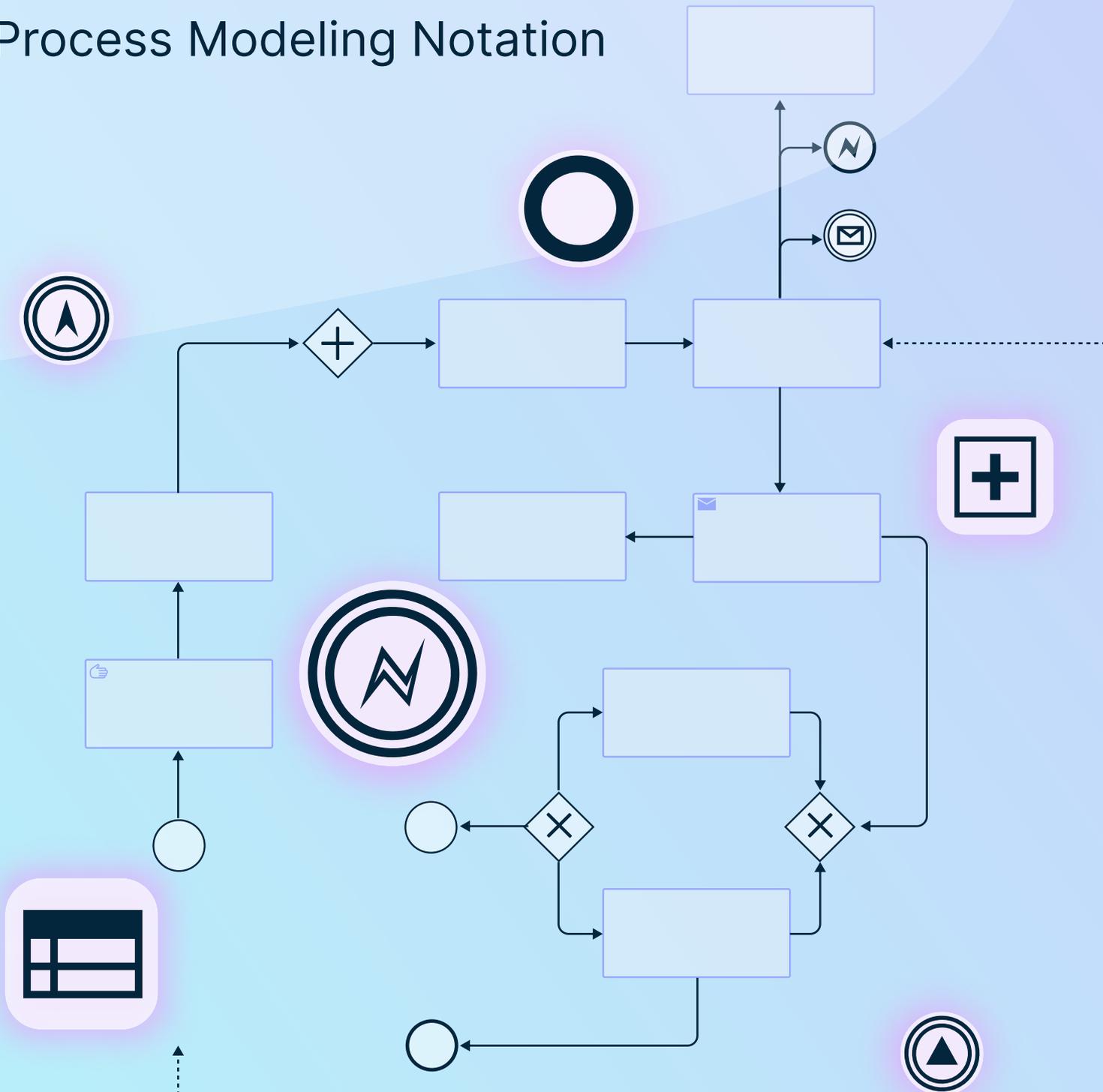


What is BPMN?

The Easy Guide to Business
Process Modeling Notation





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In this guide, we will delve into what is BPMN, including its history, when and how to use it, and the benefits it brings to the table. We'll explore BPMN diagrams, their elements, and symbols, and provide examples to illustrate their practical applications. Additionally, we'll discuss the challenges of creating BPMN diagrams and how tools like Creately can simplify the process.



What is BPMN?

Business Process Model and Notation (BPMN) is a standardized diagramming language that provides a graphical representation of business processes, enabling organizations to document, analyze, and optimize their workflows. Unlike traditional flowcharts, BPMN diagrams are rich with specific symbols and notations that cater to the complexities of modern business activities.

↳ Build on ideas

Standardization →

BPMN is a globally recognized standard, ensuring consistency and clarity across various stakeholders and software tools

Expressiveness →

With a comprehensive set of symbols, BPMN can illustrate complex process dynamics such as parallel tasks, events, and decision gateways.

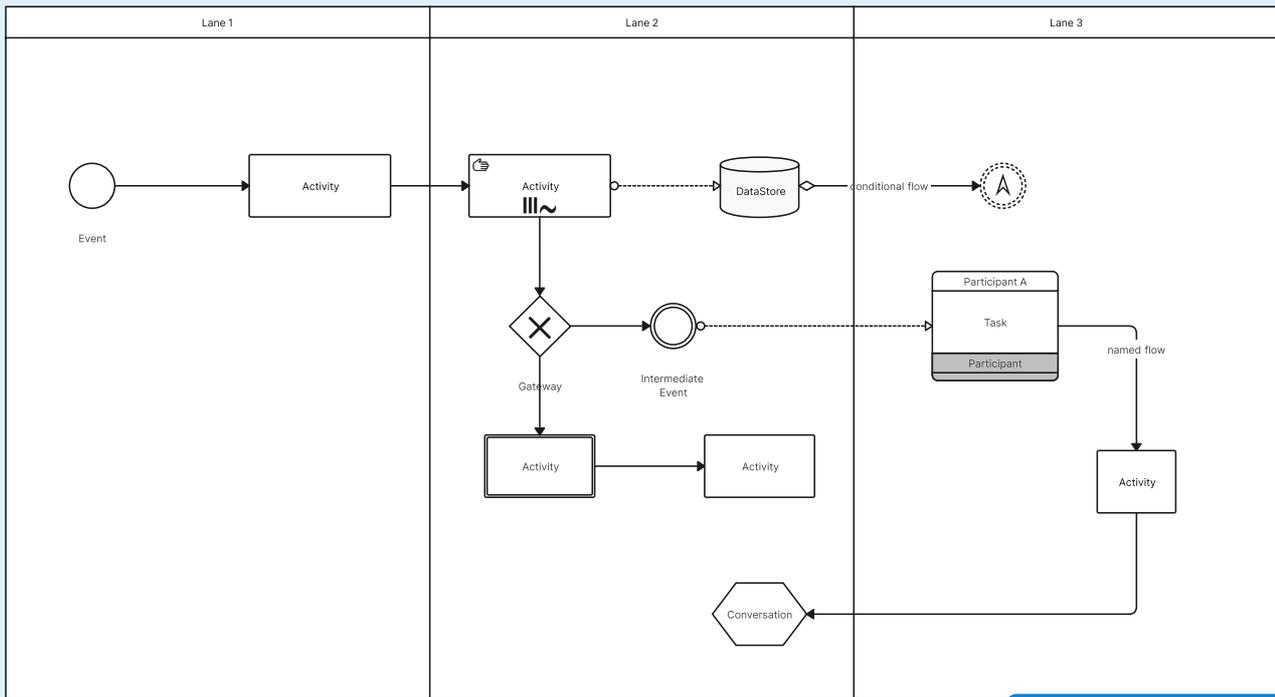
Versatility →

It's suitable for both technical users who design and implement processes and business stakeholders who need to understand them.

While other process modeling languages exist, BPMN's widespread adoption is due to its balance of simplicity and expressiveness. It bridges the gap between the technical implementation of processes and the business strategy that guides them.



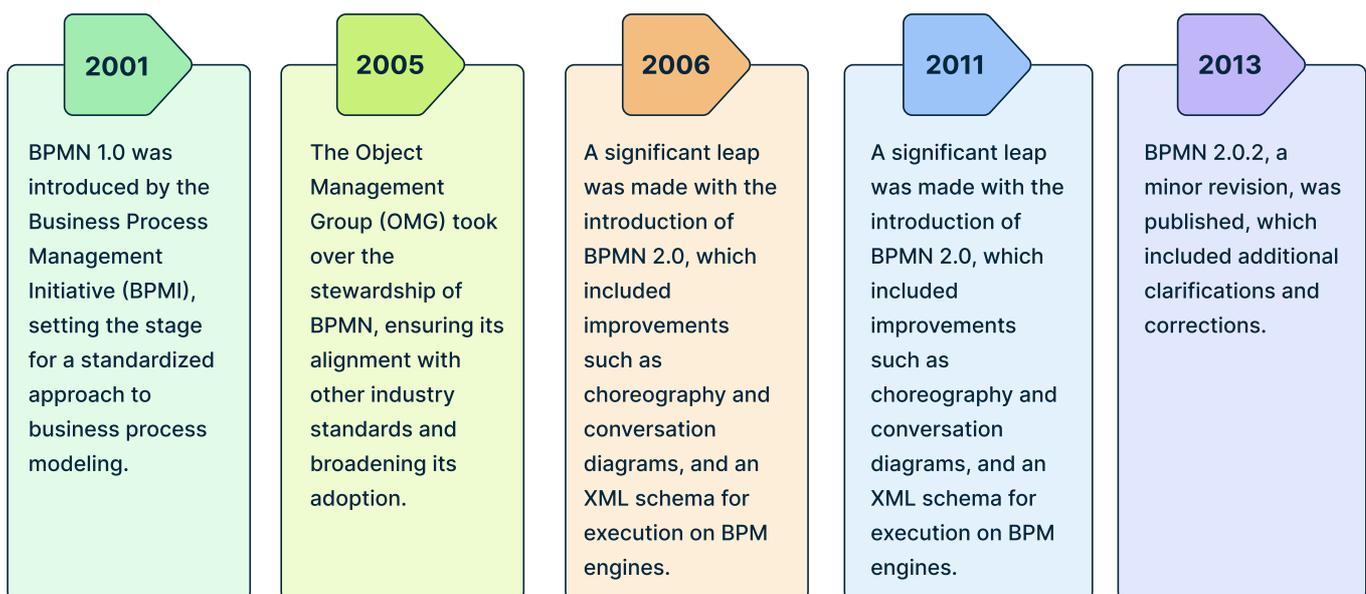
BPMN Swimlane Diagram Template



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History of BPMN

Here are some key milestones that have shaped BPMN into the robust framework it is today. These milestones not only reflect the technical advancements but also the collaborative efforts of key organizations and figures dedicated to the development of BPMN.



When to Use BPMN

BPMN diagrams are particularly beneficial in scenarios where clear communication and detailed process mapping are essential. Here are some appropriate use cases for BPMN diagrams

Complex workflow visualization →

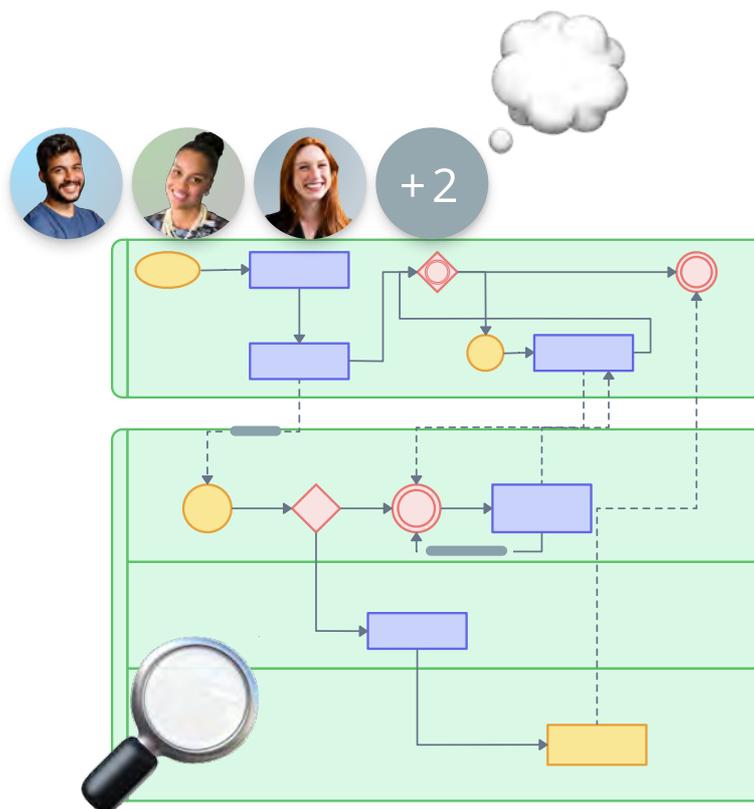
When dealing with intricate workflows that involve multiple stakeholders, BPMN diagrams provide a standardized method to visualize and communicate the processes.

Business process improvement →

BPMN is ideal for identifying bottlenecks and inefficiencies in existing processes, helping teams to optimize and refine their workflows.

System integration planning →

For projects that require the integration of various systems, BPMN diagrams can outline the interactions and data flow between these systems, leading to a smoother integration.



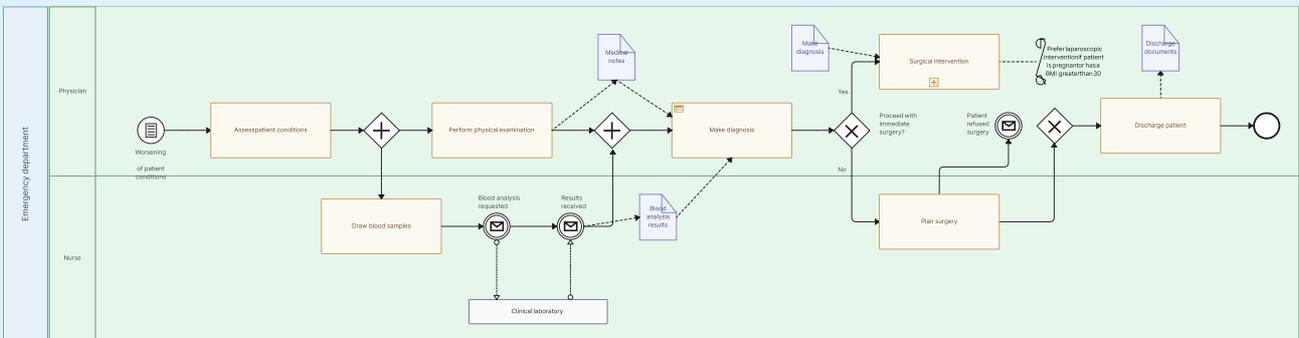


BPMN Examples

BPMN diagrams serve as a universal language, bridging the gap between process design and implementation. Let's delve into some illustrative examples from various industries

Healthcare →

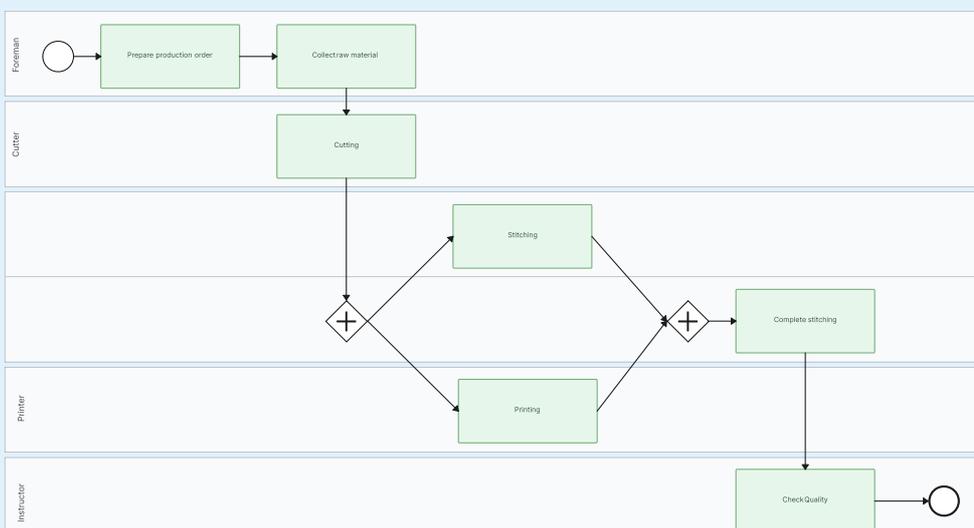
A BPMN diagram can map out patient admission processes, making sure that each step from registration to discharge is clearly defined and optimized for efficiency and patient care.



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Manufacturing →

BPMN diagrams are used to streamline production workflows, identifying bottlenecks and enabling seamless coordination between different departments, from procurement to shipping.

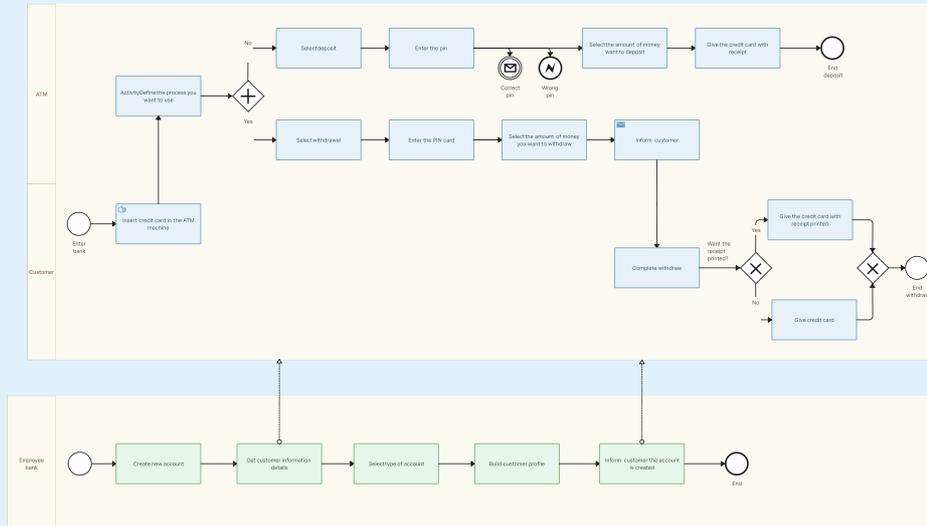


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Banking →

In the banking sector, BPMN diagrams facilitate the visualization of loan approval processes, making it easier to identify areas for improvement and ensure compliance with regulatory standards.



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Features of BPMN

Business Process Model and Notation is renowned for its extensive set of elements and symbols. Each element represents different activities, decisions, and flows within a business process, ensuring that every detail can be captured.

Task and activity symbols →

From simple tasks to complex subprocesses, BPMN includes a variety of symbols to denote work being done.

Gateway symbols →

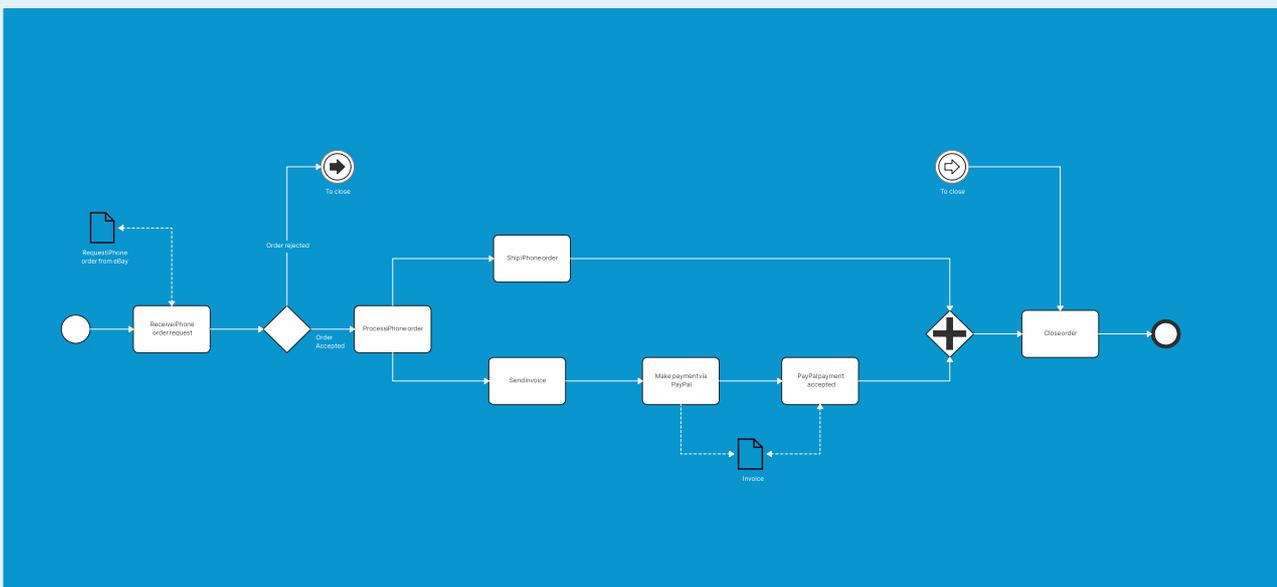
Decision points in a process are clearly depicted with gateway symbols, guiding the flow based on conditions.

Event symbols →

Events that trigger or result from process steps are represented with distinct symbols, indicating start, intermediate, and end states.

Connecting objects →

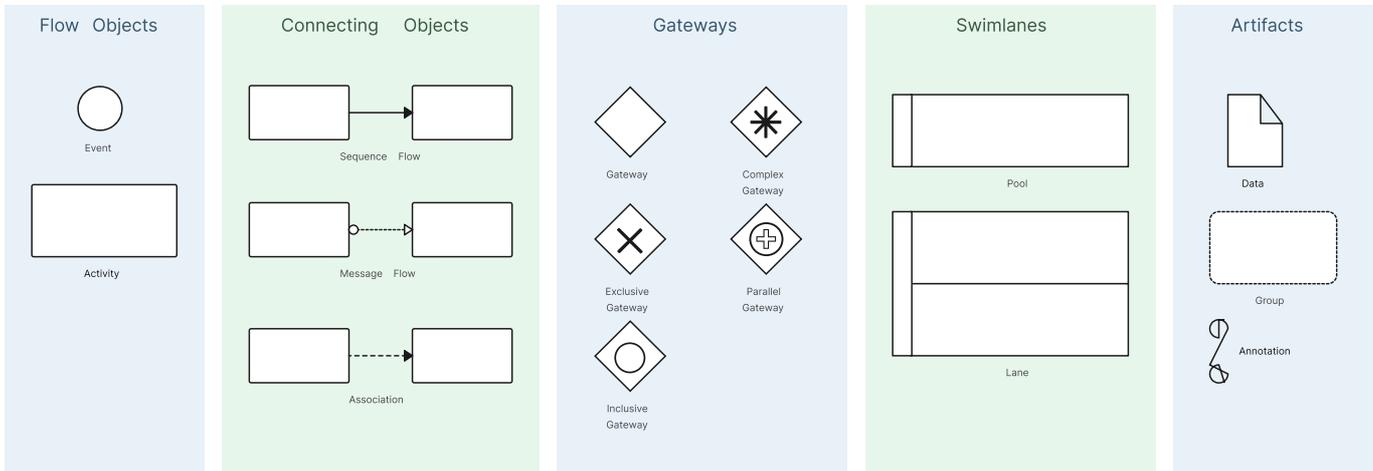
Sequence flows, message flows, and associations are the lifelines that connect elements, illustrating the interaction between different parts of the process.



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BPMN 2.0 Diagram Elements and Symbols

Understanding the core elements of BPMN 2.0 diagrams is crucial for anyone involved in business process modeling. These elements are represented by a variety of symbols, each with a specific meaning and purpose within the BPMN framework.



1 Flow Objects in BPMN

Flow objects are symbols that represent elements in a business process that impact the flow of the process. They collectively help model the sequence of activities, events, and decision points within a business process. They provide a clear representation of how the process flows and the conditions or events that trigger different actions.

	START			INTERMEDIATE				END
	Standard	Event Sub-Process Interrupting	Event Sub-Process Non-Interrupting	Catching	Boundary Interrupting	Boundary Non-Interrupting	Throwing	Standard
None : Untyped events, indicate start point, state changes or final states.								
Message : Receiving and sending messages.								
Timer : Cyclictimer events, points in time, time spans or timeouts.								
Escalation : Escalating to an higher level of responsibility.								
Conditional : Reacting to changed business conditions or integrating business rules.								
Link : Off-page connectors. Two corresponding link events equal a sequence flow.								



Error : Catching or throwing named errors.								
Cancel : Reacting to cancelled transactions or triggering cancellation.								
Compensation : Handling or triggering compensation.								
Signal : Signalling across different processes. A signal thrown can be caught multiple times.								
Multiple : Catching one out of a set of events. Throwing all events defined.								
Parallel Multiple : Catching all out of a set of parallel events.								
Terminate : Triggering the immediate termination of a process.								

Events

Events are key elements that represent occurrences or states within a business process. Events play a crucial role in modeling the flow of activities and defining how the process responds to external stimuli or triggers. There are three main types of BPMN events: Start Events, Intermediate Events, and End Events.

Start Events

Start events mark the beginning of a process. They represent the points at which a process is initiated. There are several types of start events, including:

None start event

The process starts immediately without an external trigger.

Message start event

The process is triggered by the receipt of a message.

Timer start event

The process is initiated based on a predefined time or timer.

Conditional start event

The process starts based on a specified condition.



Signal start event →

The process begins in response to the receipt of a signal.

Multiple start events →

Multiple events can trigger the start of the process, and any one of them can initiate the process.

Intermediate Events ↘

Intermediate events occur between the start and end of a process. They represent points where something happens during the execution of the process.

Message intermediate event →

Represents the receipt or sending of a message during the process.

Timer intermediate event →

Represents an intermediate point in the process based on a timer or specific time.

Conditional intermediate event →

Represents an intermediate point based on a specified condition.

Signal intermediate event →

Represents the occurrence of a signal during the process.

Link intermediate event →

Represents the use of a link to connect different parts of the process.

Error intermediate event →

Represents an error condition during the process.



End Events

End events mark the conclusion or completion of a process. They represent the points at which the process finishes its execution. There are several types of end events, including.

None end event

The process concludes without any specific result.

Message end event

The process concludes by sending a message.

Error end event

The process concludes with an error condition.

Terminate end event

The process is terminated abruptly.

Signal end event

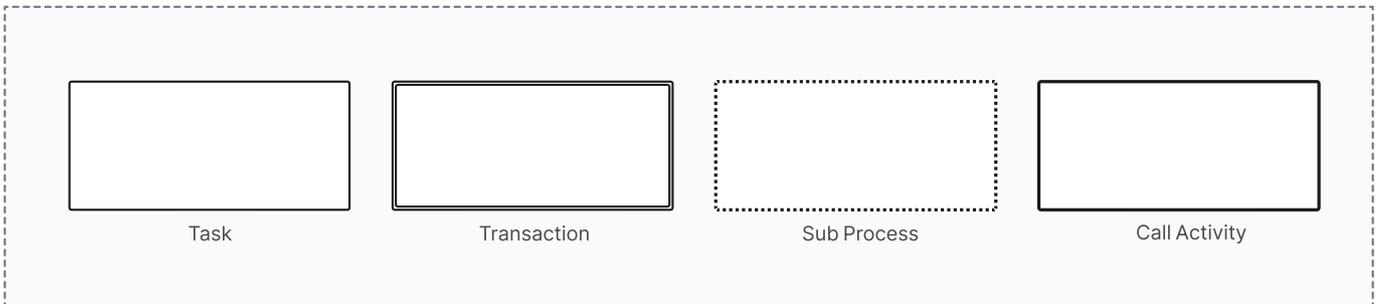
The process concludes in response to a signal.

Multiple end event

Multiple end events can be used to indicate various possible outcomes or results.

2 Activities

Activities are represented by various symbols to depict different types of work or tasks within a business process. The main BPMN activity symbols are:



Task →

Represents a unit of work that needs to be performed as part of the process. Tasks can be atomic (indivisible) or expanded into sub-processes.

Sub-process →

Represents a subprocess within the main process. Subprocesses allow for the decomposition of complex processes into smaller, more manageable components.

Transaction →

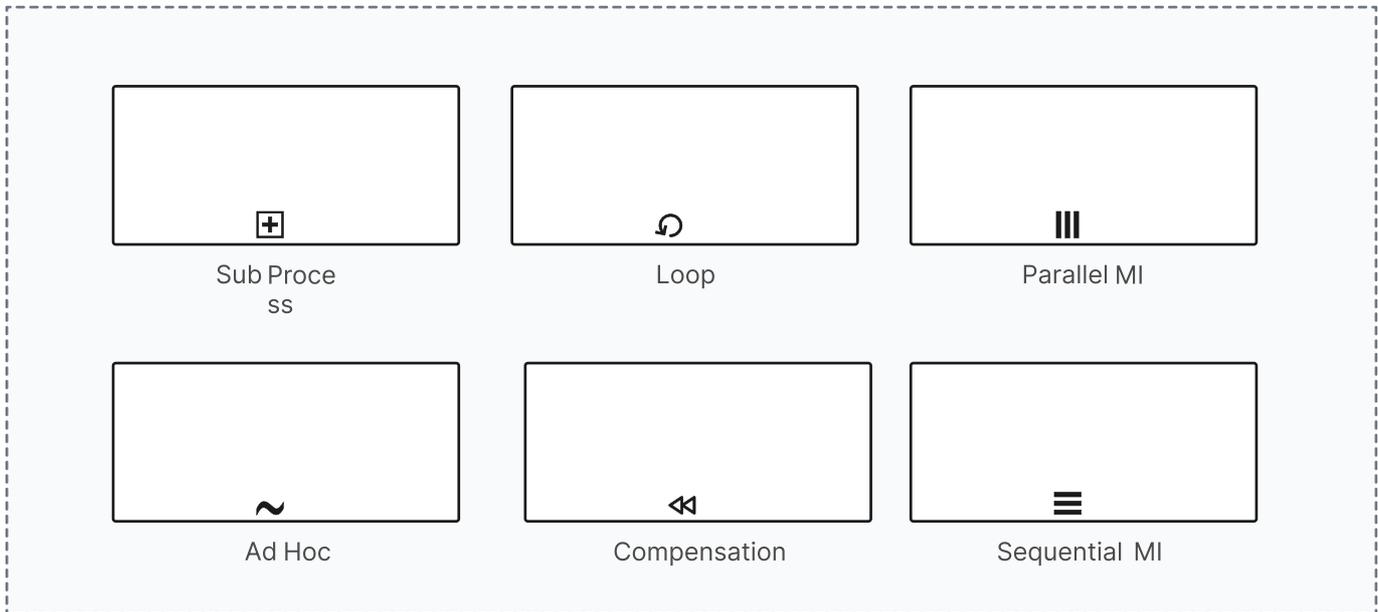
Represents a transactional subprocess, which is a specialized form of a subprocess. It makes sure that all enclosed activities are completed successfully or rolled back in case of an error.

Call activity →

Represents a call to a global process or a reusable subprocess defined outside of the current process. It is used for modularizing processes and reusing them in different contexts.

Activity Markers

Activity markers are symbols or icons added to BPMN activity shapes to convey additional information about the nature or behavior of the activity.



Loop marker

Indicates that the associated activity or subprocess should be repeated in a loop until a certain condition is met.

Parallel marker

Indicates that the tasks within a subprocess can be executed in parallel.

Ad hoc marker

Indicates that the tasks within the subprocess can be performed in any order or repeated as needed.

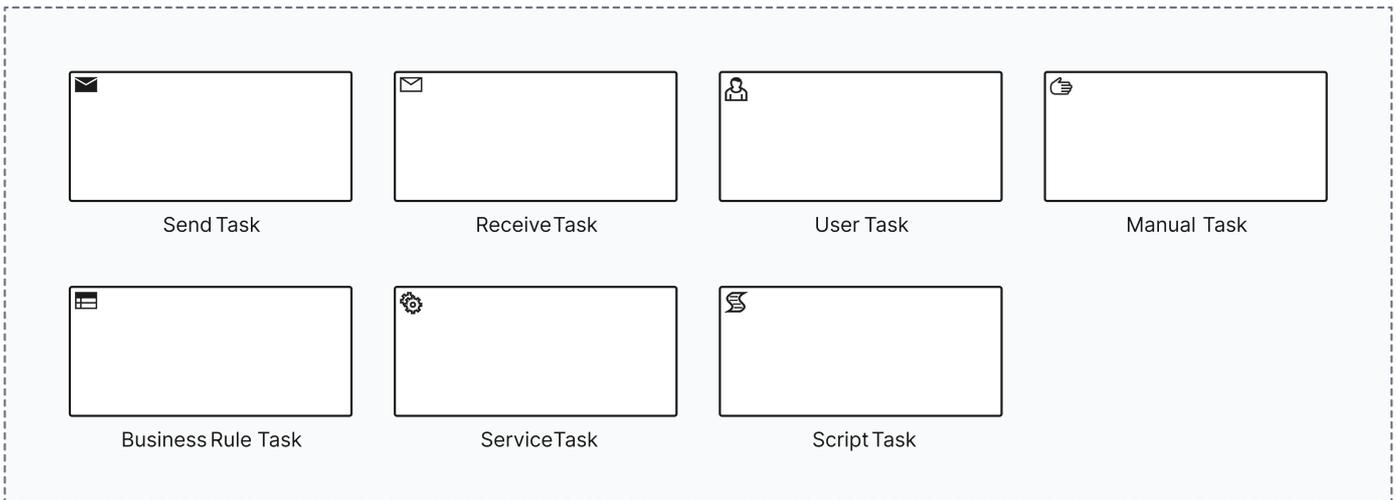
Compensation marker

Indicates that the activity is a compensation activity, and it is associated with handling compensation for a previous activity in case of an error.

Sequential marker

Indicates that the tasks within a subprocess should be executed sequentially.

Task Types



Send task

Represents a task that sends a message or signal to another process or participant.

Receive task

Represents a task that waits for a message or signal to be received before proceeding.

User task

Represents a task that requires human interaction. It is typically performed by a knowledge worker or end-user.

Manual task

Represents a task that is performed manually by a human, but it is less specific than a User Task.

Business rule task

Represents a task that is based on business rules or decision logic. It is often used for decision-making within the process.

Service task

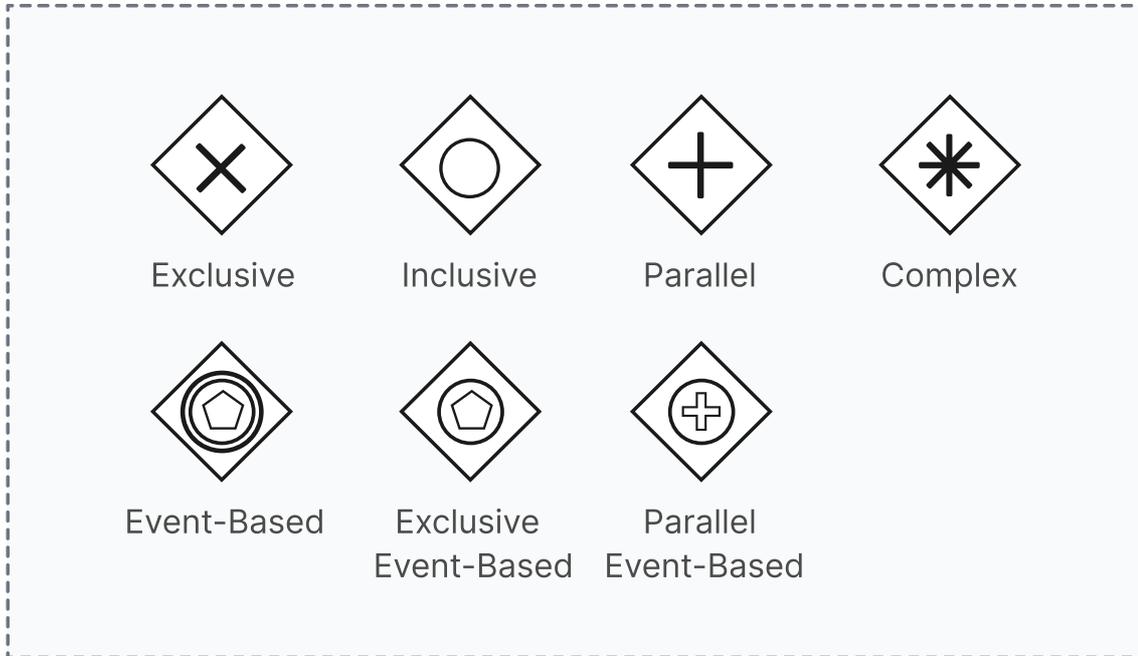
Represents an automated task that is performed by a software service or system. It may involve communication with external systems.

Script task

Represents a task that is performed based on a predefined script or script language. It is typically automated.

3 Gateways

BPMN gateways are symbols used to model decision points and control the flow of a business process. Gateways determine which path the process should take based on certain conditions or events.



Exclusive gateway →

Represents a decision point where only one of the outgoing paths can be taken. The decision is based on evaluating conditions associated with each outgoing sequence flow.

Inclusive gateway →

Represents a decision point where multiple paths can be taken based on evaluating conditions associated with each outgoing sequence flow. All paths with true conditions are taken.

Parallel gateway →

Represents a point where multiple paths can be taken simultaneously without evaluating conditions. It is used for parallel execution of activities.

Complex gateway →

Represents a more complex decision point where conditions and rules may involve a combination of logical operators. It allows for more sophisticated decision-making logic.

Event-based gateway →

Represents a decision point based on events. It is used when the process flow depends on the occurrence of specific events, such as receiving a message or a timer event.

Exclusive event-based gateway →

Similar to the event-based gateway, but enforces exclusive decision-making based on events. Only one path can be taken, depending on the first event to occur.

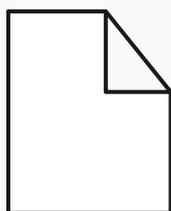
Parallel event-based gateway →

The occurrence of all subsequent events starts a new process instance.

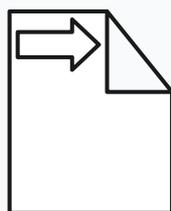
4 Artifacts

Data Symbols ↙

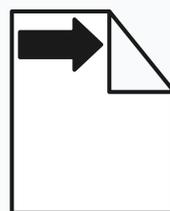
Data symbols represent the flow and handling of data within a business process. They help in visualizing how data is created, used, stored, and transferred throughout the process.



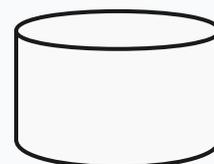
Data



Data
Input



Data
Output



DataStore

Data object →

Represents data or information used or produced within a process. It helps illustrate the flow of data between activities.

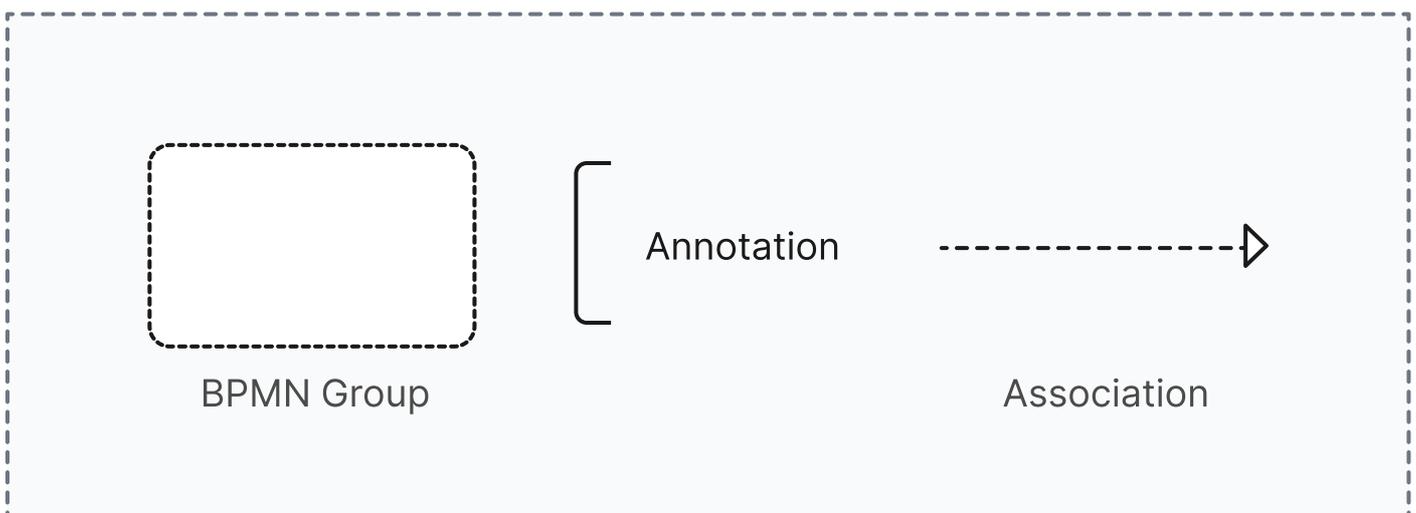
Data input/output →

Represents the input or output of data from an activity. It indicates the flow of data into or out of a task or subprocess.

Data store →

Represents a place where data is stored during the execution of a process. It can be a physical repository or a database.

Group, Annotation, & Association ↘



Group →

Groups related elements in a diagram. It is often used to visually organize and highlight specific sections of the process.

Annotation →

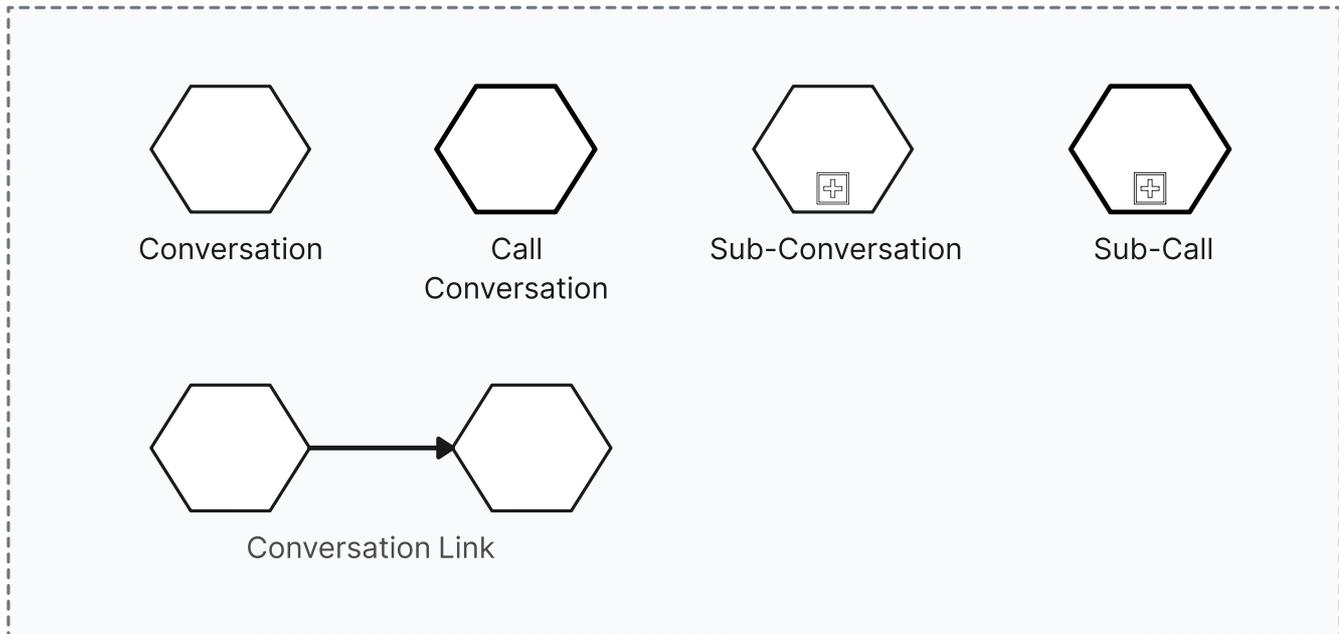
Provides additional information or comments to enhance the understanding of the process. Annotations are often used to add explanatory notes or documentation.

Association →

Connects artifacts, data objects, or text annotations to flow objects, indicating a relationship or dependency. Associations help in clarifying connections between elements.

4 Conversations

Conversations are used to model interactions and communications between participants in a business process. Conversations provide a high-level view of how different participants, typically represented as Pools in BPMN diagrams, exchange messages and collaborate to achieve a common goal.



Conversation →

Represents a conversation or communication between different participants in a business process. It provides an overall context for the interactions.

Sub-conversation →

Represents a more detailed or nested conversation within a larger conversation. It is used to provide a more granular view of interactions within a specific part of the overall process.

Call conversation →

Represents a call or sub-process that is initiated from within a conversation to represent a more detailed interaction or subprocess.

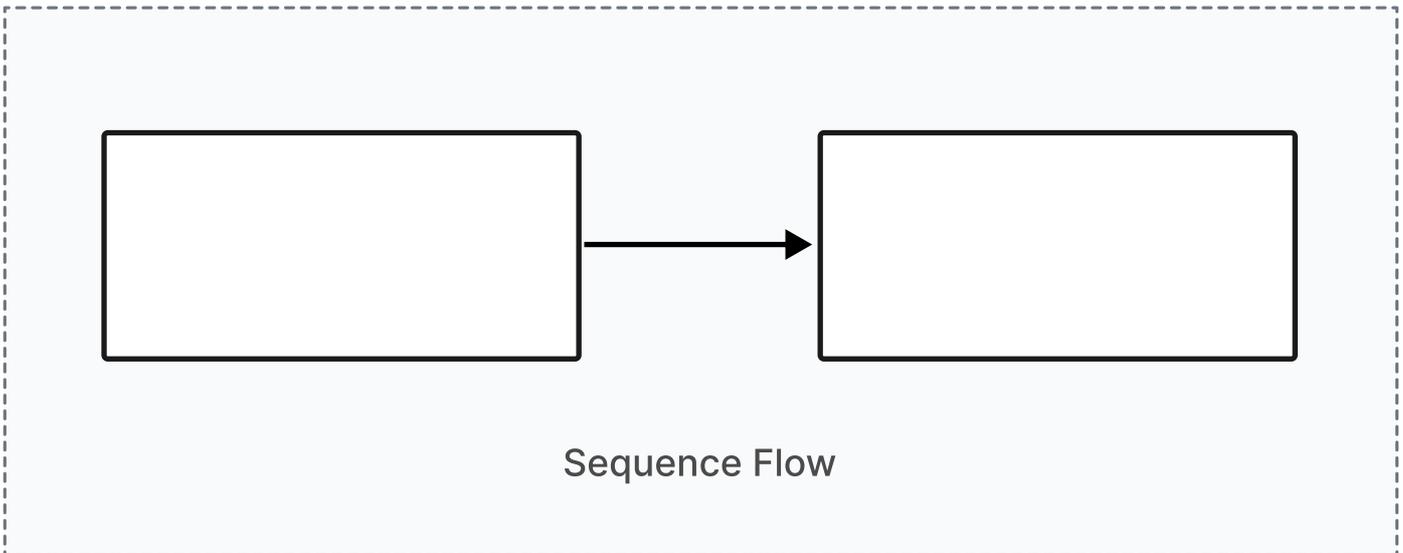
Conversation link →

Represents a connection or link between different parts of a conversation or between different participants. It indicates that there is a relationship or interaction between them.

6 Connecting Objects

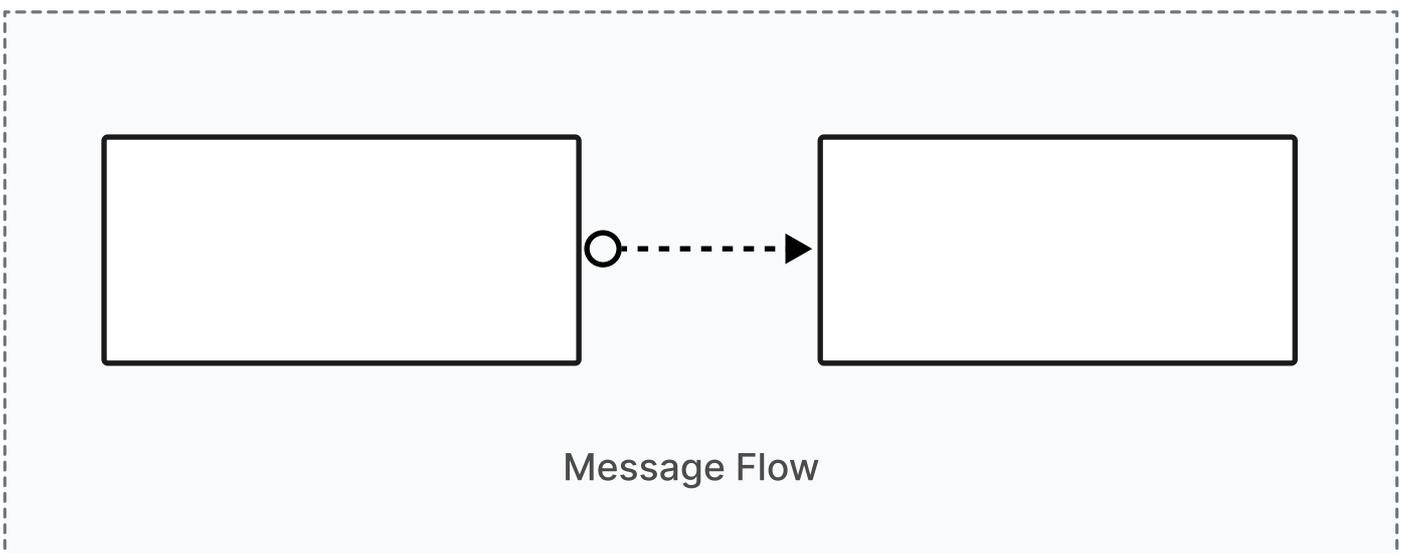
Connecting objects are symbols used to illustrate the relationships and connections between different elements within a business process. These connecting objects help define the sequence, flow, and dependencies among various BPMN elements.

Sequence flow



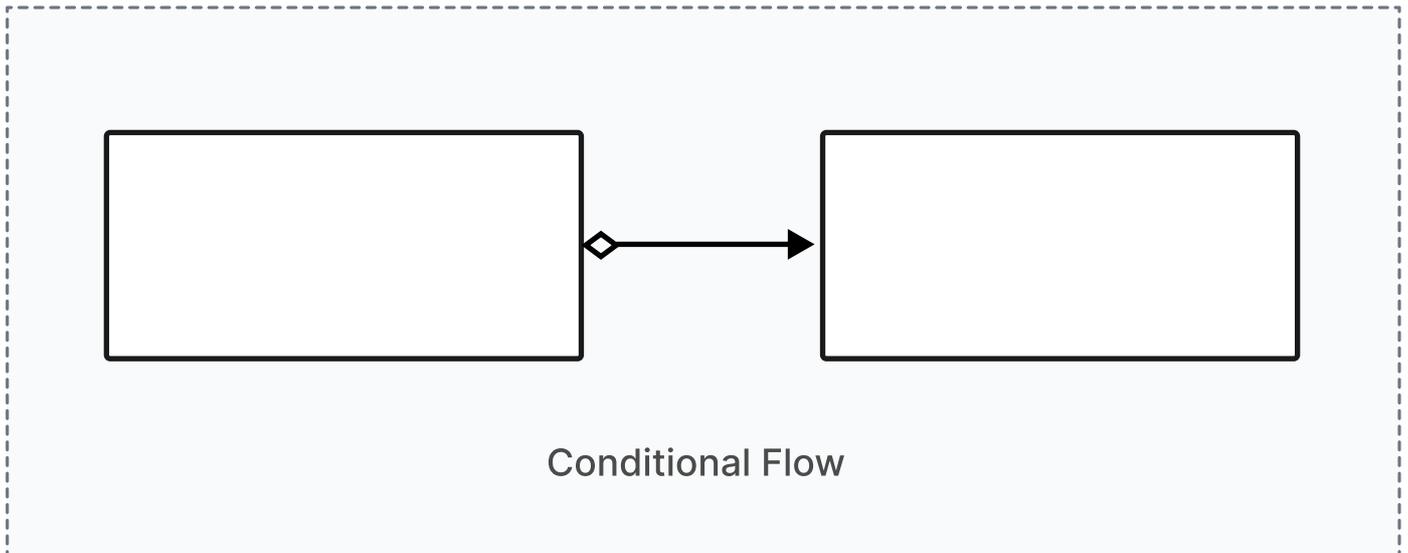
Represents the order in which activities or events are performed within a process. It connects two flow objects, indicating the direction of process flow.

Message flow



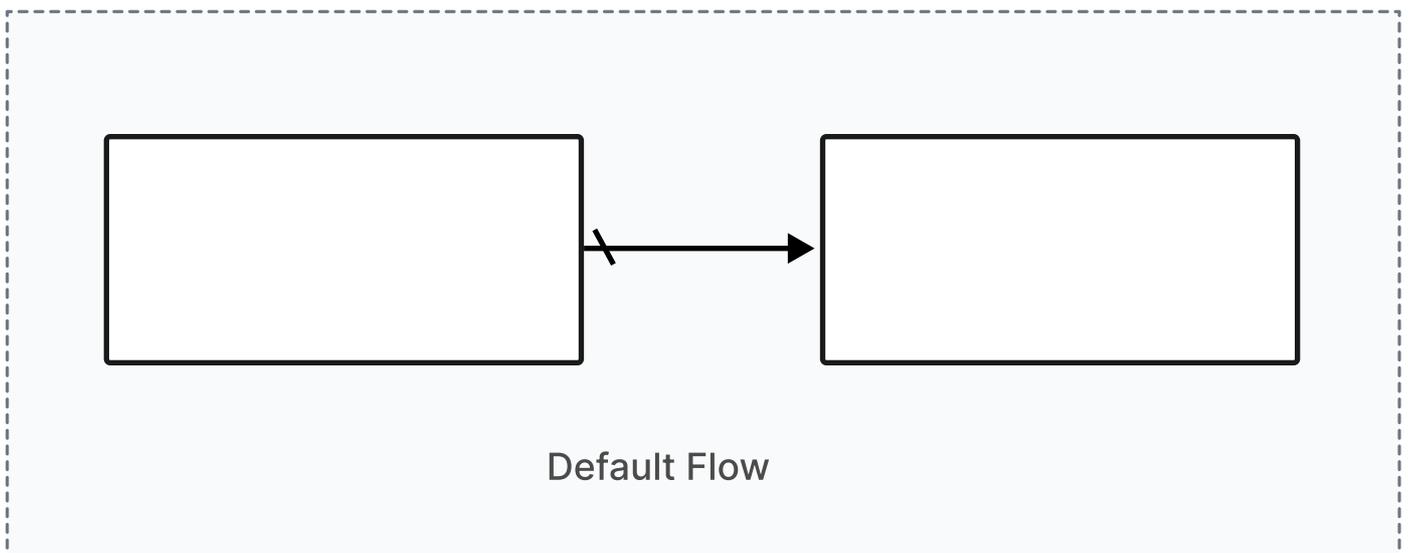
Represents the flow of messages between participants or pools in a process. It illustrates the communication paths between different entities.

Conditional Flow



Represents a flow in the process that is taken based on a specific condition or decision.

Default Flow



Default flow is the default branch to be chosen if all other conditions evaluate to false.

7 Swimlanes

Swimlanes are used to visually organize and categorize activities within a business process. Swimlanes are typically represented as horizontal or vertical partitions that divide the process diagram into sections, each corresponding to a specific participant, role, department, or system involved in the process.

Lane 1	
Lane 2	
Lane 3	

Pools

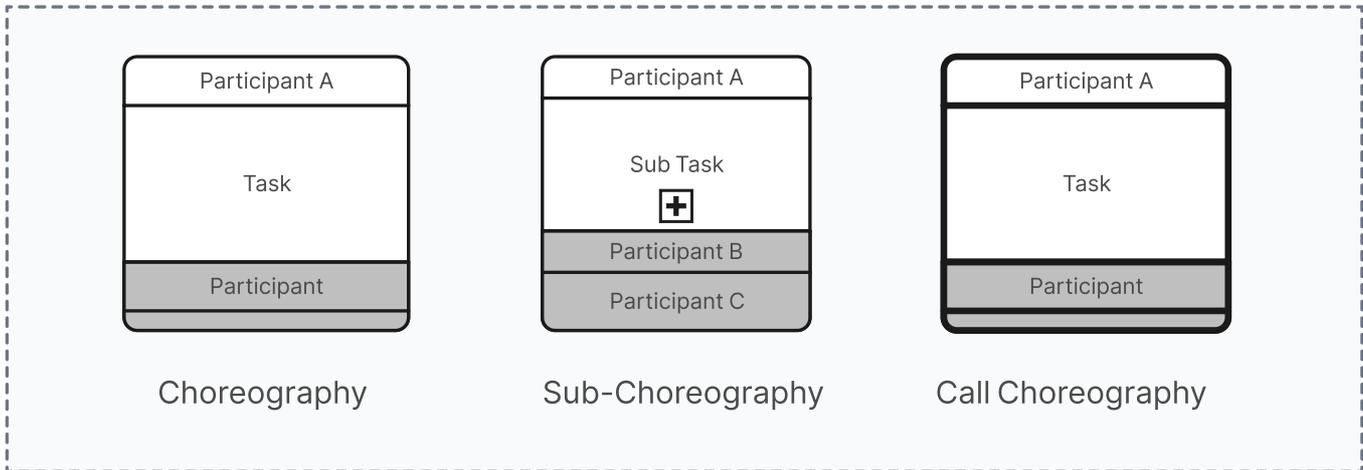
Pools are used to represent separate organizational entities or participants in a process. Each pool can contain its own set of activities and processes, and communication between pools is depicted using message flows.

Lanes

Lanes are subdivisions within a pool and are used to organize and categorize activities further. Each lane typically corresponds to a specific role, department, or system within the organizational entity represented by the pool.

8 Choreographies

Choreographies provide a way to model the interactions and collaborations between multiple participants or entities in a business process. Unlike traditional process diagrams that focus on the internal workings of a single participant, choreographies emphasize the communication and coordination between different entities.



Choreography task →

Represents an Interaction (Message Exchange) between two participants.

Sub-choreography task →

Contains refined choreography with several interactions.

Call choreography →

A wrapper for a globally defined Choreography Task or Sub-Choreography. A call to a Sub-Choreography is marked with a + symbol.



How to Create a BPMN Diagram

Creating a BPMN diagram involves visually representing the steps and components of a business process.

Step 1 Identify the Process

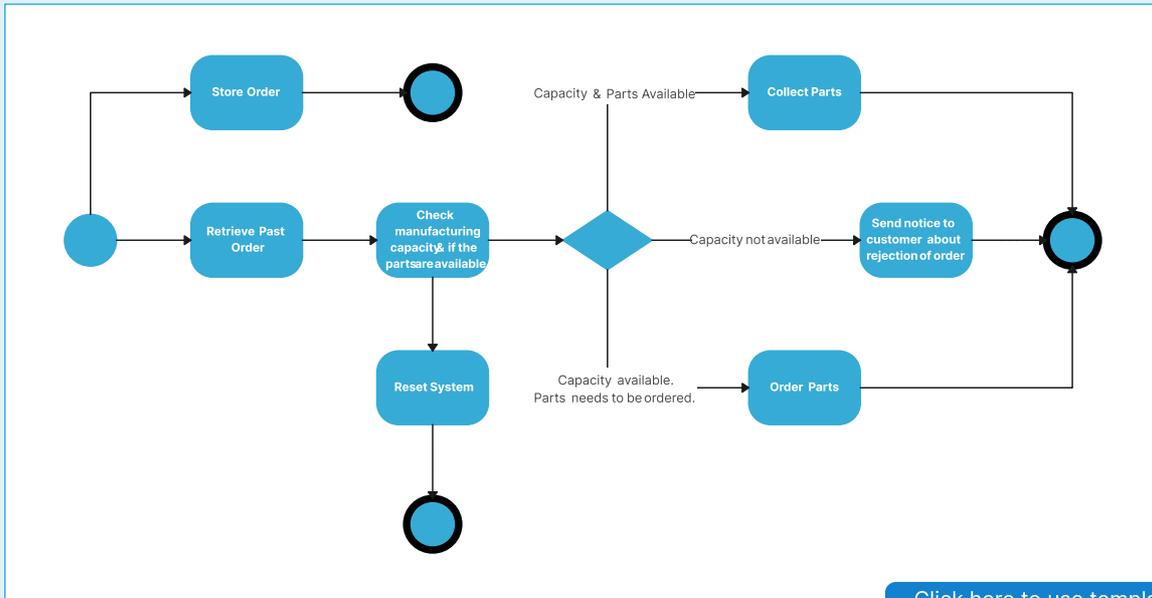
Clearly define the boundaries and scope of the business process you want to model using BPMN.

Step 2 Choose a Tool

Choose a BPMN-compliant modeling tool. For example, you can use Creately's BPMN software to quickly visualize your business processes. It comes with pre-made templates and an extensive shape libraries for BPMN 2.0, flowcharts, & process maps, real-time collaboration and powerful diagramming and AI capabilities.

Step 3 Draw the BPMN diagram

- Begin your BPMN diagram with a start event. This represents the initiation point of the process.
- Use rounded rectangles to represent activities or tasks within the process. Place them in sequence to show the flow of the process.
- Use diamond-shaped gateways to represent decision points in the process. These indicate where the flow can take different paths based on conditions.
- Use arrows to connect activities in the order they occur. Sequence flows represent the flow of the process from one task to the next.
- Use parallel gateways to show parallel paths in the process. Use exclusive gateways for mutually exclusive paths based on conditions.
- Represent the completion points of the process using end events. There can be different types of end events, such as normal end, error end, or cancel end.
- Use data objects to represent data exchanged between activities. Include artifacts such as annotations or groups to provide additional information.
- If your process involves collaboration between different entities, use pools to represent separate participants and lanes to represent their specific responsibilities.



Step 4 Annotate and Document

Add annotations to provide additional information or details about specific elements in the diagram. Document any relevant information that enhances understanding.

Step 5 Validate and Review

Share the BPMN diagram with stakeholders to validate its accuracy and completeness. Address any feedback or questions.

BPMN Subprocesses

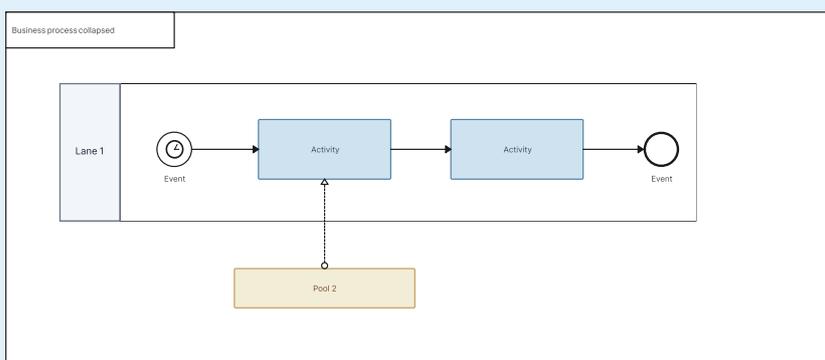
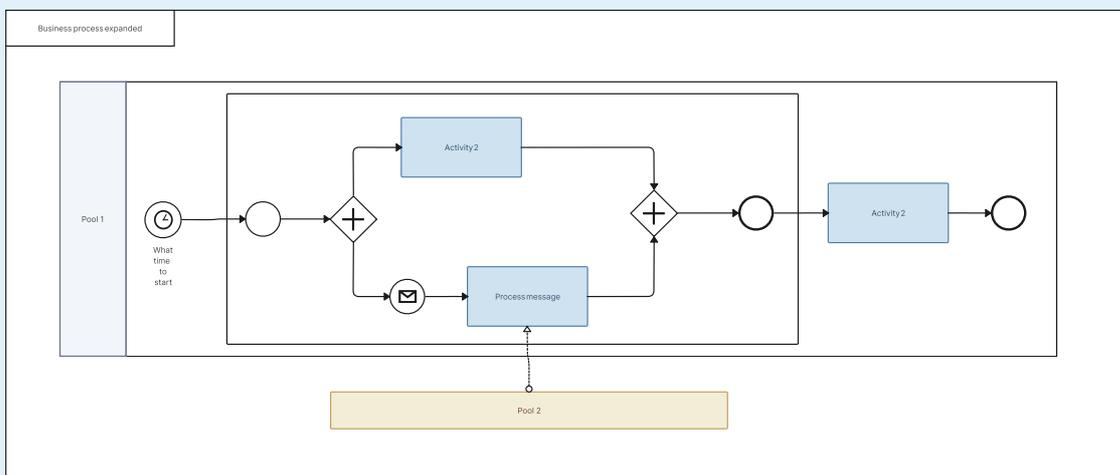
In BPMN, sub-models or subprocesses are used to represent a modular and hierarchical structure within a larger process. Subprocesses make complex processes more manageable and understandable. There are two main types of subprocesses in BPMN:

Collapsed subprocess

A collapsed subprocess represents a subprocess at a higher level of abstraction. It is shown as a single shape, often a rounded rectangle, with a plus sign inside. This indicates that there is more detail hidden within the subprocess. When a BPMN diagram is intended for a higher-level overview, collapsed subprocesses provide a concise representation.

Expanded subprocess

An expanded subprocess provides a detailed view of the subprocess within the main process. When you expand a subprocess, you reveal the internal activities, events, and gateways that make up that subprocess. The expanded subprocess allows for a more in-depth understanding of the contained activities and their relationships.



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📌 Key points about sub-models in BPMN

Key points about sub-models in BPMN →

Subprocesses can be reused in multiple places within a BPMN diagram or even in different BPMN diagrams. This promotes modularity and consistency across processes.

Separation of concerns →

Subprocesses support the separation of concerns by breaking down a complex process into smaller, more manageable parts. Each subprocess can represent a specific aspect or functionality of the overall process.

Encapsulation →

Subprocesses encapsulate a set of activities, events, and gateways, providing a higher-level abstraction. This can improve the readability of the main process and make it easier to focus on specific aspects.

Call activities →

BPMN includes a specific element called a "Call Activity" to represent the invocation of a reusable subprocess. A Call Activity can reference a subprocess defined elsewhere, allowing for modular design and consistent use of subprocesses across processes.

Transaction subprocess →

BPMN also supports a special type of subprocess called a "Transaction Subprocess," which allows for the modeling of transactional behavior, including compensation activities in case of failures.

📌 Quick Tips for Drawing More Effective BPMN Diagrams

Understand your process →

Gain a deep understanding of the business process before starting the diagram. Clearly define the scope, objectives, and key activities.



Follow BPMN standards →

Adhere to BPMN standards to maintain consistency and compatibility with BPMN-compliant tools.

Sequence flow clarity →

Clearly define the sequence flow between activities. Ensure a logical and easily understandable order of execution.

Correctly use gateways →

Understand and correctly use gateways (decision, inclusive, exclusive) to represent branching and merging points in the process.

Use swimlanes wisely →

Pools and lanes help visualize collaboration, so use them when appropriate for your process.

Annotate and document →

Add annotations to explain complex parts of the process. Use comments or documentation to provide additional details.

Simplify complex processes →

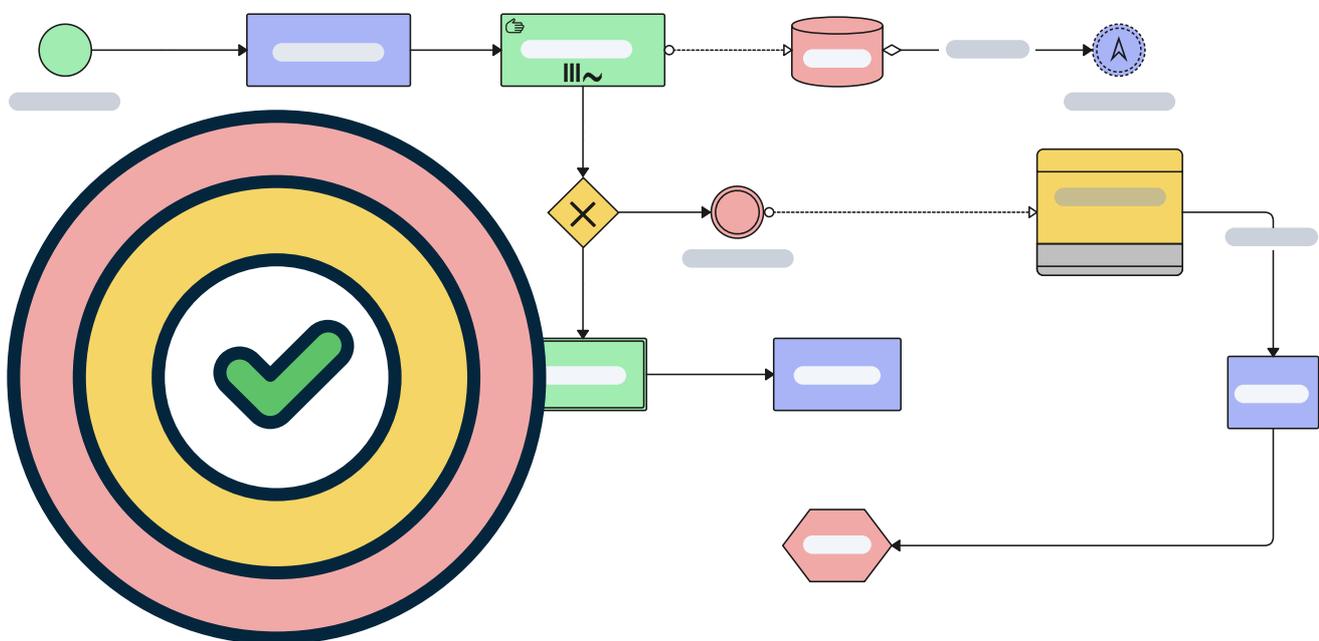
Break down complex processes into subprocesses or use expansion markers to simplify the view.

Consider process improvement →

Use the BPMN diagram as a basis for process improvement discussions within your organization.

The Goal of BPMN

The goal of BPMN is to establish a standardized visual language to represent business processes, fostering collaboration and clear communication. BPMN provides a universally accepted notation, facilitating the modeling and documentation of complex processes, as well as analysis, optimization, and automation. From design to execution and continuous improvement, it supports business processes throughout their lifecycle, bridging the gap between business and technical professionals. Ultimately, BPMN serves as a powerful tool to improve understanding, streamline communication, and drive efficiency in business process management.





Why Use BPMN

Organizations use BPMN to improve communication, collaboration, and understanding of their business processes. Here's why they are important;

1 Standardized notation

BPMN provides a standardized notation that is widely accepted in the business process management domain. This common language ensures consistency and clarity in communicating business processes.

2 Clear visualization

It allows for the clear and intuitive visualization of complex business processes, making it easier for stakeholders to understand, analyze, and improve workflows.

3 Communication

BPMN serves as a communication tool between business and technical stakeholders. It bridges the gap between business analysts and IT professionals by providing a shared visual language.

4 Process improvement

Organizations use BPMN to model existing business processes and identify areas for improvement. It supports the analysis and optimization of workflows to boost efficiency and effectiveness.

5 Process automation

BPMN is often used in conjunction with business process automation tools. The standardized notation allows for a smoother transition from process design to automated execution.

6 Training and onboarding

BPMN diagrams serve as valuable training materials for new employees, providing a visual guide to understand how various processes within an organization work.

7 Risk management

BPMN allows organizations to identify potential bottlenecks, risks, and inefficiencies in their processes, enabling proactive risk management strategies.



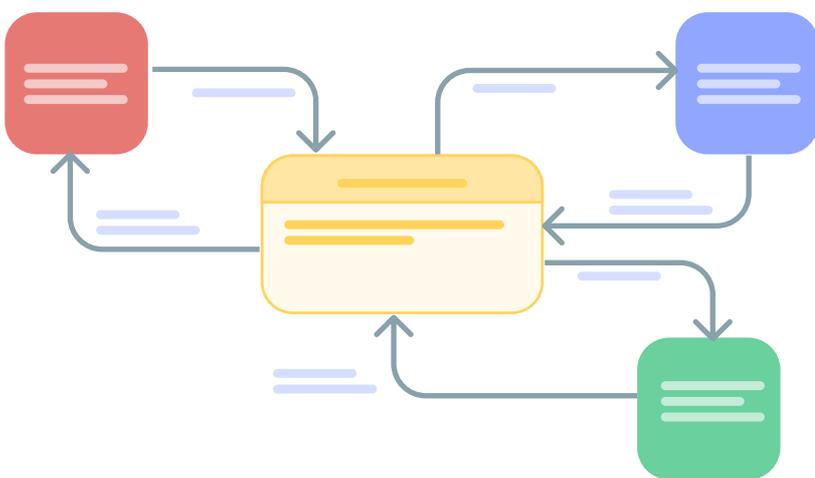
Challenges of Creating a BPMN Diagram

It can be hard to create a BPMN diagram, even for the most technically savvy product managers. Intricacies of BPMN notation combined with complicated business processes can lead to these problems:

	Challenge	Solution
Complexity and detail	Visualizing elaborate business processes can lead to complex BPMN diagrams.	Simplify, use subprocesses, and focus on high-level views
Stakeholder collaboration	Making sure collaboration among diverse stakeholders with varying expertise.	Facilitate workshops, seek input, and use BPMN as a visual bridge.
Selecting the right level of detail	Balancing detail for understanding without overwhelming viewers.	Tailor detail to the audience and purpose, emphasizing key elements.
Tool selection and training	Choosing the right BPMN tool and maintaining team proficiency.	Select user-friendly tools aligned with needs, and provide training for proficiency.

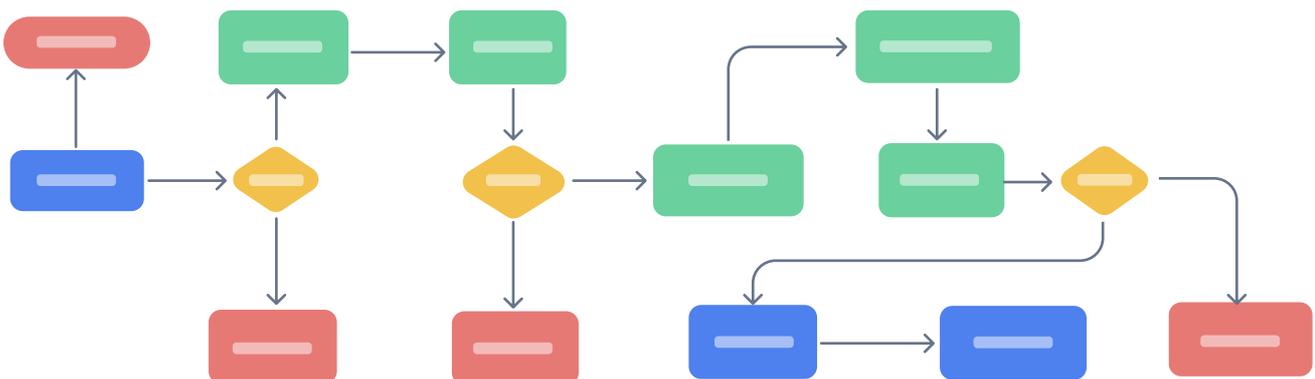
BPMN vs. UML

BPMN (Business Process Model and Notation) is designed for modeling business processes, focusing on visualizing and improving workflows. In contrast, UML (Unified Modeling Language) is a broader modeling language used in software engineering for designing and documenting software systems. BPMN is tailored for business stakeholders, while UML is primarily used by software developers and technical stakeholders. While both use standardized notations, BPMN emphasizes business processes' temporal aspects, and UML covers a wider range of software design aspects. Organizations may use one or both depending on their project needs.



BPMN Vs. Flowchart

BPMN (Business Process Model and Notation) is specialized for modeling business processes with standardized symbols, focusing on clarity and communication for business stakeholders. Flowcharts, more versatile in application, don't have strict standardization and can represent various processes beyond business, providing flexibility in detail and symbols. The choice depends on the specific purpose and audience of the diagram.



How Creately Can Help You to Create a BPMN Diagram

Creating a BPMN diagram can be a complex task, but with Creately, the process becomes significantly more manageable. Here's how you can use Creately to draw a comprehensive BPMN diagram;

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Capture process requirements effectively

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Collaborate and share easily across teams

Easily control access to public & private process details for external stakeholders with advanced workspace sharing options and collaborate with cross-functional teams & clients on a shared canvas. Connect with your existing tools and workflows with powerful integrations for Confluence, Microsoft Teams, Google Workspace, etc.

Conclusion

As we wrap up our exploration of BPMN, it's clear that this standardized language has a significant impact on business efficiency. By providing a clear and consistent way to document processes, BPMN helps organizations to analyze and improve their operations effectively.

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