

2. INTRODUCTION TO THE BUSINESS PROCESS ANALYSIS

2A DEFINITION AND SCOPE

A business process is a sequence of steps performed for a given purpose. Based on this generic definition, a business process considered within the framework of trade facilitation can be defined as:

A chain of logically connected activities to move goods and related information across borders from buyer to seller and to provide related services

Business processes are valuable organizational assets. They enable the creation and delivery of business values as defined by organizational goals. Business processes are often driven by information. In the area of international supply chain, for example, the movement of cargo has to be escorted by corresponding cargo documents. It involves an average of 40 documents, 200 data elements (30 of which are repeated at least 30 times) and the re-keying of 60 to 70 per cent of data at least once.³ Delay on document processing or lack of integrity in the information that flows across business processes has become a factor that holds back cargo movement. On the average, each additional day that a cargo is delayed prior to being shipped reduces trade volume by at least 1 per cent and by approximately 7 per cent if the products are time-sensitive to time-insensitive agricultural goods.⁴

³ APEC (1996). *APEC means business: building prosperity for our community. Report to the Economic Leaders*. Asia Pacific Economic Cooperation Secretariat, Singapore.

⁴ Djankov, S., Freund, C., and Pham, C. (2006). *Trading on Time*, World Bank, Washington DC.

Because the underlying business process has a significant impact on the performance of the overall business, any process improvement achieved can enhance the competitiveness both at the organizational and the national level. Business process analysis is a study of existing business processes within one or across several organizations, both in normal operation and in exceptional situations. Its primary goal is to understand attributes of business processes and relationships among them. The results of the business process analysis may serve as a baseline for implementing trade facilitation measures such as:

- Simplification of trade procedures (including commercial, transport, regulatory and financial procedures);
- Simplification of documentary requirements and their alignment with international standards; and
- Automation of international trade transaction and its associated electronic documents for Single Window and paperless trade systems.

2B BUSINESS PROCESS MODELING METHODOLOGY USED IN THIS GUIDE

Business process modeling is a technique for documenting business processes where each element of the business process is represented by graphical notations. It can be achieved by a simple drawing with paper and pencil or a software tool. The resulting graphical representation of a business process is known as a *business process model*. Each business process model illustrates:

- Activities that come in a specific order and decision points;

- Actors who perform those activities;
- Defined inputs and outputs of each activity;
- Criteria for entering and exiting the business process;
- How actors relate to one another;
- How information flows throughout the business process;
- Associated rules and regulations; and
- Quantitative indicators such as number of steps, as well as time and cost required to complete a particular business process.

The documentation of existing business processes in simple diagrams and brief descriptions helps create a common understanding on working norms and operational procedures among relevant stakeholders. The stakeholders of the business processes include practitioners who deal with the documented business processes on a daily basis; experts who may be brought in to assist with the initiation and implementation of business process improvement programmes, and decision makers who make informed decisions regarding the revision of related regulations and procedures.

Business process models are increasingly used in trade facilitation. For the purposes of this Guide, the business process model serves as a tool that facilitates:

- The analysis of activities, documents, and information flow in international trade procedures;
- The identification and prioritization of problematic areas that cause the delays in moving goods from seller to buyer; and
- The design of improvement measures to address these problematic areas (e.g. simplifying processes and data, and eliminating redundancies).

The Unified Modeling Language (UML)⁵ provides a set of standard graphical notations for business process modeling. UML is internationally accepted and widely used not only among practitioners in business communities but also

in information technology and software development. The consistency in modeling techniques produces results in a form that is easily understood, analysed and validated. If the ultimate goal of the business process modeling and analysis is to automate the international trade transaction and move to electronic trade documents exchangeable through the Single Window and paperless trade systems, the use of common standard graphical notations in business process modeling is vital. This is mainly because the common standard graphical notations allow business domain experts to communicate procedural and documentary requirements with technical experts who are designated to put the systems in place.

2C UML GRAPHICAL NOTATIONS USED IN THIS GUIDE

In business process analysis, the use case diagram serves as a project's frame of reference. Its purpose is to present a graphical overview of core business processes that are subject to further examination at a greater depth. It indicates all stakeholders involved in these business processes and demonstrates all actual associations between these business processes and the stakeholders.

The activity diagram is an elaboration of each business process displayed in the use case diagram. It portrays a sequence of activities and information flows from one responsible party to another. It informs its audience not only who is doing what in which order, but also documentary inputs that serve as prerequisites to activities and documentary outputs that can be obtained upon completion of activities. A set of graphical notations for use case and activity diagramming are provided with explanations of their meaning in Tables 2.1. and 2.2. These notations are adopted from UML.

This BPA Guide focuses on modeling business processes with two types of UML diagrams: the use case diagram and the activity diagram, shown in Figure 2.1. The use case diagram illustrates the high-level business processes and actors associated with each of them. It serves as a frame of reference for further elaboration of business process modeling work. The activity diagram, on the other hand,

⁵ UML Resource Page, <http://www.uml.org>.

Table 2.1. Use Case Diagram notations

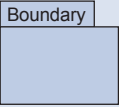

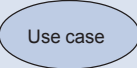
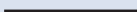
Notation	Description and instruction for use
	<p>Subject Boundary:</p> <ul style="list-style-type: none"> – Represents a process area – Includes the name of a subject boundary on top
	<p>Actor:</p> <ul style="list-style-type: none"> – Represents a role which participates in a particular business process. – Can be an individual, an organization, a department, etc. – Is labelled with a role-name – Is placed outside the subject boundary
	<p>Use Case:</p> <ul style="list-style-type: none"> – Represents a core business process – Is labelled with a descriptive verb-noun phrase
	<p>Relationship Association:</p> <ul style="list-style-type: none"> – Links actors with the use cases (business processes) they participate in

Table 2.2. Activity Diagram notations




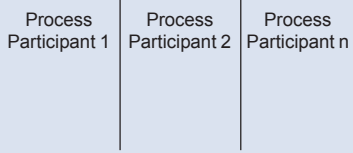






Notation	Description and instruction for use
	<p>Initial State</p> <ul style="list-style-type: none"> – Represents the beginning of a set of activities – Can only be one initial state for each activity diagram
	<p>Final Flow State</p> <ul style="list-style-type: none"> – Is used to stop the flow of activities – Indicates that further activities cannot be pursued within the described context
	<p>Final Activity State</p> <ul style="list-style-type: none"> – Is used to indicate the completion of the business process
	<p>Swimlane</p> <ul style="list-style-type: none"> – Is used to break up individual actions to individuals/agencies that are responsible for executing their actions – Is labelled with the name of the responsible individual, organization, or department
	<p>Activity</p> <ul style="list-style-type: none"> – Represents a non-decomposable piece of behaviour – Is labelled with a name that 1) begins with a verb and ends with a noun; and 2) is short yet contains enough information for readers to comprehend <p style="text-align: right;"><i>(Continued)</i></p>

Table 2.2. (continued)

Notation	Description and instruction for use
	<p>Object</p> <ul style="list-style-type: none"> – Represents a document or information that flows from one activity to another activity – Is labelled with a name of a document
	<p>Decision</p> <ul style="list-style-type: none"> – Represents the point where a decision, depending on the outcome of a specific prior activity, has to be made – Has multiple transition lines coming out of a decision point and connecting to different activities – Attached with labels addressing the condition on each transition line that comes out of an activity and connects to a decision point or vice versa
	<p>Transition line</p> <ul style="list-style-type: none"> – Indicates a sequential flow of activities and information flows in an activity diagram
	<p>Fork (Splitting of Control)</p> <ul style="list-style-type: none"> – Is used to visualize a set of parallel activities or concurrent flow of activities
	<p>Join (Synchronization of Control)</p> <ul style="list-style-type: none"> – Is used to indicate the termination of a set of parallel activities or concurrent flow of activities

describes activities, inputs, and outputs associated with each business process listed in the use case diagram.

2D OUTPUTS OF THE BUSINESS PROCESS ANALYSIS

The main output of the business process analysis exercise within the context of trade facilitation is the business process analysis report that contains the following components:

- Use case diagram showing the scope of the business process analysis project;
- Activity diagrams;

- Process descriptions, including a list of trade forms and documents, as well as a list of trade-related laws, rules and regulations;
- Integrated activity diagram;
- Time-procedure chart;
- A list of identified bottlenecks; and
- Recommendations to improve the business process and/or to-be business process models.

These output components are further explained in the following parts of the BPA Guide.

Figure 2.1. The use of UML diagrams in the BPA Guide

