**

**Airline Industry Data Model**

*Business Logical Model Guidelines*

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Document Status

DRAFT V0.5

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**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Name** | **Description of change** |
| 0.1 | 22 Jan 2015 | Peter Neumann | First draft |
| 0.2 | 28 Jan 2015 | Peter Neumann | After a first review |
| 0.3 | 11 Oct 2019 | Michael Thomas,  Jean-Christophe Cornu | Updates on Business Pillars for Business Scenario |
| 0.4 | 11 Dec 2019 | Michael Thomas,  Jean-Christophe Cornu | Further updates on Business Pillars |
| 0.5 | 07 Jan 2020 | Jean-Christophe Cornu | Minor corrections after internal review |
|  |  |  |  |
|  |  |  |  |
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|  |  |  |  |

# Introduction

## Document Purpose and Intended Audience

The purpose of this document is to describe how to develop the Business Conceptual Model, i.e. the conceptual layer of the business pillar (partition “B2”), of the airline industry data model.

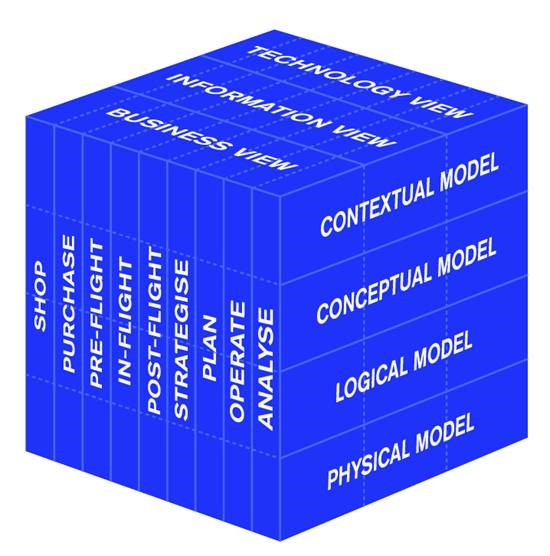
The intended audience of this document are all individuals involved in developing the model, mostly:

* members of PSC (Passenger Standards Conference) standards work-groups developing or expanding the LDM as part of BRD development,

These individuals have a variety of profiles including Airline and IT supplier Business Analysts and Enterprise Architects.

## Document Context

The Airline industry data model is to be published by IATA as a foundational layer for the development of airline messaging standards in XML or any other data format that may emerge in the future.



The data model is structured in 3 pillars (Business, Information, Technology), 4 layers (Contextual, Conceptual, Logical, Physical), and operational stakeholder views. A separate guideline document will exist for each of the 12 partitions defined by the pillar and layer.

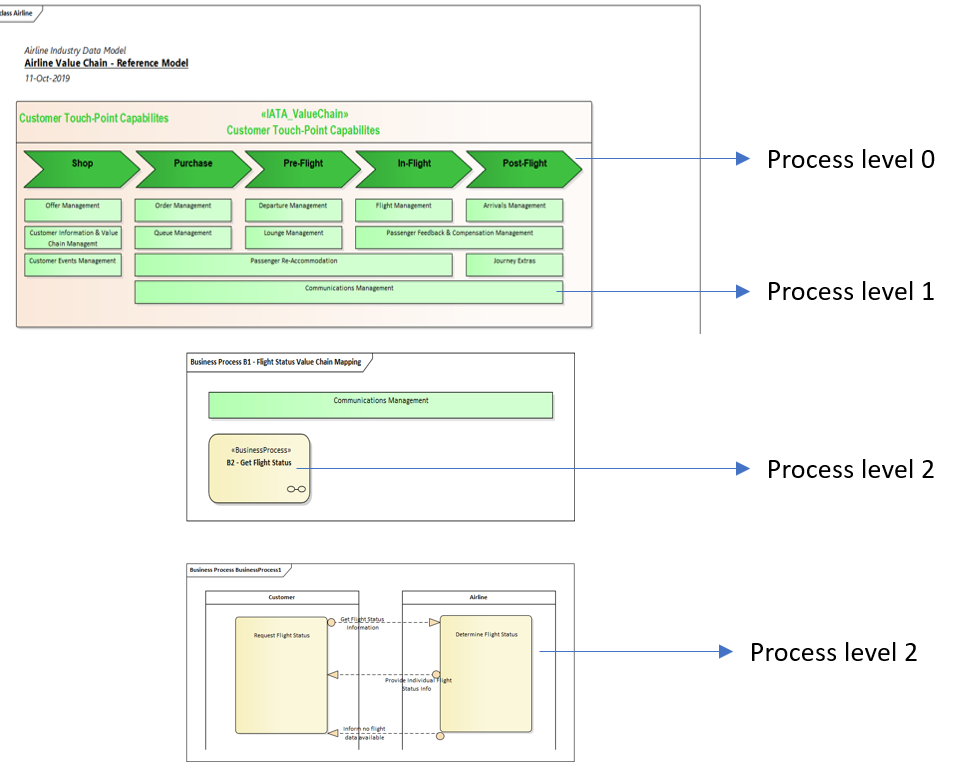
The data model uses UML and as a tool Sparx Enterprise Architect (EA). The first 3 layers are platform-independent. The present guidelines will therefore be (partly) EA specific, but agnostic to the target messaging standard (e.g. XML).

# Overall Approach to Business Modeling

The content of this chapter is the same for all Business pillar guidelines (B1, B2, B3) to introduce the entire business modeling approach.

## Definition of Process Levels

As a fundamental concept used in this Business Architecture the following picture shows the different process levels with their definitions. This concept is derived from the process architecture used in SAP reference model.



Process Level 0 (Primary Activity)

Shows the Domain Primary Activities which have the goal to create value that exceeds the cost of providing the product or service.

Process Level 1 (Process Area):

Shows a Business Process area for a specific business purpose.

The Business Domain Model is the modeling starting point and the highest-level model type. It shows the business domains and clusters the subdomains into these business domains.

Process Level 2 (Business Process Activity Diagram):

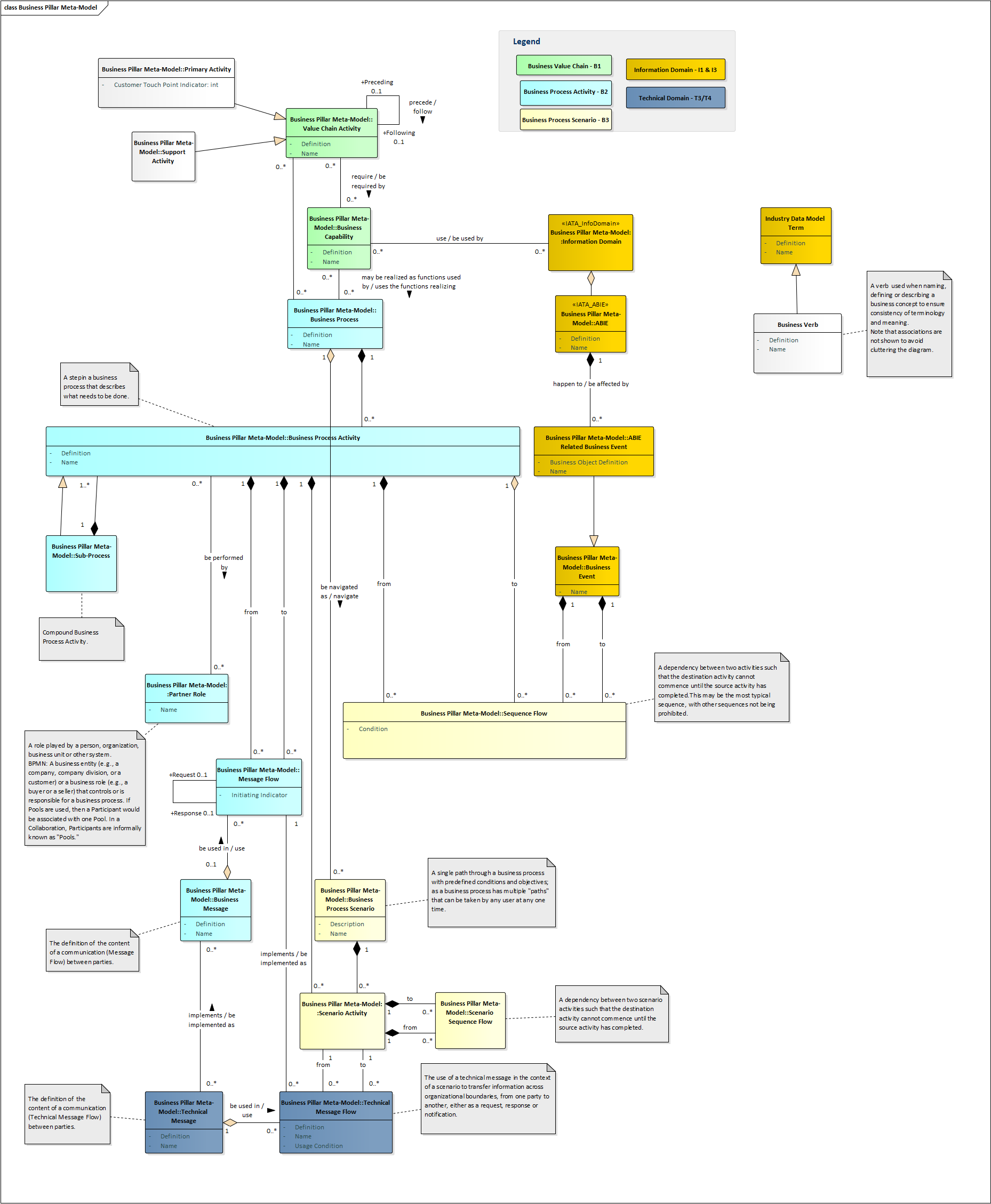
Shows the root level for a specific business process activity purpose.

This is where the Business modeling starts describing the Business capabilities using Business Process Notations workflow

## Business pillar to Information & Technology pillar Connections

The following diagram, available in AIDM Enterprise Architect, represents the Business metamodel and how business information is linked to the Information pillar and the Technology pillar.

The following picture shows the main artefacts and how they are connected between the Business artifacts (color: green, light blue & yellow), Information (color: dark yellow) and Technology (color: dark blue)



## Upfront vs progressive Modeling of Content

The actual content of the Business Architecture will be created using 2 complementary approaches:

Upfront Modeling

* The content of the Value Chain is be provided as initial model.
* The content of the Process Level 1 diagram made up of the Value Chain process areas is provided as initial model.

Progressive Modeling

* All other content will be created by the work-group BRDs during their projects, as well as additions or updates to the upfront created content.

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# Modeling Use Cases (\*)

(\*) This chapter to create Modeling Use Cases is subject to be removed from the B3 guidelines based on the discussion with Methodology Group, main reason is to simplify the approach and have use User Story directly described in in the Business Process Scenario

## Modeling Artifacts

### Artifact Usage

A use case diagram at its simplest is a representation of an actor`s interaction with the system and depicting the specifications of a [use case](http://en.wikipedia.org/wiki/Use_Case). A use case diagram can portray the different types of users of a system and the case and will often be accompanied by other types of diagrams as well.

### Artifacts and Properties

This chapter explains which Artifacts needs to be used and which attributes of the Artifacts need to be filled.

|  |  |  |  |
| --- | --- | --- | --- |
| **Artifact** | **Stereotype** | **Description** | **Properties (and example)** |
| Use Case | IATA\_Use Case | A use case is a list of steps, typically defining interactions between a role (known in [Unified Modeling Language](http://en.wikipedia.org/wiki/Unified_Modeling_Language) (UML) as an "[actor](http://en.wikipedia.org/wiki/Actor_(UML))") and a system, to achieve a goal. The actor can be a human or an external system. | * Name: Name of the Use Case |
| Actor | IATA\_Use Case Actor | An actor in the [Unified Modeling Language](http://en.wikipedia.org/wiki/Unified_Modeling_Language) (UML) "specifies a role played by a user or any other system that interacts with the subject. | * Name: Name of the Actor |
| Boundary | Not applicable | The system boundary indicates the scope of the system.  The use cases inside the rectangle represent the functionality that is intended to implement. | * Name: Name of the Boundary (e.g. Customer, Airline OMS, Airline Inventory) |

### Artifact Rules and Quality Assurance

* The Use Cases need to be placed into the corresponding boundary.

## Modeling Associations

### Association Usage

Not applicable.

### Associations and Properties

This chapter explains which associations between the Artifacts need to be used and which attributes of the associations need to be filled.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **From Artifact** | **Association** | **To Artifact** | **Description** | **Properties** |
| Actor | Use | Use Case | Indicates the use of a system by an actor. |  |

### Association Rules and Quality Assurance

Not applicable

## Navigation

This chapter explains which navigation from an artifact to another model needs to be created.

|  |  |
| --- | --- |
| **Navigation** | **Description** |
| Use Case | Indicates the use of a system by an actor.  link to the corresponding Business Process Scenario (e.g. defined as UserStory) can be attached in the diagram using with insert \ Other element \ Business Process Scenario |

## Views / Diagrams

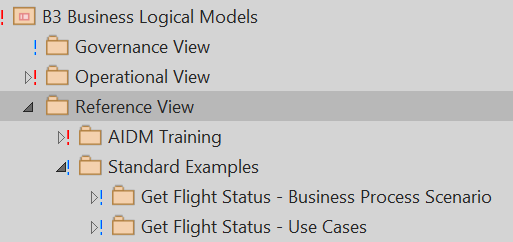
The diagram and all its Artifacts need to be created in the Operational View.

|  |  |  |  |
| --- | --- | --- | --- |
| **Diagram** | **type** | **Toolbox** | **Properties** |
| Use Case Diagram | Use Case | IATA | * Name: Name of the Use Case   (e.g. Get Flight Status UC) |

## Package Structure

There will be a Package per project with as many Use Case Diagrams required by the Business Requirement Document in the Operational View.

Standard Examples are also defined in the Reference View..



# Modeling Business Process Scenario

## Modeling Artifacts

### Artifact Usage

Modeling Business scenario Activity are referenced from a copy of an existing Business Process Activity diagram created in B2 partition.

### Artifacts and Properties

This chapter explains which Artifacts needs to be used and which attributes of the Artifacts need to be filled.

|  |  |  |  |
| --- | --- | --- | --- |
| **Artifact** | **Stereotype** | **Description** | **Properties (and example)** |
| Activity | Activity | An Activity organizes and specifies the participation of subordinate behaviors, such as sub-Activities or Actions, to reflect the control and data flow of a process | * Name: Name of the Activity |
| ActivityInitial | Use Case Activity Initial | In Activity diagrams, it defines the start of a flow when an Activity is invoked. |  |
| ActivityFinal | Use Case Activity Final | The Activity Final element, indicates the completion of an Activity or process. |  |
| User Story | User Story | References the appropriate Business user story providing details of the Business message flow | Name of the User Story with details of the Business message flow described in the notes |

### Artifact Rules and Quality Assurance

* A User Story has at least one Initial and one Final and should describe at least one success and error Business message flow.
* This is recommended to have multiple User Story to describe all relevant scenario

## Navigation

This chapter explains which navigation from an artifact to another model needs to be created.

|  |  |
| --- | --- |
| **Navigation** | **Description** |
| Business Process Scenario diagram with UserStory | Indicates the use of a UserStory within a Business Process Activity.    link to the corresponding high-level Use Cases can be attached in the diagram using with insert \ Other element \ Use Cases |

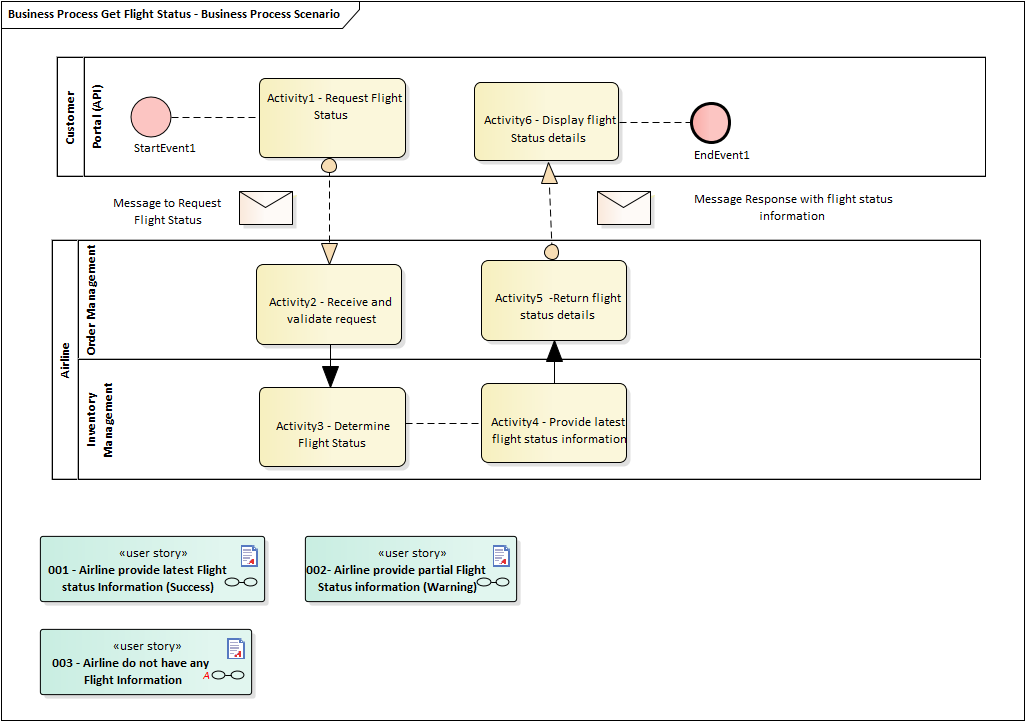
## Views / Diagrams

The list of UserStory artifacts are referenced directly in the copy of the Business Process diagram defined in previous Business Concept (B2) and renamed as Business Process Scenario with all UserStory defined.

|  |  |  |  |
| --- | --- | --- | --- |
| **Diagram** | **Stereotype** | **Toolbox** | **Properties** |
| User Story | EAUserStory | BPMN 2.0 | * Name of the diagram: Name of the Business Scenario Diagram for the project.   (e.g.: Get Flight Status)   * Type: Business Process * Description: Verbal text to explain the content of the UserStory * Link to the composite diagram describing the details of each specific UserStory (e.g. Success, Warning, Error) |

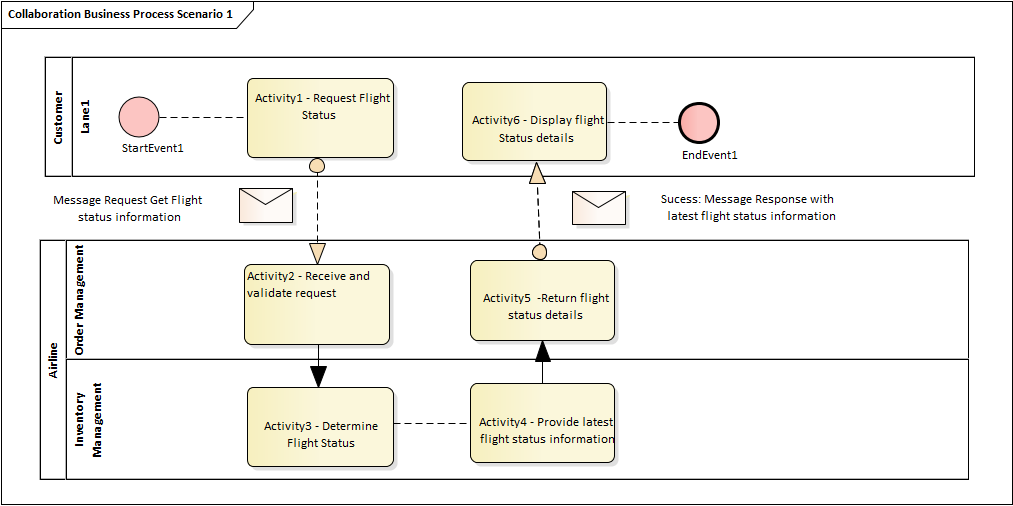
### Views Business Process Scenario Diagram

Below is an example of the diagram for the Business Process “Get Flight Status” with as many required UserStory to explain different scenario to be developed (e.g. Success, Warning or Error message)



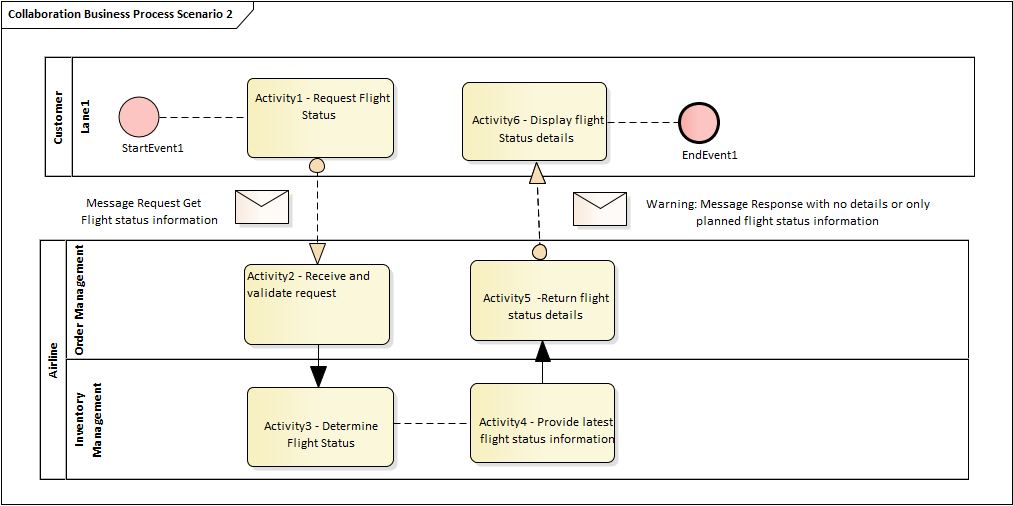
### UserStory 001 – Success

Airline send back a message response with actual flight status information retrieved from Inventory system.



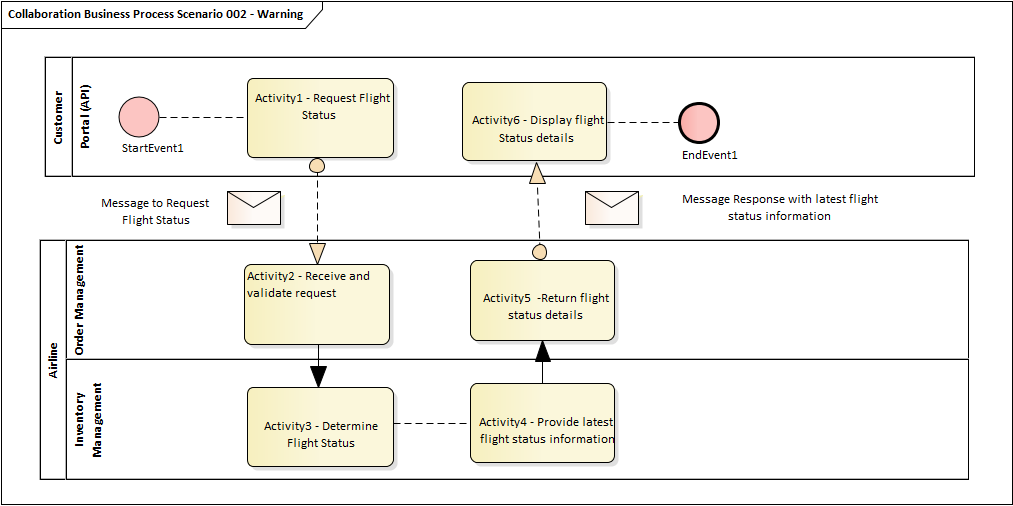
### UserStory 002 – Warning

Airline Sent a Message Response with only the planned flight status information, as retrieved from Inventory system and tell the customer to retry later.



### UserStory 003 – Error

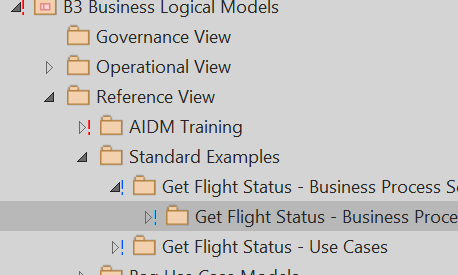
Airline returns error message (e.g. flight number is incorrect or cancelled)



## Package Structure

There will as many Business Process Scenario Diagram as required by the project to provide details of the UserStory in the Operational View.

There will be one Package per Business Process Scenario.



# Annexes

## Third Party Standards

**BPMN 2.0 :**

BPMN 2.0 provides instruments to enable enterprise architects to describe, analyze and visualize the relationships among business domains in an unambiguous way.

Business Process Model and Notation has become the de-facto standard for business processes diagrams. It is intended to be used directly by the stakeholders who design, manage and realize business processes, but at the same time be precise enough to allow BPMN diagrams to be translated into software process components. BPMN has an easy-to-use flowchart-like notation that is independent of any implementation environment.

[http://www.opengroup.org/subjectareas/enterprise/BPMN 2](http://www.opengroup.org/subjectareas/enterprise/BPMN%202).0

<https://sparxsystems.com/enterprise_architect_user_guide/14.0/guidebooks/tools_ba_bpmn_business_process_diagram.html>

**UML :**

The Unified Modeling Language™ - UML - is [OMG](http://www.omg.org/)'s most-used specification, and the way the world models not only application structure, behavior, and architecture, but also business process and data structure.

<http://www.uml.org/>

## Glossary of this document

|  |  |
| --- | --- |
| **Term** | **Description** |
| ABIE | Aggregated Business Information Entity |
| AIDM | Airline Industry Data Model |
| SSR | Special Service Request |
| BRD | Business Requirements Document |
| DMTFG | Data Model and Tooling Focus Group |
| EA | Enterprise Architect |
| IATA | International Air Transport Association |
| OMG | Object Management Group |
| PSC | Passenger Services Conference |
| UML | Unified Modeling Language |
| XML | Extensible Markup Language |