

5 Gateways

- ▷ Exclusive gateway
- ▷ Event-based gateway
- ▷ Parallel gateway
- ▷ Inclusive gateway



Activities



A Task is a unit of work, the job to be performed. When marked with a symbol it indicates a Sub-Process, an activity that can be refined.



A Transaction is a set of activities that logically belong together; it might follow a specified transaction protocol.



An Event Sub-Process is placed into a Process or Sub-Process. It is activated when its start event gets triggered and can interrupt the higher level process context or run in parallel (non-interrupting) depending on the start event.



A Call Activity is a wrapper for a globally defined Task or Process reused in the current Process. A call to a Process is marked with a symbol.

Activity Markers

Markers indicate execution behavior of activities:

- Sub-Process Marker
- Loop Marker
- Parallel MI Marker
- Sequential MI Marker
- Ad Hoc Marker
- Compensation Marker

Task Types

Types specify the nature of the action to be performed:

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

Sequence Flow

defines the execution order of activities.

Default Flow

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

Conditional Flow

has a condition assigned that defines whether or not the flow is used.

Conversations

A Conversation defines a set of

Choreographies

Participant A

Participant A

Participant A

Gateways

Exclusive Gateway



When splitting, it routes the sequence flow to exactly one of the outgoing branches. When merging, it awaits one incoming branch to complete before triggering the outgoing flow.

Event-based Gateway



Is always followed by catching events or receive tasks. Sequence flow is routed to the subsequent event/task which happens first.

Parallel Gateway



When used to split the sequence flow, all outgoing branches are activated simultaneously. When merging parallel branches it waits for all incoming branches to complete before triggering the outgoing flow.

Inclusive Gateway



When splitting, one or more branches are activated. All active incoming branches must complete before merging.



Exclusive Event-based Gateway (instantiate)

Each occurrence of a subsequent event starts a new process instance.

Complex Gateway



Complex merging and branching behavior that is not captured by other gateways.



Parallel Event-based Gateway (instantiate)

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

Events

	Start	Intermediate	End
Standard			
Event Sub-Process Interrupting			
Event Sub-Process Non-Interrupting			
Catching			
Boundary Interrupting			
Boundary Non-Interrupting			
Throwing			
Standard			

Intyped events, start point, state or final states.

Receiving and messages.

Cyclic timer events, a time, time spans or ...

Escalating to or level of ability.

Reacting to business conditions rating business rules.

If page connectors, responding link events sequence flow.

Catching or throwing errors.

Reacting to cancelled flows or triggering action.

Handling or compensation.

Signaling across differences. A signal thrown caught multiple times.

Catching one out of events. Throwing all defined.

Multiple: Catching if a set of parallel.

Triggering the termination of a

Data



A Data Object represents information flowing through the process, such as business documents, e-mails, or letters.



A Collection Data Object represents a collection of information, e.g., a list of order items.



A Data Input is an external input for the entire process. A kind of input parameter.



A Data Output is data result of the entire process. A kind of output parameter.



A Data Association is used to associate data elements to Activities, Processes and Global Tasks.



A Data Store is a place where the process can read or write data, e.g., a database or a filing cabinet. It persists beyond the lifetime of the process instance.

Pool (White Box)

Pools (Participants) and Lanes represent responsibilities for activities in a process. A pool or a lane can be an organization, a role, or a system. Lanes subdivide pools.

organizational boundaries. Message flow can be attached to pools, activities, or message events. The Message Flow can be decorated with an envelope depicting the content of the message.

The order of message exchanges can be specified by combining message flow and sequence flow.

BPM OFFENSIVE
BERLIN



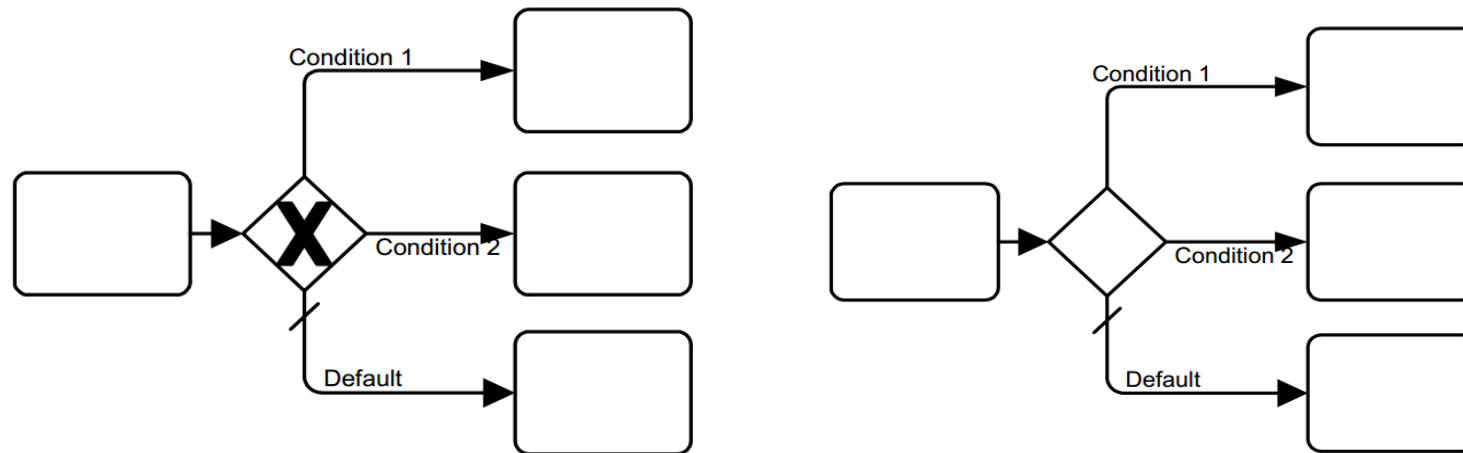
SIGNAVIO
BPM SOFTWARE

1

Exclusive Gateway
(If .. Else if ..)

Exclusive gateway

- Exclusive Gateway (Decision) is used to create **alternative paths** within a Process flow. For a given instance of the Process, only one of the paths can be taken.
- A **Decision** can be thought of as a question that is asked at a particular point in the Process.
- The question has a defined set of alternative answers. Each answer is associated with a condition Expression



Exclusive Gateway Sample (Data-based Exclusive Gateway)

Exclusive gateway – Real world example

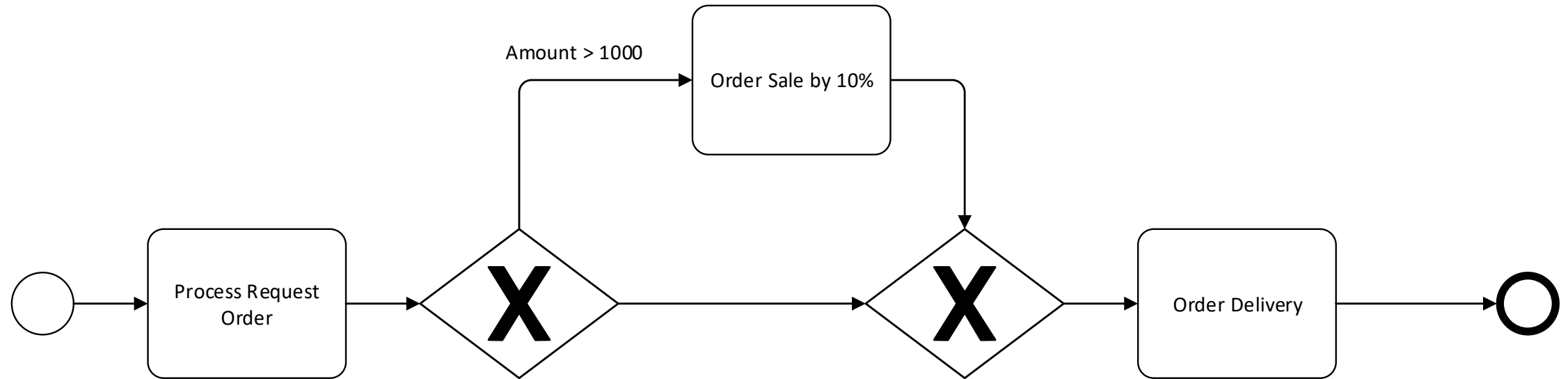
- ☒ One
- ☐ Two
- ☐ Three



Road Diversion

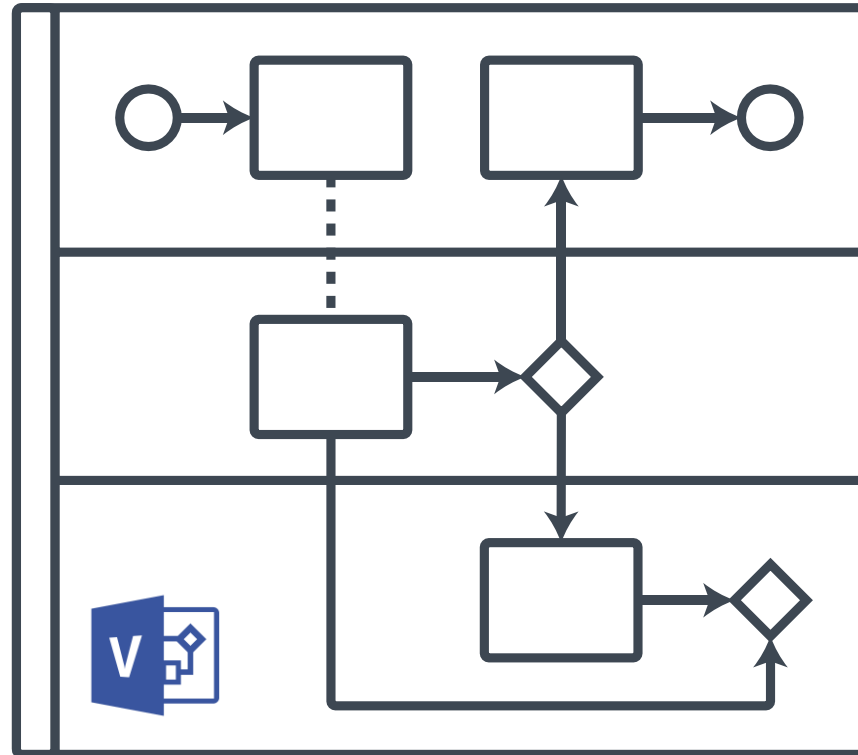


Exclusive gateway - BPMN Example



Exclusive gateway Sample
(with X Marker or not is the same)

Exclusive gateway - BPMN Hands-on



BPMN Demo using Microsoft Visio

Token Demo

https://knowhow.visual-paradigm.com/know-how_files/2009/12/04_Exclusive_gateway.html

2

Event-based gateway

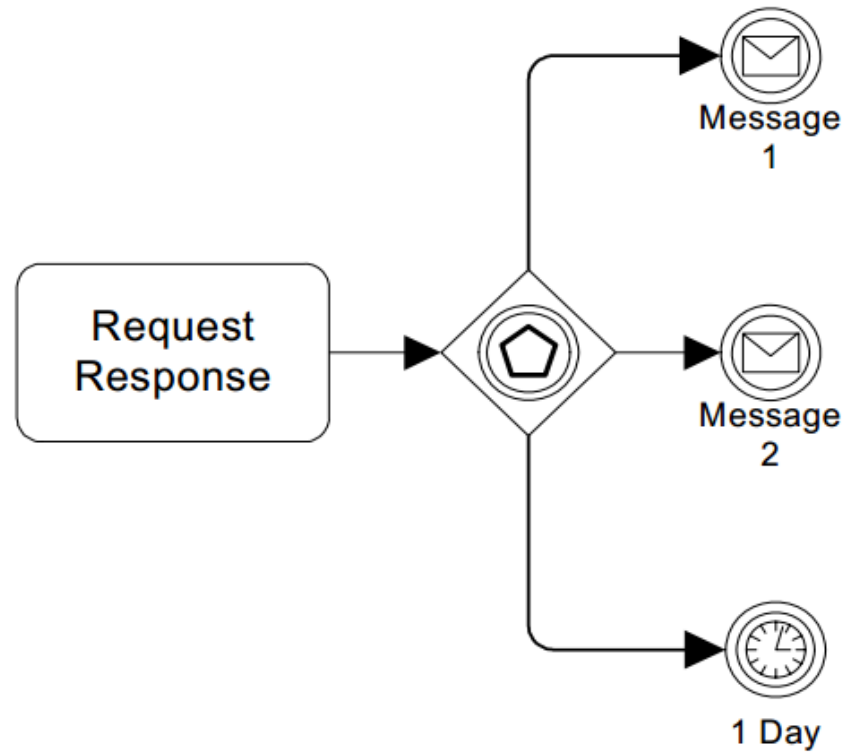
Event-based gateway

- Event-Based Gateway are similar to exclusive gateway but the **trigger** of gateway is base on **event** occur **instead of evaluate condition**.
- Event-base gateway , is always **followed by catching events** or **receive tasks**.
- Sequence flow is routed to the subsequent event/task which happens first.
- Basically, the decision is made by another Participant (which send message) based on data that is not visible to Process

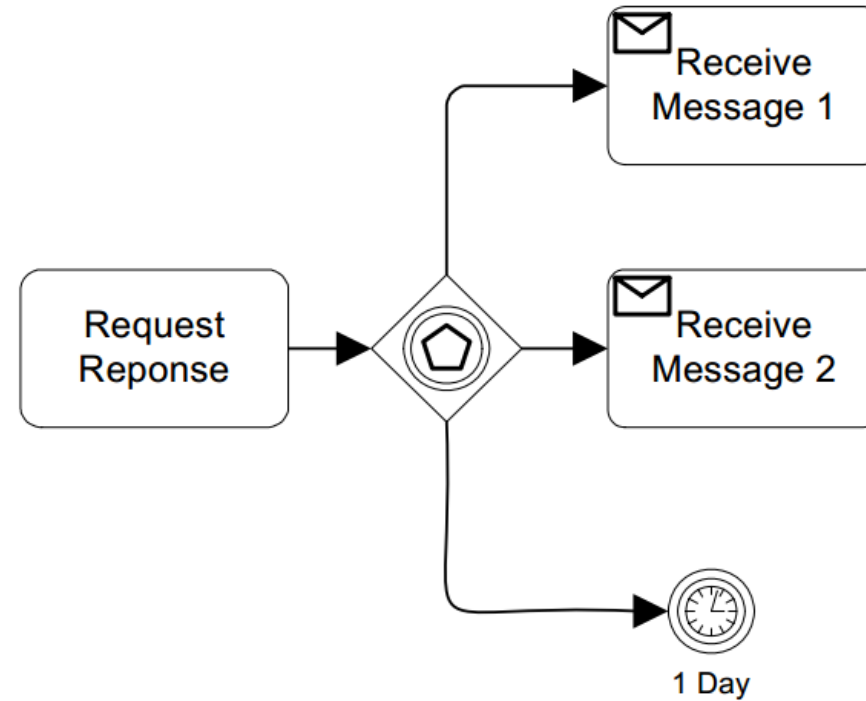


Exclusive
Gateway Notation

Event-based gateway



Event-Based Gateway example using
Message Intermediate Events



Event-Based Gateway example
using Receive Tasks

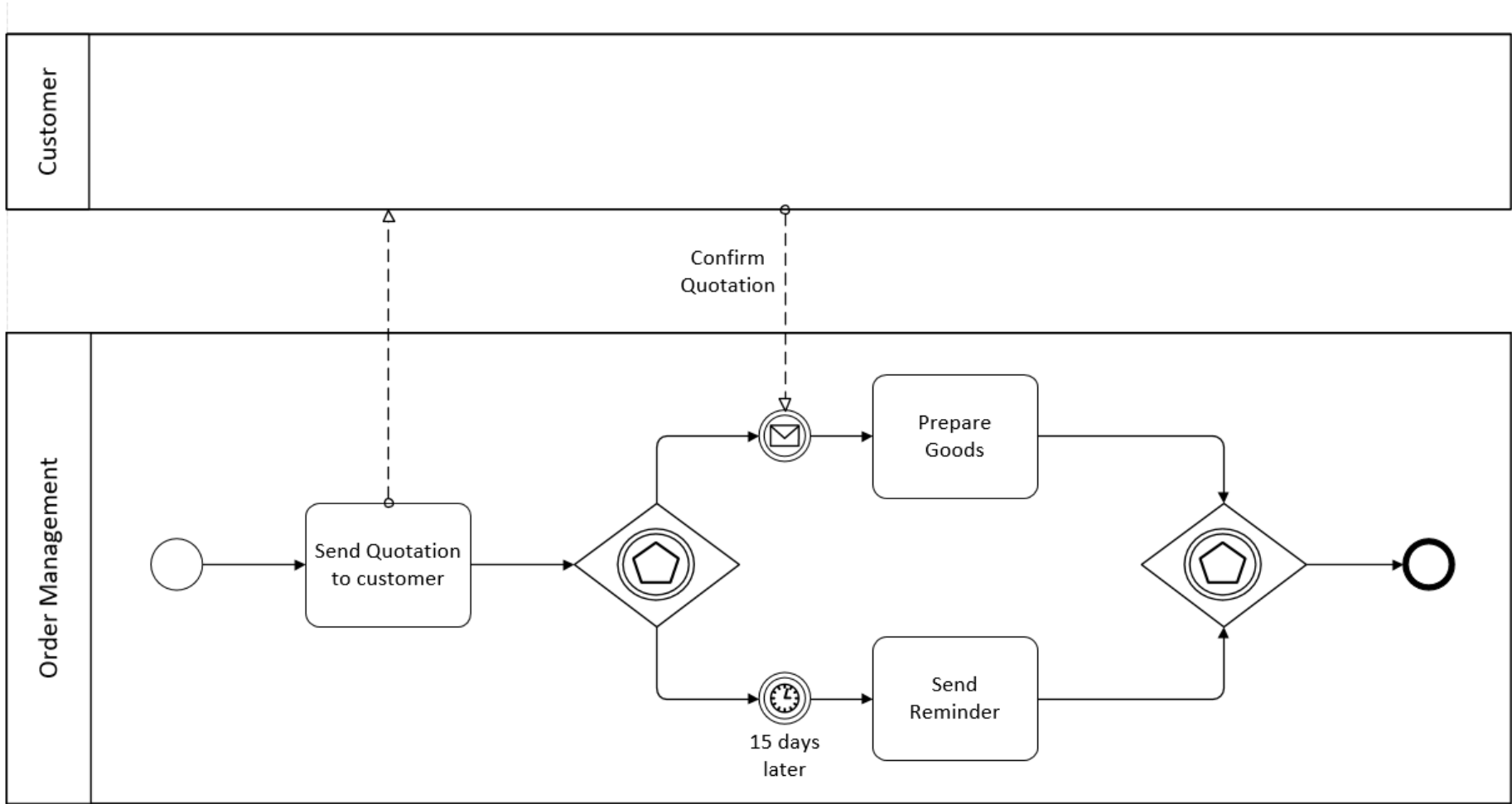
Event-based gateway – Real world example



Event-based Gateway

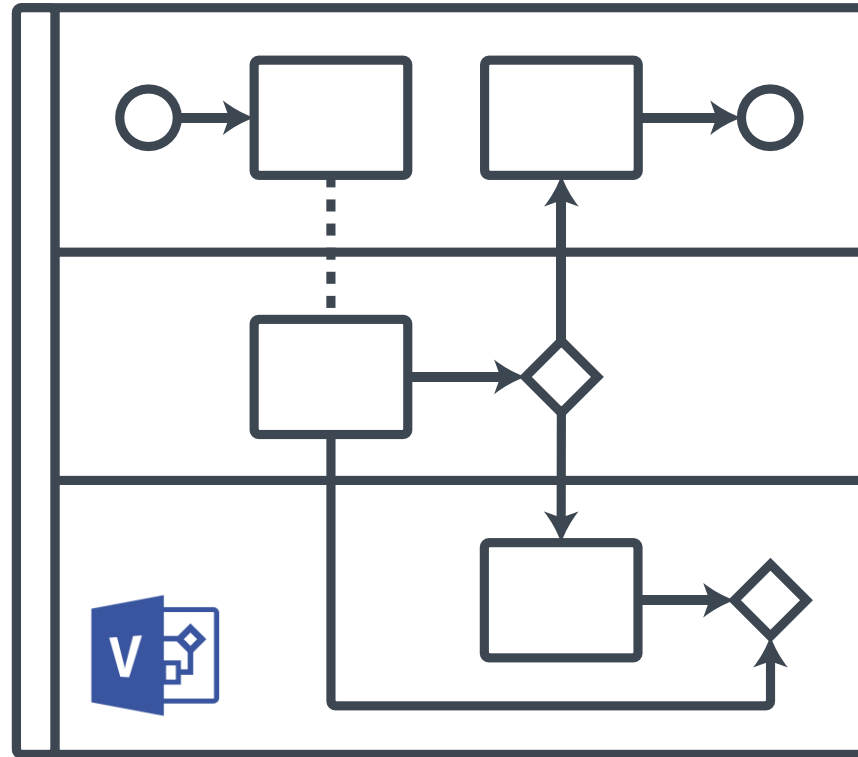
Triggered by time Alarm , sensor Alarm

Event-based gateway - BPMN Example



Event-based gateway Sample

Event-based gateway - BPMN Hands-on



BPMN Demo using Microsoft Visio

Token Demo

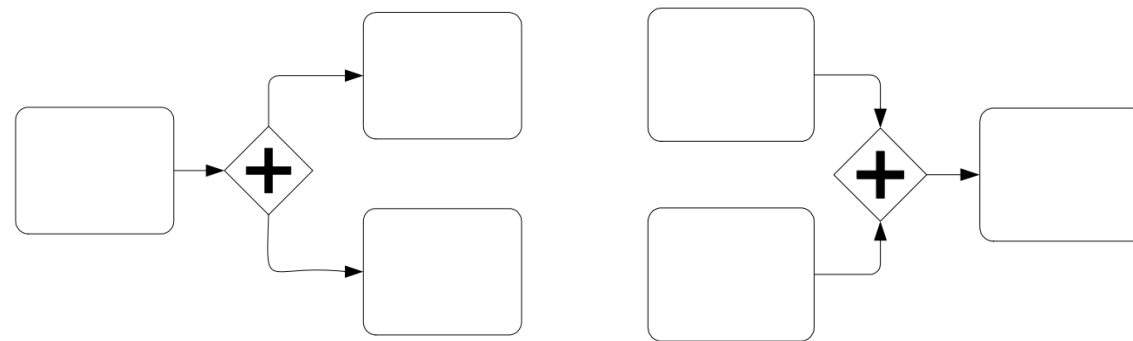
https://knowhow.visual-paradigm.com/know-how_files/2009/12/10_Event-Based_Gateway.html

3

Parallel gateway

Parallel gateway

- Parallel Gateway is used to **synchronize** (combine) parallel flows and to **create** parallel flows
- A Parallel Gateway creates parallel paths without checking any condition, **each outgoing Sequence Flow receives a token** upon execution of this Gateway
- For incoming flows, the Parallel Gateway will **wait for all incoming flows** before triggering the flow through its outgoing Sequence Flows



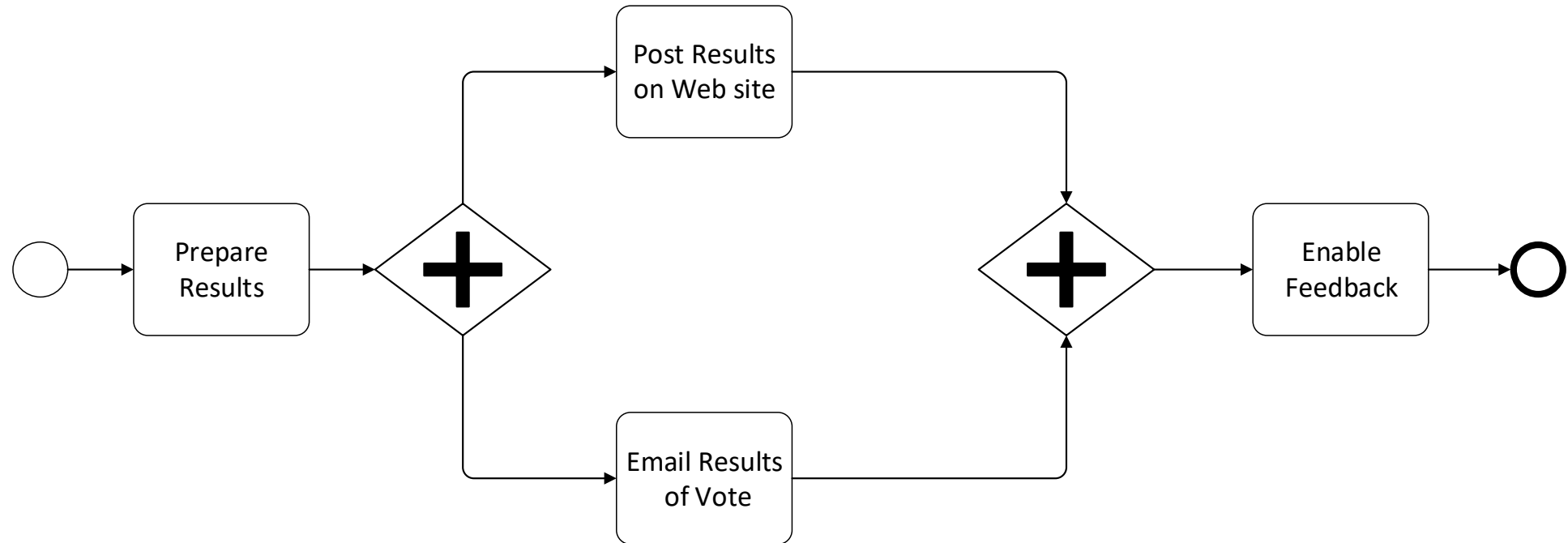
Parallel Gateway Sample (Create & Combine)

Parallel gateway – Real world example



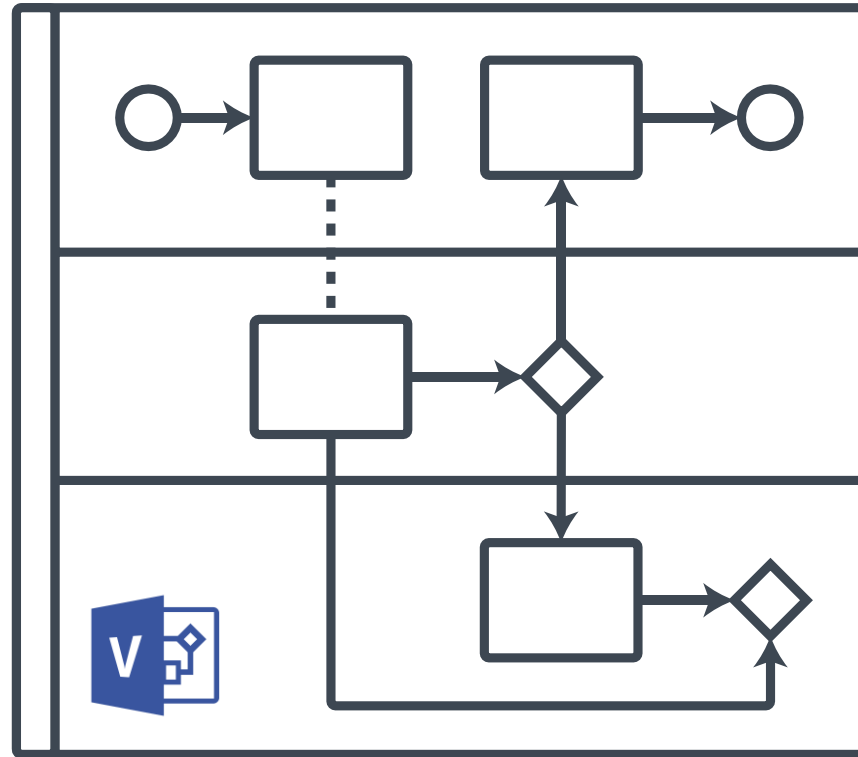
Multi Work (Parallel)

Parallel gateway - BPMN Example



Parallel gateway Sample

Parallel gateway - BPMN Hands-on



BPMN Demo using Microsoft Visio

Token Demo

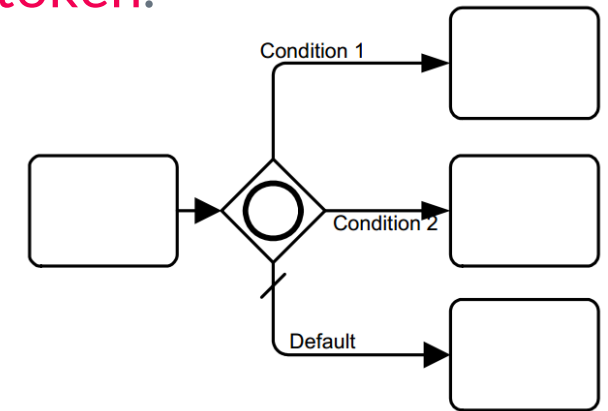
https://knowhow.visual-paradigm.com/know-how_files/2009/12/11_Parallel_Gateway.html

4

Inclusive gateway

Inclusive gateway

- Inclusive gateway can be used to create **alternative** but **also parallel paths** within a Process flow.
- Unlike the Exclusive Gateway, **all condition Expressions are evaluated**. The true evaluation of **one condition** Expression **does not exclude** the evaluation of **other condition** Expressions.
- **All** Sequence Flows with a **true** evaluation will be **traversed by a token**.
- Since each path is considered to be independent, all combinations of the paths **MAY** be taken, from zero to all.



Inclusive Gateway Notation

Inclusive gateway – Real world example

- ☒ One
- ☐ Two
- ☐ Three

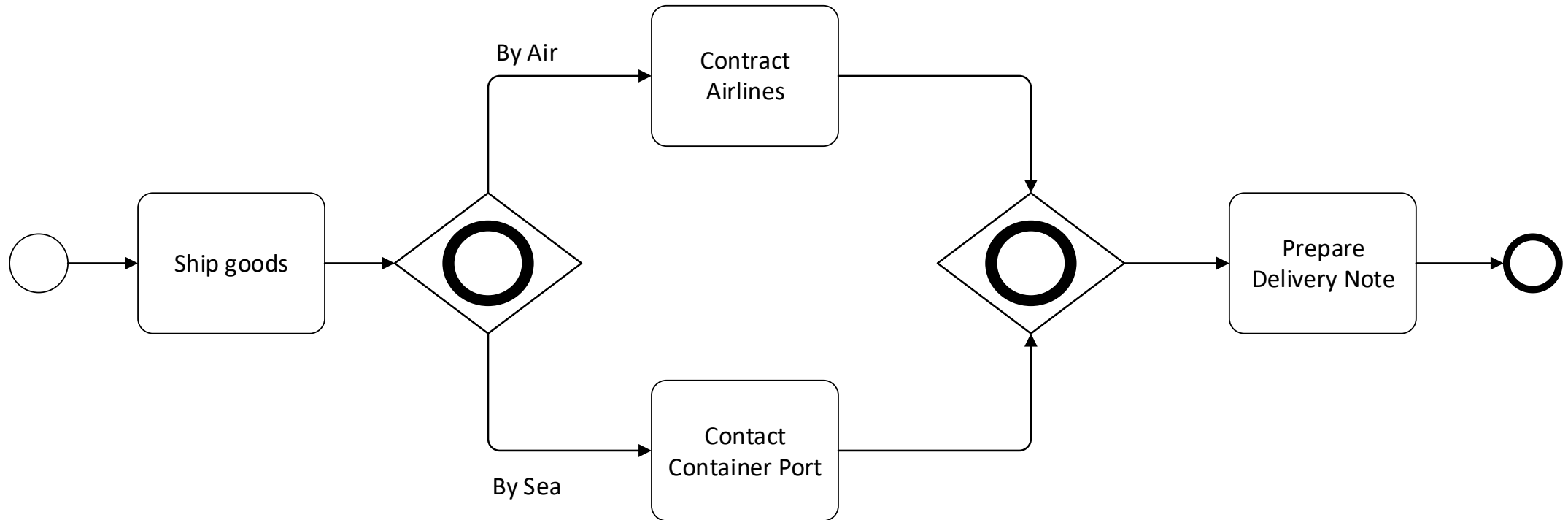
OR



Applicable for Exclusive OR Parallel

Mixer can Squeeze one or multiple fruits or vegetables

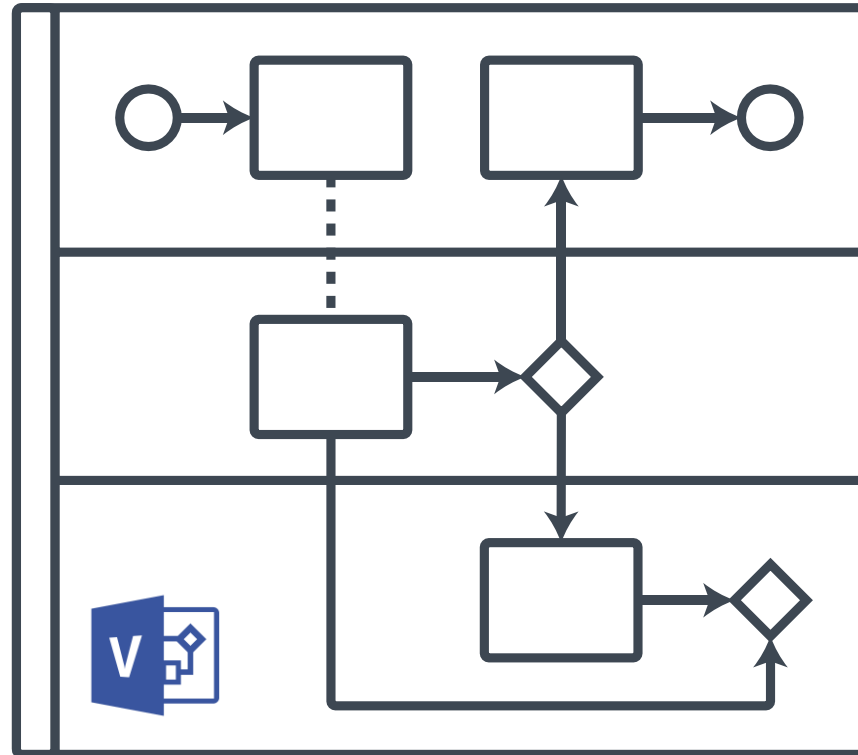
Inclusive gateway - BPMN Example



Inclusive gateway Sample

Exclusive || Parallel || or Both Gateway

Inclusive gateway - BPMN Hands-on



BPMN Demo using Microsoft Visio

Token Demo

https://knowhow.visual-paradigm.com/know-how_files/2009/12/07_Inclusive_gateway.html

References



[Togaf Online Documentation](#)

[Process Group for Togaf](#)

[Open 2 Study Course](#)

[Togaf Arabic Playlist](#)



To Be continue .. 😊

Thanks!

Any questions?

You can find me at:



eng.mohamedzakarya@gmail.com



Mohamed Zakarya Abdelgawad