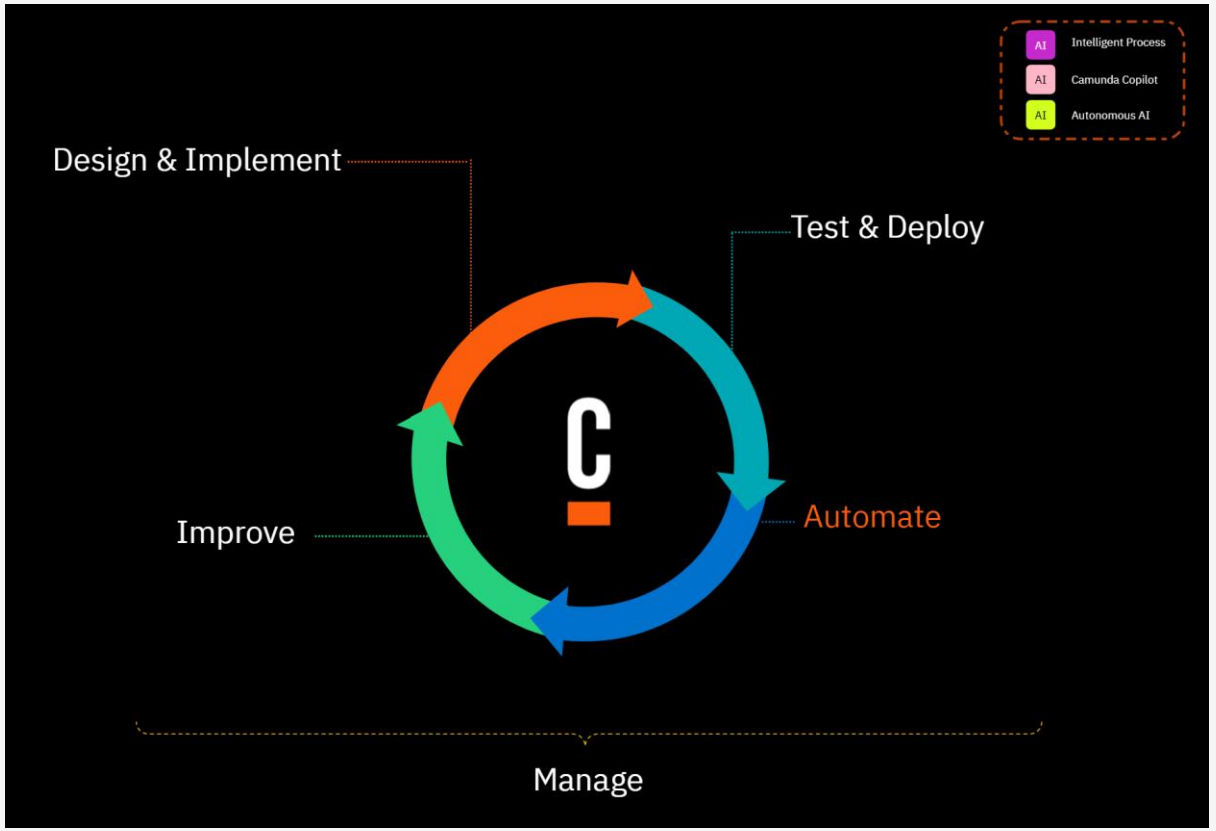
Here are some key takeaways:

1. **The distinction**. Process orchestration is the coordination of the different tasks in a process. (automated and manual) Task automation is the use of technology to perform certain tasks without human intervention. and process automation is a mix of both process orchestration and task automation.
2. **Leveraging Camunda's capabilities**. The platform supports the entire lifecycle of business processes, enhancing efficiency and connectivity.
3. **Prioritizing security and resilience**. Camunda's ISO 27001 certification and high resilience features ensure data protection and reliable performance.
4. **Utilizing flexible packages**. Camunda offers scalable solutions tailored to various business needs, accommodating growth and operational demands.

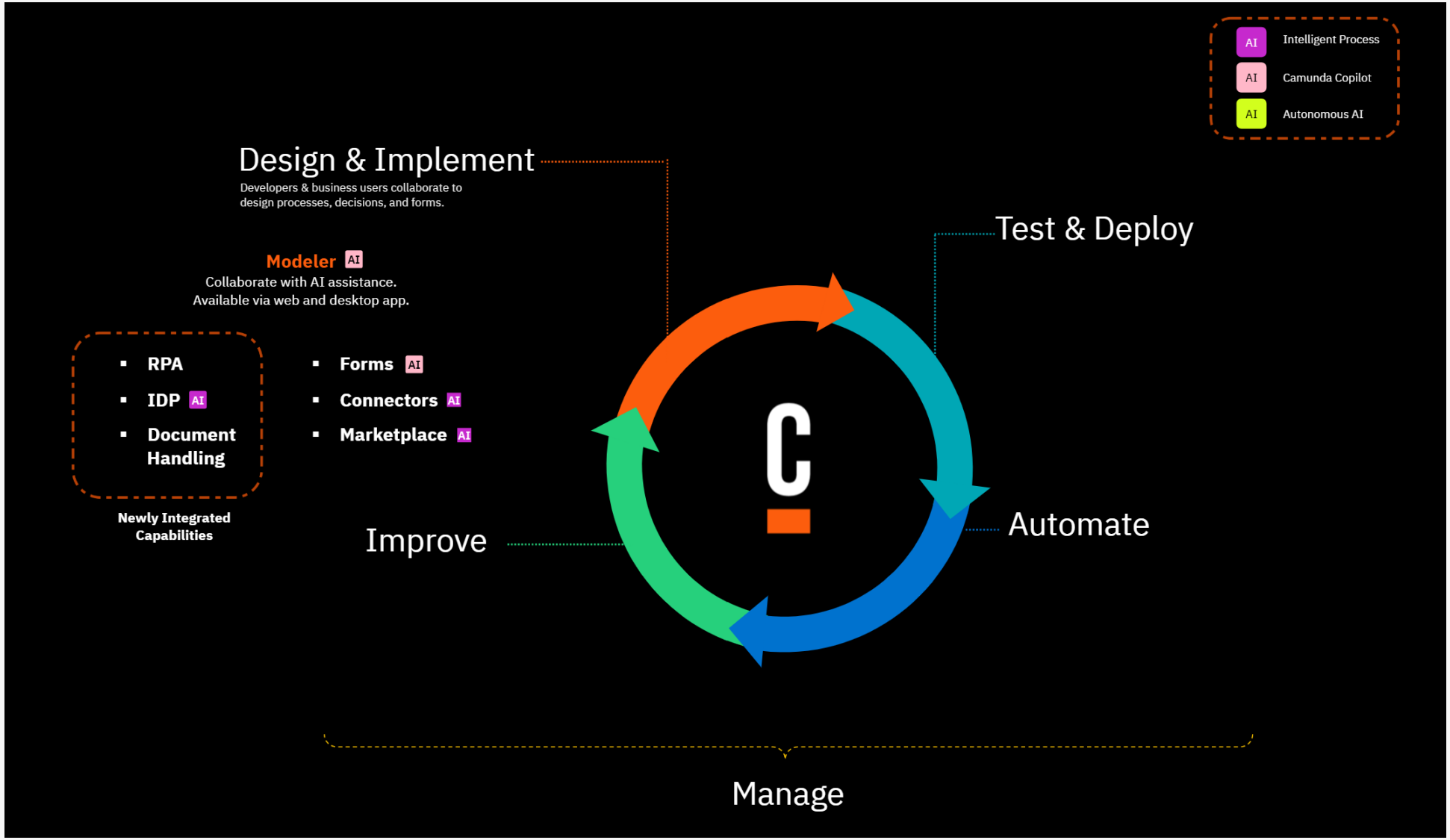
Product Details

Product Details

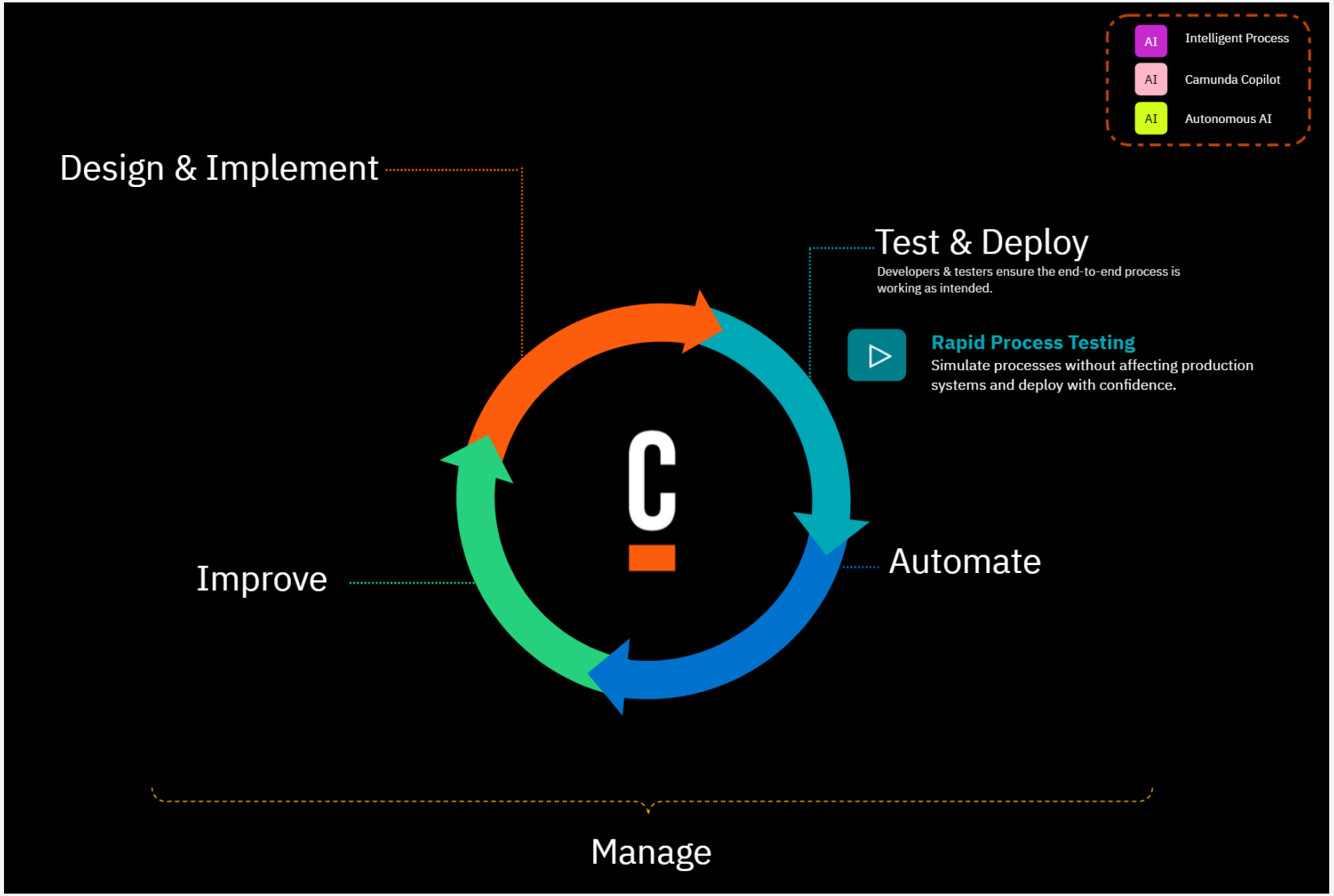
Camunda supports the **entire lifecycle** of process improvement through a **suite of tools** that align with the various **stages of process management.**



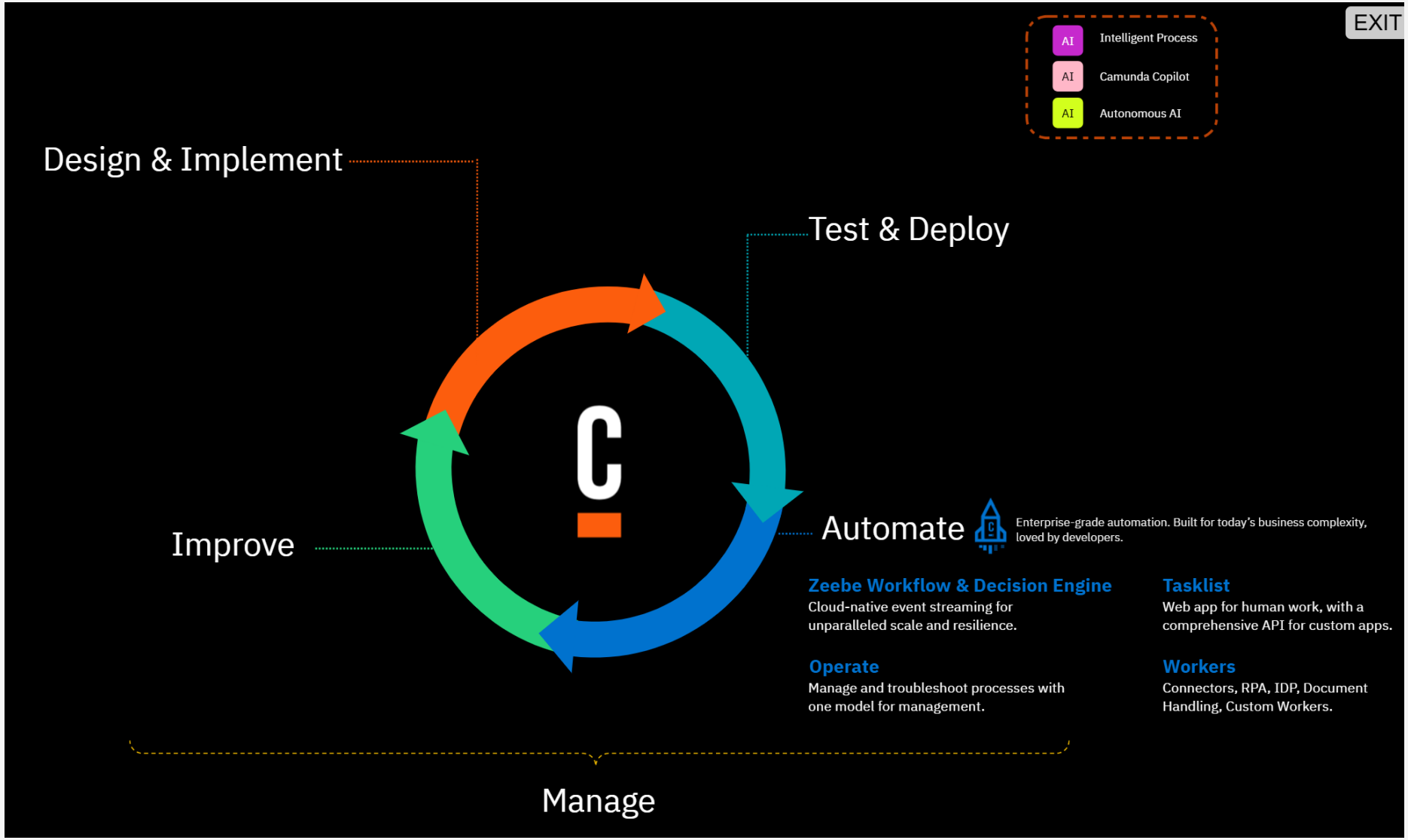
Product Details



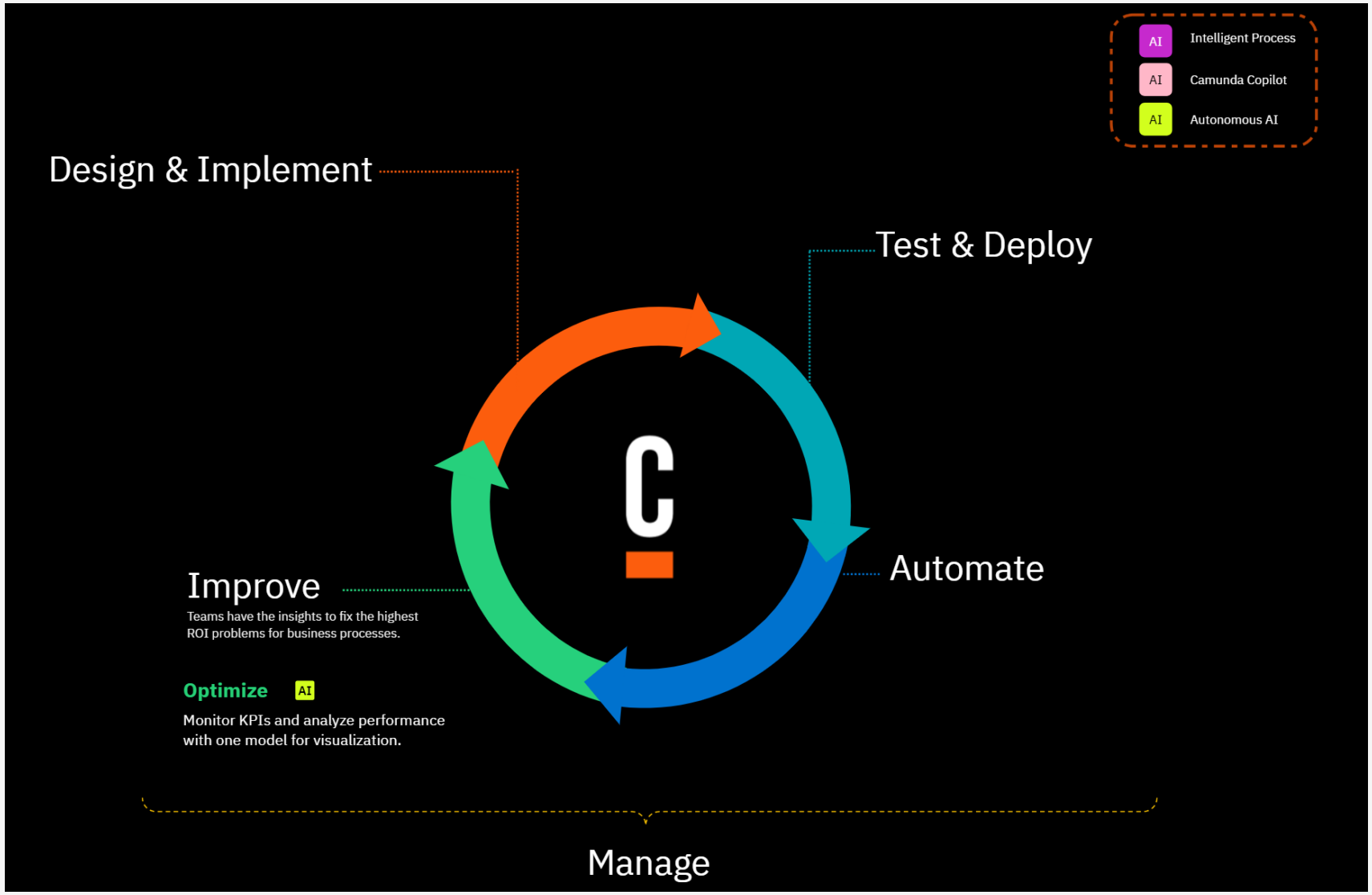
Product Details



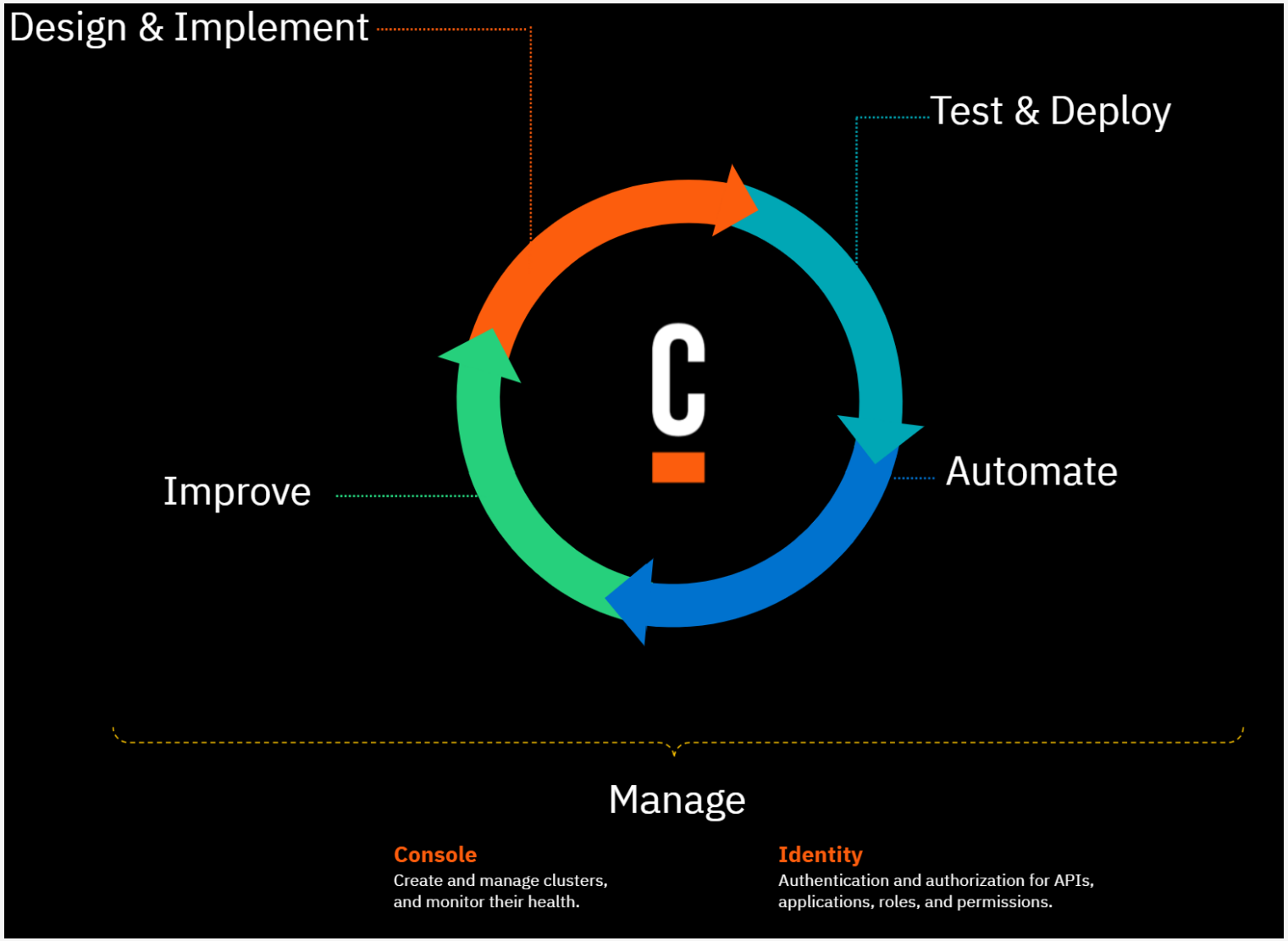
Product Details



Product Details



Product Details



Design and Implement

The Camunda product guides you through the lifecycle of process improvement with various tools.

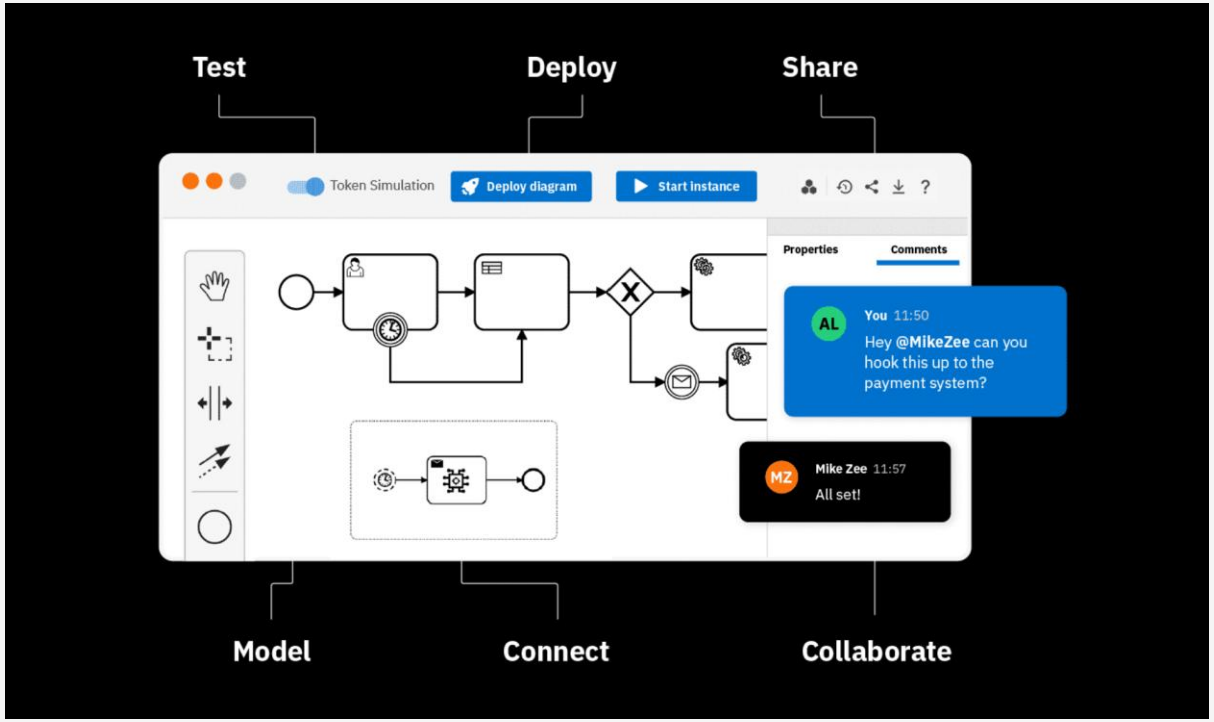
In this lesson, you will learn which tools are used at different stages and gain context about each stage, along with a real-world example of their implementation.

Camunda Modeler

What is Camunda Modeler?

Camunda Modeler is an application for designing and modeling business processes, decisions, and forms.

It enables users to create workflows and decision logic that can be executed by the Camunda platform.



What is Camunda Modeler?

Camunda offers two modelers to design and implement your diagrams.

Web Modeler

The Web Modeler Integrate seamlessly with Camunda 8 SaaS and Self-Managed installations alongside Console and is ideal for teams and users who need collaborative features and cloud-based accessibility.

Desktop Modeler

The Desktop Modeler is installed and used locally and integrates with your local development environment.

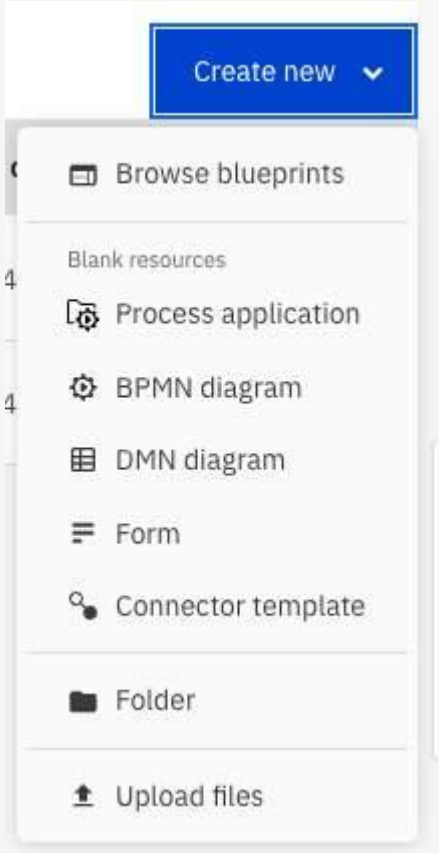
It is ideal for developers and advanced users who require offline access, customization, or the ability to extend features with plugins.

About the Modeler

Functionality

The Camunda Modeler allows users to:

- Visually design BPMN processes for execution by a workflow engine, such as Zeebe.
- Define decision logic using Decision Model and Notation (DMN) tables to automate complex decision-making processes.
- Design user interfaces for workflows with Camunda Forms, enabling the creation of forms for tasks in a process.

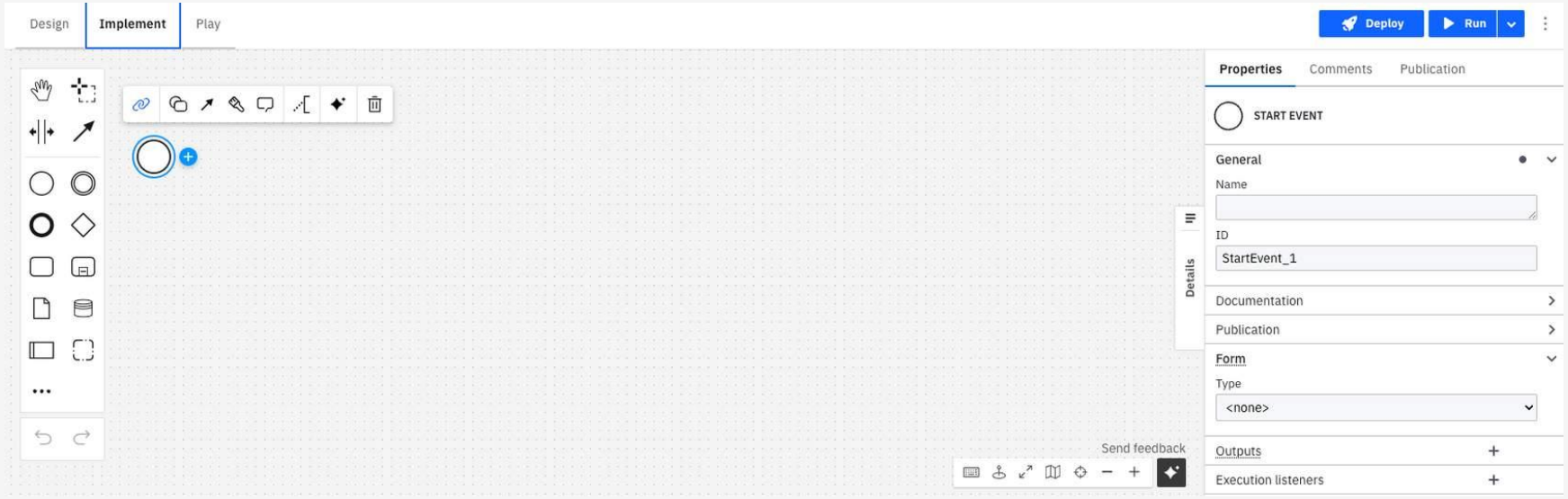


User Interface

The interface is clean and intuitive, featuring a central canvas for modeling BPMN workflows, DMN decision tables, or forms.

It includes a toolbar with modeling elements on the left where users can drag and drop elements onto the canvas to map out process steps.

And a properties panel on the right for configuring elements, and a top menu for file management, validation, and deployment options.



Process Components

Users can define the flow of tasks, events, and gateways, and configure executable properties.

Target Audience

Aimed at developers, process engineers, and business analysts involved in business process creation and management.

Example | Why Adopt Camunda?

Problem: Camundanzia Insurance Company is facing issues with processing claims efficiently.

Their current system is manual, error-prone, and time-consuming, leading to customer dissatisfaction and increased operational costs.

They need a solution that can automate and streamline their claim processing to improve customer experience and operational efficiency.

RPA (Robotic Process Automation)

What is RPA?

1. RPA, or Robotic Process Automation, is a technology that automates repetitive tasks using software robots, or bots.

2. Bots mimic human actions to complete digital tasks like data entry, menu navigation, or information copying.

3. You can integrate Camunda with RPA to automate tasks within a business process.

Here's how RPA can be used with Camunda to automate repetitive tasks:

Step 1

Identify Repetitive Tasks

Use Camunda to orchestrate processes and delegate repetitive tasks, such as data entry, to an RPA bot.

Step 2

Trigger RPA Bots

Integrate with RPA tools like UiPath or Automation Anywhere through Camunda's connectors or APIs.

Step 3

Bot Execution

The RPA bot performs the repetitive task.

Here's how RPA can be used with Camunda to automate repetitive tasks:

Step 4

Return Results

The bot sends the task output back to Camunda.

Step 5

Continue Workflow

Camunda uses the results to proceed with the next steps in the business process.

Example | Camundanzia Implements RPA

Camundanzia decides to use RPA to automate repetitive tasks such as data entry from claim forms into their internal systems.

They utilize bots, which integrate with Camunda, to perform these tasks.

IDP (Intelligent Document Processing)

What is IDP?

1. IDP, or Intelligent Document Processing, is an advanced form of automation.

2. It leverages technologies like Optical Character Recognition (OCR), machine learning (ML), and natural language processing (NLP).

3. These technologies help extract structured data from unstructured documents.

Unstructured documents are those that don't follow a specific format or structure.

Here's how IDP can be used to handle the extraction of structured data from unstructured documents:

Step 1

Document Capture

The first step is to capture the document digitally if it's not already in a digital format. This can be done through scanning or taking a picture of the physical document.

Step 2

Pre-processing

Once the document is in a digital format, the IDP system may perform pre-processing steps to improve the quality of the image for data extraction. This can include tasks like de-skewing, de-noising, and contrast enhancement to make the text more legible.

Here's how IDP can be used to handle the extraction of structured data from unstructured documents:

Step 3

OCR (Optical Character Recognition)

The IDP system uses OCR technology to convert different types of documents, such as scanned papers, PDF files, or images, into machine-readable text. OCR recognizes the characters and words on the documents.

Step 4

Data Classification and Extraction

After OCR, the system uses machine learning and pattern recognition to classify the information within the document. For instance, it might identify certain blocks of text as names, dates, addresses, or invoice numbers. It then extracts this information into structured data.

Here's how IDP can be used to handle the extraction of structured data from unstructured documents:

Step 5

Validation

The extracted data may need to be validated to ensure accuracy. This can be done through predefined rules, cross-referencing with existing databases, or even manual review in some cases.

Step 6

Post-processing

Once the data is extracted and validated, it can be converted into a structured format that is suitable for use in other systems, such as CSV, JSON, or XML files, or directly integrated into databases or enterprise resource planning (ERP) systems.

Here's how IDP can be used to handle the extraction of structured data from unstructured documents:

Step 7

Machine Learning Feedback Loop

An important aspect of IDP is that it often includes a feedback loop where the system learns from corrections and validations to improve its accuracy over time. As more documents are processed and more corrections are made, the IDP system's algorithms adjust to better understand the structure and content of the documents.

Example | Camundanzia Implements IDP

To handle the extraction of structured data from unstructured claim documents, **Camundanzia** implements IDP.

They use Camunda's connectors to integrate with an AI-based OCR tool to parse documents, extract relevant data, and feed it into their workflow.

Forms

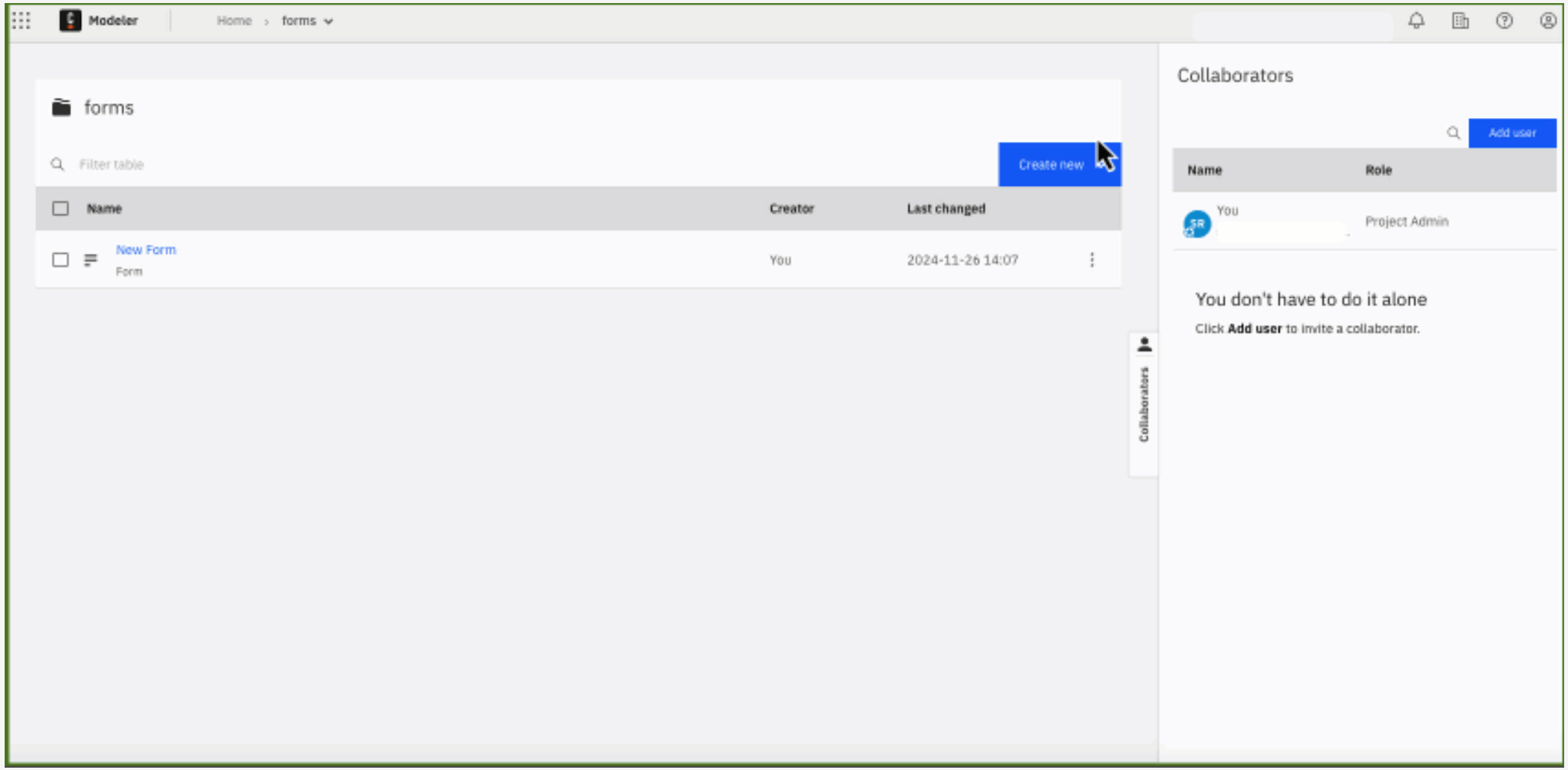
What are Forms in Camunda?

Forms are essential for providing work instructions, collecting information, and facilitating decisions in human task orchestration.

They serve as lightweight user interfaces for focused data input, enhancing efficiency compared to routing users to applications.

Forms are utilized in **user tasks** as start forms for initiating new process instances or as **public forms** to capture user input at scale.

What are Forms in Camunda?



Example | Camundanzia Utilizes Forms

Camundanzia utilizes Camunda Forms to create digital versions of their claim submission forms.

These forms are embedded in their customer portal, allowing customers to submit claims online directly into the workflow.

Connectors and The Camunda Marketplace

What are Connectors?

In Camunda 8, connectors are predefined components that allow you to integrate external systems and services directly into your BPMN process diagrams.

These connectors enable your workflow to interact with other applications, databases, or services without writing custom integration code.

They act as a bridge between your BPMN process and the outside world, handling tasks like sending emails, calling APIs, or accessing databases.

Example | Camundanzia Uses Camunda's Connectors

The company leverages Camunda to send customized emails via the SendGrid connector to notify customers about the status of their claims.

What is the Camunda Marketplace?

The Camunda Marketplace is an online platform where the Camunda community and partners can share and access connectors, blueprints, and other resources related to the Camunda platform.

The marketplace helps accelerate development, streamline implementation, and foster collaboration within the Camunda community.

What is the Camunda Marketplace?

In the Camunda Marketplace, users can find various types of contributions, including:

Connectors

Connectors are designed to simplify integrating third-party tools into workflow automation, saving development time and effort.

Blueprints

Blueprints are pre-built templates, examples, or assets that help users quickly set up, deploy, and customize process automation workflows using the Camunda platform.

What is the Camunda Marketplace?

In the Camunda Marketplace, users can find various types of contributions, including:

Contributions

Users can submit connectors and blueprints for the Camunda community to utilize.

Idea Portal

Ideas can be submitted via the idea portal in the marketplace.

The Camunda marketplace is a collaborative space for contributors to showcase their work and for users to find solutions to enhance their Camunda BPM deployment.

Some content is officially supported by Camunda, while other contributions are maintained by community members with varying levels of support and documentation.

Example | Camunda Marketplace

Camundanzia browses the Camunda Marketplace for pre-built workflow models, form templates, and connectors that can be quickly adapted to their own needs, reducing the time to implementation.

Lesson Takeaways

The Camunda product has various tools to guide customers through the lifecycle of process improvement.

Here are some key takeaways:

1. **The Camunda Modeler**. It is important for creating BPMN diagrams and DMN tables.
2. **Integrating RPA for automation**. Enhances efficiency in business processes by identifying repetitive tasks.
3. **Leveraging IDP for data extraction**. Using advanced technologies to convert unstructured documents into structured data.

Utilizing forms and connectors. They streamline user interactions and integrate external systems into workflows.

Test and Deploy

Rapid Process Testing

What is Rapid Process Testing?

Rapid Process Testing with Camunda involves efficient testing of BPMN business processes within the Camunda environment.

This practice ensures that processes function as intended before deployment, allowing organizations to identify and resolve issues early, saving time and reducing costs associated with complex debugging later.

Here are key aspects of Rapid Process Testing with Camunda:

Automated Testing

Camunda supports frameworks like JUnit for Java applications, allowing developers to automate process execution and verify outcomes.

In-Memory Engine

Camunda can run an in-memory version of the process engine, speeding up test execution by avoiding database transactions.

Process Instance Modification

Developers can modify the state of a running process instance to test different scenarios without restarting the entire process.

Here are key aspects of Rapid Process Testing with Camunda:

BPMN Assertions

Camunda provides BPMN assertions to verify process execution, making tests more expressive and readable.

Continuous Integration

Integrate Camunda's testing capabilities into a CI pipeline to run tests automatically and catch issues early.

Mocking External Services

Camunda allows developers to mock external services in tests, ensuring process flow without relying on external systems.

Here are key aspects of Rapid Process Testing with Camunda:

CI/CD Blueprint

CI/CD Blueprint supports process testing by automating the validation, unit testing, and integration testing of BPMN and DMN models during the build pipeline. It ensures that only tested and error-free process artifacts are deployed, enhancing reliability and speeding up delivery.

Rapid Process Testing is an important part of the development lifecycle in a Camunda-based workflow automation project, enabling developers to deliver high-quality, reliable process applications with confidence.

Example | Camundanzia Uses Testing Tools

Once the workflows are designed, Camundanzia uses Camunda's testing tools to simulate and test the claim processing workflows, ensuring all integrations work as expected and the process flows smoothly.

Lesson Takeaways

Rapid Process Testing within the Camunda ensures BPMN business processes are thoroughly tested for functionality before deployment.

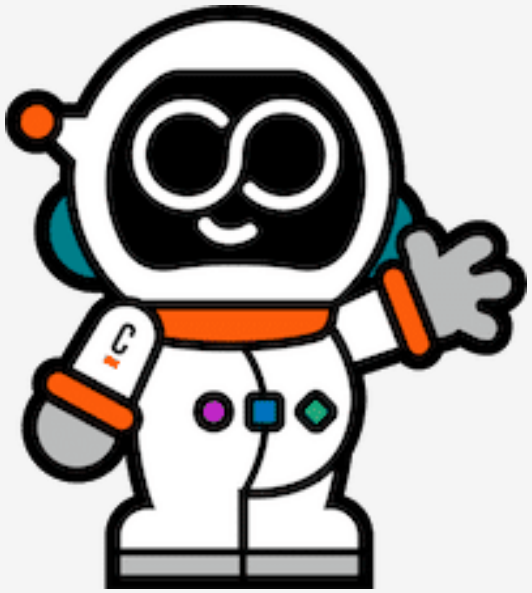
Here are some key takeaways:

1. **Automating testing** and utilizing frameworks like JUnit to streamline process execution and outcome verification.
2. **Leveraging in-memory engine**. Speeding up test execution by avoiding database transactions with an in-memory process engine.
3. **Modifying process instances**. Testing various scenarios by altering the state of running process instances without restarting.

Integrating testing in CI. Incorporating Camunda's testing capabilities into continuous integration pipelines for early issue detection.

Automate

Zeebe Workflow and Decision Engine



What is Zeebe?

Zeebe is a workflow engine for microservices orchestration, designed to meet the scalability and reliability demands of high-performance, distributed systems.

It was developed by Camunda and is now part of the Camunda Platform, positioned as a modern solution for automating workflows in cloud-native environments.

Key features and characteristics of Zeebe include:

Scalability

Zeebe is built to scale horizontally, which means it can handle a high volume of concurrent process instances by distributing the load across multiple nodes in a cluster.

This makes it well-suited for modern cloud architectures that require elasticity and resilience.

Fault Tolerance

Zeebe maintains high availability through its distributed cluster architecture.

Even if some nodes fail, the workflow engine can continue operating, ensuring that ongoing workflows are not interrupted.

Key features and characteristics of Zeebe include:

Asynchronous and Non-Blocking

The engine is designed to handle long-running and asynchronous processes efficiently.

It can manage workflows that depend on external systems and services without blocking resources, which is essential for microservices environments where services operate independently and at different speeds.

Event-Driven

Zeebe operates using an event-sourcing mechanism, where all changes to the workflow state are captured as a sequence of events.

This approach provides a robust audit trail for each workflow instance and enables replayability for recovery purposes.

Key features and characteristics of Zeebe include:

BPMN Compliance

Zeebe uses BPMN (Business Process Model and Notation) for workflow modeling, an open standard.

This makes it easy to design complex workflows visually and ensures compatibility with other BPMN-based tools.

Decision Automation

While Zeebe itself focuses on workflow automation, it can be used in conjunction with DMN (Decision Model and Notation) for decision automation.

DMN can be applied to model and execute business rules that are part of the automated workflows.

Zeebe is designed for developers who need a high-throughput, low-latency workflow engine that integrates seamlessly with microservices and supports the orchestration of complex business processes in cloud and containerized environments.

Example | Camundanzia Deploys Zeebe Workflow Engine

Camundanzia deploys the Zeebe workflow engine to manage high-load claim processing tasks and to make decisions on claim approvals using Camunda's Decision Engine, which employs DMN (Decision Model and Notation) tables for business rules.

Operate

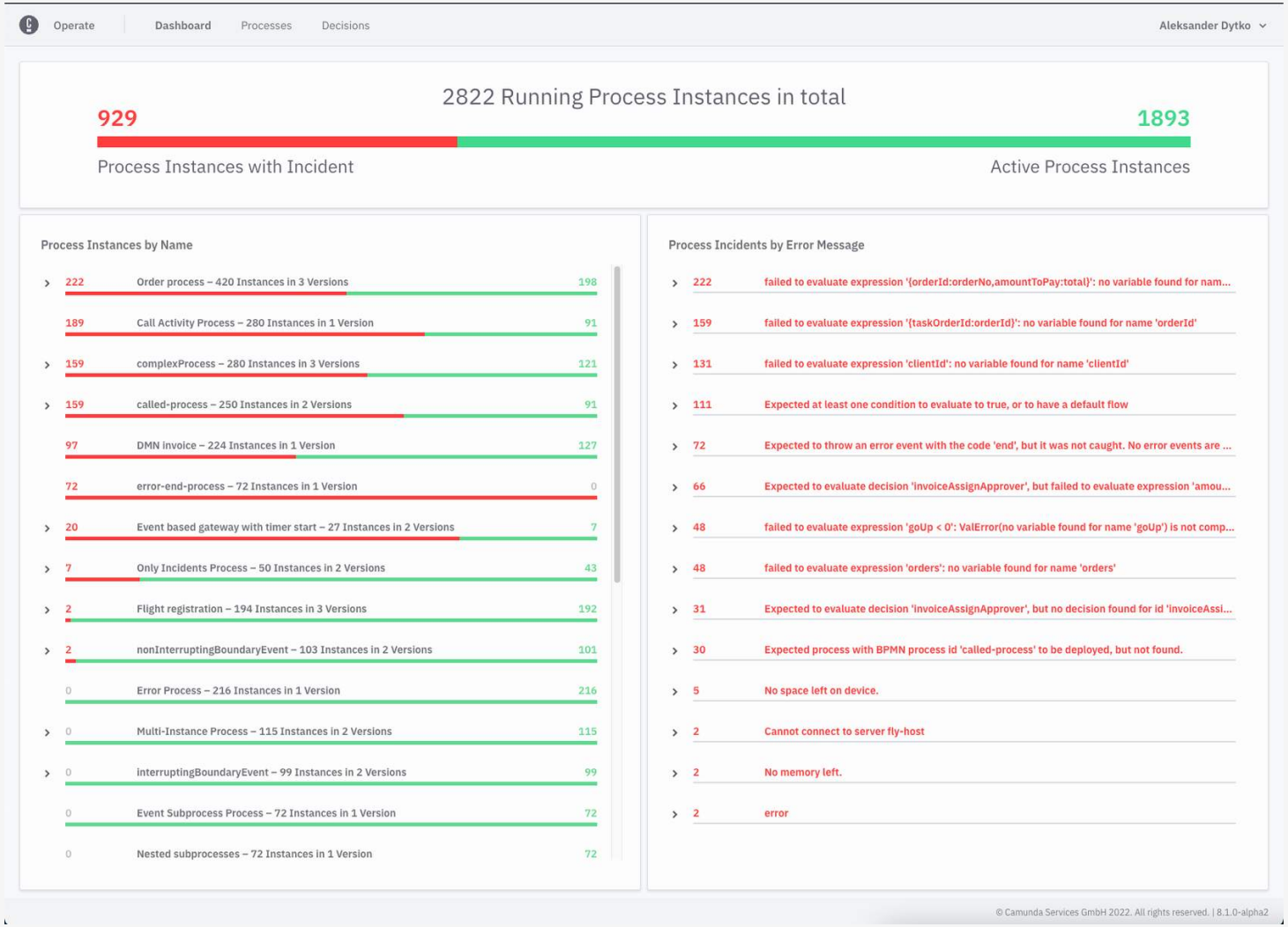
What is Operate?

Operate is a tool for monitoring and troubleshooting process instances running in Zeebe.

In addition to offering visibility into both active and completed process instances, Operate also provides the following functionalities:

1. Resolve incidents and update variables of process instances.
2. Retry or cancel multiple process instances simultaneously.
3. Delete completed instances and related resources.
4. Modify an active process instance to enable its continued execution.
5. Batch move active process instances to allow for ongoing execution.

What is Operate?



Example | Camundanzia Uses Operate

Camundanzia uses Camunda Operate to monitor the health of their workflows, troubleshoot issues, and ensure that claim processes are running efficiently without bottlenecks.

Tasklist

What is CamundaTasklist?

Camunda Tasklist streamlines the management of complex business processes by integrating all endpoints, including human tasks, through comprehensive process orchestration.

When a business process is automated using the Camunda workflow engine, certain steps may require human interaction or decision-making.

These steps are represented as user tasks within the BPMN process diagram.

Camunda Tasklist helps to automatically assign tasks and help teams easily complete manual work through a lightweight, easy-to-integrate solution, keeping processes running smoothly.

Here's a brief overview of what Camunda Tasklist offers:

Task Management

Users can view, claim, complete, or reassign tasks assigned to them or their groups.

Task Forms

Camunda Tasklist displays forms for user tasks, allowing users to enter required information to complete tasks.

Filtering and Sorting

Camunda Tasklist provides options to filter tasks by criteria like due date, priority, or process variables.

Notifications

Users receive notifications about new tasks or tasks nearing their due date to stay aware of responsibilities.

Here's a brief overview of what Camunda Tasklist offers:

Process Overview

Users can view the progress of process instances, including completed and pending tasks, for context.

Customization

Camunda Tasklist can be customized to match business requirements, such as custom forms or system integrations.

Example | Camundanzia Uses Tasklist for User Tasks

Camundanzia’s customer service representatives use Camunda Tasklist to manage and complete user tasks in the claim process, such as reviewing claim details and manually approving or rejecting claims based on the provided evidence.

Lesson Takeaways

This lesson covered the Zeebe Workflow and Decision Engine, Operate, and Tasklist.

Here are some key takeaways:

1. **Zeebe's scalability**. It efficiently handles high volumes of concurrent processes across distributed nodes.
2. **Recognizing the importance of fault tolerance**. Zeebe ensures continuous operation even during node failures.
3. **Leveraging the event-driven model**. This provides a robust audit trail and allows for recovery through event replay.
4. **Utilizing Camunda Tasklist for user tasks**. It offers a user-friendly interface for managing and completing tasks within automated workflows.

Monitor workflows with Camunda Operate. It provides insights and visibility into the execution of workflows, aiding in optimization.

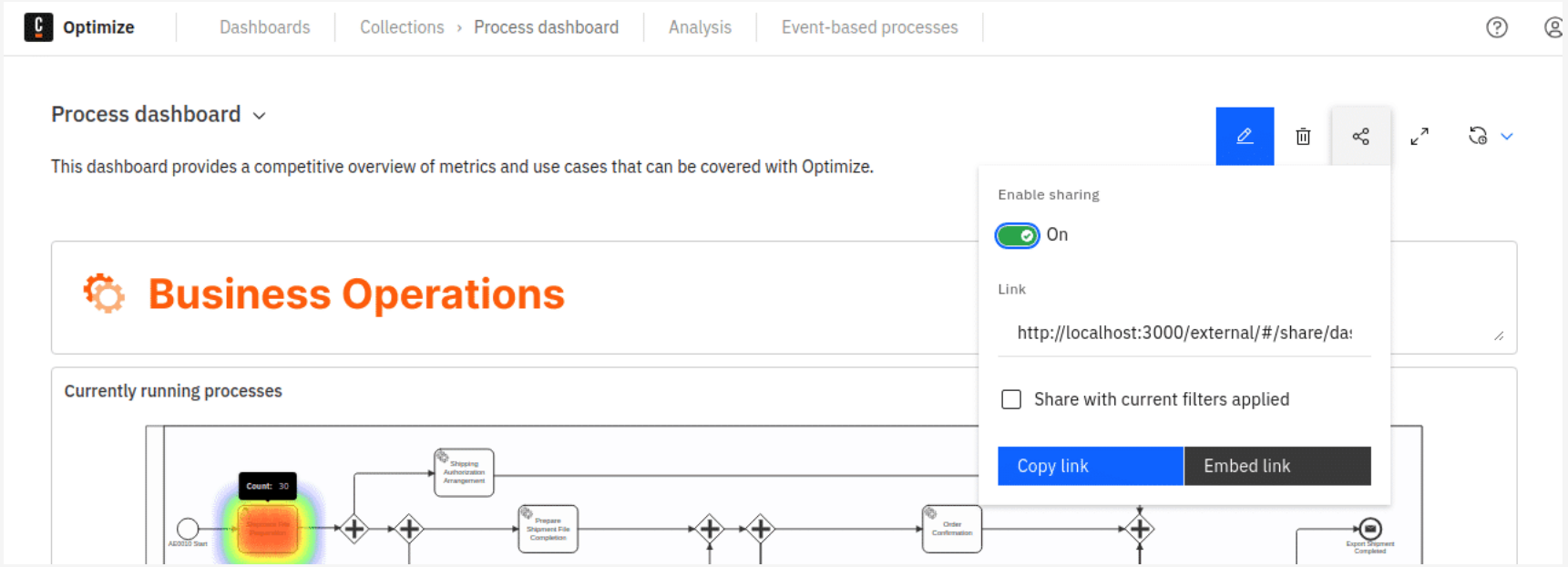
Improve

Optimize

What is Optimize?

Optimize provides business intelligence tools specifically designed for Camunda enterprise customers.

By utilizing data gathered during process execution, users can collaboratively access reports, share insights, analyze bottlenecks, and identify areas for improvement within their business processes.



Optimize

As process instances operate on the server, Optimize makes REST API calls to the Camunda server to collect new historical data, which is then stored in its Elasticsearch database.

This process allows users to independently analyze reports and dashboards, gaining actionable insights without impacting the runtime.

Continuous Process Improvement

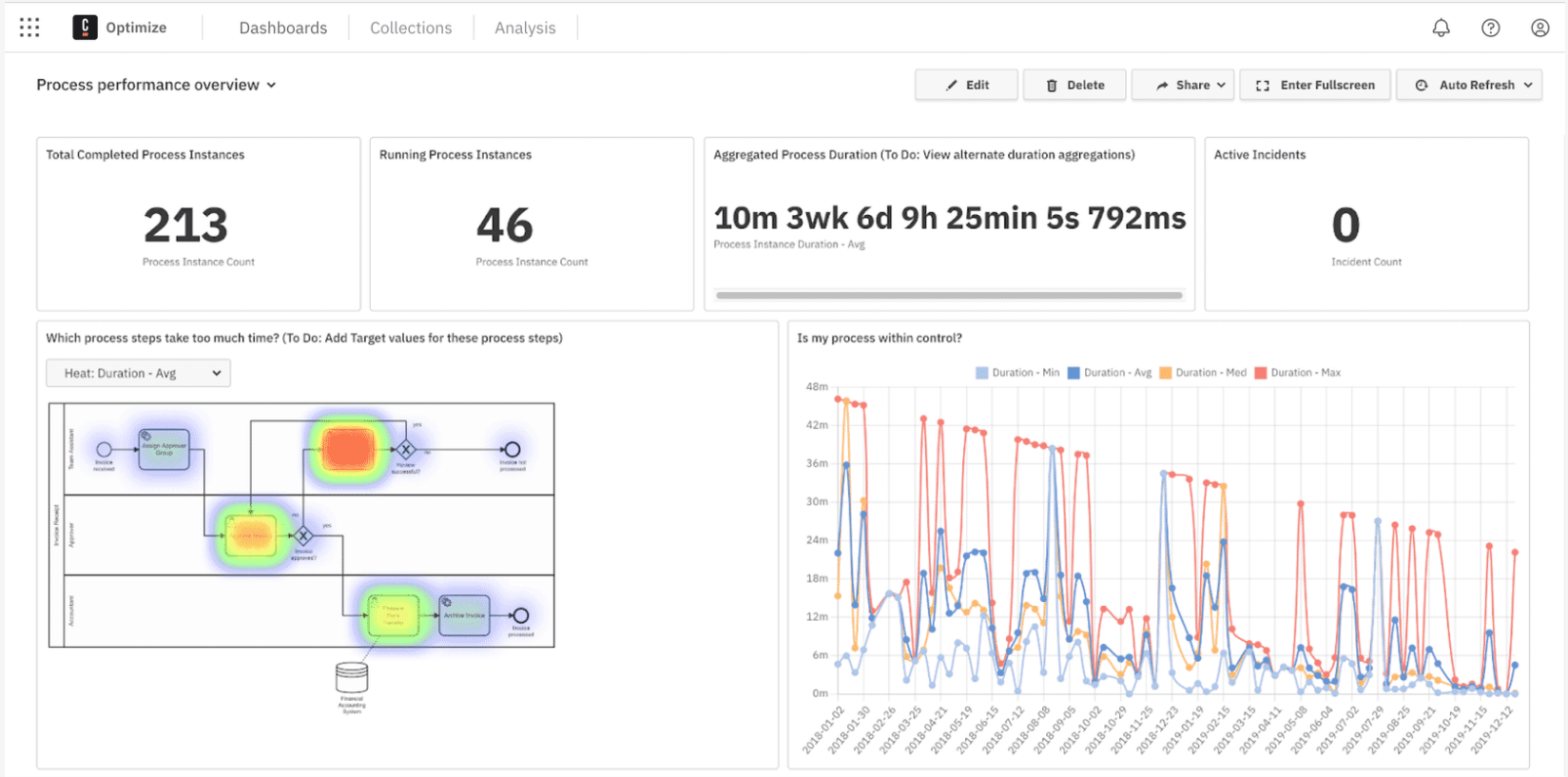
Optimize enhances traditional business intelligence tools for continuous process improvement.

It helps identify constraints in individual or organizational systems quickly.

Optimize

Process Performance Dashboards

Explore features like process performance dashboards and heatmaps for instance durations.



Optimize

Activity Visualization

Visualize activity instances compared to total process instances.

Optimize | Features

Optimize offers a variety of features designed to enhance your experience:

1. Create and Analyze Dashboards
2. Create and Access Reports
3. Alerts
4. Collections
5. Task Analysis
6. Branch Analysis

Example | Performance Analysis

With Camunda Optimize, **Camundanzia** analyzes the performance of their claim processing workflows.

They use reports and heatmaps to identify process bottlenecks and inefficiencies, which they can then address to improve cycle times and reduce costs.

Lesson Takeaways

Optimize is a business intelligence tool designed for Camunda enterprise customers to enhance reporting, analysis, and continuous improvement of business processes.

Here are some key takeaways:

1. **Utilizing Optimize for better insights**. It helps in analyzing data to improve business processes.
2. **Leveraging dashboards and reports**. These features allow for quick identification of bottlenecks and inefficiencies.
3. **Focusing on continuous improvement**. Optimize supports ongoing enhancements in process performance and efficiency.

Accessing historical data independently. Users can analyze reports without affecting the runtime of processes.

Manage

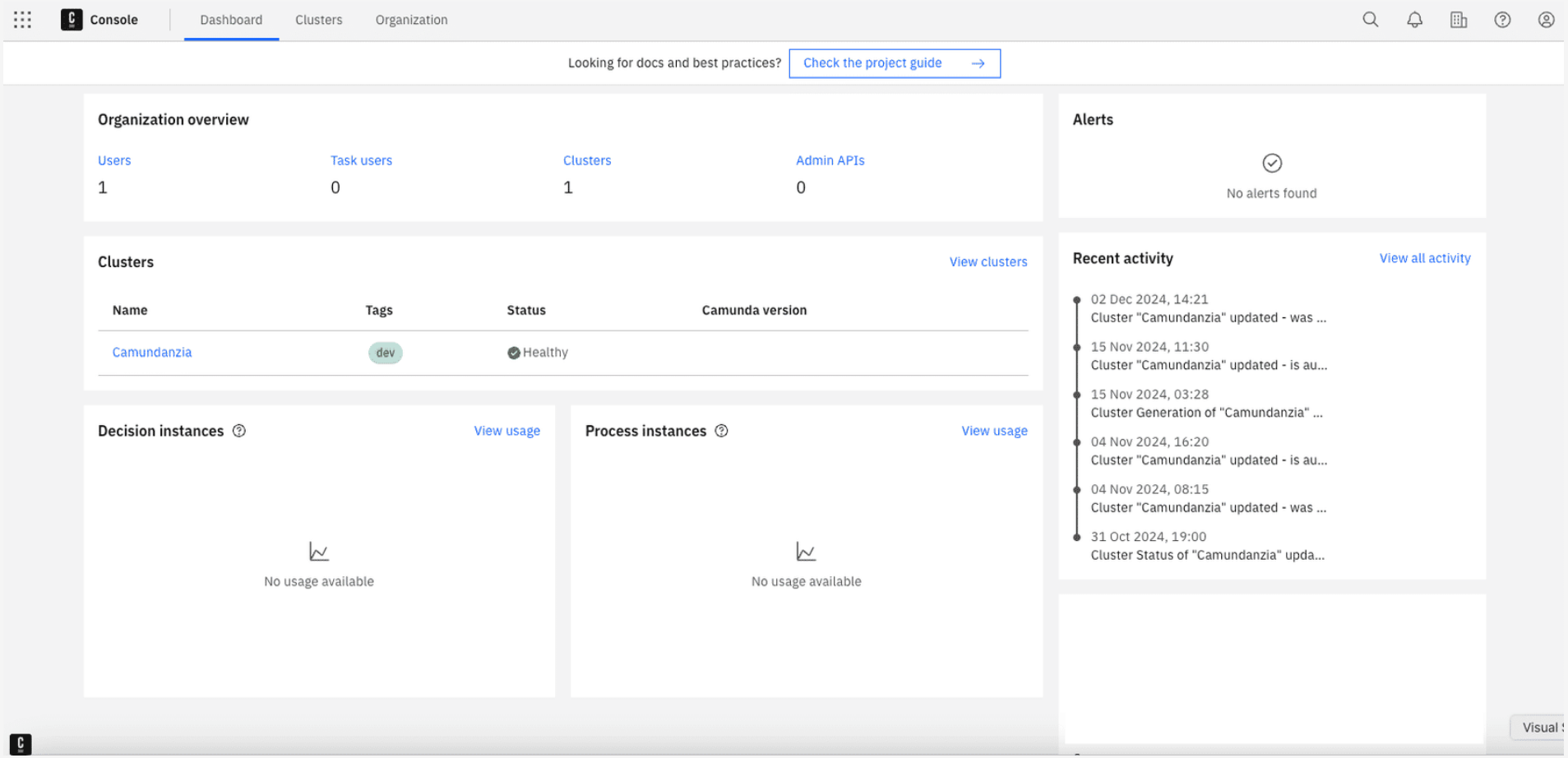
Console

What is Console?

Camunda Console serves as the management application for various integrated products, including Modeler, Tasklist, Operate, and Optimize.

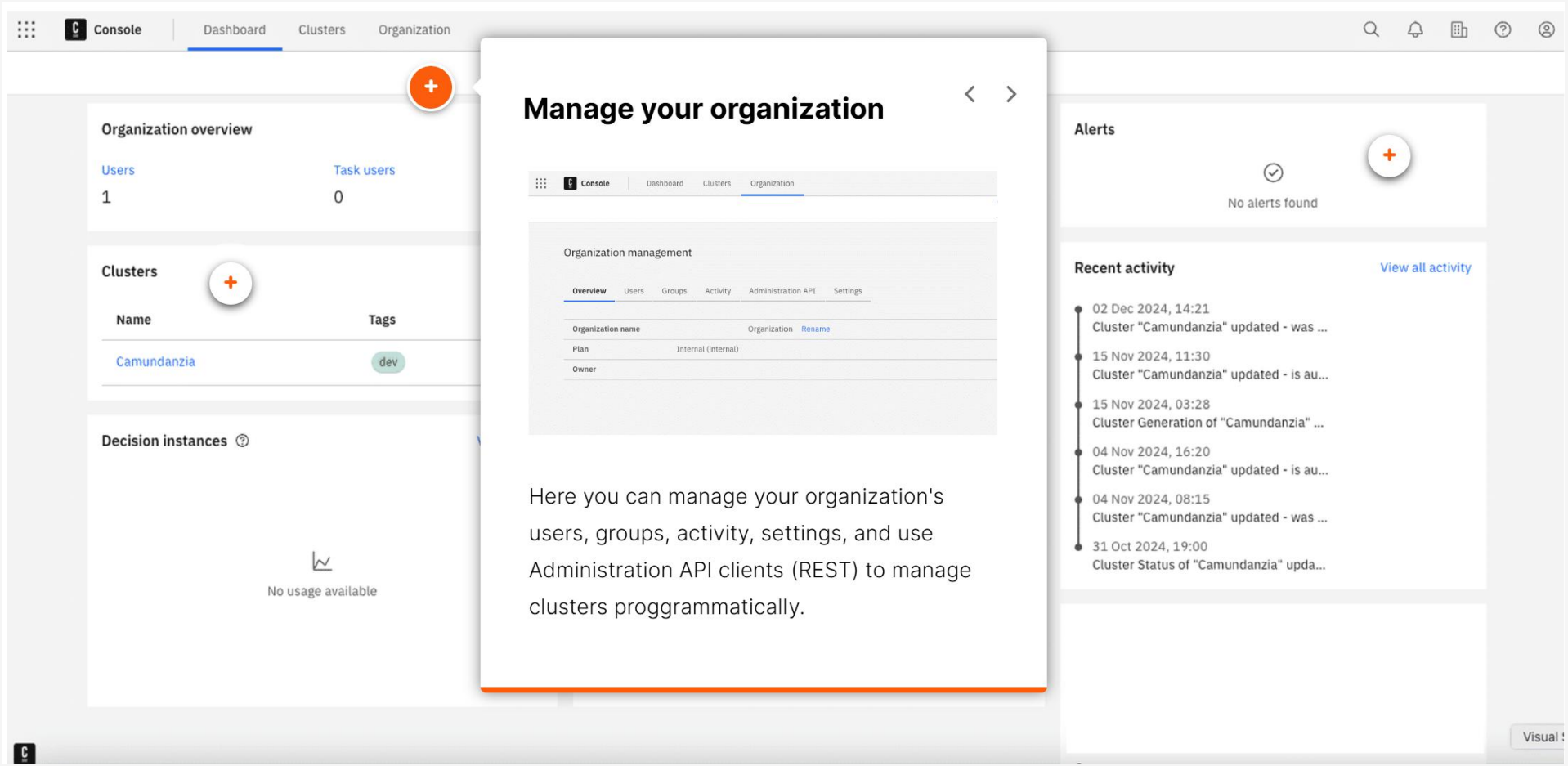
Console

Here's what you can do within the Camunda Console:



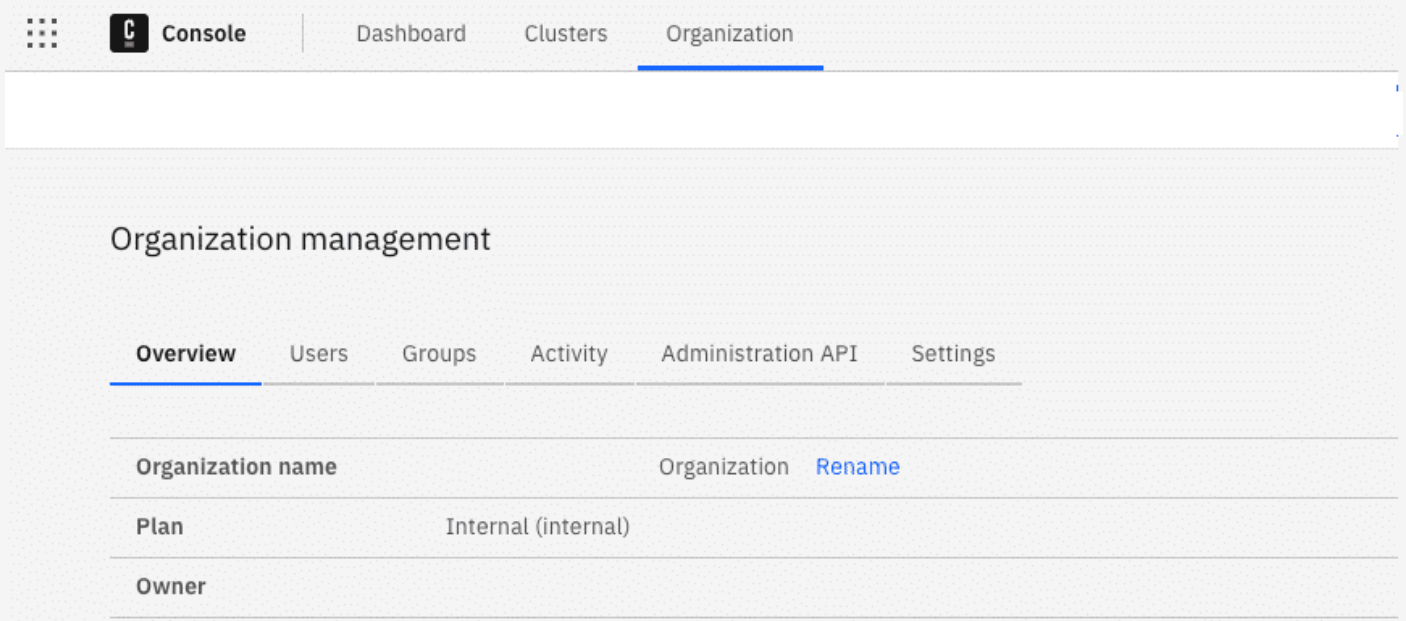
Console

Here's what you can do within the Camunda Console:



Console

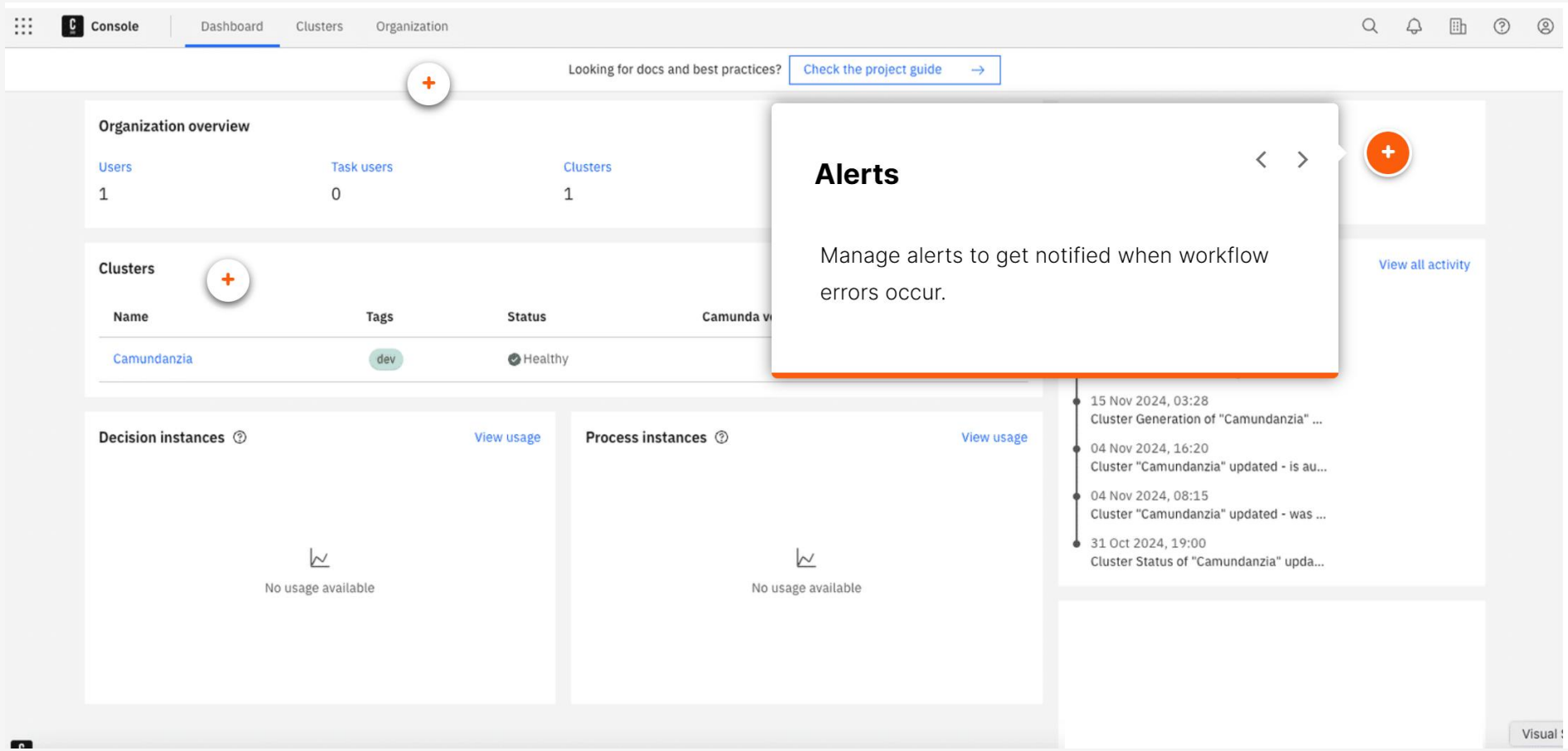
Here's what you can do within the Camunda Console:



Here you can manage your organization's users, groups, activity, settings, and use Administration API clients (REST) to manage clusters proggrammatically.

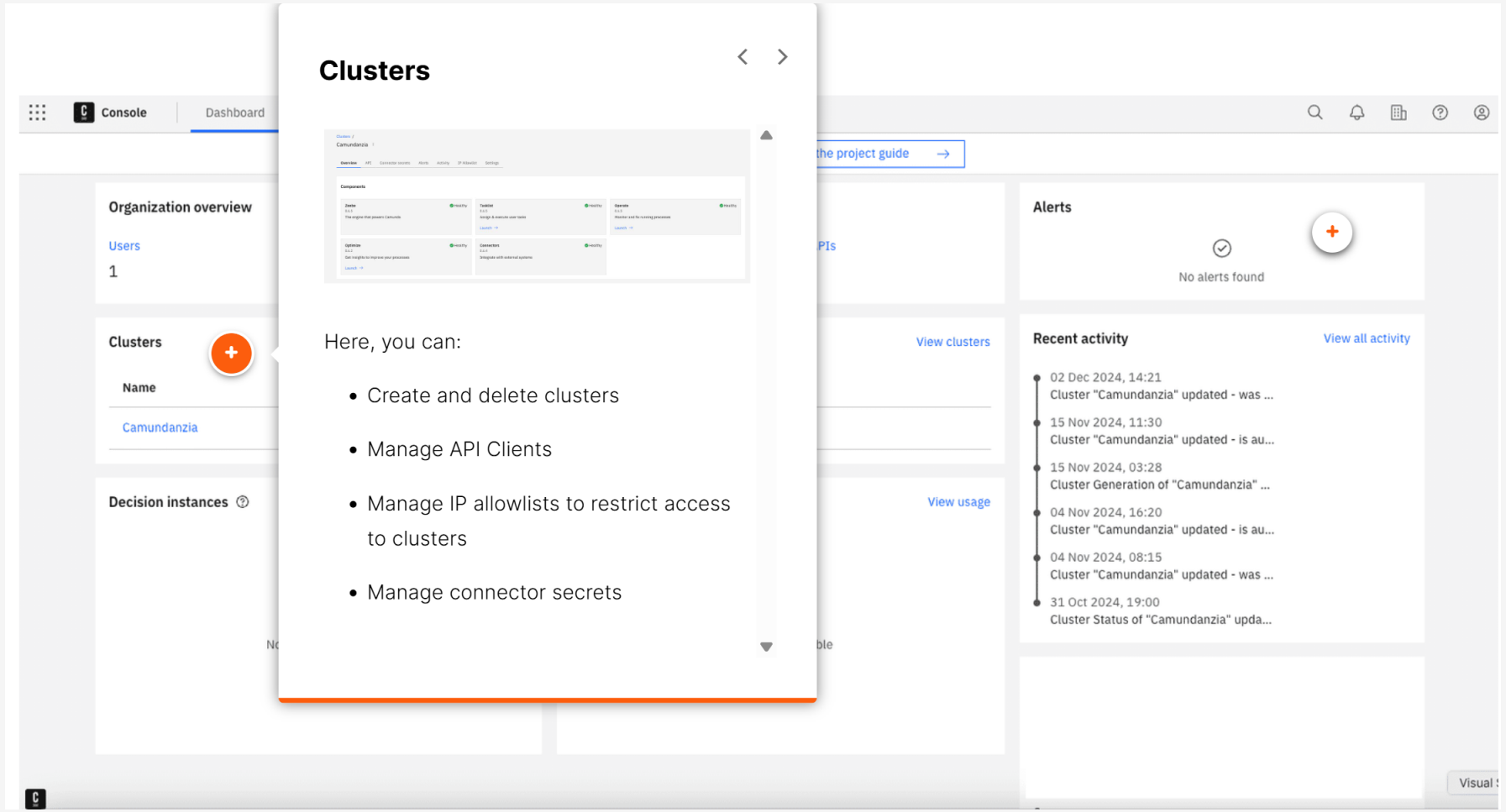
Console

Here's what you can do within the Camunda Console:



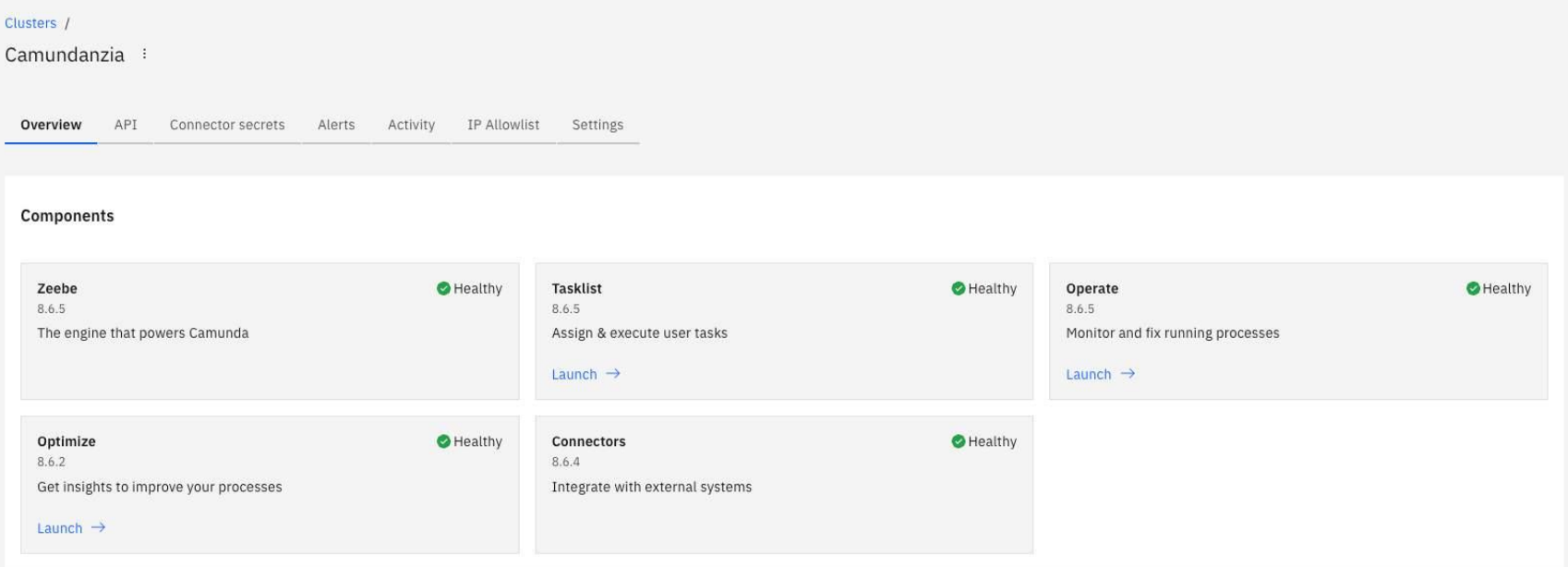
Console

Here's what you can do within the Camunda Console:



Console

Here's what you can do within the Camunda Console:



Here, you can:

- Create and delete clusters
- Manage API Clients
- Manage IP allowlists to restrict access to clusters

Manage connector secrets

Example | Camundanzia Manages IT Operations with Console

Camundanzia IT operations team uses Camunda Console to manage and maintain the Camunda platform, including deployments, version control, and resource allocation.

Lesson Takeaways

The Camunda Console is a management application that integrates various products like Modeler, Tasklist, Operate, and Optimize. It allows users to manage clusters, API clients, user permissions, and alerts effectively.

Here are some key takeaways:

1. **The Camunda Console**. Integrates multiple products for efficient management.
2. **Managing clusters and API clients**. You can create, delete, and restrict access to clusters easily.
3. **Utilizing alerts for workflow errors**. Set up notifications to stay informed about issues.