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Department:  
Public Service and Administration  
REPUBLIC OF SOUTH AFRICA

# **TOOLKIT ON PUBLIC SERVICE BUSINESS PROCESS MAPPING**

## Contents

1.	Introduction .....	3
2.	Definition of Business Process Mapping (BPM).....	4
3.	Why the guide was developed? .....	5
4.	Purpose of the guide .....	5
5.	Who should use the guide? .....	6
6.	BPM Components .....	6
7.	The Four Major Steps of Business Process Mapping.....	8
7.1	Step One: Problem identification.....	8
7.2	Step Two: Information gathering .....	9
7.3	Step Three: Map “As Is” (Interviewing and mapping) .....	9
7.4	Step Four: Analysis .....	10
8.	Business Process Mapping Diagram.....	11
	Annexure 1 Business Process Mapping Notation (BPMN).....	12
9	References.....	44

## 1. Introduction

According to the White paper on Transforming Public Service Delivery (Batho Pele), 1997, National and provincial departments must publish standards for the level and quality of services they will provide, including the introduction of new services to those who have previously been denied success to them. In the case of certain services, such as health, education, national departments, in consultation with provincial departments, may set standards which will serve as national baseline standards. Respective provinces may set their own standards, provided these meet or exceed the national baseline. Provincial departments may also set additional standards for aspect of services not covered by national norms. Similarly, departments may set intra-departmental service standards which will serve as minimum norms for their institutions and components.

In terms of the Public Service Regulations, 2001, Part III.C.I states that: “an executing authority shall establish and sustain a service delivery improvement programme for his or her department in including amongst others standards for the main services to be provided”.

Departments are expected to publish their service delivery standards in an annual statement so as to ensure that the citizenry is informed of their expectations. The main objectives of service delivery standards are:

- To improve service delivery by promoting high quality, high value public services that is vital to the well being of citizens.
- To provide value for money to taxpayers by ensuring that services are cost efficient.
- To articulate the commitment of public servants to the transformation process by delivering a high standard of service.
- To meet the growing expectations of the public for more information and active consultative processes.
- To ensure integrated service delivery by aligning departmental/domain specific standards with national norms and standards.
- To ensure a progressive and evolutionary, incremental approach to the quality of public service delivery.

## 2. Definition of Business Process Mapping (BPM)

According to Davenport (1993), BPM is a structured measured set of activities designed to produce a specific output for a particular customer or market. Furthermore, this definition places more emphasis on how work is done within an organisation. Brian Underdahl (2011) defines BPM as an approach that is designed to produce better processes.

A business process is a set of linked, repetitive business activities that together and only together transform inputs into outputs that are of value to a customer.

In the South African government context, BPM is a means of defining and managing what happens, from start to end in a business process leading provision of a service/s. Furthermore, it is a collection of related, structured activities or tasks that produce a specific service or product and it is visualised with a flowchart.

BPM is more than just documenting a new or old process and it involves the following:

- ✓ Identifying all of your processes
- ✓ Identifying the person responsible for each process
- ✓ Breaking down each process into the individual steps performed (from start to finish) – no step is too small to document
- ✓ Physically map out the steps that are identified either on a computer, white board, whatever is needed to present a visual image of the process for everyone to see what is being discussing

### Definition of Business Process Mapping

Business Process Mapping is the initial description of a business process in graphic form.

However, prior to departments initiating BPM, three core objectives must be adhered to which are:

- **Effectiveness**
  - ✓ Does the process meet service beneficiary needs?
  - ✓ Does the process leads to the attainment of desired goal?
  - ✓ Effectiveness means a right job has been done irrespective of methods/technique used.

- **Efficiency**
  - ✓ Does it cut down on the usage of resources?
  - ✓ Efficiency means the right technique has been used for doing a job/achieving a goal/satisfaction
  
- **Adaptability**
  - ✓ Is the process flexible enough to change as requirements change?

### **3. Why the guide was developed?**

The dawning of the new dispensation in 1994 was characterised by special mandate to provide appropriate services to all the people of the country. This was, still is and will continue to be a massive responsibility of government and one that requires total commitment by people at all levels of government, if it is going to be fulfilled.

The new government made a pledge to the people of South Africa to serve the people without discrimination, respecting the dignity of all and ensuring that the needs of the majority of the population, who had been disadvantaged in the past, are met efficiently and effectively.

As the government is constantly advocating for improved service delivery, BPM serves as a radical redesign of processes to achieve improvements in cost, quality and turn-around-time leading to improved service delivery.

### **4. Purpose of the guide**

The purpose of the document is to provide step-by-step guidance on the business process mapping. Furthermore, the guide aims to capacitate staff at all national and provincial departments and local government, on the business process mapping. This will help government departments to move easily and quickly across the 'bridge' that spans the chasm of frustration between "knowing" and "doing" and the outcome will be continuous improvement in service delivery. Furthermore there will be enhanced satisfaction on the part of service beneficiaries.

## 5. Who should use the guide?

National, provincial departments and local government are required to embark on business process mapping of their services in order to improve Service Delivery within their respective departments.

## 6. BPM Components

### 6.1 Process Scope

A process should have a **name**. The name will be used to reference the process throughout the business process life cycle. Only one name should be used and be understood by internal and external stakeholders.

The process should have a **purpose**. It is important to understand why the process exists or what is the need or requirement for the process.

A process should have a start and an end. Processes are started by trigger events and end with result events.

A process should have a boundary. The boundary will separate the process from its environment and will stipulate what's included and excluded in the process.

### 6.2 Process Suppliers and Customers

Process suppliers provide inputs to the process.

#### Process customers

- Receive value from the process
- Are always external to the process
- Can be internal or external to the department

### **6.3 Inputs**

Processes start with inputs arriving from the environment. They can be tangible or intangible items such as raw materials, information, messages, requests, funds, energy, service beneficiaries in need of a service. The arrival of inputs is the events that start the process.

### **6.4 Outputs**

Processes end with outputs. Outputs can be tangible or intangible items that flow from the process back to the environment. Examples are finished products, processed information, manufactured material, invested funds or satisfied service beneficiaries. The outputs achieve the results of the process.

### **6.5 Flow Units**

Flow units are the specific, definable items in the process that are transformed by the activities. Flow units start as inputs and are either consumed or end as outputs. They follow routes in the process. They can be documents, information or physical objects.

### **6.6 Activities**

Process activities transform inputs into outputs. Activities are the building blocks of processes. Activities always take time and require resources. Activities are linked to form a network.

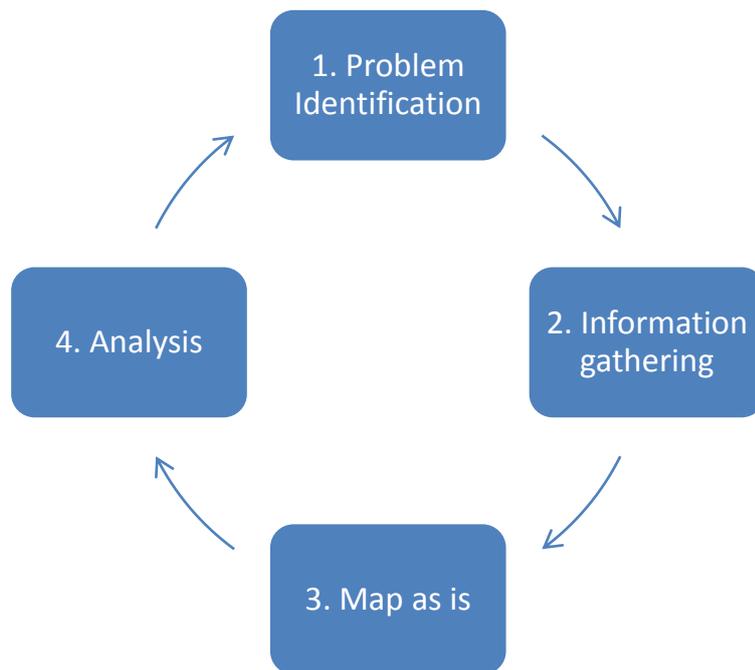
### **6.7 Resources**

Resources perform activities within the process. They apply energy when performing activities. They enable the transformation of inputs into outputs. They can be people, equipment, machines, tools information systems or facilities. Activities usually require multiple resources. They are not transformed by the activity.

## 6.8 Directives

Directives constrain or dictate under what conditions transformation occurs. They guide or govern the work being done. They are neither consumed nor transformed by the activity. They are the knowledge, policies, procedures and rules that keep the process on course and moving toward its desired result.

## 7. The Four Major Steps of Business Process Mapping



### 7.1 Step One: Problem identification

Prior to implementing BPM, it is prudent that those involved must understand the identification process of BPM, which cover the following areas:

- What or which service is going to be mapped?
- Why is it mapped?
- When is it going to be mapped?
- Where is the service being performed?
- Who is going to be involved in the whole process?

- How much is going to cost?

## **7.2 Step Two: Information gathering**

It is worth noting that in the BPM case defining processes shall not be based on the department's own understanding, instead it must be defined by the service beneficiaries' understanding. Walking through service beneficiary experiences assist the reviewer to identify trigger points that can make or break success.

In the information gathering steps, it is where you identify objectives, risks, and key controls in a process. There is a large volume of information that should be obtained before trying to learn the intricacies of a process. Primary among these is identifying who the true process owners are (that is the ones who can effect change). Their buy-in and agreement throughout the analysis is paramount. Additional information that should be obtained include the objectives of the process, risks to the process, key controls over those risks, and measures of success for the process.

In order to effectively record and maintain this information, important worksheets have to be developed.

Finally the main aim of this step is to identify possible bottle-necks/blockages that prevent the process from achieving its desired results. This includes information transfer between department or staff and value adding processes. In this step one looks at the following:

- Where are the bottlenecks?
- Which processes are as a result of service beneficiaries' dissatisfaction?
- Which processes have obvious problems?
- Where can improve efficiency be applied?

## **7.3 Step Three: Map "As Is" (Interviewing and mapping)**

This involves sitting with each employee and having him or her describe what it is they do on day-to-day bases. This information is then recorded.

Each step in the process is recorded and built in front of the individual completing the work. This allows them to interactively ensure the final map matches their understanding of work. Time flows down the page, and each individual involved is represented by a separate column. In this manner, a simple map

can result from a complicated process. Only after all this is done the actual "Process Mapping" is completed.

#### **7.4 Step Four: Analysis**

During the analysis, the reviewer looks at the following:

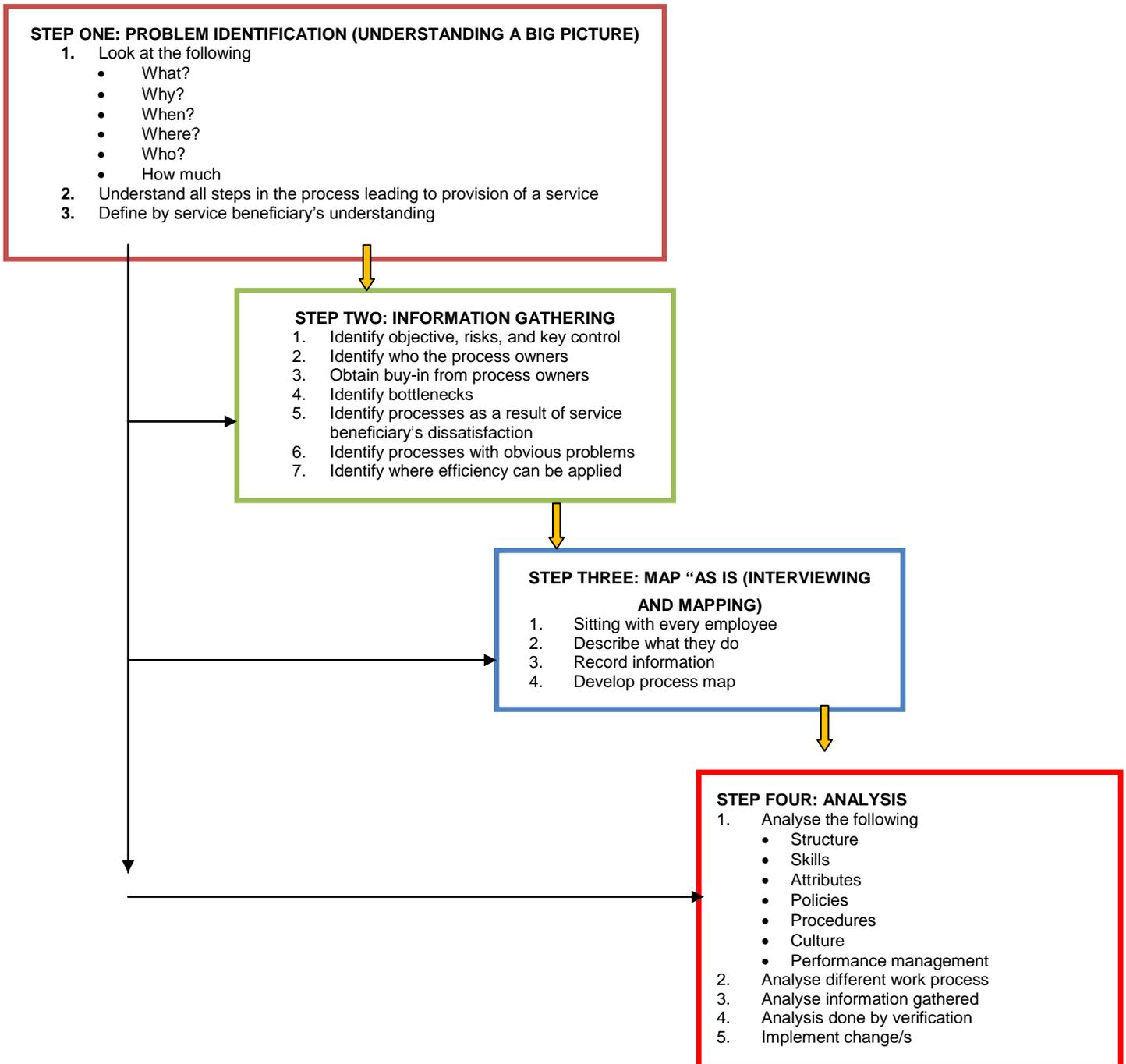
- Structure of the department
- Skills possessed and attributes by those performing the service
- Policies and procedures applicable to the service being mapped
- Organisation working culture
- Performance management

To begin with, managers should be able to identify different work processes that are being implemented. Knowing the process of each component of the department is crucial in understanding how work is done and how it could serve the needs of service beneficiaries.

Secondly, once the process is identified it is necessary to gather data and information on the intricacies of the different business processes. Managers should be able to gather information regarding the key personnel involved in the work process. These individuals can make changes to the process, therefore, they should be involved in crafting the process map. Other pertinent information that should be gathered includes process objectives, risks, control mechanisms, and measures of milestones.

Thirdly, verification should be done on the data gathered. Verification takes many forms like actual interview, line manager's conferences, and other techniques that a business manager can implement. Results should be mapped out. This step will validate if the identified processes are clear and if work set are being effectively carried out. The information gathered and the map that was created should be analyzed. Any inefficiency in the process should be purged immediately and best practices should serve as a model for the whole business process.

## 8. Business Process Mapping Diagram



## Annexure 1 Business Process Mapping Notation (BPMN)

These notes give details of the Business Process Model and Notation (BPMN) shapes

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
EVENTS	<ol style="list-style-type: none"> <li>1. An event is something that “happens” during the course of a business process.</li> <li>2. Events are triggered by something, and have results.</li> <li>3. Events are used to model time, conditions and communication in between different processes</li> </ol>	<ol style="list-style-type: none"> <li>1. BPMN has restricted the use of events to include only those types of events that will affect the sequence or timing of activities of a process.</li> </ol>
START EVENTS 	Indicates where a particular process will start.	<ol style="list-style-type: none"> <li>1. Starts the flow of the Process, and thus, will not have any incoming Sequence Flow—no Sequence Flow can connect to a Start Event.</li> <li>2. A Start Event is a circle that MUST be drawn with a single thin line. The thickness of the line MUST remain thin so that the Start Event may be distinguished from the Intermediate and End Events. NB: START EVENTS ONLY CATCH; END EVENTS ONLY THROW</li> </ol>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
NONE START EVENT 	Begin business processes in an undefined way (trigger unspecified).	It is also used for a Sub-Process that starts when the flow is triggered by its Parent Process. Use it only for expanded sub-process.
MESSAGE START EVENT 	A Message arrives from a participant and triggers the start of the Process.	Emits a token when a specified message is received.
TIMER START EVENT 	A specific time-date or a specific cycle (e.g., every Monday at 9am) can be set that will trigger the start of the Process.	Emits a token when a time condition becomes true.
CONDITIONAL START EVENT 	Is triggered when a Condition become true. E.g. "S&P 500 changes by more than 10% since opening," or "Temperature above 300C" becomes true etc.	A condition is a type of Expression. The condition expression for the Event must become false and then true before the Event can be triggered again. The event MUST be displayed with a lined paper marker.
SIGNAL START EVENT	A signal arrives that has been broadcast from another	Note that the Signal is not a Message, which has a specific

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>Process and triggers the start of the Process. E.g. Via Newsletter, DPSA circular, Email from Communication Unit etc.</p>	<p>target for the Message. Multiple Processes can have Start Events that are triggered from the same broadcasted Signal.</p>
<p>MULTIPLE START EVENT</p> 	<p>This means that there are multiple ways of triggering the Process. E.g. combination of email, telephone call, letter etc. Only one of these events will be required to start the Process.</p>	<p>Note – The behaviour of Process may be harder to understand if there are multiple Start Events. It is RECOMMENDED that this feature be used sparingly and that the modeller be aware that other readers of the Diagram may have difficulty understanding the intent of the Diagram.</p>
<p>END EVENT</p> 	<p>Indicates where a process will end. A final event is triggered as termination of the process.</p>	<ol style="list-style-type: none"> <li>1. Will not have any outgoing Sequence Flow and no Sequence Flow can connect from an End Event &amp; it cannot have incoming Message Flow but can have multiple incoming sequence flows.</li> <li>2. Shares the same basic shape of the Start Event and Intermediate Event, a circle with an open centre so that markers can be placed within</li> </ol>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		<p>the circle to indicate variations of the Event.</p> <p>3. The circle that MUST be drawn with a single thick black line. The thickness of the line MUST remain thick so that the End Event may be distinguished from the Intermediate and Start Events.</p>
<p>NONE END EVENT</p> 	<p>1. No Event Detail defined.</p> <p>2. It is also used to show the end of a Sub-Process that ends, which causes the flow to go back to its Parent Process.</p>	<p>1. The modeller does not display the type of Event.</p> <p>2. The Event will not have an internal marker.</p>
<p>MESSAGE END EVENT</p> 	<p>Indicates that a message is sent to a participant at the conclusion of the process. Is used to express a message as notification about the termination of the process.</p>	<p>Can only send message to a different participant or process and targets within same pool are not allowed.</p>
<p>TERMINATE END EVENT</p> 	<p>Indicates that all activities in the Process should be immediately ended.</p>	
<p>SIGNAL END EVENT</p>	<p>Indicates that a Signal will be broadcast when the End has</p>	<p>Note that the Signal, which is broadcast to any Process that</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>been reached.</p>	<p>can receive the Signal, can be sent across Process levels or Pools, but is not a Message (which has a specific Source and Target).</p>
<p>MULTIPLE END EVENT</p> 	<p>This means that there are multiple consequences of ending the Process.</p>	<p>The Event will have the pentagon internal marker.</p>
<p>INTERMEDIATE EVENT</p> 	<p>1. Indicates where something happens (an Event) somewhere between the Start and End of a Process.</p> <p>2. It will affect the flow of the Process, but will not start or (directly) terminate the Process. Intermediate Events can be used to:</p> <ul style="list-style-type: none"> <li>• show where messages are expected or sent within the Process,</li> <li>• show where delays are expected within the Process,</li> <li>• disrupt the Normal Flow through exception handling,</li> </ul>	<p>1. It is a circle that MUST be drawn with a double thin black line.</p> <p>2. The thickness of the line MUST remain double so that the Intermediate Event may be distinguished from the Start and End Events.</p> <p>3. An Intermediate Event that is placed within the normal flow of a Process can be used for one of two purposes. The Event can respond to (“catch”) the Event Trigger or the Event can be used to set off (“throw”) the Event Trigger. An Intermediate Event that is attached to the</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		<p>boundary of an Activity can only be used to “catch” the Event Trigger; it cannot have an incoming sequence Flow but can have one (and only one) outgoing Sequence Flow.</p> <p>4. When a Token arrives at an Intermediate Event that is placed within the normal flow of a Process, one of two things will happen. If the Event is used to “throw” the Event Trigger, then Trigger of the Event will immediately occur (e.g., the Message will be sent) and the Token will move down the outgoing Sequence Flow. If the Event is used to “catch” the Event Trigger, then the Token will remain at the Event until the Trigger occurs (e.g., the Message is received). Then the Token will move down the outgoing Sequence Flow</p> <p>NB: The following Intermediate Events MAY be used in Normal Flow: None, Message, Timer, Conditional,</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		Link, and Signal. Thus, the following MUST NOT: Multiple. ° If used within Normal Flow: They MAY have one (and only one) incoming sequence flow.
<p>MESSAGE INTERMEDIATE EVENT</p> 	<p>A message arrives from a participant and triggers the Event. This causes the Process to continue if it was waiting for the message.</p>	<p>When used to “catch” the message, then the Event marker will be unfilled. When used to “throw” the message, the Event marker will be filled. In Normal Flow, it can be used for sending messages to a participant.</p>
<p>SIGNAL INTERMEDIATE EVENT</p> 	<p>It is used for sending or receiving signals. A Signal is for general communication within and across Process Levels, across Pools, and between Business Process Diagrams. Thus, there is a source of the Signal, but no specific intended target.</p>	<ol style="list-style-type: none"> <li>1. The Event can only receive a Signal when attached to the boundary of an activity.</li> <li>2. Defines a more general, non-error condition for interrupting activities (such as the successful completion of another activity). When used to “catch” the signal, the Event marker will be unfilled. When used to “throw” the signal, the Event marker will be filled.</li> </ol>
	This means that there are	If used within normal flow, the

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
<p data-bbox="188 389 528 472">MULTIPLE INTERMEDIATE EVENT</p> 	<p data-bbox="627 389 971 472">multiple Triggers assigned to the Event.</p>	<p data-bbox="1026 389 1401 1133">Event can “catch” the Trigger or “throw” the Triggers. When attached to the boundary of an activity, the Event can only “catch” the Trigger. When used to “catch” the Trigger, only one of the assigned Triggers is required and the Event marker will be unfilled. When used to “throw” the Trigger (the same as a Multiple End Event), all the assigned Triggers will be thrown and the Event marker will be filled.</p>
<p data-bbox="188 1267 549 1301">LINK INTERMEDIATE EVENT</p> 	<p data-bbox="627 1214 967 1520">A Link is a mechanism for connecting two sections of a Process. Link Events can be used to create looping situations or to avoid long Sequence Flow lines.</p>	<ol data-bbox="1026 1214 1401 2018" style="list-style-type: none"> <li>1. Link Event uses are limited to a single Process level (i.e., they cannot link a parent Process with a Sub-Process).</li> <li>2. Paired Intermediate Events can also be used as “Off-Page Connectors” for printing a Process across multiple pages. They can also be used as generic “Go To” objects within the Process level. There can be multiple Source Link Events, but there can only be one</li> </ol>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		<p>Target Link Event. When used to “catch” from the Source Link, the Event marker will be unfilled. When used to “throw” to the Target Link, the Event marker will be filled.</p> <p>3. An Intermediate Event with a Link Trigger <b>MUST NOT</b> be both a target and a source of a Sequence Flow. If used as an “Off-Page Connector” or a “Go To” object: A Link Intermediate Event <b>MAY</b> be the target (Target Link Event) or a source (Source Link Event) of a Sequence Flow, but <b>MUST NOT</b> be both a target and a source. If there is a Source Link Event, there <b>MUST</b> be a matching Target Link Event (they have the same Name) There <b>MAY</b> be multiple Source Link Events for a single Target Link Event. There <b>MUST NOT</b> be multiple Target Link Events for a single Source Link Event.</p>

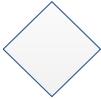
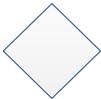
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<p>TIMER INTERMEDIATE EVENT</p> 	<p>A specific time-date or a specific cycle (e.g., every Monday at 9am) can be set that will trigger the Event.</p>	<p>1. Can be used in two ways: Time-out – when placed on activity boundary and Delay – when placed inline in a sequence flow.</p>
<p>GATEWAYS</p> 	<p>Gateways are used to model control flow branching in BPMN. Gateways split and join sequence flow.</p>	<p>1. A Gateway is a diamond that MUST be drawn with a single thin black line. 2. Sequence Flow MUST connect only to the corners of the boundary of the Gateway</p>
<p>EXCLUSIVE GATEWAYS</p> 	<p>Gates or Decisions are locations within a business process where the Sequence Flow can take two or more alternative paths. Decisions can be thought of as a question that is asked at that point in the Process. The question has a defined set of alternative answers (Gates). Each Decision Gate is associated with a condition expression found within an outgoing Sequence Flow. When a Gate is chosen during the</p>	<p>The conditions for the alternative Gates should be evaluated in a specific order. The first one that evaluates as TRUE will determine the Sequence Flow that will be taken. Since the behaviour of this Gateway is exclusive, any other conditions that may actually be TRUE will be ignored; only one Gate can be chosen. This means that if none of the other Gates are chosen, then the default Gate will be chosen—along with its</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>performance of the Process, the corresponding Sequence Flow is then chosen.</p> <p>The Data-Based Exclusive Gateways:</p> <p>The set of Gates for Data-Based Exclusive Decisions is based on the Boolean expression contained in the Condition Expression attribute of the outgoing Sequence Flow of the Gateway. These expressions use the values of process data to determine which path should be taken</p> <p>Pending.</p> <p>3.1 Example: After receiving an order, it shall be checked whether the order is valid. If it is, the order is processed and further steps are taken. If the order is invalid, it shall be rejected. The control flow depends on the validity of the order.</p>	<p>associated Sequence Flow. BUT the default Gate is not mandatory for a Gateway. Conditions are usually expressed by annotations on the outgoing edges. A Token arriving at the Decision would be directed down the appropriate path, based on the chosen Gate.</p> <p>The Data-Based Exclusive Gateway MUST NOT use a marker that is shaped like an "X" BUT only use blank diamond notation without a marker (PDI).</p>
INCLUSIVE GATEWAYS	Modeling "or" situations (not necessarily either/or) is done via Inclusive Gateways. This	1. When splitting, one or more branches are activated. All active incoming branches

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>Decision represents a branching point where alternatives are based on conditional expressions contained within outgoing Sequence Flow. However, in this case, the True evaluation of one condition expression does not exclude the evaluation of other condition expressions. Since each path is independent, all combinations of the paths may be taken, from zero to all.</p> <p>Example 1: Director attends a forum and is expected to co-facilitate and /or provide inputs during the session. He can facilitate and provide inputs at the same time or do one activity at the time or decide to do only one activity.</p> <p>Example 2. In a Quality Insurance Bureau customers are asked about shipping service and product quality. Customers can rate both criteria positive or negative which leads to 4 possible answers overall (+/+, +/-, -/+, -/-</p>	<p>must complete before merging. A marker ("O") will be placed in the center of the Gateway to indicate that the behavior of the Gateway is inclusive.</p> <p>2. When the Inclusive Gateway is used as a Merge, it will synchronize all Tokens that have been produced upstream, but at most one for each incoming Sequence Flow. It requires that Tokens for all Sequence Flow that were actually produced by an upstream (by an Inclusive situation, for example) be synchronized. If an upstream Inclusive produces two out of a possible three Tokens, then a downstream Inclusive will synchronize those two Tokens and not wait for another Token, even though there are three incoming Sequence Flow.</p> <p>The evaluation does not have to respect a certain order.</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>). The two criteria are independent, that means if a customer gave one answer so far, you don't know about how he will rate the other. The Inclusive Gateway realizes the implied Indecency.</p>	
<p>PARELLEL GATEWAY</p> 	<p>Modeling "and" situations is done via Parallel Gateways which provide a mechanism to synchronize parallel flow and to create parallel flow.</p> <p>Example: When receiving an order, products are shipped while the seller awaits the payment. Both tasks are executed in parallel. The process terminates after both payment is received and products are shipped.</p>	<ol style="list-style-type: none"> <li>1. 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.</li> <li>2. The Parallel Gateway MUST use a marker that is in the shape of a plus sign (“+”) and is placed within the Gateway diamond to distinguish it from other Gateways.</li> </ol>
<p>EVENT BASED GATEWAY</p> 	<p>To model decisions that are based on events, the Event based (Exclusive) Gateway is used.</p> <p>On the input side, their</p>	<p>After such Gateway there shall be two or more Intermediate Events. Message-, Timer-, Condition- and Signal-Events. It is also possible that none of the</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>behavior is the same as a Data-Based Exclusive Gateway. On the output side, the basic idea is that this Decision represents a branching point in the process where the alternatives are based on events that occur at that point in the Process, rather than the evaluation of expressions using process data. A specific event, usually the receipt of a message, determines which of the paths will be taken.</p> <p>Example 1: if a company is waiting for a response from a customer, they will perform one set of activities if the customer responds "Yes" and another set of activities if the customer responds "No." The customer's response determines which path is taken. The identity of the Message determines which path is to be taken.</p> <p>Example 2: Tom wants to have coffee with a friend. He sends him an sms and waits for reply. Depending on his friend's</p>	<p>awaited events will occur, so it is recommended to model also a Timer-Event which represents a Timeout situation. By that the process will guaranteed continue.</p>

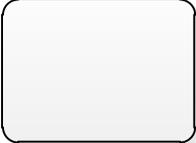
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	answer (agree or don't agree) he will meet him or he will stay at home.	
<p>ACTIVITY</p> 	<p>An activity is work that is performed within a business process. An activity can be atomic or non-atomic (compound). The types of activities that are a part of a Business Process Diagram are: Process, Sub-Process, and Task. However, a Process is not a specific graphical object. Instead, it is a set of graphical objects.</p>	<ol style="list-style-type: none"> <li>1. Activity Performers: One or more Performers MAY be entered. The Performer attribute defines the resource that will perform or will be responsible for the activity. The Performer entry could be in the form of a specific individual, a group, an organization role or position, or an organization.</li> <li>2. If the activity is instantiated with a specified input, that activity shall complete with the specified output.</li> </ol>
<p>SUB-PROCESS</p> 	<p>Is a compound activity in that it has detail that is defined as a flow of other activities. A Sub-Process is a graphical object within a Process Flow, but it also can be “opened up” to show another Process (either Embedded or Reusable). The Sub-Process can be in a collapsed view that hides its details or a Sub-Process can</p>	<p>A Sub-Process object shares the same shape as the Task object, which is a rounded rectangle. A Sub-Process is a rounded corner rectangle that MUST be drawn with a single thin black line. The Sub-Process marker MUST be a small square with a plus sign (+) inside. The square MUST be positioned at the bottom</p>

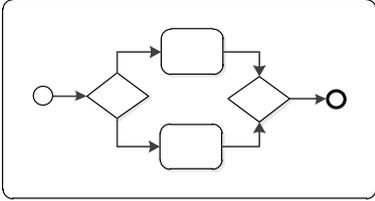
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	be in an expanded view that shows its details within the view of the Process in which it is contained.	centre of the shape. Expanded process may only begin with a none start event and end with a none end event.
<p>EMBEDDED SUB-PROCESS</p> 	<p>An Embedded (or nested) Sub-Process object is an activity that contains other activities (a Process). The Process within the Process is dependent on the parent Process for instigation and has visibility to the parent's global data.</p>	<p>The objects within the Embedded Sub-Process, being dependent on their parent, do not have all the features of a full Business Process Diagram, such as Pools and Lanes. Thus, an expanded view of the Embedded Sub-Process would only contain Flow Objects, Connecting Objects, and Artefacts.</p>
<p>A REUSABLE SUB-PROCESS</p> 	<ol style="list-style-type: none"> <li>1. A Reusable Sub-Process object is an activity within a Process that "calls" to another Process that exists within a BDP. The Process that is "called" is not dependent on the Reusable Sub-Process object's parent Process for global data.</li> <li>2. The Reusable Sub-Process object may pass data to/from the called Process: <ol style="list-style-type: none"> <li>2.1 Example: A JE process can be used as part of the other</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. The called Process will (MUST) be instantiated as a Sub-Process through a None Start Event. Being reusable, the Process could also be instantiated as a Sub-Process by other Independent Sub-Process objects (in the same or other diagrams). In addition, it can be instantiated as a top-level Process through a separate Start Event that has a</li> </ol>

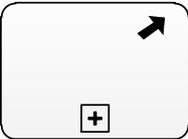
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>process such as Design Org structure. It can also be used as independent process when it gets triggered by a “JE request”.</p>	<p>Trigger.</p> <p>2. A Reusable Sub process object shares the same shape as the Task and Sub-Process, which is a rectangle that has rounded corners. If it calls a Process, then there are two options:</p> <p>2.1 The details of the called Process can be hidden and the shape will be the same as a collapsed.</p> <p>2.2 If the details of the called Process are available, then the shape will be the same as an expanded Sub-Process.</p>
<p>REFERENCE SUB PROCESS</p> 	<p>There may be times where a modeller may want to reference another Sub-Process that has been defined. If the two Sub-Processes share the exact same behaviour and properties, then by one referencing the other, the attributes that define the behaviour only have to be created once and maintained in only one location.</p>	<p>All inputs, outputs and data MUST match.</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>Example: A submission process. If all processes required of the submission and the format and steps are exactly the same, then one process can be used/ referenced for all other processes.</p>	
<p>A TASK</p> 	<p>A Task is an atomic Activity within a Process flow. It is a unit of work, the job to be performed. A Task is used when the work in the Process is not broken down to a finer level of Process Model detail. Generally, an end-user, an application, or both will perform the Task. i.e. draft a submission</p>	<p>A Task object shares the same shape as the Sub-Process, which is a rectangle that has rounded corners. A Task is a rounded corner rectangle that MUST be drawn with a single thin line. BPMN specifies three types of markers for Task: a Loop marker or a Multi-Instance marker and a Compensation marker. A Task MAY have one or two of these markers.</p>
<p>A SERVICE TASK</p> 	<p>A Service Task is a Task that provides some sort of service, which could be a Web service or an automated application external to the process.</p>	<p>Tasks of these types must start be receiving a Message &amp; when they end, they will often send a message back to the process that started them.</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
<p>A RECEIVE TASK</p> 	<p>A Receive Task is a simple Task that is designed to wait for a message to arrive from an external participant (relative to the Business Process). Once the message has been received, the Task is completed. A Receive Task is often used to start a Process. In a sense, the Process is bootstrapped by the receipt of the message.</p>	<p>1. In order for the Task to Instantiate the Process it must meet one of the following conditions:</p> <p>1.1 The Process does not have a Start Event and the Receive Task has no incoming Sequence Flow.</p> <p>1.2 The Incoming Sequence Flow for the Receive Task has a source of a Start Event.</p>
<p>A SEND TASK</p> 	<p>A Send Task is a simple Task that is designed to send a message to an external participant (relative to the Business Process). Once the message has been sent, the Task is completed.</p>	<p>This indicates that the Message will be sent by the Task. The Message in this context is equivalent to an out-only message pattern (Web service). One or more corresponding outgoing Message Flow MAY be shown on the diagram. However, the display of the Message Flow is</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		not required. The Message is applied to all outgoing Message Flow and the Message will be sent down all outgoing Message Flow at the completion of a single instance of the Task.
<p>A USER TASK</p> 	<p>A User Task is a typical “workflow” task where a human performer performs the Task with the assistance of a software application and is scheduled through a task list manager of some sort.</p>	<ol style="list-style-type: none"> <li>1. The Message will be received at the start of the Task, after the availability of any defined Input Sets. One or more corresponding incoming Message Flows MAY be shown on the diagram. However, the display of the Message Flow is not required.</li> <li>2. The sending of the message marks the completion of the Task, which may cause the production of an Output Set. One or more corresponding outgoing Message Flow MAY be shown on the diagram. However, the display of the Message Flow is not required.</li> </ol>
	A Script Task is executed by a	1. The modeller or implementer

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
<p>A SCRIPT TASK</p> 	<p>business process engine.</p>	<p>defines a script in a language that the engine can interpret. When the Task is ready to start, the engine will execute the script. When the script is completed, the Task will also be completed.</p> <p>2. The modeller MAY include a script that can be run when the Task is performed. If a script is not included, then the Task will act equivalent to a Task Type of None.</p>
<p>A MANUAL TASK</p> 	<p>1. A Manual Task is a Task that is expected to be performed without the aid of any business process execution engine or any application. 2. An example of this could be a telephone technician installing a telephone at a customer location.</p>	<p>The task is entirely performed manually.</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
<p>ADHOC SUB PROCESS</p> 	<ol style="list-style-type: none"> <li>1. Ad-Hoc is a Boolean attribute, which has a default of False. This specifies whether the Process is Ad Hoc or not. The activities within an Ad Hoc Process are not controlled or sequenced in a particular order; their performance is determined by the performers of the activities.</li> <li>2. Each process can be executed arbitrarily, often until a completion condition is fulfilled. Can be done when necessary (the need arises).</li> </ol>	<ol style="list-style-type: none"> <li>1. If set to True, then the Ad Hoc marker SHALL be placed at the bottom centre of the Process or the Sub-Process shape for Ad Hoc Processes. Following attributes apply ONLY if the sub-process is ad-hoc: Ad-hoc ordering – determines if it's activities can be performed in parallel (the default) or must be sequential. Affected by resource constraints Ad-hoc completion condition – an expression that tells you when the ad-hoc sub-process will end</li> </ol>
<p>STANDARD ACTIVITY LOOP</p> 	<ol style="list-style-type: none"> <li>1. If the loop condition is evaluated before the activity, this is generally referred to as a “while” loop. This means that the activities will be repeated as long as the condition is true. The activities may not be performed at all (if the condition is false the first time) or performed many</li> </ol>	<ol style="list-style-type: none"> <li>1. Loops can also be created by connecting a Sequence Flow to an “upstream” object. An object is considered to be upstream if that object has an outgoing Sequence Flow that leads to a series of other Sequence Flow, the last of which turns out to be an incoming Sequence Flow to the original object. That is,</li> </ol>

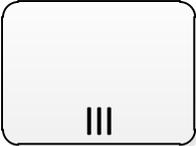
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>times. E.g. Record customer details while more customers are still waiting or calling in. Activity will stop as soon as no customers are available or calling in.</p> <p>2. If the loop condition is evaluated after the activity, this is generally referred to as an “until” loop. This means that the activities will be repeated until a condition becomes true. The activities will be performed at least once, but may be performed many times. E.g. Amend the submission until accepted.</p>	<p>that object produces a Token and that Token traverses a set of Sequence Flow until the Token reaches the same object again.</p> <p>2. Expanded Sub-Processes also can have a loop marker placed at the bottom centre of the Sub-Process rectangle.</p> <p>3. Those activities that are repeated (looped) will have a loop marker placed in the bottom centre of the activity shape.</p>
<p>MULTI-INSTANCE LOOP</p> 	<p>1. If the MI Ordering is serial, then this becomes much like a while loop with a set number of iterations the loop will go through. These are often used in processes where a specific type of item will have a set number of sub-items or line items. A Multi-Instance loop will be used to process each of the line items.</p>	<p>Those activities that are Parallel Multi-Instance will have a parallel marker placed in the bottom centre of the activity shape.</p> <p>New activity instances may execute in parallel or in sequence.</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	<p>2. If the MI Ordering is parallel, this is generally referred to as multiple instances of the activities. An example of this type of feature would be used in a process to write a book, there would be a Sub-Process to write a chapter. There would be as many copies or instances of the Sub-Process as there are chapters in the book. All the instances could begin at the same time. Or send newsletters while subscribers are still active or valid.</p>	
ARTEFACTS	<p>1. BPMN provides modellers with the capability of showing additional information about a Process that is not directly related to the Sequence Flow or Message Flow of the Process.</p> <p>2. At this point, BPMN provides three standard Artefacts: A Data Object, a Group, and an Annotation. Additional standard Artefacts may be added to the BPMN</p>	<p>1. Associations can be used to link Artefacts to Flow Objects.</p> <p>2. An Artefact MUST NOT be a target/ source for Sequence Flow OR Message Flow.</p>

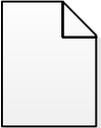
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	specification in later versions.	
<p>DATA OBJECTS</p> 	<ol style="list-style-type: none"> <li>1. Is considered an Artefact and not a Flow Object. They are considered an Artefact because they do not have any direct effect on the Sequence Flow or Message Flow of the Process, but they do provide information about what the Process does.</li> <li>2. That is, how documents, data, and other objects are used and updated during the Process. While the name “Data Object” may imply an electronic document, they can be used to represent many different types of objects, both electronic and physical.</li> </ol>	<ol style="list-style-type: none"> <li>1. A Data Object is a portrait-oriented rectangle that has its upper-right corner folded over that MUST be drawn with a solid single black line.</li> <li>2. As an Artefact, Data Objects generally will be associated with Flow Objects. An Association will be used to make the connection between the Data Object and the Flow Object. This means that the behaviour of the Process can be modelled without Data Objects for modellers who want to reduce clutter.</li> <li>3. The same Process can be modelled with Data Objects for modellers who want to include more information without changing the basic behaviour of the Process.</li> </ol>

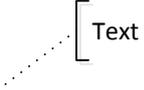
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
<p>TEXT ANNOTATIONS</p> 	<ol style="list-style-type: none"> <li>1. Text Annotations are a Mechanism for a modeller to provide additional information for the reader of a BPMN Diagram.</li> <li>2. Text is an attribute which is text that the modeller wishes to communicate to the reader of the Diagram.</li> </ol>	<ol style="list-style-type: none"> <li>1. A Text Annotation is an open rectangle that MUST be drawn with a solid single black line.</li> <li>2. The Text Annotation object can be connected to a specific object on the Diagram with an Association, but do not affect the flow of the Process. Text associated with the Annotation can be placed within the bounds of the open rectangle.</li> </ol>
<p>A GROUP</p> 	<ol style="list-style-type: none"> <li>1. Is an Artefact that provides a visual mechanism to group elements of a diagram informally? The grouping is tied to the Category supporting element (which is an attribute of all BPMN elements). That is, a Group is a visual depiction of a single Category.</li> <li>2. The graphical elements within the Group will be assigned the Category of the Group. (Note -- Categories can be highlighted through other mechanisms,</li> </ol>	<ol style="list-style-type: none"> <li>1. A Group is a rounded corner rectangle that MUST be drawn with a solid dashed black line.</li> <li>2. As an Artefact, a Group is not an activity or any Flow Object, and, therefore, cannot connect to Sequence Flow or Message Flow. In addition, Groups are not constrained by restrictions of Pools and Lanes. This means that a Group can stretch across the boundaries of a Pool to</li> </ol>

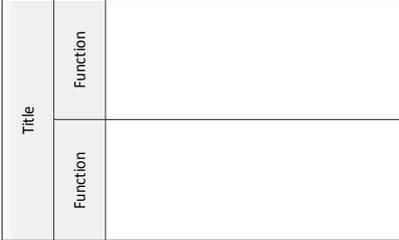
Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
	such as colour, as defined by a modeller or a modelling tool).	<p>surround Diagram elements, often to identify activities that exist within a distributed business-to-business transaction.</p> <p>3. Groups are often used to highlight certain sections of a Diagram without adding additional constraints for performance, as a Sub-Process would. The highlighted (grouped) section of the Diagram can be separated for reporting and analysis purposes. Groups do not affect the flow of the Process.</p>
CONNECTING OBJECTS	<p>There are two ways of Connecting Objects in BPMN: a Flow, either sequence or message, and an Association. Sequence Flow and Message Flow, to a certain extent; represent orthogonal aspects of the business processes depicted in a model, although they both affect the performance of activities within a Process.</p>	<p>Sequence Flow will generally flow in a single direction (either left to right, or top to bottom) and Message Flow will flow at a 90° from the Sequence Flow. This will help clarify the relationships for a Diagram that contains both Sequence Flow and Message Flow. However, BPMN does not restrict this relationship between the two types of Flow. A modeller can</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		connect either type of Flow in any direction at any place in the Diagram.
<p>A SEQUENCE FLOW</p> 	<p>A Sequence Flow is used to show the order that activities will be performed in a Process. Each Flow has only one source and only one target.</p>	<ol style="list-style-type: none"> <li>1. The source and target must be from the set of the following Flow Objects: Events (Start, Intermediate, and End), Activities (Task and Sub-Process), and Gateways.</li> <li>2. During performance (or simulation) of the process, a Token will leave the source Flow Object, traverse down the Sequence Flow, and enter the target Flow Object.</li> <li>3. A Sequence Flow is a line with a solid arrowhead that MUST be drawn with a solid single line.</li> </ol>
<p>A MESSAGE FLOW</p> 	<ol style="list-style-type: none"> <li>1. A Message Flow is used to show the flow of messages between two entities that are prepared to send and receive them.</li> <li>2. In BPMN, two separate Pools in the Diagram will represent the two entities.</li> </ol>	<ol style="list-style-type: none"> <li>1. Message Flow MUST connect two Pools, either to the Pools themselves or to Flow Objects within the Pools.</li> <li>2. They cannot connect two objects within the same Pool.</li> <li>3. A Message Flow is a line with an open arrowhead that</li> </ol>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		<p>MUST be drawn with a dashed single black line.</p> <p>4. The Message Flow can connect directly to the boundary of a Pool, especially if the Pool does not have any process details within.</p> <p>5. A Message Flow can also cross the boundary of a Pool and connect to a Flow Object within that Pool.</p> <p>6. If there is an Expanded Sub-Process in one of the Pools, then the message flow can be connected to either the boundary of the Sub-Process or to objects within the Sub-Process.</p>
<p>AN ASSOCIATION</p> <p>.....</p>	<p>1. An Association is used to associate information and Artefacts with Flow Objects. Text and graphical non-Flow Objects can be associated with the Flow Objects and Flow.</p> <p>2. An Association is also used to associate Data Objects with other objects.</p>	<p>1. An Association Flow is a line that MUST be drawn with a dotted single black line.</p> <p>2. If there is a reason to put directionality on the association then: A line arrowhead MAY be added to the Association line.</p> <p>3. A directional Association is often used with Data Objects to show that a Data Object is</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
		<p>either an input to or an output from an activity.</p> <p>4. An Association is used to connect user-defined text (an Annotation) with a Flow Object.</p>
SWIM-LANES (POOLS AND LANES)	<p>BPMN uses the concept known as “swimlanes” to help partition and/organize activities. It is possible that a BPMN Diagram may depict more than one private process, as well as the processes that show the collaboration between private processes or Participants. If so, then each private business process will be considered as being performed by different Participants. Graphically, each Participant will be partitioned; that is, will be contained within a rectangular box called a “Pool.” Pools can have sub-Swim lanes that are called, simply, “Lanes.”</p>	
	<p>1. A Pool represents a Participant in the Process. A Participant can be a specific</p>	<p>1. A Pool is a square-cornered rectangle that MUST be drawn with a solid single black</p>

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance		
<p>A POOL</p> <table border="1" data-bbox="199 555 593 694"> <tr> <td data-bbox="199 555 296 694">Function</td> <td data-bbox="296 555 593 694"></td> </tr> </table>	Function		<p>business entity (e.g., a company) or can be a more general business role (e.g., a buyer, seller, or manufacturer).</p> <p>2. Graphically, a Pool is a container for partitioning a Process from other Pools, when modelling business-to-business situations, although a Pool need not have any internal details (i.e., it can be a “black box”).</p> <p>3. Another aspect of Pools is whether or not there is any activity detailed within the Pool. Thus, a given Pool may be shown as a “White Box,” with all details exposed, or as a “Black Box,” with all details hidden. No Sequence Flow is associated with a “Black Box” Pool, but Message Flow can attach to its boundaries.</p>	<p>line.</p> <p>2. One, and only one, Pool in a diagram MAY be presented without a boundary. If there is more than one Pool in the diagram, then the remaining Pools MUST has a boundary.</p> <p>3. To help with the clarity of the Diagram, A Pool will extend the entire length of the Diagram, either horizontally or vertically. However, there is no specific restriction to the size and/or positioning of a Pool. Modellers and modelling tools can use Pools (and Lanes) in a flexible manner in the interest of conserving the “real estate” of a Diagram on a screen or a printed page.</p> <p>4. A Pool acts as the container for the Sequence Flow between activities. The Sequence Flow can cross the boundaries between Lanes of a Pool, but cannot cross the boundaries of a Pool.</p>
Function				

Diagram Types	Description	Quality Assurance Guideline: Key Attributes, Rules and Standards for compliance
<p>LANE</p> 	<p>1. Lane is a sub-partition within a Pool and will extend the entire length of the Pool, either vertically or horizontally.</p> <p>2. If the pool is invisibly bounded, the lane associated with the pool must extend the entire length of the pool.</p> <p>3. Text associated with the Lane (e.g., its name and/or any attribute) can be placed inside the shape, in any direction or location, depending on the preference of the modeller or modelling tool vendor.</p>	<p>1. Lanes are used to organize and categorize activities within a Pool. The meaning of the Lanes is up to the modeller. BPMN does not specify the usage of Lanes.</p> <p>2. Lanes are often used for such things as internal roles (e.g., Manager, Associate), systems (e.g., an enterprise application), an internal department (e.g., shipping, finance), etc. In addition, Lanes can be nested or defined in a matrix. For example, there could be an outer set of Lanes for company departments and then an inner set of Lanes for roles within each department.</p>

## 9 References

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