

Modelagem de Processos

BPMN 2.0

Introdução

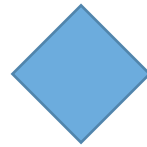
- O que é?
 - **Business Process Management Notation**
 - Moderna notação para modelar processos
 - Versão 2.0 (existe desde 2000)
- Por que?
 - Facilita a comunicação entre áreas de negócio (Usuários, Analistas e Técnicos)
 - Suportado por várias ferramentas
 - Possui diversos elementos adequados para automatizar dos processos

Simples!

- Atividade



- Gateway



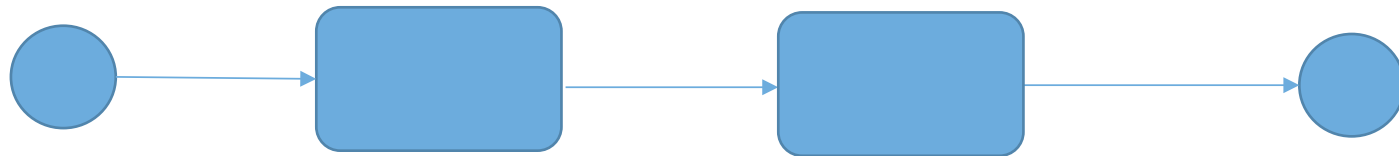
- Evento



- Conexão



Processo Simples



Complexo!

BPMN 2.0 - Business Process Model and Notation <http://bpmb.de/poster>

Activities

- Task**: A Task is a set of work, like jobs for people to do. When needed, it is a type of a call activity or Sub-Process, an activity that can be nested.
- Sub-process**: A Sub-process is a set of activities that logically belong together, it might follow a specified standard for people to do.
- Event Sub-Process**: An Event Sub-Process is placed into a Process or Task. It is used to model other tasks that are not part of the regular process, but are triggered by an event. It is used to model a process that can be used or reused in parallel to other tasks in a regular process.
- Call Activity**: A Call Activity is a message for a globally defined Sub-Process or Task that is used in a process or process.

Activity Markers
Markers that describe the nature of an activity.

- Sub-Process Marker
- Loop Marker
- Parallel Split Marker
- Sequence Split Marker
- Event Sub-Process Marker

Task Types
Types specify the nature of the activity (to be performed).

- Send Task
- Receive Task
- User Task
- Manual Task
- Business Rule Task
- Service Task
- Script Task

Response Plan: describes the reaction in order of activities.

Default Plan: is the default to be used in the absence of all other valid plans.

Conditional Plan: how a call activity is executed if the event is not in the default plan.

Conversations

- Conversation**: A Conversation describes a set of logical or logical-physical interactions. When a participant is involved in a conversation, it is also a participant in a conversation.
- Conversation Link**: Conversation links connect participants in a conversation.
- Participant**: A Participant is a role in a conversation. Conversation links connect participants.

Conversation Diagram

Choreographies

- Participant**: A Choreography by Task represents a set of activities (for example, a task) for a participant.
- Message**: Messages are used to coordinate participants in a choreography.
- Choreography Diagram**: A Choreography Diagram represents a set of activities for a participant in a choreography.

Events

	Start	Intermediate	End
Start	Start		
Intermediate		Intermediate	
End			End

Start Event: An event that starts a process or a sub-process.

Intermediate Event: An event that occurs during the execution of a process or a sub-process.

End Event: An event that marks the end of a process or a sub-process.

Collaboration Diagram

Pool: A Pool is a set of participants that are involved in a collaboration.

Participant: A Participant is a role in a collaboration.

Message Flow: Messages are used to coordinate participants in a collaboration.

Gateways

- Exclusive Gateway**: When splitting, it routes the outgoing flows to exactly one of the outgoing flows. When merging, it waits until all incoming flows are received before the outgoing flow is triggered.
- Event-based Gateway**: In all outgoing flows, the outgoing event is triggered by the outgoing flow.
- Parallel Gateway**: When splitting, it splits the outgoing flows, and all outgoing flows are received before the outgoing flow is triggered.
- Inclusive Gateway**: When splitting, it splits the outgoing flows, and all outgoing flows are received before the outgoing flow is triggered.
- Exclusive Inclusive Gateway**: When splitting, it splits the outgoing flows, and all outgoing flows are received before the outgoing flow is triggered.
- Complex Gateway**: Can split outgoing flows and merge incoming flows. It is used to model a process that can be used or reused in parallel to other tasks in a regular process.
- Parallel Inclusive Gateway**: The outgoing flows are received before the outgoing flow is triggered.

Swimlanes

- Pool**: A Pool is a set of participants that are involved in a collaboration.
- Participant**: A Participant is a role in a collaboration.
- Message Flow**: Messages are used to coordinate participants in a collaboration.

Data

- Data Input**: A Data Input is an external input for the entire process. It can be read by an activity.
- Data Output**: A Data Output is a variable used by a process or a sub-process.
- Data Object**: A Data Object represents a data object that is used by a process or a sub-process.
- Data Store**: A Data Store is a data store that is used by a process or a sub-process.
- Message**: A Message is used to coordinate participants in a collaboration.

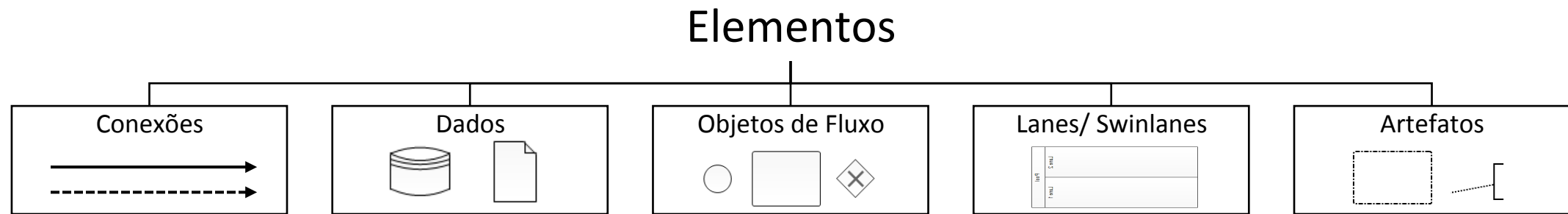
Problemas

- Mais de 100 elementos
- Difícil de ser entendido quando o modelo apresenta muitos detalhes
- Não é suportado totalmente pela maioria das ferramentas
- Exige um mini treinamento para ser compreendido

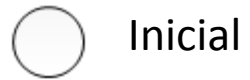
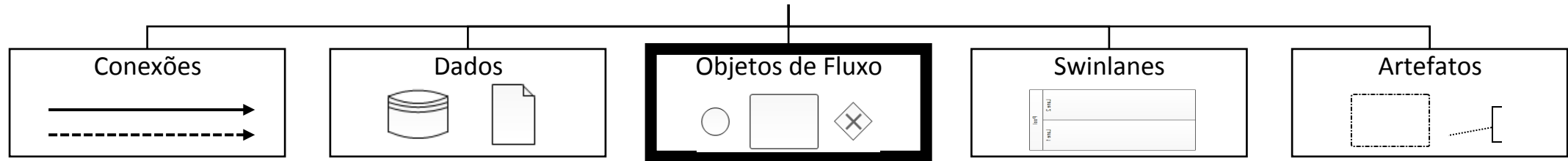
Prós x contras

Prós	Contras
<ol style="list-style-type: none">1. Permite descrever todos os passos dos processos no menor nível de granularidade2. Suporta orquestração de serviços e a execução de tarefas humanas do workflow3. Permite descrever como a organização responderá às suas exceções e regras de negócio4. Está diretamente ligada a service-oriented-Arquitecture (SOA)5. Possibilita gerar código para linguagem BPEL	<ol style="list-style-type: none">1. Não cobre mapas mais estratégicos e mapas de processos mais alto nível2. Muitas políticas de processo precisam de descrição mais textual

Categorias de elementos BPMN



Elementos



Inicial



Intermediário



Final



Tarefa



Subprocesso

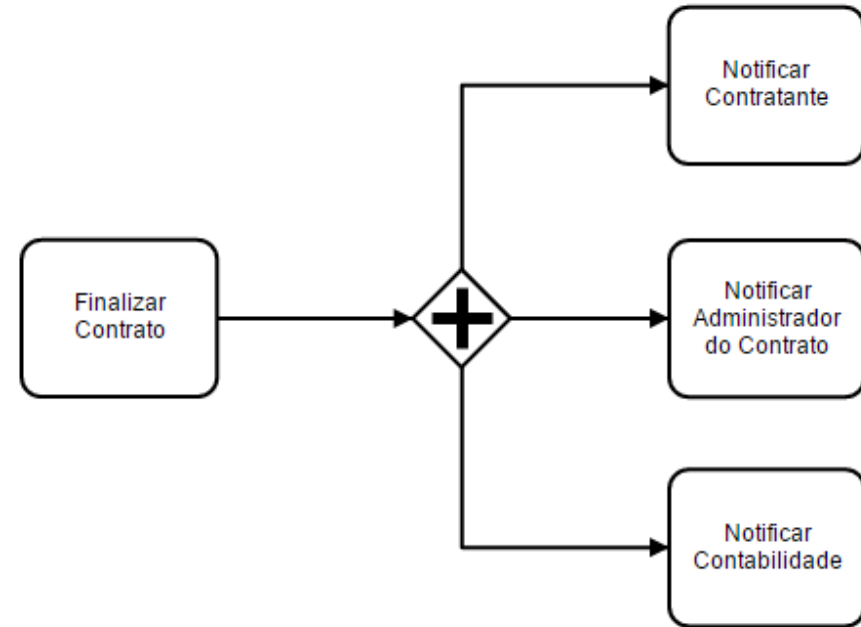
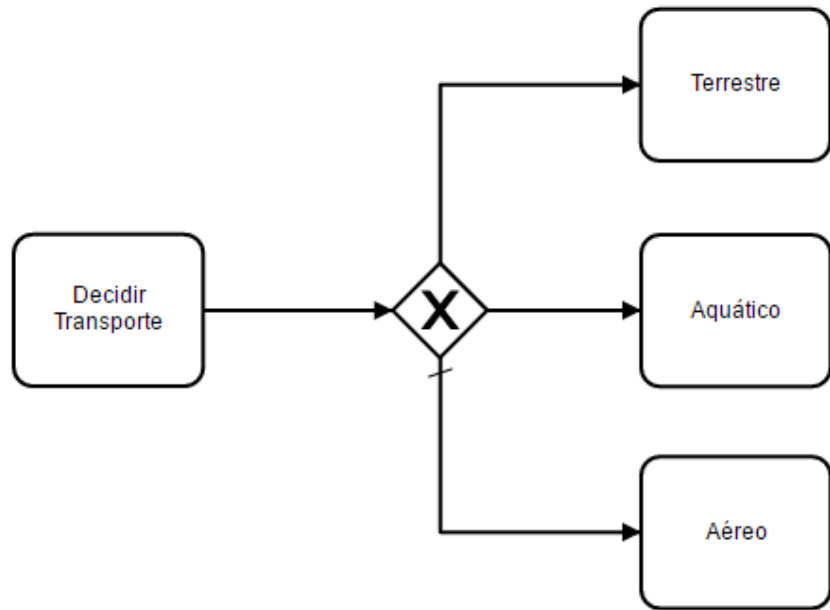
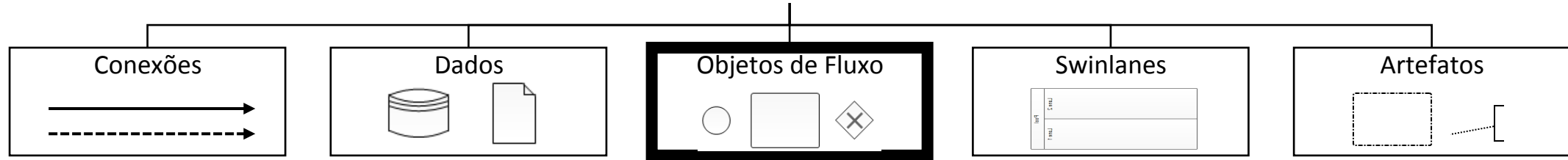


Exclusivo

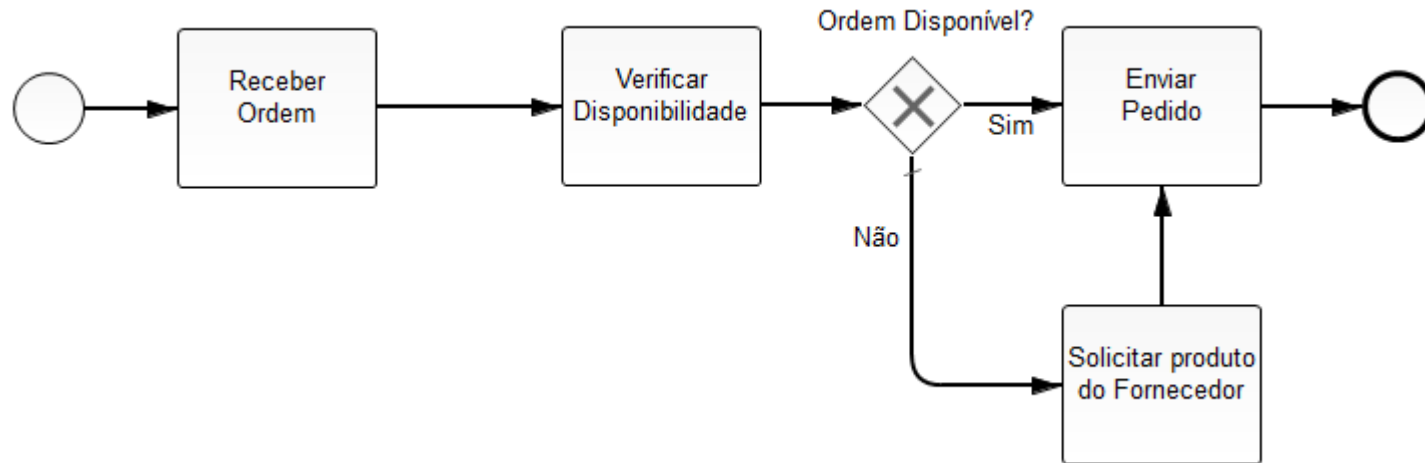
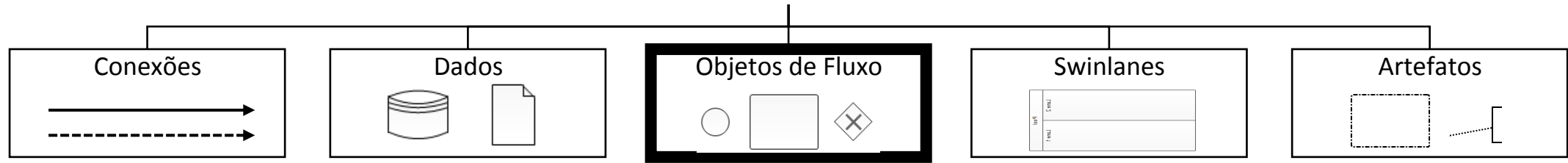


Paralelo

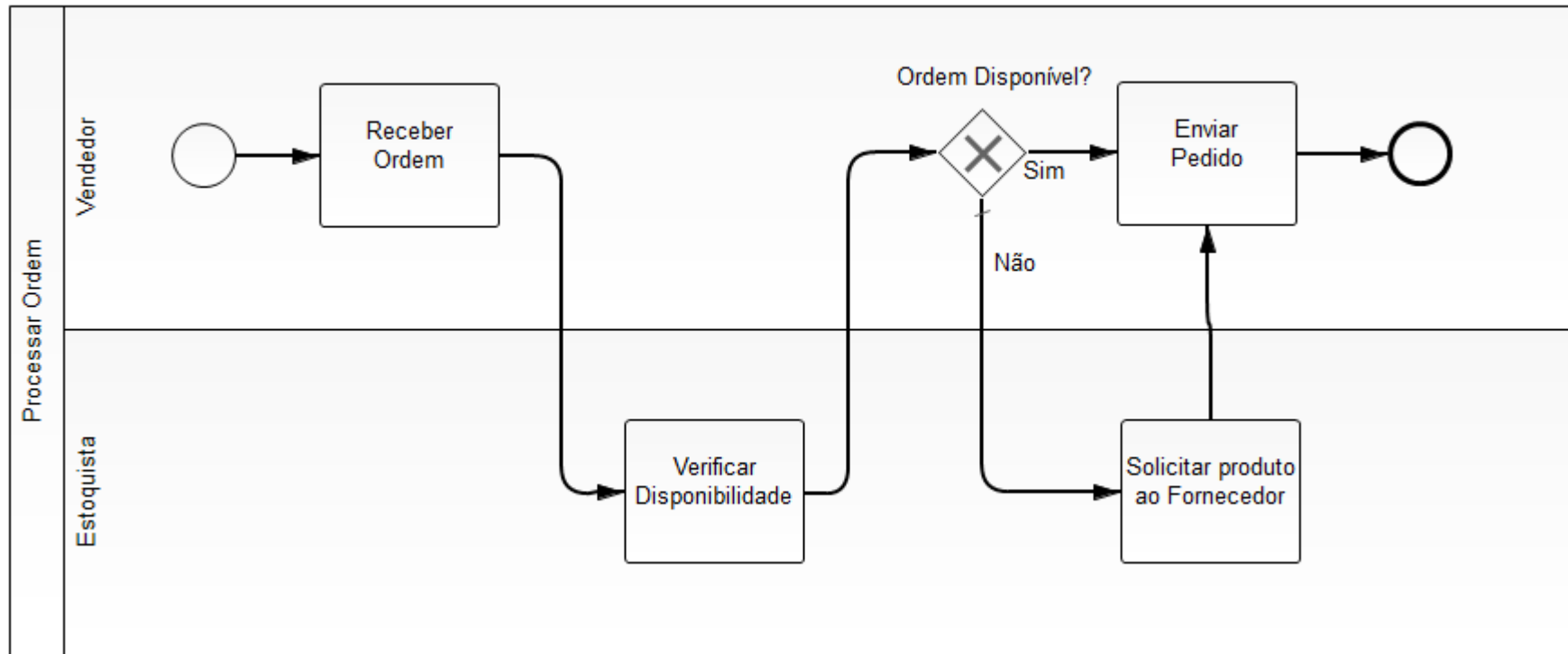
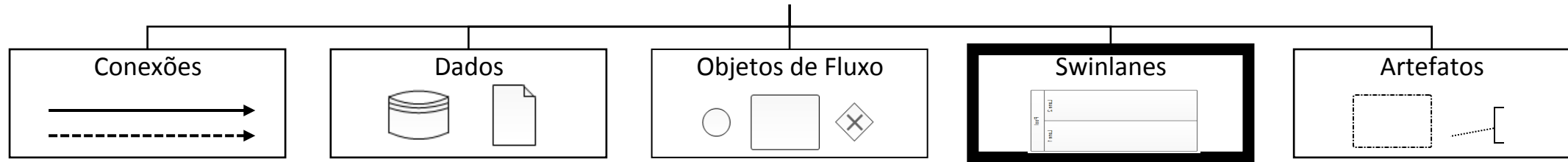
Elementos



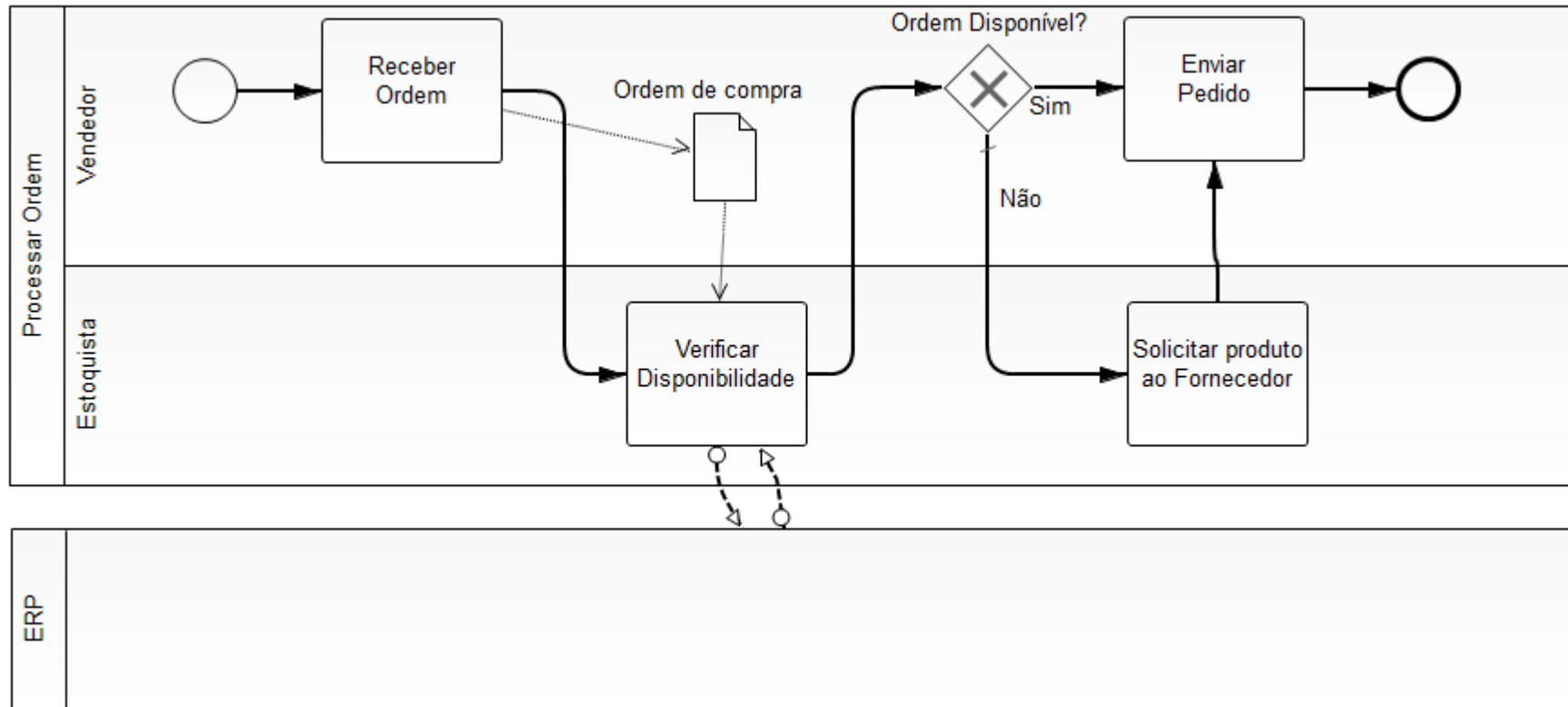
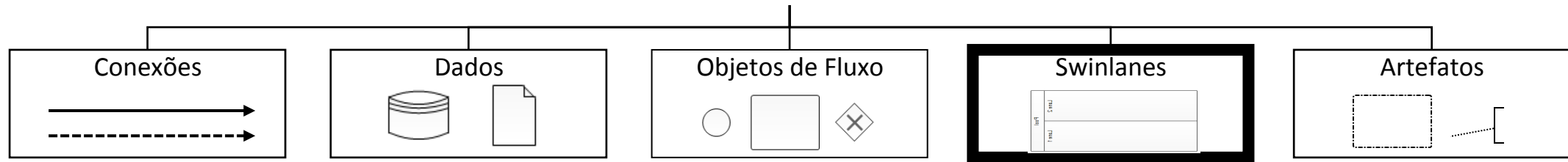
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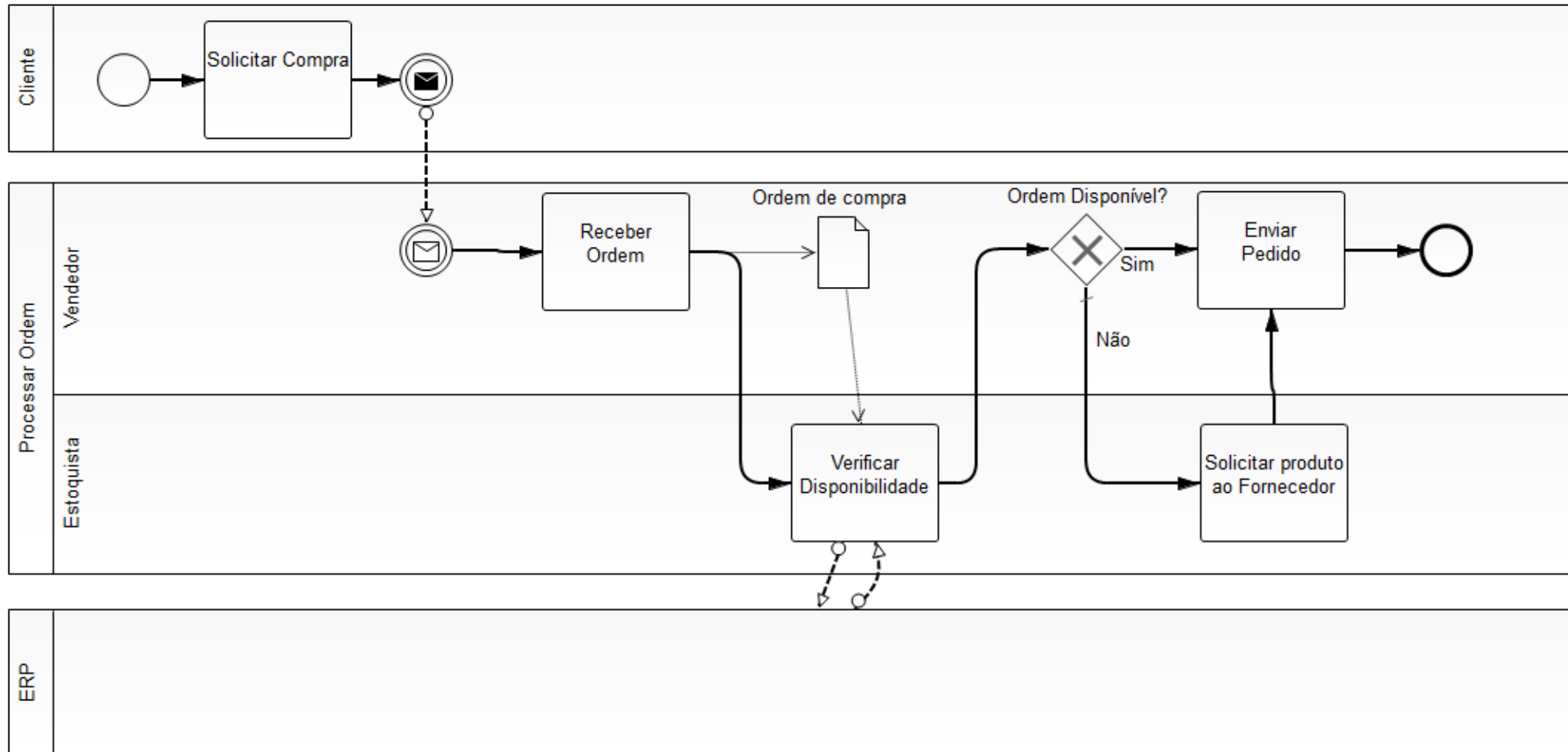
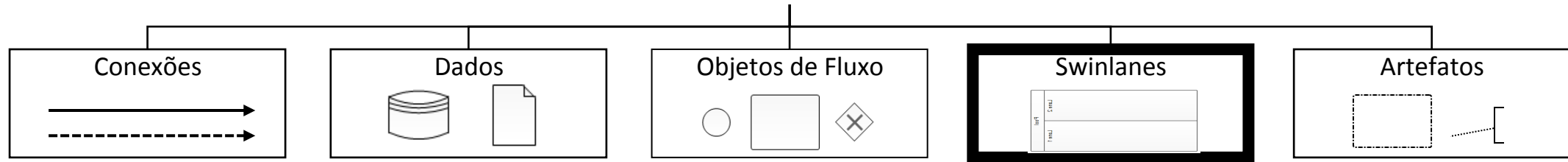
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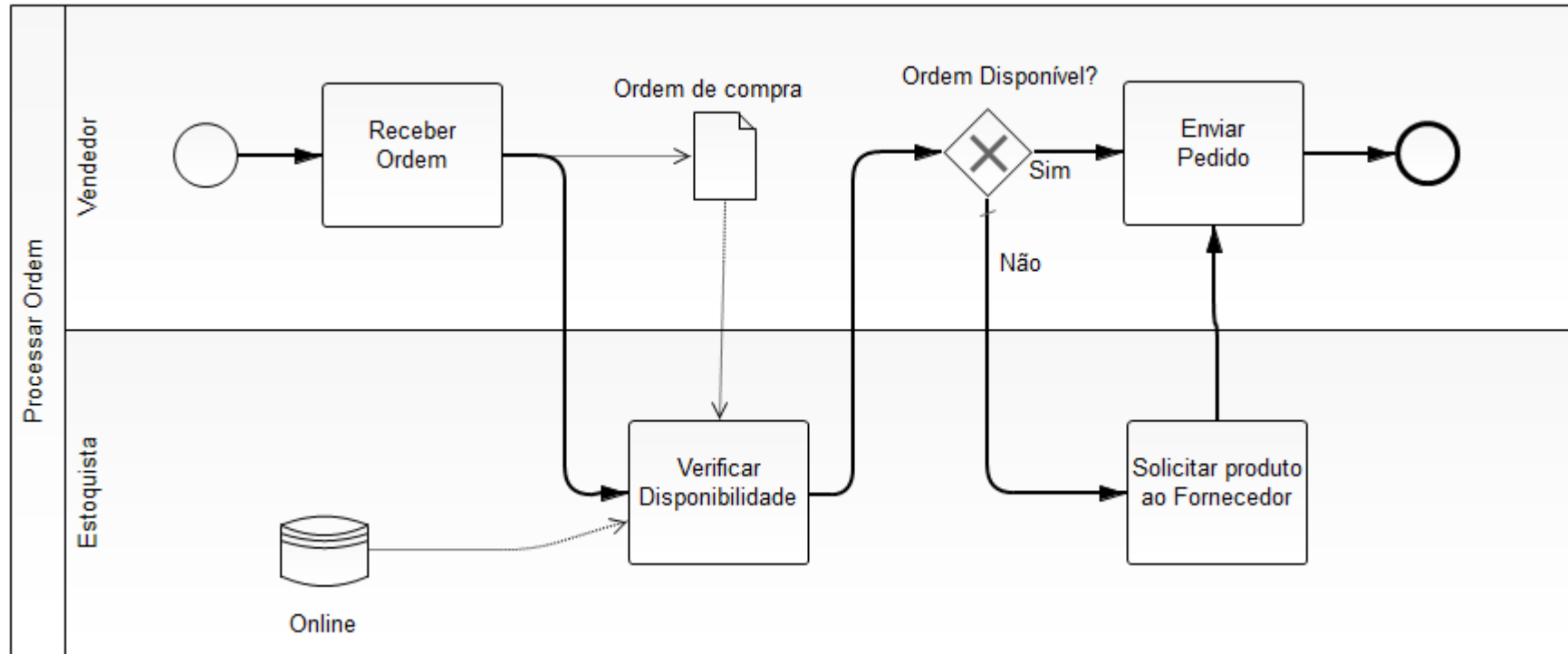
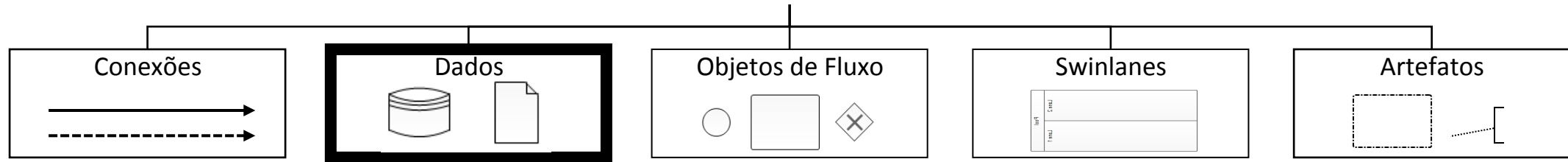
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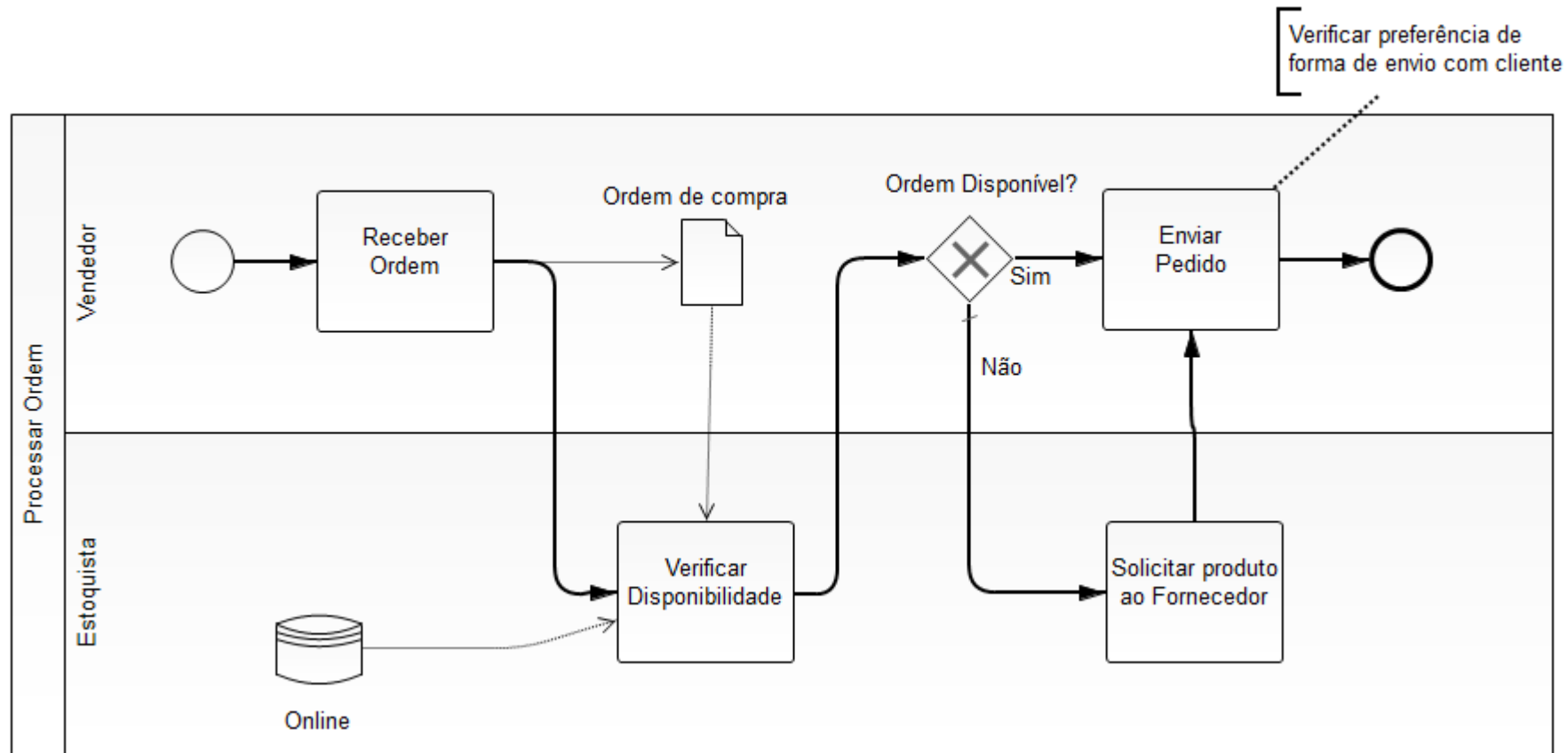
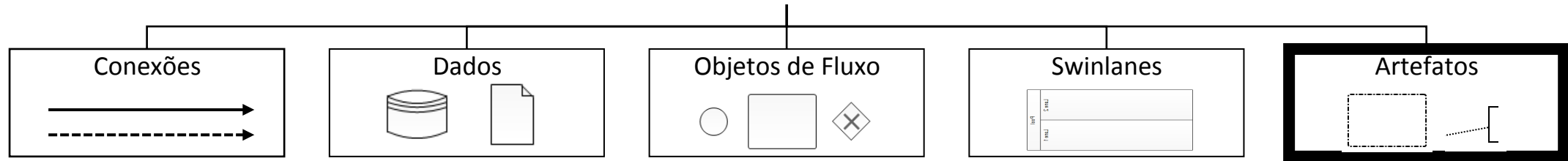
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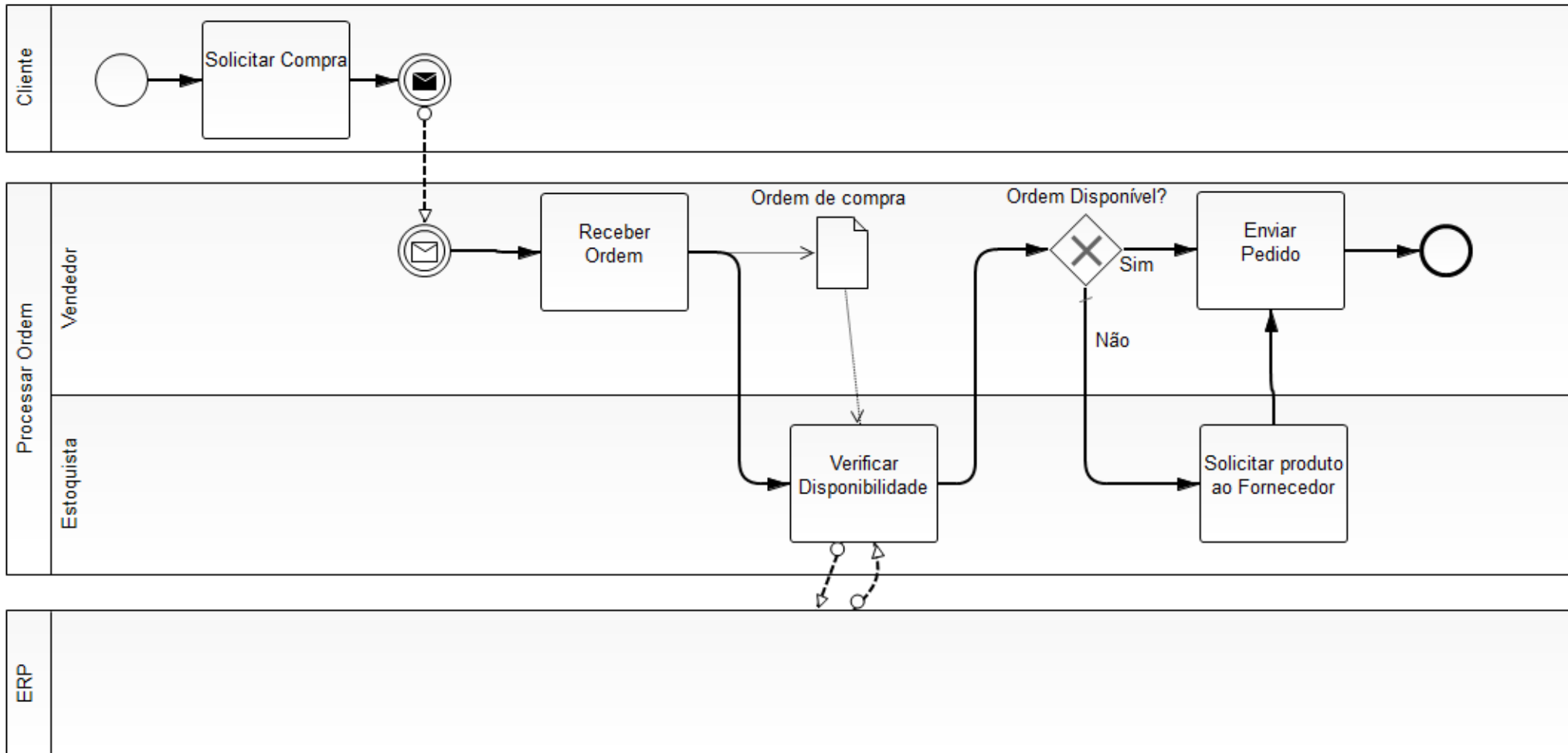
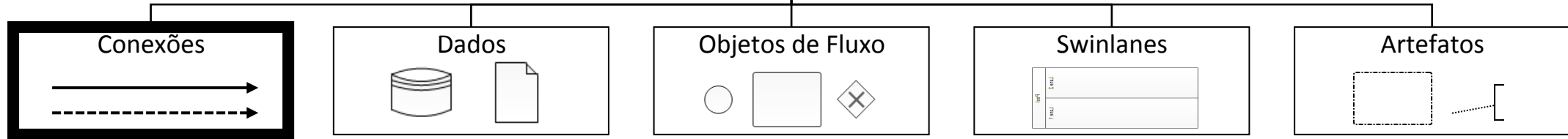
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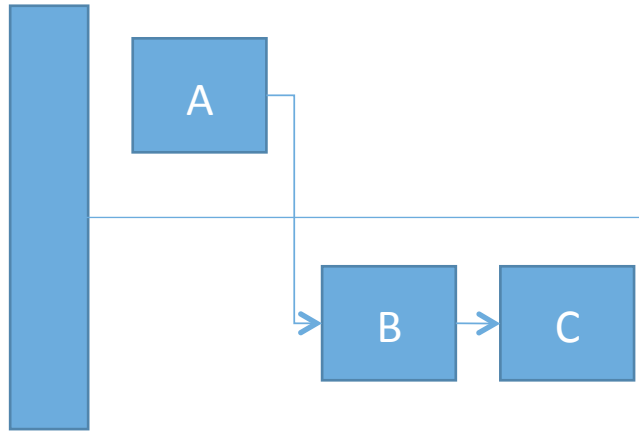
Elementos



Elementos



Fluxo de processo

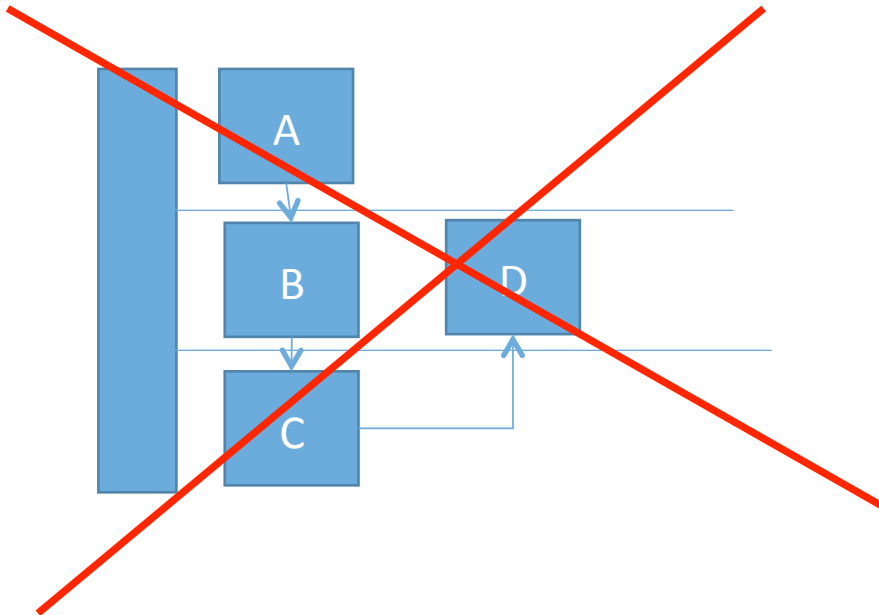


O tempo é no sentido da esquerda para a direita

É necessário mostrar ordem cronológica

B inicia depois de A

C inicia depois de B



As transições saem da direita e chegar na esquerda da próxima tarefa

Exercício 1

- O funcionário do Departamento de Marketing solicita a compra. Se a compra for de um pôster é aprovada automaticamente, caso contrário, seu gerente deve verificar.

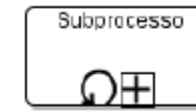
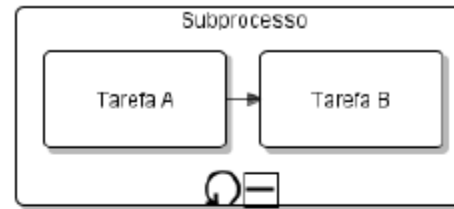
Lista expandida

Tarefas

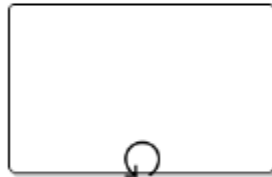
Tarefa: Uma atividade atômica



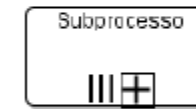
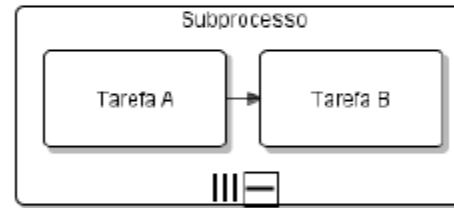
Subprocesso Repetitivo Sequencial



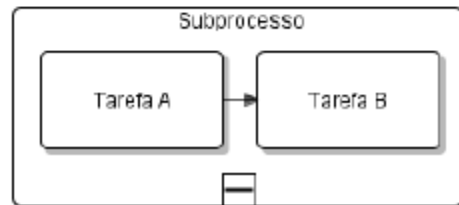
Tarefa Repetitiva



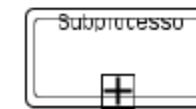
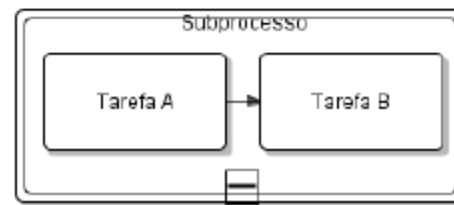
Subprocesso Repetitivo em Paralelo



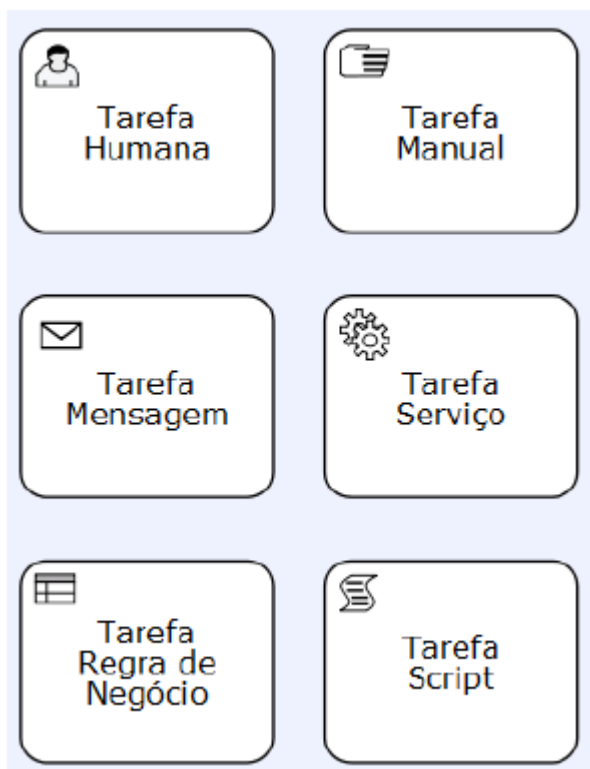
Subprocesso: grupo(s) de tarefas



Transacional



Tarefas



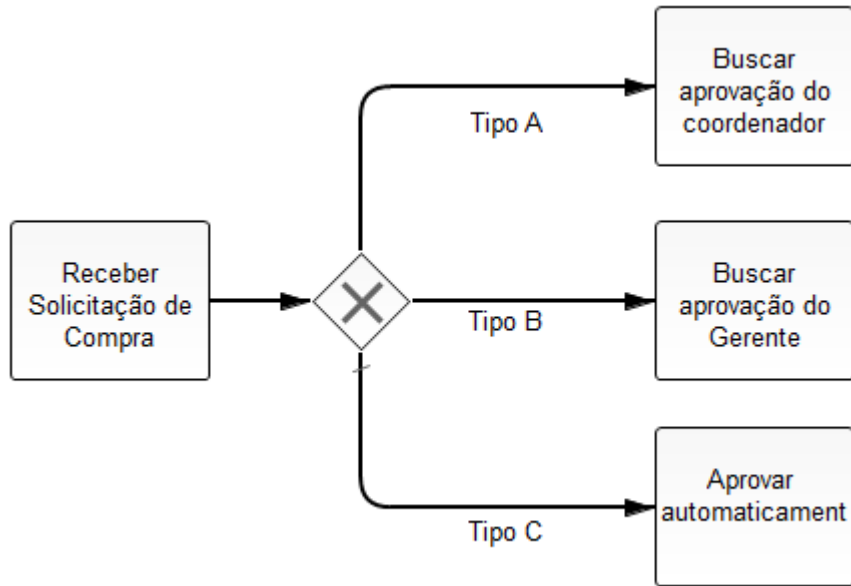
- Sempre use palavras chaves que tenham significado para o negócio
- Não use abreviações incomuns
- Não use o tipo de elemento no nome
- Evite artigos e pronomes
- **Use frases com verbos no infinitivo**

Gateways



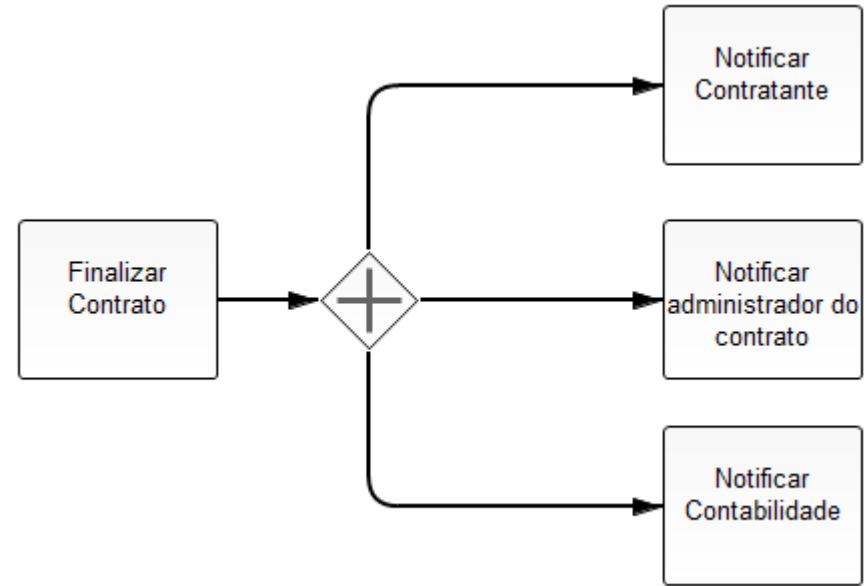
- Gateway não são decisões
- Gateways não tomam decisões, eles apenas direcionam um fluxo
- A decisão deve ser determinada em uma atividade anterior ao Gateway

Gateways



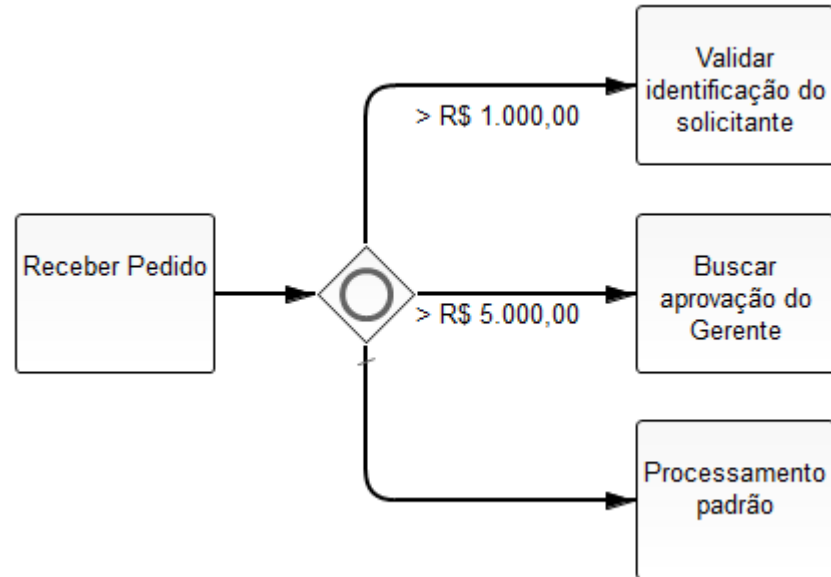
Fluxo default não são nomeados

Exclusivo baseado em dados

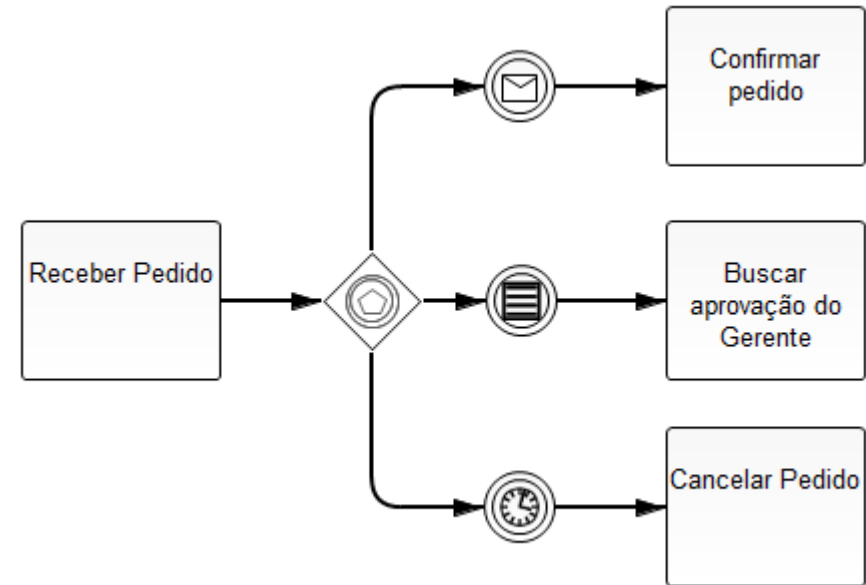


Paralelo

Gateways

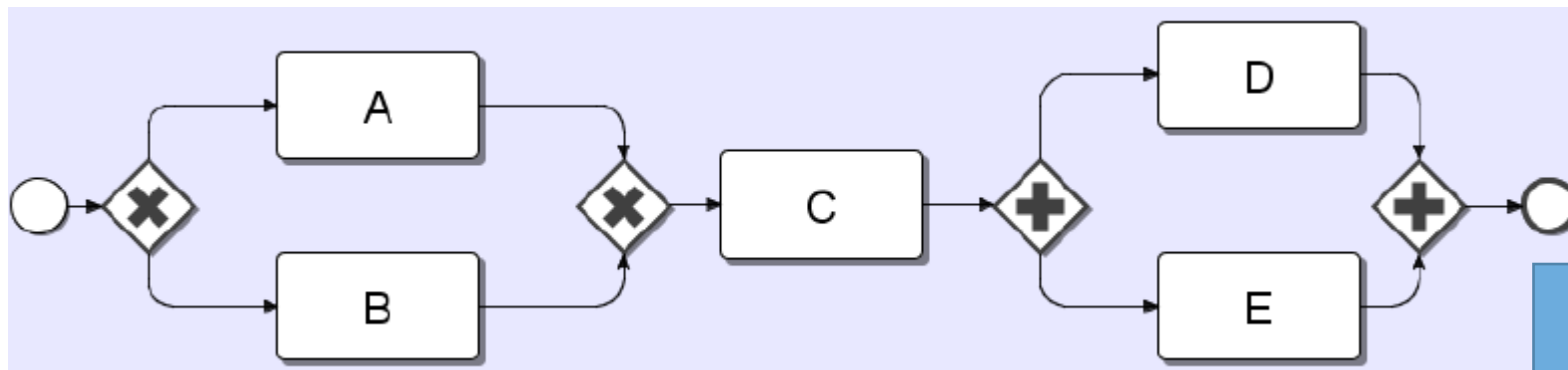
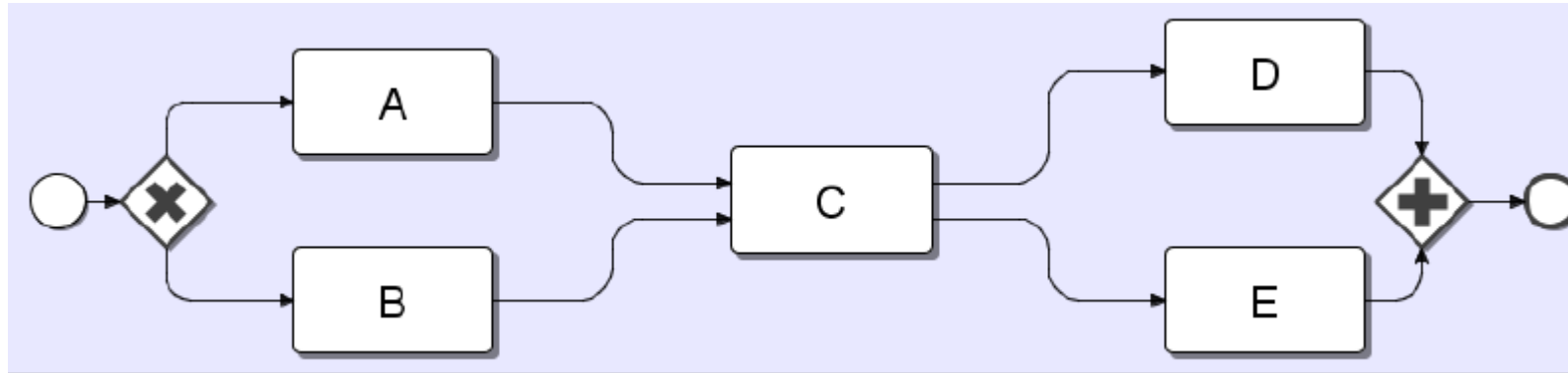


Inclusivo baseado em dados



Exclusivo baseado em eventos

Boas Práticas

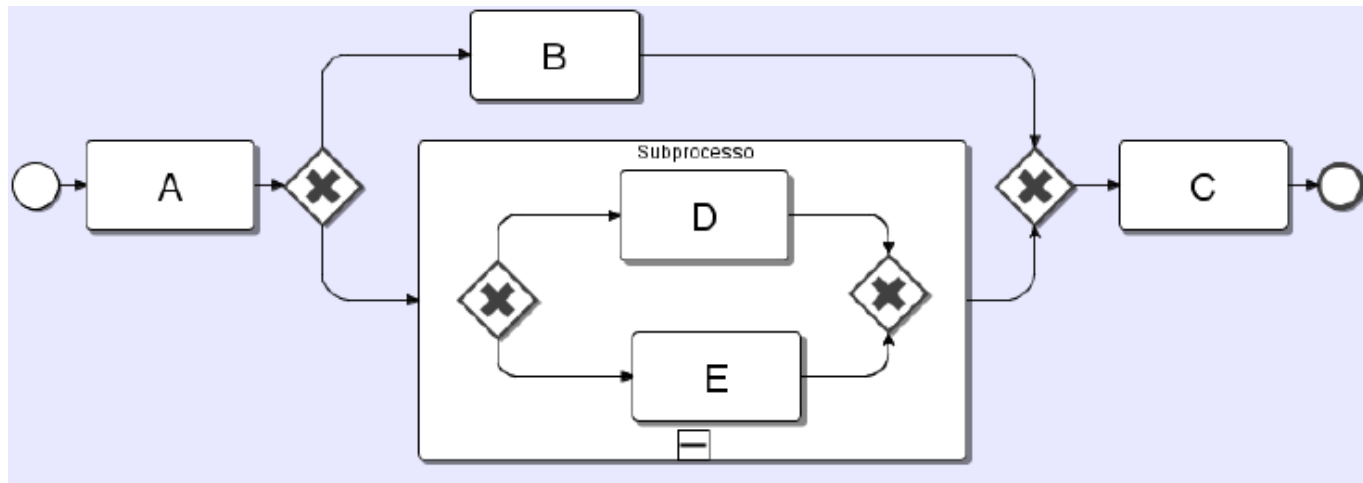
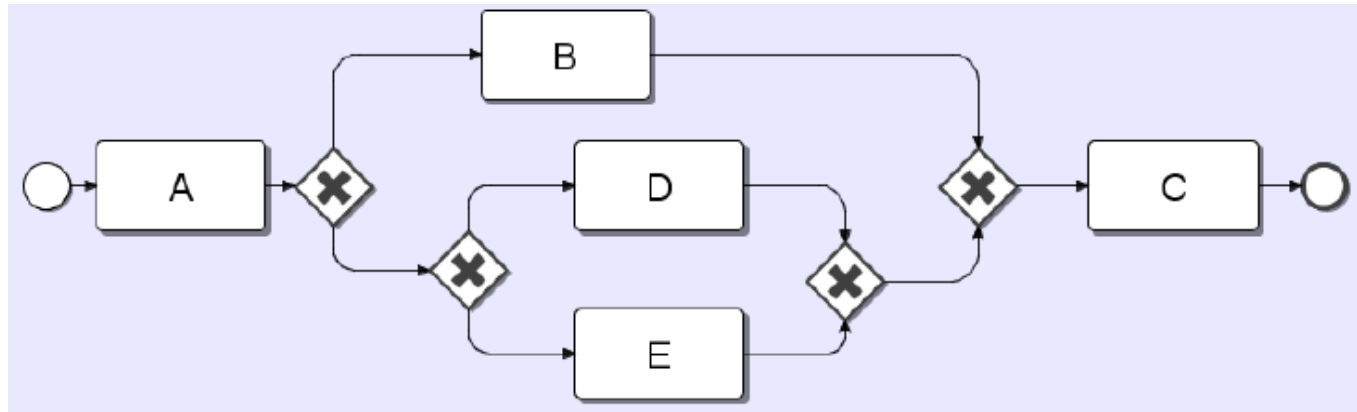


Boa Prática Explícito



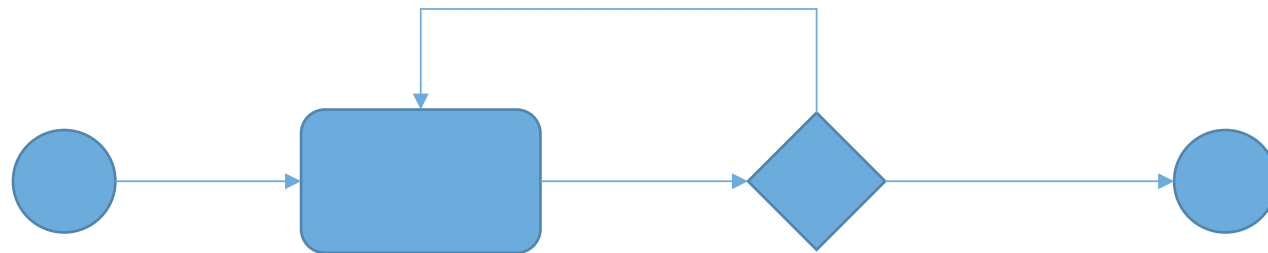
- Não nomeie gateway de conversão
- Nomeie Gateway Exclusivo com uma frase interrogativa

Boas práticas



- Nomeie Gateway Exclusivo com uma frase interrogativa

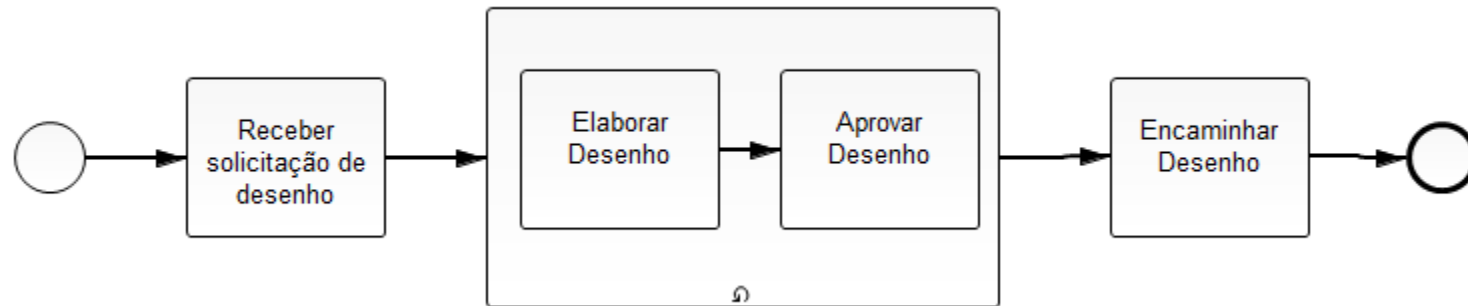
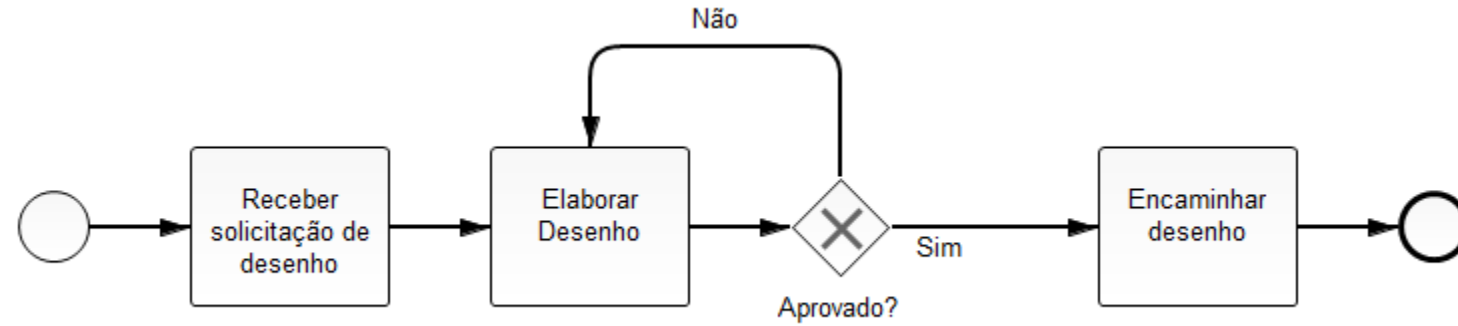
GO TO ou Looping



Looping

- Muitas atividades são repetidas muitas vezes em um processo
- Isso pode ser modelado com looping
- O Go to (backwards running sequence flows) são utilizados.
- Para processos automatizado loop são preferidos
- Go To para modelar loops complexos pode ser fonte de erros (deadlock)

Go TO ou Looping



Exercício 2

- O funcionário do Departamento de Marketing solicita uma compra. Seu gerente aprova, reprová ou gera uma pendência na compra. Neste último caso o solicitante faz as correções e envia novamente para aprovação.

Eventos



Início



Intermediário



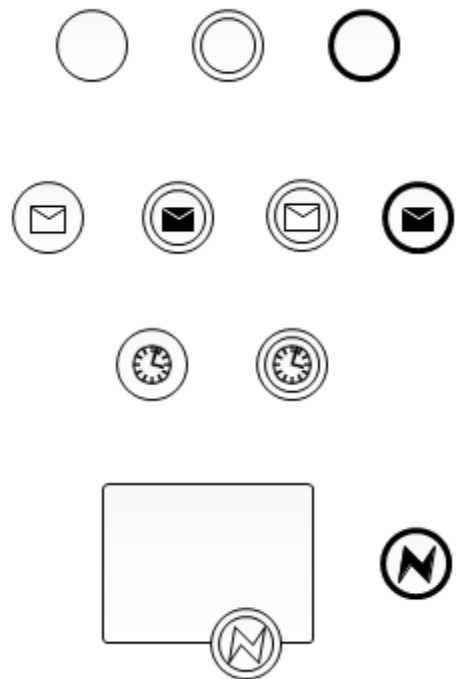
Fim

“Algo que acontece” no processo

Eventos

	Start		Intermediate				End	
	Event sub-pr.		Catching	Boundary		Throwing		
	Inter.	Non-inter.		Inter.	Non-Inter.			
None								
Message								
Timer								
Error								
Escalation								
Cancel								
Compensation								
Conditional								
Link								
Signal								
Terminate								
Multiple								
Multiple paralel								

Principais eventos



•Vazio: usado para assinalamento. Indica alguma mudança no estado do processo

•Mensagem: o processo envia ou espera por uma mensagem de um participante

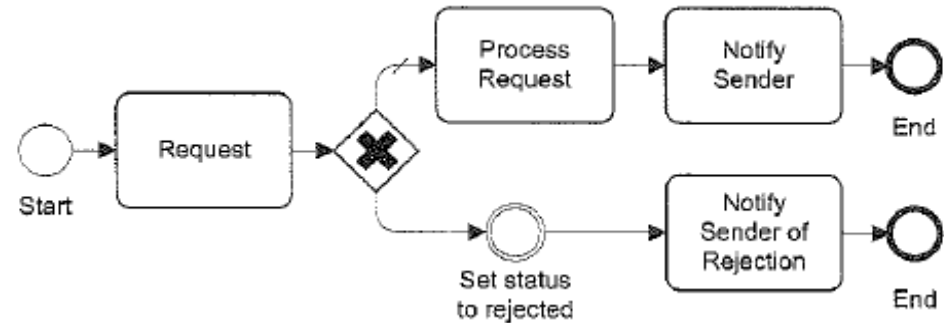
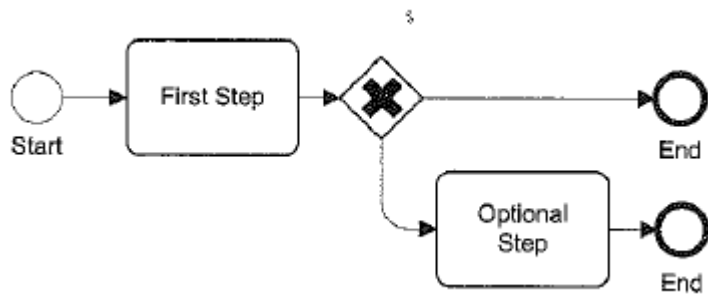
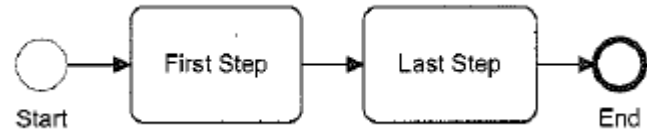
•Tempo: um período de tempo pode ser assinalado para acionar um evento

•Erro: empregado para tratar ocorrência de exceções

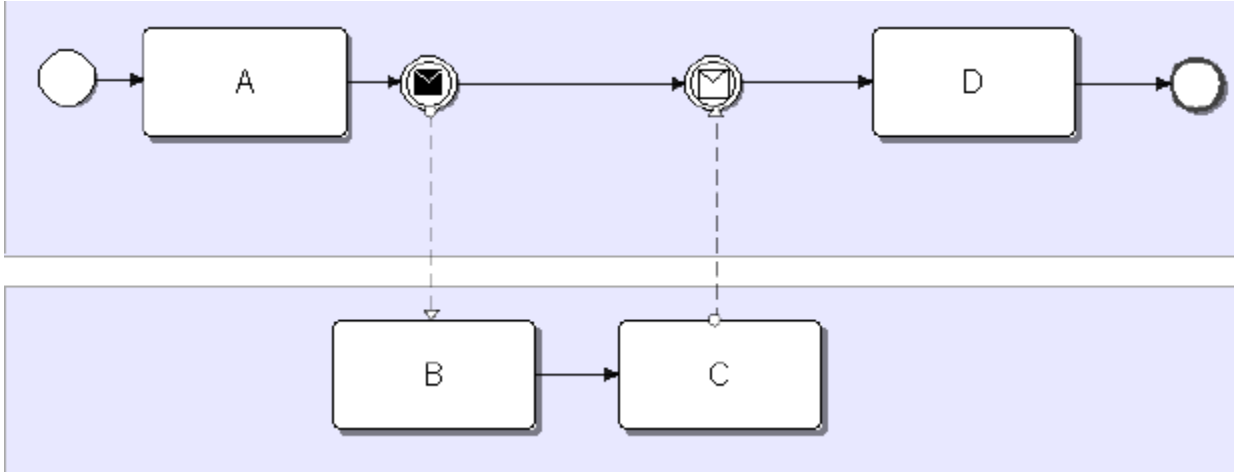


Todos os eventos devem ser nomeados

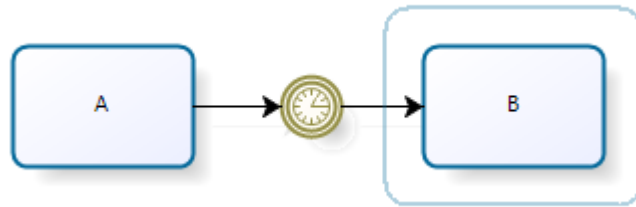
Exemplos de Eventos



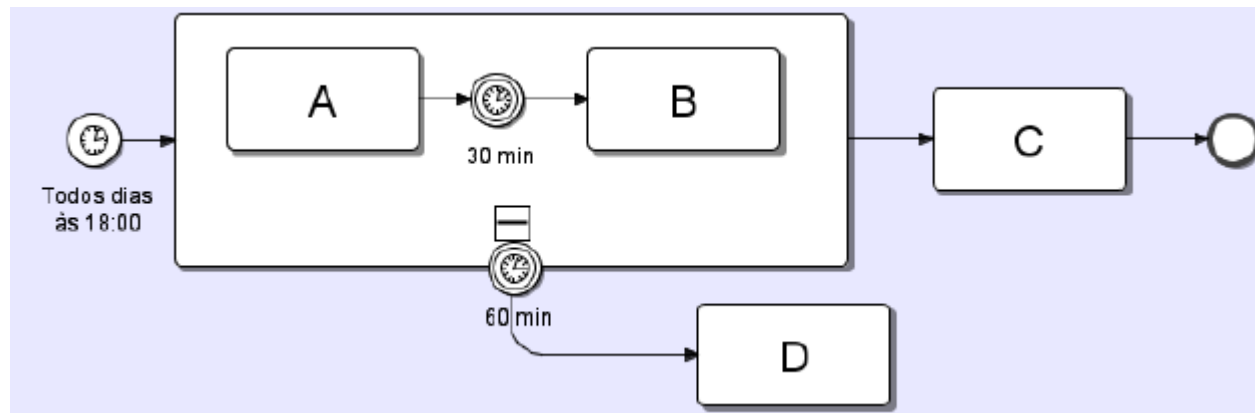
Acionamento e captura de eventos



Eventos intermediários: tempo

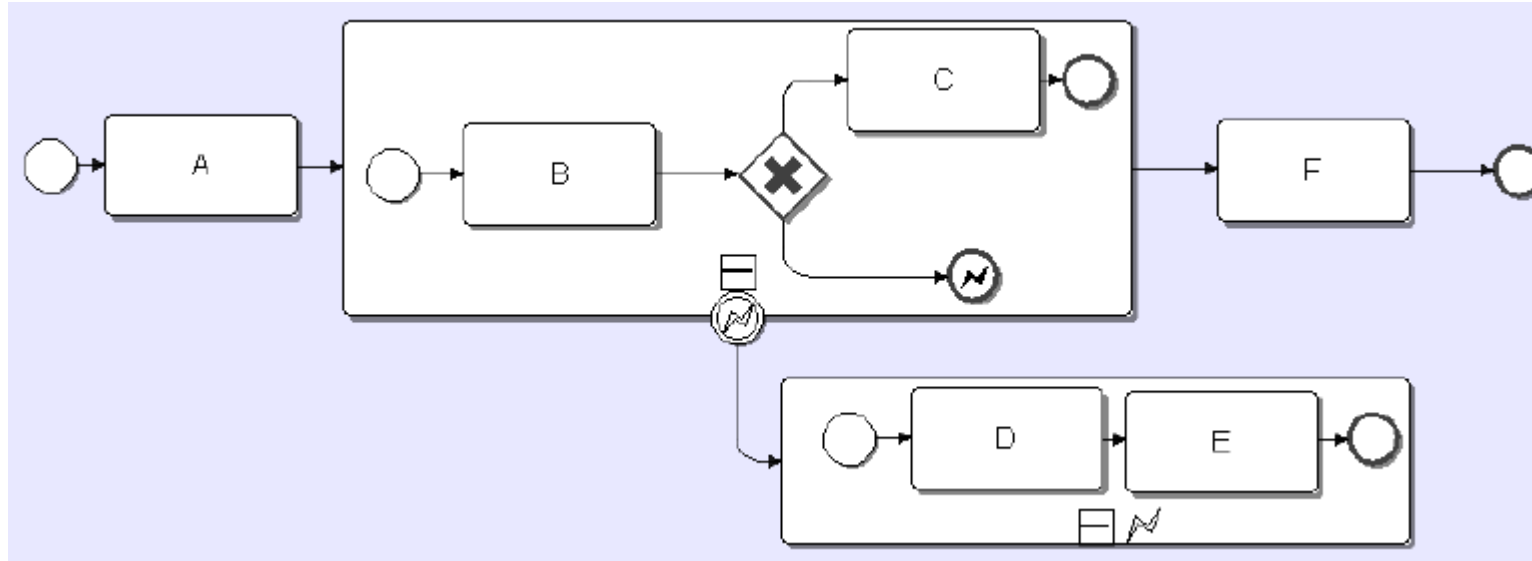


Evento intermediário tempo pode ser usado para expressar que o participante necessitará de um tempo após completar a atividade, entre o início da próxima atividade



Pode ser usado também dentro do sub-processo para expressar que o processo deverá ser completado até um determinado tempo.

Evento intermediário: erro



O evento intermediário Erro pode ser usado dentro do sub-processo para capturar erros que ocorrem no sub-processo e fornece como lidar com esses erros

Exercício 3

- O Cliente faz um pedido de compra. O Analista de crédito verifica junto ao Serasa a disponibilidade de crédito do cliente e Caso o crédito seja reprovado, a compra é cancelada; caso aprovado, o Analista de crédito solicita o pagamento ao cliente. Após pagamento realizado, a compra segue para separação pelo Estoque e posterior envio para o cliente que deve acusar o recebimento.
- Caso o pagamento demore mais do que 5 dias para ser realizado, a compra é cancelada.