# 3. GUIDE TO BUSINESS PROCESS ANALYSIS TO SIMPLIFY TRADE PROCEDURES

3A Introduction to phases, stakeholders and related issues

The business process analysis consists of three phases that have to be carried out in sequence (see Figure 3.1):

Phase I: *Scope setting*, which includes the following two steps:
Step 1 - Define a project scope
Step 2 - Develop a detailed work plan and secure resources

Phase II: *Data collection and process documentation*, which includes two steps:
Step 3 - Acquire background information
Step 4 - Conduct interviews and document captured data

Phase III: *Process analysis and recommendations development,* which includes the following two steps:
Step 5 - Analyse the "as-is" processes
Step 6 - Develop and propose recommendations.

Figure 3A-1. Key steps and stakeholders in business process analysis
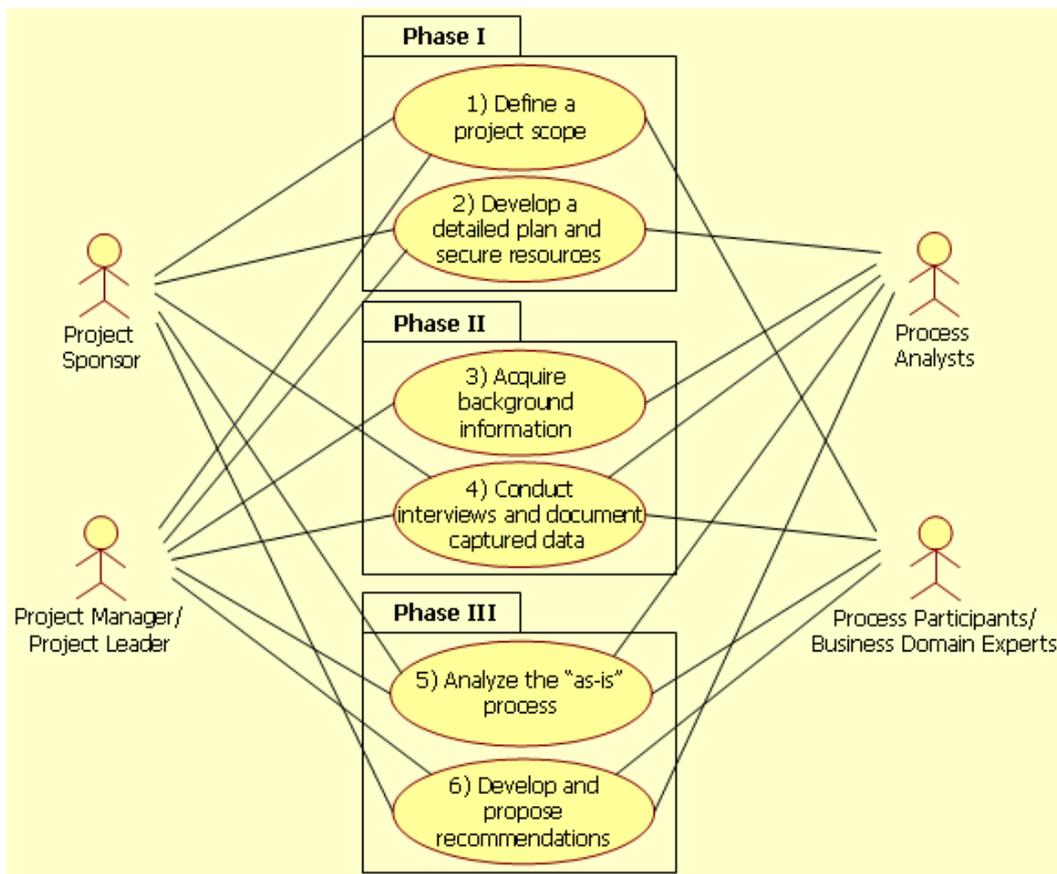
Four groups of stakeholders participate in a business process:

- Project sponsor, who acts as authorized person from a lead agency commissioning the business process analysis study and who has a crucial role in approving and driving the implementation of process improvement program;
- Project manager/project leader, who is in charge of planning, directing, staffing, and managing the development of the business process study;
- Project analysts, who are in charge of collecting, documenting, and analysing the business processes as well as proposing a set of recommendations on how to improve them;
- Process participants/Business Domain Experts, who carry out business processes and thus have specific expertise and knowledge of a business process.

Their responsibilities in the different phases of the business process analysis are summarized in *Table 3A-1*.

The steps within each phase require that a series of activities be carried out. These activities will be explained in Section 3B. It is highly recommended that validation and verification activities are embedded in each step to ensure the accuracy and comprehensiveness of the outputs. Such validation and verification can be achieved through several rounds of a *peer review* performed by relevant stakeholders of the business process analysis exercise. Refinement shall be made until the quality of outputs is acceptable.

The six steps described in this Guide, together with deliverables of the business process analysis report, are summarized in Table 3A-2. The same table also provides guidance on what should be done (the "Do's") and what should be avoided (the "Don'ts") in conducting the business process analysis exercise.

Table 3A-1. Roles and responsibilities of stakeholders in BPA

Role	Phase I		Phase II		Phase III	
	Step 1: *Define project scope*	Step 2: *Develop a detailed plan and secure resources*	Step 3: *Acquire background information*	Step 4: *Conduct interview and document captured data*	Step 5: *Analyse the "as-is" processes*	Step 6: *Develop and propose recommendations*
Project Sponsor	Finalize and approve the project scope	Approve any changes to project scope Commit specific resources	Provide management support and direction when needed Participate in major project reviews and approve key deliverables including the recommendations toward the desired to-be processes Ensure timely resolution of issues affecting project success			
						Drive the implementation of approved recommendations
Project manager/project leader	Acquire relevant information to define the scope of a process under investigation	Develop a detailed plan Organize resources	Oversee and control the execution of the plan Participate in the review of milestone deliverables including the final output			
Process Analysts	-	Review plan and propose adjustment if needed	Conduct desk research Make necessary preparation for interview and observation	Conduct the interviews Collect and consolidate data Document the "as-is" processes	Analyse and identify bottlenecks and improvement opportunities of the "as-is" processes	Develop recommendations for process simplification Report the final output
Process participants/business domain experts	Verify the proposed project scope	-	Provide relevant knowledge on process under investigation Verify the accuracy of applicable deliverables			Participate in the review of the final output

Table 3A-2. Overview of BPA

Step	Deliverables	Do's	Don'ts
Step 1: Define project scope	*Use case diagram* and *description* illustrating: – Business domain – Process areas (optional) – Process participants – Core business processes in which those participants interact	Be precise on the scope of the process analysis study. Direct limited BPA efforts and resources to the business domains that have strategic importance (e.g., a business domain that deals with major export or import products.), face the largest challenges (e.g., a business domain that is losing its competitive edge), and/or has a large future potential. Specify the environment and conditions in which the business domain of interest operates, such as mode of transport, terms of delivery, terms of payment, country of destination, and country of origin at the early phase of the business process analysis project, because different modes of transport, terms of delivery, and terms of payment have different procedural and documentary requirements. The selected environment and conditions should be common to typical transactions. Set the scope from the perspective of the beneficiary. With limited resources, detailed modeling and analysis of the business process, for example, is not possible. If the beneficiary is an exporter, the emphasis is on what the exporter has to do in order to ship the cargo to the destination country. If the beneficiary is a carrier, the emphasis is on what the carrier has to do in order to leave the port of departure. Break the project into sub-projects if the scope is relatively large. For example, if the project requires the analysis of business processes for exporting 10 countries' strategic products, break the project into 10 sub-projects and define the project scope for each of them.	Do not set the scope that is too broad, too vague, or too complicated.
Step 2: Develop a detailed plan and secure resources	*Detailed project plan* including human resources, schedules, and software supported tools	Set up a team that consists of process analysts with critical thinking, good personalities, and sound interpersonal skills.	Do not underestimate the effort and scheduling of certain tasks, especially those related to human interactions, e.g. data collection and verification.
Step 3: Acquire background information	*A folder of background information* containing: – A list of potential interviewees (e.g. names of contact person from government agencies and businesses responsible for carrying out respective activities in the business processes) and	Do collect as much background information as possible from diverse available sources.	Do not proceed to any interview session before the interviewers have grasped sufficient background information and familiarity with the organization and the

Step	Deliverables	Do's	Don'ts
	their contact information – A note explaining a sequence of activities in core business processes – A list of forms and documents associated with those activities as well as samples of physical copies if available *A list of guiding questions for the interview*		specific business processes in question.
Step 4: Conduct interviews and document captured data	*A set of activity diagrams* illustrating: – Starting and ending points – A set of activities – Documents associated with each business transaction *A set of process descriptions* describing: – The name of a process area to which this particular business process belongs – The name of the business process (use case) – Related laws, rules, and regulations – The name of process participants (parties responsible for carrying out certain activities in the business process) – Input and criteria to enter/begin the business process – Activities and associated documentary requirements to complete the business process – Output and criteria to exit the business process – Average time required to complete this business process *An activity diagram* illustrating integrated processes in the business domain *Time-Procedure Chart* illustrating relationships between business process and time required to complete each business process in the business domain of interest	Arrange interview sessions with a diverse range of process participants performing different roles in the business domain of interest. Interviewing process participants/business domain experts performing different roles allow process analysts to see business processes from different perspectives. Consider practitioners at the operational level potential interviewees. They are likely to be more knowledgeable than the management when it comes to the practicalities of business processes. Inform interviewees about overall expectations from the interview session and the specific business processes of interest. Start with the activity diagram when attempting to define a process using various pieces of information collected from various interviewees. Drawing helps formulate ideas and a logical sequence of activities. Most likely, drawing the first diagram is going to be a struggle. If two connecting activities in a logical sequence do not make sense, it means that some activities may be missing in between. Make sure that 'Swimlane' is labeled with the role-name or the name of the responsible individual, organizational unit, or organization; 'Activities' is labeled with a name that begins with a verb specifying an action; and 'object' is labeled with a name of a document. The appropriate use of notations is important in order to make the activity diagrams complete and meaningful. Read the activity diagrams a few time and make sure that all components of the activity diagrams are organized in a logical sequence and that the activity diagrams are understandable. The activity diagrams are useless if they cannot convey the information on how the business processes are carried out to the readers. Write down questions that come up when drawing the diagram and use them for another interview session. Structure the second round of the interview based on these questions. Define and document processes in a way that reflects the current state of practices. Always re-use patterns (diagram of identical activities) where applicable, as it saves time and ensures the consistency of processes across the business domain.	Do not attempt to create processes that look "perfect" from the beginning. Perfection does not represent what actually happens in reality and thus cannot serve as a baseline for improvement.

Step	Deliverables	Do's	Don'ts
		Hold an experience-sharing session among the team of process analysts from time to time. Experience sharing allows process analysts to observe and depict patterns in some processes across the business domain. For example, process analysts responsible for defining processes of different products will discover among themselves that no matter what products there are, traders have to comply with customs regulations in submitting customs declarations following similar instructions. Make sure that core business processes represented by bars in the time-procedure chart are consistent with core business processes represented by use cases in the use case diagram Reflect accurately a time frame (i.e., the average time it takes to complete the processes, for example, in hour or day) and a timeline (i.e., the time in which core business processes occur in relation to other core business processes, e.g., sequential or simultaneous) in which core business processes are carried out in the time-procedure chart. Collate timelines for selected import and export processes in a separate table. The table should provide the minimum, maximum and average time needed for each selected process (e.g. document preparation, inland transportation, inland customs time, terminal handling time). Additionally, a calculation of the maximum deviation to the average time could show important insights.	
Step 5: Analyse the "as-is" processes	*A set of observations* of the "as-is" processes that have the potential to be improved	During the interview, seek interviewees' opinions and observations on bottlenecks and issues related to the procedural, regulatory, and documentary requirements that should be improved and how to improve them. Listen to the 'unsaid.' The fact that 'process participants whom process analysts interview find the processes used in administering international trade transactions easy and business friendly' does not mean that there are no bottlenecks and there is no room for improvement. It is important that all outputs derived from Step 4 are thoroughly reviewed when attempting to identify bottlenecks and improvement opportunities. Apply common sense when analyzing business processes.	Do not wait to the end to analyse and identify any bottlenecks and recommendations for improvement. Rather, incrementally collect them along various phases of the process analysis study. Do not rely only on interviewees' opinion.
Step 6: Develop and propose recommendations	*Final report with recommendations* for process simplification, which may include diagrams of "to-be" business processes	Consult relevant stakeholders to find out the limitation of what can and cannot be done for process improvement recommendations. Listen to their reasons why a particular procedural, regulatory, or documentary requirement is necessary.	Do not assume that all proposed recommendations can be implemented.

3B Individual phases, steps and activities

The rest of this Chapter will discuss the three phases of the business process analysis, detailed steps involved in each phase and activities necessary to complete the steps.

Phase I: Scope setting

The objective of this phase is to establish a baseline for the implementation and management of a business process analysis project. It consists of two steps:

Step 1 - Define the project scope
Step 2 - Develop a detailed work plan and ensure resources.

Step 1: Define the project scope

Step 1 aims at identifying a frame of reference for further detailed business process modeling work. The frame of reference, which is visualized in a UML use case diagram, illustrates the high-level business processes and actors associated with each of them.

Figure 3B-1. Stakeholders involved in Step 1
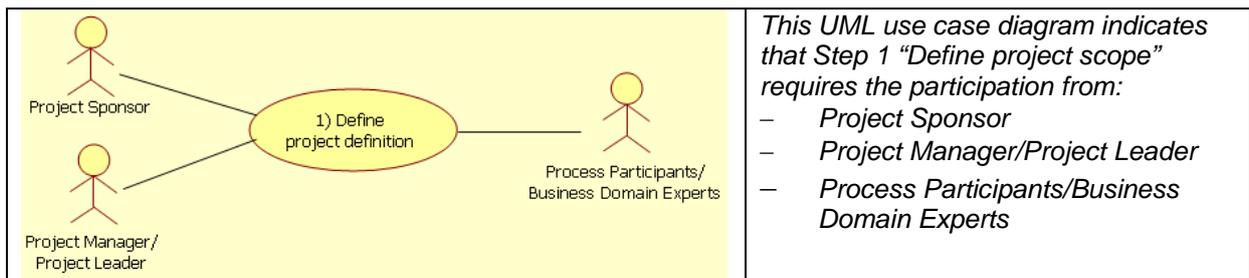
This step includes seven necessary activities, as illustrated with the UML activity diagram in Figure 3B-2. Its detailed description is provided below.

Figure 3B-2. Activities involved in Step 1
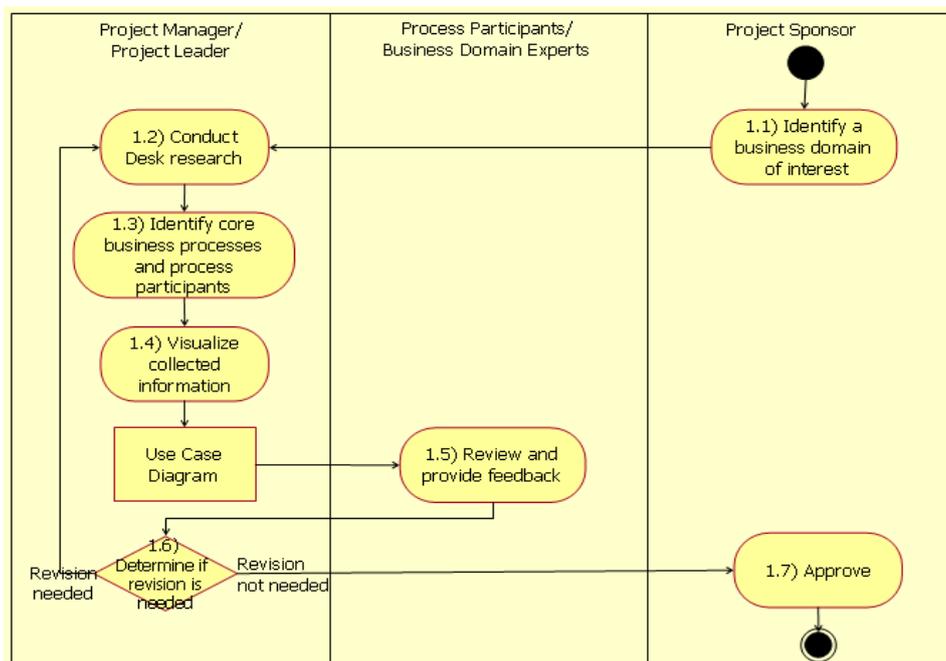
Activity 1.1

Project sponsor identifies "a business domain" of interest. A business domain is usually the name of the industry (such as frozen shrimp export) or service (such as customs clearance) whose business processes are subject to the business process analysis exercise. (See Box 3B-1 for an example)

Box 3B-1. Case study – define the project scope

Recognizing the need for a greater efficiency in documentary procedures related to international trade transactions, Thailand has prioritized the establishment of the Single-Window e-Logistic Platform as the national flagship project. Progress towards the establishment of the Single-Window e-Logistic Platform was hindered by several factors. One was the absence of knowledge about the integrative nature of processes performed by different parties and about information flow throughout the international supply chain.

In response to this shortfall, the Department of Export Promotion (under the Ministry of Commerce) commissioned an in-depth study on the export process with the following objectives:
- To drive the formalization of the export process;
- To investigate interrelationships among processes, information, and stakeholders, as well as related laws and regulations;
- To provide a basis for simplification of procedural requirements and harmonization of data requirements; and
- To facilitate automation of international trade transactions, and thus the establishment of the Single-Window e-Logistic Platform.

As export processes vary by product, it is not possible to carry out the study of the export process for all products at once. The selection of export products for the BPA project is based on the following criteria:
- Strategic importance of the product on national economy;
- Aggressiveness of competition; and
- Degree of willingness of stakeholders to participate in data collection process.

For this particular project, frozen shrimp was selected, based on the above criteria. It is one of the country's strategic export products. The export volume of shrimp has been growing for the past five years. The production of frozen shrimp, in addition, involves the whole chain of production from farmers to manufacturers, retailers, and suppliers. About 80 percent of raw materials for production are sourced locally. Thai producers have been targeted to differentiate their products to deal with direct competition with low-cost Chinese and Vietnamese shrimp. Rice and poultry are also considered as among Thailand's strategic export products. However, relatively close connection with stakeholders from shrimp exporters, their logistics service providers, and relevant government agencies gave relatively more confidence in achieving the goal of the project.

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University.

To initiate a Business process analysis, it is crucial that the project sponsor clearly specifies:
- The process or set of procedures that he/she is interested in analysing – e.g. only customs clearance or payment process; or the entire set export procedures from factory floor to the port.
- The environment and conditions in which the industry of interest operates and which shall be included in the BPA; i.e. mode of transport, terms of delivery, terms of payment, and country of destination (given that regulatory requirements vary from one country to another). An example is provided in Box 3B-2.

Box 3B-2. Case study – scope of analysis

The Ministry of Commerce, represented by Department of Export Promotion, as a project sponsor, specified that the analysis of the frozen shrimp export process covers all activities in the international trade transaction, which range from "the establishment of commercial contracts," through "the arrangement of inland and cross-border transportation and export formalities to meet regulatory requirements" to "the payment of the purchased cargo." Due to the fact that mode of transport, terms of delivery, and terms of payment can vary, the project sponsor agreed to the following assumptions made for the study:

- Ship: Shrimp exporters choose ocean freight as a mode of transport, as it is one of the cheapest and most convenient ways to ship goods overseas.
- CIF (Cost, Insurance, and Freight): Shrimp exporters in most cases arrange and absorb the cost of shipping their cargo to the port of destination. Minimum insurance coverage is also procured against loss of or damage to the goods during the carriage.
- FCL (Full Container Load): For simplicity, the analysis of frozen shrimp export process traces the operation of a sole exporter. It is also assumed that the whole container is intended for a single consignee.
- CY (Container Yard) Container Service: For simplicity, it is assumed that "CY/CY" container service is used. Under such service, the carrier delivers an empty container to exporter's premises for loading and brings the loaded container back to the container yard. At the container yard, the container waits to be loaded onto the vessel. No unpacking or modification is made.
- L/C (Letter of Credit): For simplicity, a letter of credit is assumed as method of payment.

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

Activity 1.2

Project manager/project leader conducts initial desk research on the environment and conditions in which the business domain of interest operates.

Activity 1.3

Project manager/project leader, based on the outcome of the desk research, identifies core business processes and stakeholders who interact with those business processes.

Box 3B-3. Identifying core business processes

Core business process in the context of this BPA Guide refers to the business process that regularly occurs in typical trade transactions. Business processes on the production or manufacturing side are not included. Box 3B-4 provides a sample list of business processes that must be carried out every time when exporting frozen shrimp to the major export markets for Thai frozen shrimp including the United States, Japan, and the European Union.

In the business domain of interest under the environment and conditions in which the business domain of interest operates, the project manager/project leader often comes across business processes that are not needed to be carried out in every trade transaction. These business processes are not core business processes. For example, the acquisition of an export license falls into this category of business processes. It is one of the first requirements that one needs to fulfill in order to obtain the right to export goods to countries of trading partners. An export license, whether a general or a product-specific one, usually permits exporters to export their products multiple times within a pre-specified timeframe. The renewal of the export license is required only when the validity period is about to end. The validity period may vary from months to years.

Project manager/project leader should view business processes that are not usually carried out in every trade transaction as either conditions that must exist before carrying out core business processes or exceptions that only apply when certain conditions prevail. Even though they are not core business processes, it is also important that the project manager/project leader addressed them in the study. Relevant information such as time, costs, and how to complete the processes may be provided. However, it is recommended that the project manager/project leader does not incorporate it into the analysis.

For example, the project manager/project leader should note in the 'Process Description' that in order to export frozen shrimp from Thailand to the United States, Japan, and European Union, exporters must possess a general license issued by Department of Foreign Trade and a license for trading fishery and aquaculture products issued by Department of Fisheries. If the export shipment is for the United States and the European Union, a membership with Thai Frozen Foods Association is also required.

	Time	Cost (Baht)	Valid (Year)
General license	3 Days	150	5
License for trading fishery and aquaculture products	5 Days	200	1
Membership with Thai Frozen Foods Association	2 Months	15,000-30,000	1

Project manager/project leader may provide the information about the time and costs that exporters have to spend to obtain them as well as the validity period. The information regarding such regulatory requirements, however, should only be treated as 'input and criteria to enter/begin the business process.' It should only be addressed in process description, but not incorporated into the use case diagram, the activity diagram, and the time-procedure chart.

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University`

Activity 1.4
Project manager/project leader documents capture core business processes and stakeholders of the business domain of interest using UML Use Case notations (see table 2C-1).

Project manager/project leader uses the following notations:

 - to depict core business processes;

 - to depict each stakeholder, who is known as Process participant/business domain expert; and

 - to depict all actual associations between business processes and process participants/business domain experts.

When there are core sub-business processes, project manager/project leader may organize core business processes into a process area. Boundaries may be used to group core sub-business processes together.

An example of a UML use case diagram is given in Box 3B-4.

The illustration of high-level business processes and their stakeholders in the use case diagram is recommended as the first step in identifying business processes that fall under the business domain of interest for several reasons:
1. The use case diagram visualizes high-level business processes and their stakeholders in a viewpoint that is simple enough to be easily validated by process participants/business domain experts. Having the use case diagram validated by process participants/business domain experts helps ensure the modeling of the 'right' business processes.
2. The validated use case diagram serves as a frame of reference for project manager/project leader to plan and manage the complexities of the BPA project.
3. The validated use case helps process analysts structure their business process modeling and analysis work. Using the validated use case diagram as a frame of reference, scope creep can be avoided.

Box 3B-4. Case study – visualize the project scope

This UML use case diagram illustrates core business processes used when exporting frozen shrimp from Thailand to its major export markets including the United States, Japan, and European Union. It provides the frame of reference for analysing the business processes in detail. The diagram lists all process participants/business domain experts, business processes, and the relationships among them.

The diagram shows that the scope of analysis will cover all activities in the international trade transaction, which include commercial procedures, transport procedures, regulatory procedures, and financial procedures. The core business processes are organized according to the UN/CEFACT "Buy-Ship-Pay" model. Given that the movement of cargo has to comply with regulatory requirements, transport procedures and regulatory procedures their main sub-processes are therefore grouped as "Ship".
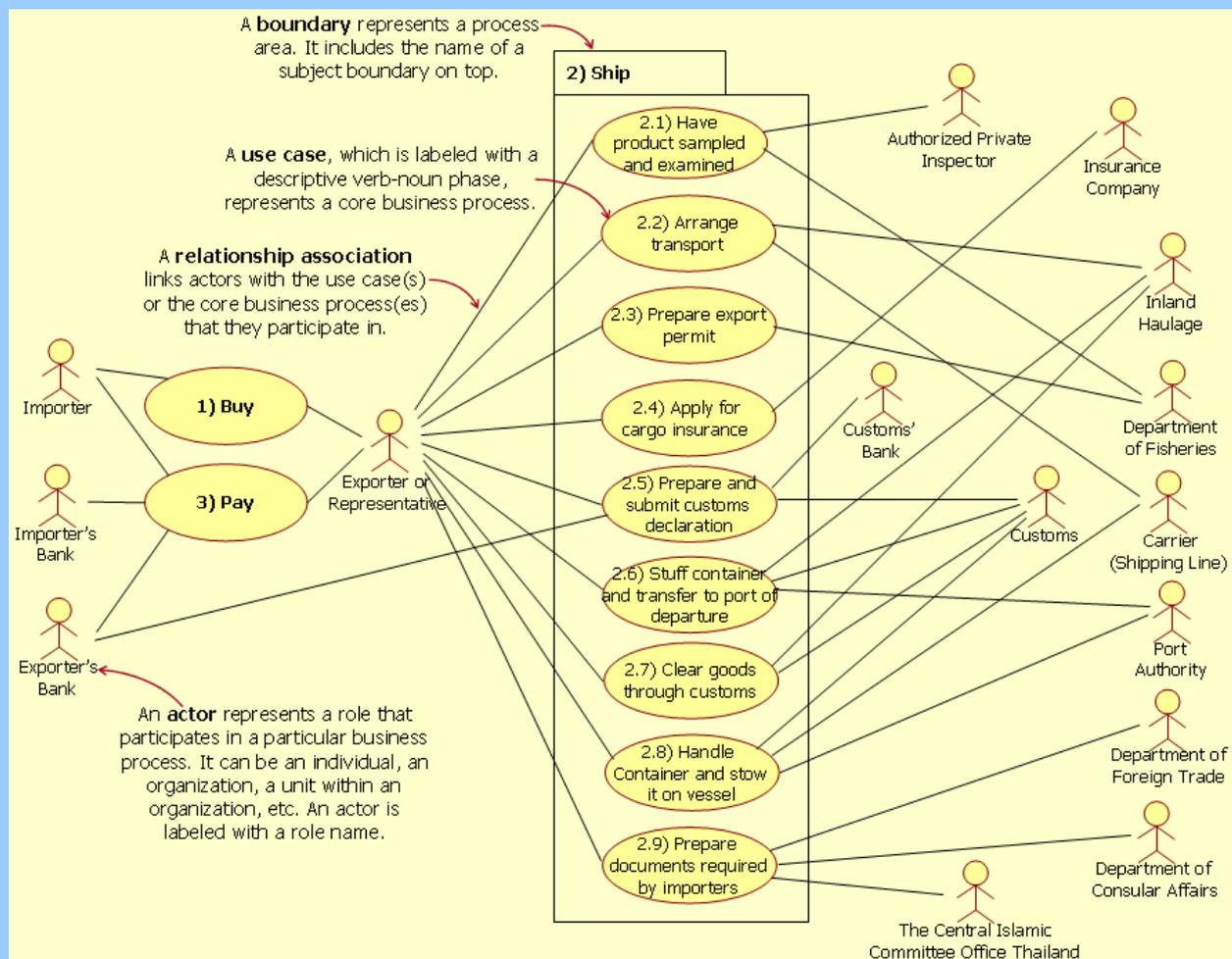
Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

Activity 1.5
Process participants/business domain experts review the use case diagram and provide feedback as well as suggestions for further improvement.

Activity 1.6
Project manager/project leader determines if the use case diagram accurately visualizes the project scope, based on the feedback from process participants/business domain experts. If it does, project manager/project leader revises and/or refines it according to the feedback from process participants/business domain experts.

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Activity 1.7

Project sponsor approves the final version of use case diagram. The use case diagram acts as a baseline for planning, managing, and carrying out the business analysis study.

The use case diagram may be changed at a later stage if an inaccuracy is found. The revised diagram should be approved by the project sponsor before adopting it as a frame of reference.

Step 2: Develop a work plan and secure resources

The objective of this step is to develop a detailed work plan that guides and manages the implementation of the business process analysis. The work plan should be based on the use case diagram developed in Step 1.

Based on the use case diagram, the work breakdown structure can be developed. An output-oriented description of project tasks as summarized in the work breakdown structure then serves as a basis for project time, cost, and effort estimation.

Figure 3B-3. Stakeholders involved in Step 2
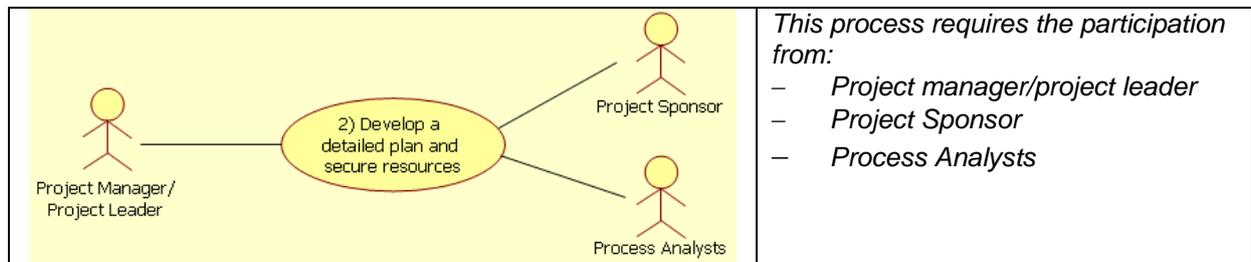
Figure 3B-4 illustrates activities that a project manager/project leader has to carry out in this step in cooperation with process analysts and under the oversight of the project sponsor. These activities are further explained below.

**Figure 3B-4. Activities involved in Step 2**
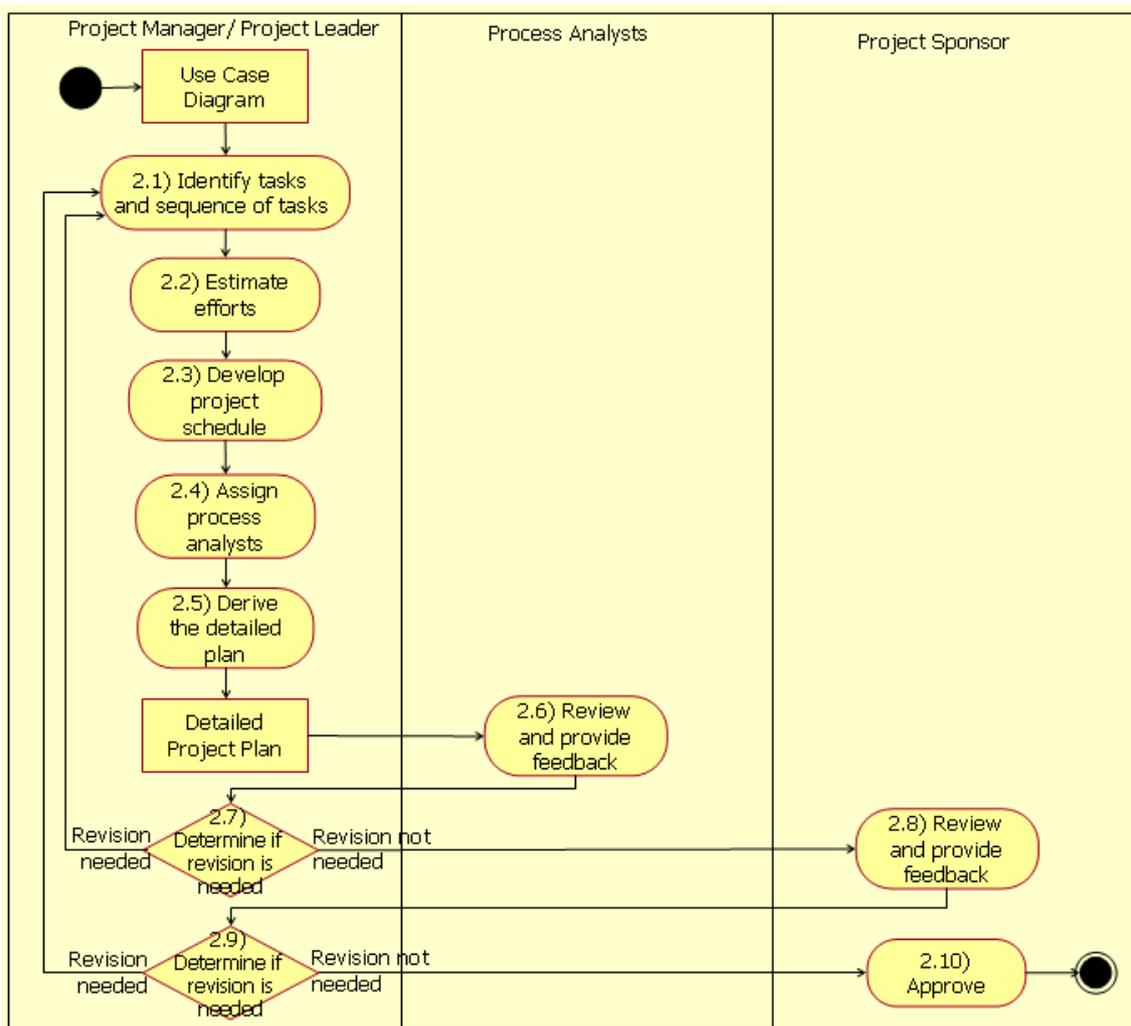
Activity 2.1

Project manager/project leader identifies, in sequential order, tasks required to derive each output of the business process analysis project. They include:

- A set of activity diagrams; each explains a core business process as represented by a use case in the use case diagram;
- A set of process descriptions; each provides a textual description of an activity diagram itself and related information including relevant laws, rules, and regulations, documentary requirements, input and criteria to enter/begin the business process, output and criteria to exit the business process, and indicate the average time required to complete them;
- An integrated activity diagram;
- A time-procedure chart;
- A list of identified bottlenecks; and
- Recommendations to improve the business process and/or to-be business process models.

To prepare a detailed breakdown of the work and structure of the project, the project manager/project leader needs to anticipate all project activities outlined in Step 3 onward. While *Activity 3.1 – 3.4* and *Activity 4.1 – 4.12* have to be carried out for all core business processes represented by use cases in the use case diagram (see Box 3B-5 for an example), the rest – including the development of integrated activity diagram, time-procedure chart, a list of identified bottlenecks, and recommendations for future improvement – requires only a one-time implementation.

Box 3B-5. Case study – use cases of core business processes in frozen shrimp export
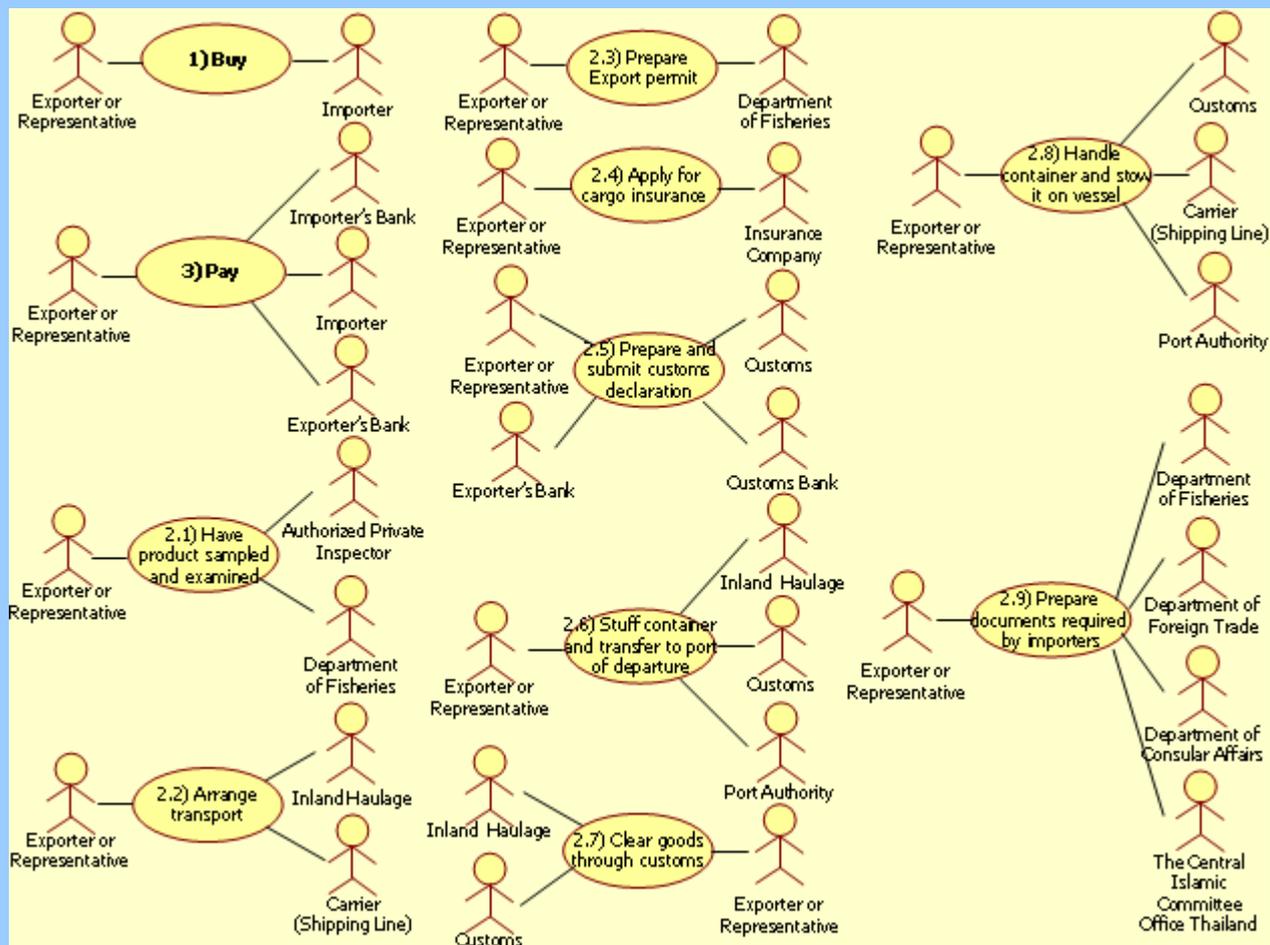
Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

Activity 2.2

Project manager/project leader estimates the effort (man-hours or man-days) needed to complete each identified task and to prepare all deliverables. There is no standard benchmark time for each activity required to complete the business process analysis project. Likewise there is no one-size-fits-all solution to determine the amount of required resources. However, the following tips may be helpful for time and resource estimation:

- In conducting business process analysis, great time and effort is spent on collecting and compiling data into visual diagrams and written descriptions. There is a set of similar project tasks for elaborating each use case into an activity diagram and process description. The more process participants/business domain experts are involved in a business process or a use case, the more complex and time-consuming the business process analysis will be.
- The first session of a face-to-face data-collection interview with each process participant/business domain expert (Activity 4.4) may take one to two hours. Given that the business process analysis is an iterative task, the interview with relevant process participants/business domain experts may be conducted more than once. However, the project teams should avoid conducting more than three interviews with the same process participants/business domain experts.

- Project Evaluation and Review Technique (PERT) estimate [8] might be used for this purpose (See Box 3B-6).

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Box 3B-6. Project Evaluation and Review Technique (PERT) estimate

Project Evaluation and Review Technique (PERT) allows probabilistic treatment of activity duration in the estimation. PERT estimate may be used to compute weighted average for each individual task. A three-point estimate includes pessimistic, most likely and optimistic. The equation is as follows:

$$\text{Task Estimate} = \frac{\text{Optimistic Time} + (4 * \text{Most Likely Time}) + \text{Pessimistic Time}}{6}$$

- The Optimistic Time is the minimum time in which a task can be completed. It is the best-case scenario set under the assumption that everything goes as planned and no internal or external obstacles will occur.
- The Most Likely Time is an estimate of the expected time that is required to complete the task.
- The Pessimistic Time is the maximum time of the worst-case scenario in which the task should be completed.

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Activity 2.3

Project manager/project leader develops a project schedule based on the following information:
- Set of tasks which are identified in a sequential manner
- Project effort estimates
- Duration of the project stated in the contractual arrangement made with the project sponsor.

Activity 2.4

Project manager/project leader assigns process analysts to the project. Once again the number of process analysts required depends on the project duration. The shorter the project duration is, the larger the number of process analysts is required. The responsibilities and required skills of process analysts are listed in Box 3B-7.

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Box 3B-7. Responsibilities and required skills of process analysts

Process analysts are responsible for the following:
- Studying and analysing the current processes ("as-is" processes);
- Creation of the business process model;
- Developing recommendations how to improve the current processes; and
- Designing the new processes ("to-be" processes) in collaboration with other stakeholders.

Process analysts should be selected based on the following skills.
- *Technology skills*: Although it is not necessary, basic knowledge of UML notations, especially in use case diagrams and activity diagrams is desirable. Related work experience is complementary.
- *Business/ organization skills*: It is important that the selected process analysts know or have an access to the individuals of the business domain subject to the business process analysis study. It is also very useful if they have knowledge of a particular organization or industry associated with the targeted business domain.
- *Interpersonal/ communication skills:* The ability of the selected process analysts to effectively communicate and interact with other project members is crucial to project success. They should have the ability to create and sustain reasonably good relationships with project stakeholders and especially process participants/business domain experts.
- *Analytical skills:* Ability to think analytically. They should be able to capture relevant information from verbal expression and written documents. They should be able to summarize the information, as well as formulate and document the business processes.

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[8] Marchewka, J.T. (2006). *Information Technology Project Management*, 2nd ed. John Wiley & Sons Inc. Hoboken, New Jersey.

Activity 2.5
Project manager/project leader compiles project time and effort estimates, project schedules, and project staff (process analysts) into the detailed plan for project stakeholders to review.

Activity 2.6
Project stakeholders review the detailed plan and then provide feedback.

Activity 2.7
Project manager/project leader, based on the feedback from process analysts, determines if the detailed project plan needs further revision. If it does, project manager/project leader revises and/or refine according to the feedback received.

Activity 2.8
Project sponsor review the detailed plan and then provide feedback.

Activity 2.9
Project manager/project leader, based on the feedback from project sponsor, determines if the detailed project plan needs further revision. If it does, project manager/project leader revises and/or refines it according to the feedback received.

Activity 2.10
Project sponsor approves the detailed plan as the baseline for future project execution, monitoring and evaluation.

Phase II: Data collection and process documentation

The knowledge about existing business processes is normally embedded in government or private sector employees who routinely carry them out. The know-how aspect of those business processes is usually not documented and the lack of process documentation makes it impossible to analyse and improve existing business processes further. The purpose of Phase II is to make the knowledge of these business processes readily available through documenting them. The documentation then can serve as a baseline to improve the existing business processes.

Phase II includes two steps:
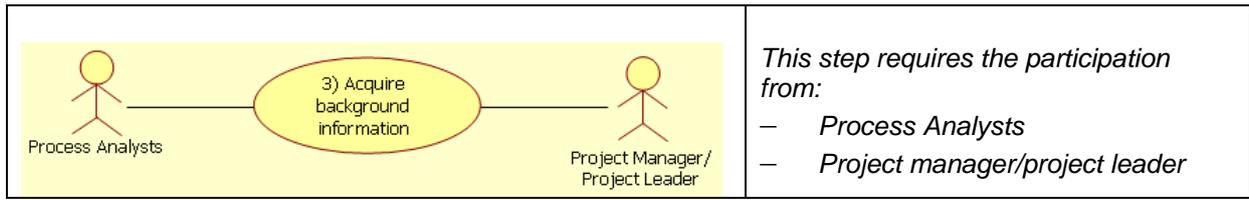   Step 3 - Acquire background information
    Step 4 - Conduct interviews and document captured data

Step 3: Acquire background information

It is important that process analysts acquire at the outset as much background information on the business processes under examination as possible, prior to the face-to-face interviews. Background information could be obtained via desk research through information publicly available on the Internet, information portals, and at inquiry points of the agencies or businesses involved in the business domain of interest.
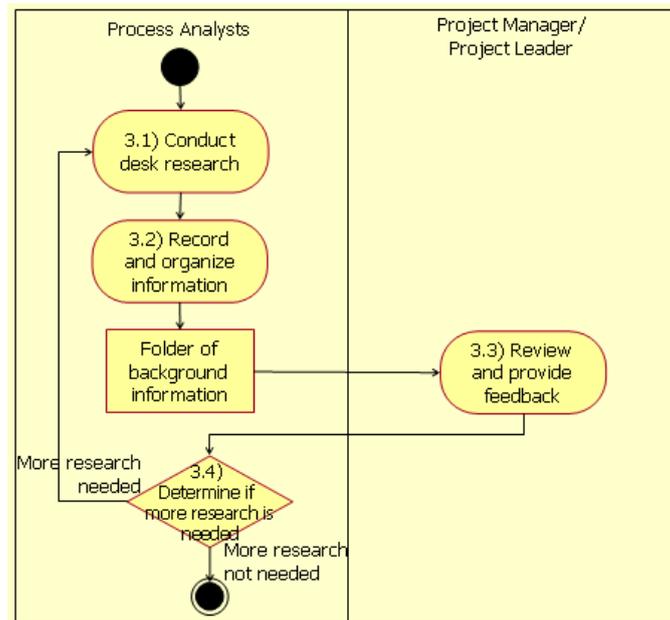
The background information provides process analysts with useful leads to the preparation of interview questions and makes them better prepared to conduct face-to-face interviews. It also allows process analysts to effectively and efficiently capture the information to be collected during the face-to-face interviews and put it into a broader context. Stakeholders participating in this step are shown in Figure 3B-5.

Figure 3B-5. Stakeholders involved in Step 3

	This step requires the participation from:
3) Acquire background information	− Process Analysts
Process Analysts — Project Manager/ Project Leader	− Project manager/project leader

Activities associated with gathering the background information are described in Figure 3B-6, and further explained below.

Figure 3B-6. Activities involved in Step 3

Activity 3.1

For each use case (see Box 3B-5 for example), process analysts conduct desk research, which involves the gathering of the background information, related laws and regulations from publicly accessible sources such as websites or inquiry points of relevant governmental agencies and business.

Activity 3.2

For each use case, process analysts systematically record and organize relevant information into a folder. The folder should contain the following information:

- Names of government agencies and businesses responsible for carrying out respective activities in the business processes under examination (e.g. chambers of commerce, in case of issuance of a non-preferential certificate of origin);
- Contact names and details of potential interviewees from the identified government agencies and businesses, i.e. officer-in-charge at the operational level for each activity;
- Sequence of activities in a process;
- Forms and documents associated with each activity (e.g., import/ export permits, SPS certificates[9], certificates of origin, commercial invoice, customs declaration, etc.).

Activity 3.3

The project manager/project leader reviews the outcome of desk research and provides feedback.

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[9] Sanitary and Phytosantary certificate

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Activity 3.4

Process analysts, based on the feedback from project manager/project leader, determine whether they have sufficient information to proceed to the next step.

Step 4: Conduct interviews and document captured data

The purpose of Step 4 is to conduct the face-to-face interviews with process participants/business domain experts. Face-to-face interview is the most commonly used data collection method for the business process analysis exercise. This process aims to confirm the accuracy of the previously collected background information and to gain an in-depth understanding of each use case or core business process in question. Such comprehensive information is necessary for creating a visual representation and descriptive explanation for each use case.

Once the face-to-face interviews with the relevant business process participants have been conducted, process analysts consolidate all inputs from interviewees and document them. There are four main outputs that should be delivered under Step 4:

1. A set of activity diagrams
2. A set of process descriptions
3. An integrated activity diagram
4. A time-procedure chart

A description of each of the four outputs including a graphical example is provided in Box 3B-8 below.

Box 3B-8. Output of Step 4

1. A set of activity diagrams; each explains each core business process as represented by a use case in the use case diagram
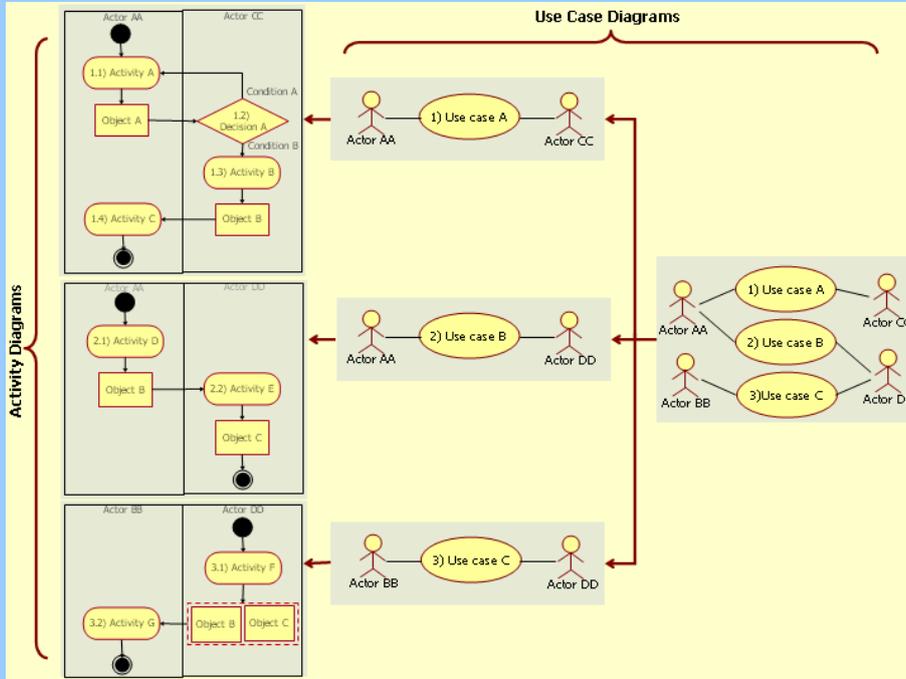

2. A set of process descriptions; each provides a textual description of an activity diagram itself and related information including relevant laws, rules, and regulations, documentary requirements, input and criteria to enter/begin the business process, output and criteria to exit the business process, and indicate the average time required to complete them
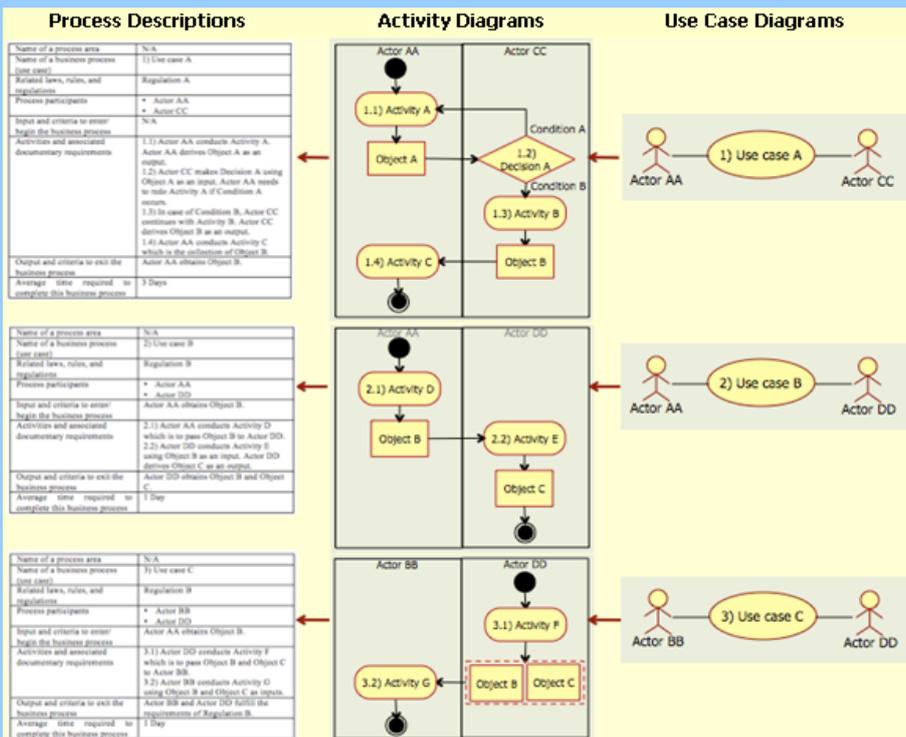
3. An integrated activity diagram that combines all activity diagrams together
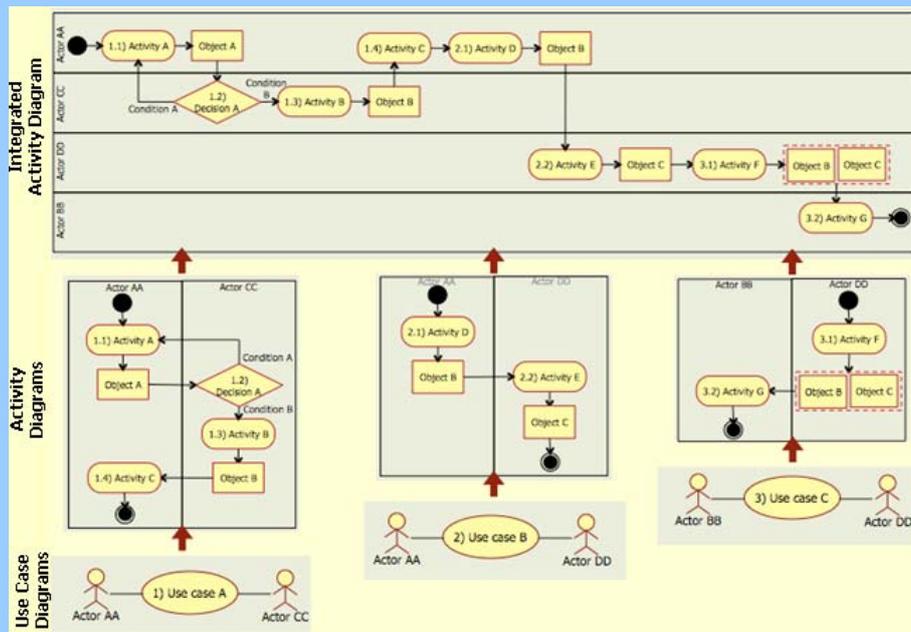
4. A time-procedure chart which informs the average time required to complete each core business process and the sequential order that core business processes are carried out
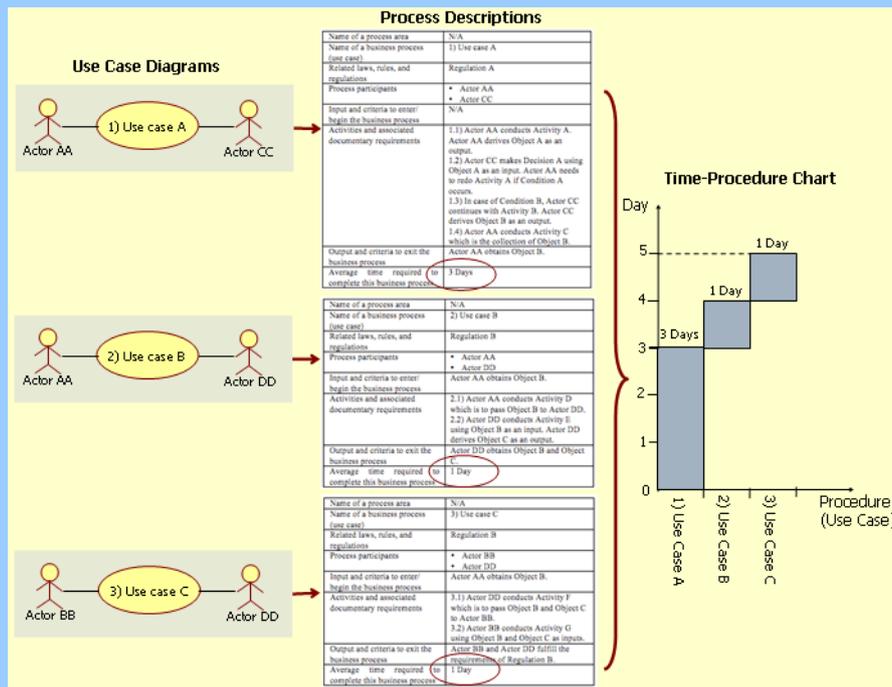
The stakeholders and activities involved in this step are shown in Figures 3B-7 and 3B-8.

Figure 3B-7. Stakeholders involved in Step 4
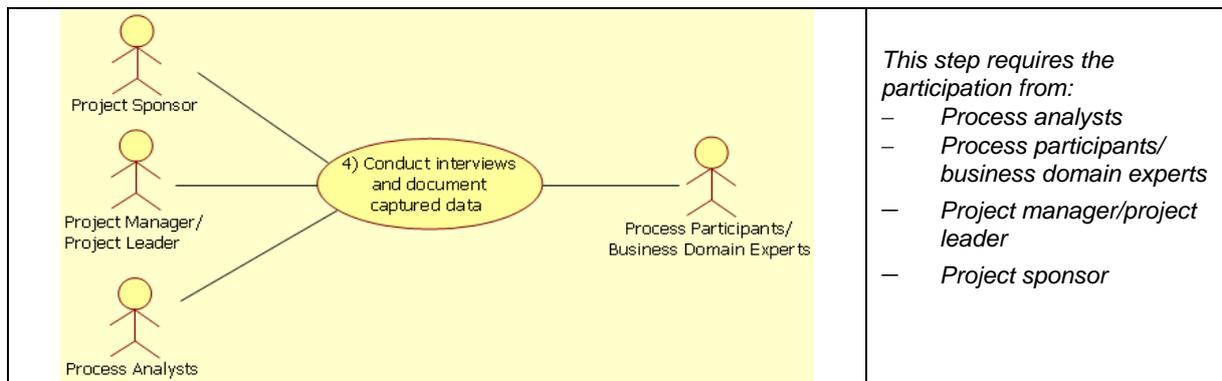
Activity 4.1
As noted before, potential interviewees are selected based on their involvement in a business process area of interest and the type of information that they can provide. The process analysts contact potential interviewees by phone or email to agree on the date, time and venue of the face-to-face interview. Process participants/business domain experts who are in charge at the operational level have relatively more potential as they usually deal with respective procedures and formalities associated with the business process on a daily basis.

To ensure the comprehensiveness and accuracy of the data to be collected, it is ideal that process analysts interview a diverse range of process participants/business domain experts performing different roles in the business domain of interest. A list of process participants/business domain experts whom process analysts should interview can be derived from a use case diagram. Box 3B-4, for example suggests that, in the case of Thai shrimp exports, process analysts should interview exporters, exporter's representatives, authorized private inspectors, customs, department of fisheries, port authority, etc. in order to obtain necessary information for the modeling of business process used when exporting frozen shrimp from Thailand to its major export markets.

It is important that process analysts have sound communication skills. Prior to inviting the potential interviewees, process analysts need to introduce themselves in a polite, friendly, and professional manner. Process analysts also need to clearly explain the purpose of the interview, how the interview will contribute to the overall business process analysis exercise, what will be the results of this exercise, and how these will be used. Doing so allows them to establish a good rapport with the potential interviewees. Establishing a good rapport not only increases the chance of having potential interviewees participate effectively in the planned face-to-face interview, but also helps create a pleasant atmosphere during the interview. Pleasant atmosphere is a vital precondition for a successful and result-oriented interview session.
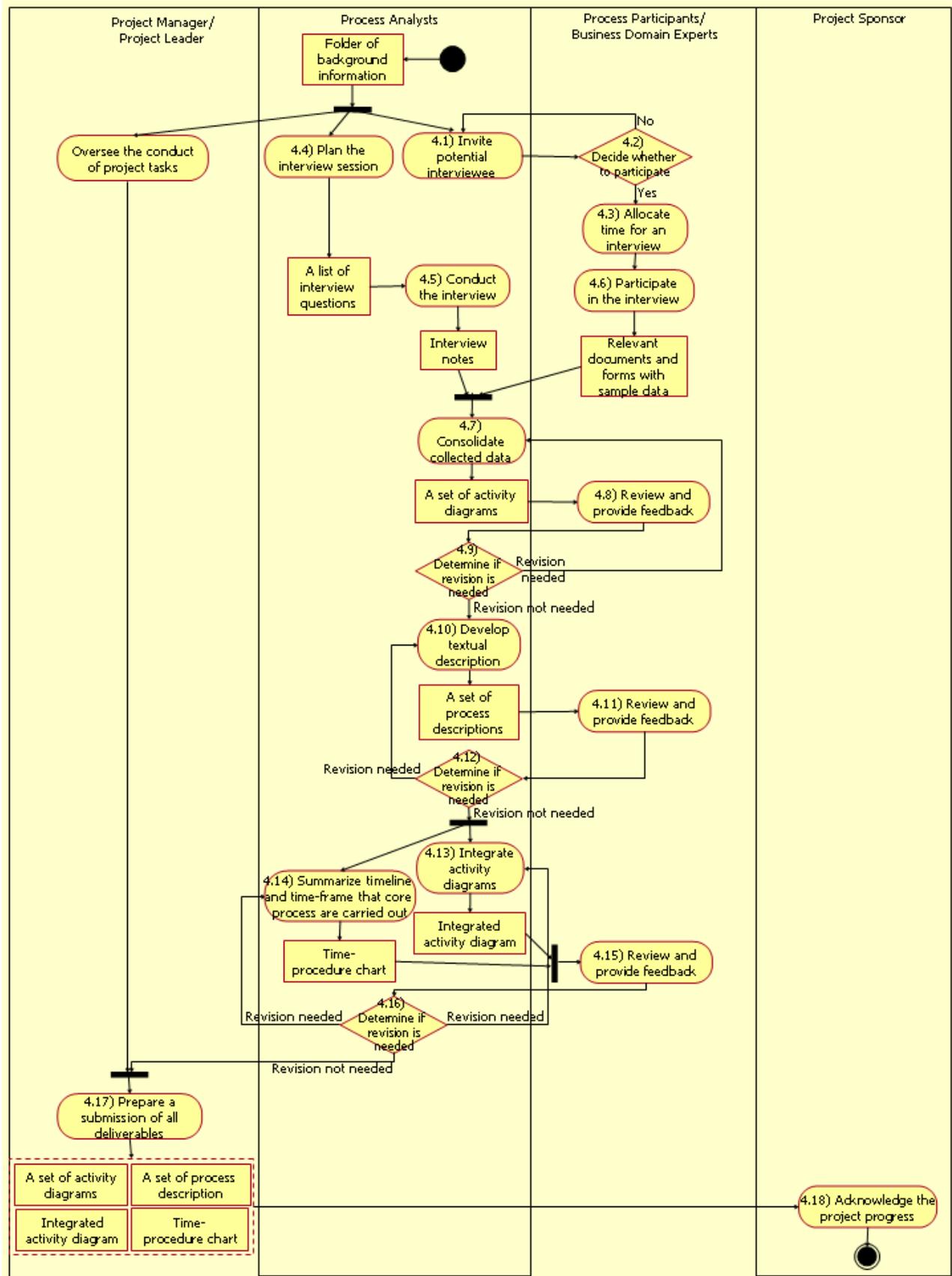
Activity 4.2
Process participants/business domain experts decide if they wish to participate.

Activity 4.3
If process participants/business domain experts agree to participate, they inform process analysts when it is convenient to have a face-to-face interview. If not, process analysts look for other potential interviewees who can substitute for the person who rejected an interview. A potential source could be a referral from the initial person to be interviewed.

Figure 3B-8. Activities involved in Step 4

Activity 4.4

In parallel with Activity 4.1, process analysts plan the interview session and prepare a list of questions based on the background information acquired earlier. The questions need to be easy to understand and structured in a logical sequence to ensure the best possible result. The questions should enable process analysts to gain a better understanding of those points they have previously found unclear. Examples of such interview questions, which were generalized from the Frozen Shrimp Export Process Analysis, are provided in Box 3B-9.

Box 3B-9. Examples of interview questions
(for interviewing exporter/importer and government agency)

Business process analysis:
- What are objectives of the business process?
- Who is involved in this business process?
- What are necessary activities that an exporter/importer has to take in order to acquire a particular document?
- Are copies of documents accepted in lieu of original documents?
- How does an exporter/importer submit the request for a particular document?
- Are there guidelines that provide an exporter/importer with instructions on how to prepare the request for a particular document? If yes, do the guidelines clearly specify what you have to do or what information you have to provide?
- How often are the request for a particular document (e.g. permit, certificate) rejected? Why?
- How does an exporter/importer collect the requested document (manually or electronically)?
- Is there any fee that an exporter/importer has to pay in order to acquire the document? If so, how much (total sum including informal payments)?
- What are the laws, rules, or regulations associated with these procedural and documentary requirements?
- For what purposes are the collected data used?
- Which business processes can be carried out in parallel?
- Which business process has to be carried out next?

Information flow analysis:
- With which other actor in the business do you need to communicate?
- What kind of data do you exchange?
- What kind of information do you send to which actor?

Time analysis:
- How much time, including waiting time, on average in hours or days does it take to complete this entire business process from the beginning to the end? What is the maximum and minimum time?
- How many actual man-hours does it require to complete this particular activity in this business process?

Cost analysis:
- How much on average does it cost to complete this particular activity in this business process or to process a particular document/set of documents?

Suggestions for improvement:
- What are the problems/bottlenecks you encounter in terms of procedures and regulations to import or export?
- What are improvements that you would like to see in the near future?

Activity 4.5

Process analysts conduct the face-to-face interviews with the process participants/business domain experts. It is recommended that the following issues are taken into account.
- Each face-to-face interview session is attended by 1-2 process analysts. Having two process analysts in the session is in fact necessary when the process analysts are relatively new to the field, or have little experience in conducting business process analysis.
- If the interview is tape recorded, it is necessary to obtain permission from the interviewee prior to the interview. But note, tape recorders may deter interviewees from providing critical information and is therefore not advisable (e.g., business information, information on informal payments, other sensitive information etc.)

- Although the process analysts conduct the interview session with prepared questions which are organized in a logical sequence, the interview is unlikely to be a pure question and answer session. It is recommended to keep the interview free-flowing and conversational, however within a basic structured framework. The best way is to start with general questions to draw information about a particular business process that is common to all operational cases. The general questions are then followed by more specific set of questions not only to seek clarifications but also to identify discrepancies and conditions where such discrepancies occur. Process analysts should adjust their questions according to how the interviewee is responding. They may also inject their opinions or ideas to stimulate the interviewee to express and elaborate his/her ideas related to the subject matter.
- During the face-to-face interviews, the process analysts should also seek interviewees' opinions and observations on any bottlenecks and issues related to the process, documents, laws, rules, and regulations that should be improved, why and how to improve them.
- Process analysts should take notes carefully. All points the interviewees make should be written down, even though they may sound irrelevant at the moment.
- Process analysts should reiterate statements made by the interviewees to confirm their correctness and understanding of the obtained information.
- Process analysts should always respect the time schedule. A summary of the major points should be made before ending the interview session.

Activity 4.6
Process participants/business domain experts participate in the interview and, if possible, provide process analysts with documents that contain additional information related to the discussion as well as forms with sample data mentioned during the interview. Sample documents and data related to the interview should be taken as the opportunity arises as it is often difficult to obtain documents and data afterwards.

Activity 4.7
Process analysts consolidate all the statements made by interviewees into an activity diagram for each use case immediately upon their return to the office. This work should be completed within maximum one working day after the interview. How to draw an activity diagram is demonstrated in Box 3B-10.

In this activity, process analysts may discover common patterns in the activity diagrams. Reusing these patterns helps avoid repetition of work and save time. For example, the customs declaration process from the business process analysis of exporting frozen shrimp can be reused in a business process analysis for exporting frozen poultry products.

Activity 4.8
Process participants/business domain experts review the activity diagrams and provide feedback.

Activity 4.9
Process analysts, based on feedback from process participants/business domain experts determine if individual activity diagrams need further revision. If it does, process analysts revise and/or refine them according to the feedback received.

<div style="border: 2px solid blue; padding: 10px;">

Box 3B-10. How to draw an activity diagram

An *activity diagram* portrays a sequence of activities carried out to achieve a specific goal. It illustrates detailed activities and flows of information or documents from one responsible party to another in a given sequence. To draw an activity diagram,

- Process analysts first prepare swimlanes for parties involved in a business process.
- Process analysts then list activities involved in the business process in a sequential order and assign a unique identifier to each of them. Each activity is placed in the swimlane with a label of the party who carries it out.
- Process analysts list documents associated with the business process. The documentary objects should be placed in the swimlane of the party either originating or holding them.
- Process analysts add decision points represented by a diamond where needed and provide a conditional statement for each transition.
- Lastly, process analysts create a starting point (initial state), an ending point (final state), and connections for all activities and documents between them.

Table 2C-2 presents the basic elements and notations of an activity diagram that is applied in this business process analysis study.

The sample activity diagram shown below provides an elaboration of "Have the product sampled and examined" use case which is part of the BPA of frozen shrimp export from Thailand to the major export markets for Thai frozen shrimp including the United States, Japan, and the European Union.
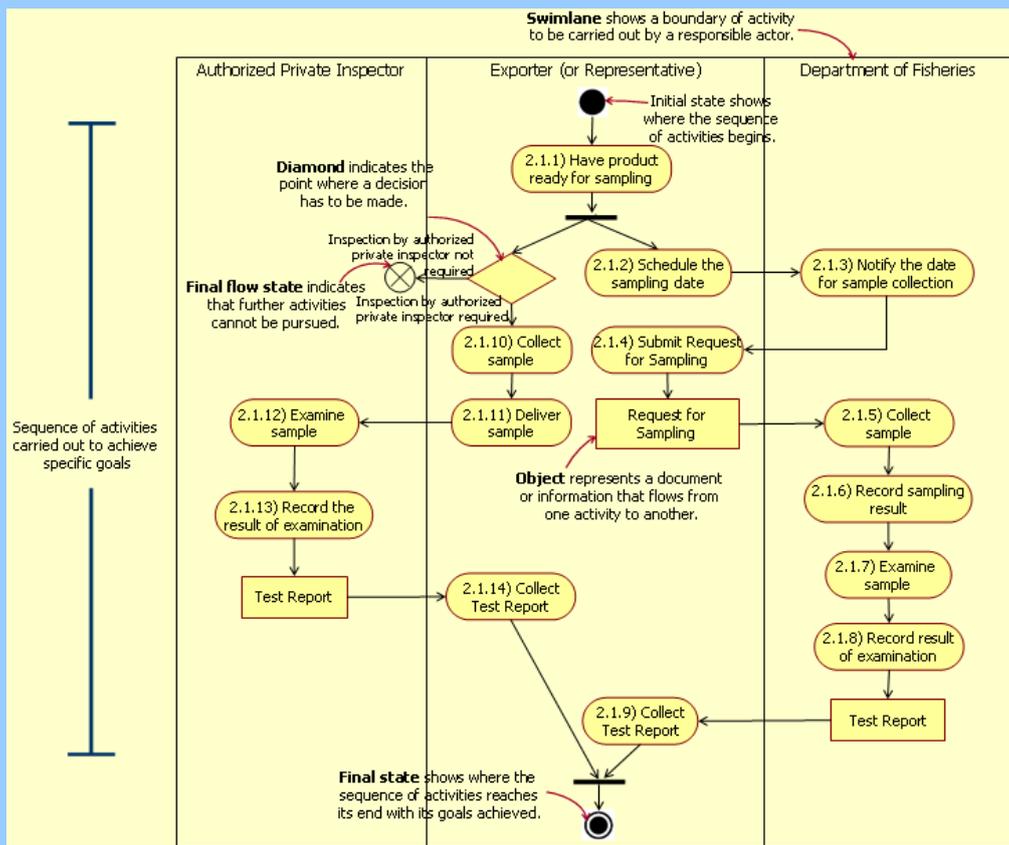
Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

</div>

Activity 4.10
Once further revision on individual diagrams is no longer required, process analysts provide textual description of individual activity diagrams.

Process description is where process analysts provide clarifications on practicalities of the business process and each 'activity' listed in the activity diagram. Process description has to include the following elements:

- The name of a process area to which this particular business process belongs to;
- The name of a business process (use case);
- Related laws, rules, and regulations;
- The name of process participants (parties responsible for carrying out certain activities in the business process);
- Input and criteria to enter/ begin the business process;
- Activities and associated documentary requirements to complete the business process
- Output and criteria to exit the business process; and
- Average time required to complete the business process.

To ensure that the explanation is given to each listed activity, process analysts provide a brief description of each activity. The description should begin with the name of the party carrying out the activity, followed by action verb describing the activity that has to be carried out. If the activity involves document(s), process analysts should include it (them) in the description. The unique number given to each activity should also be included in the description so that a trace between the textual description and the activity is maintained. An example of process description is shown in Box 3B-11.

Activity 4.11
Process participants/business domain experts review process description and then provide feedback.

Activity 4.12
Process analysts, based on the feedback from process participants and/or business domain experts, determine whether process description of each activity diagram needs further revision. If it does, process analysts revise and/or refine process description of each activity diagram according to the feedback received.

Box 3B-11. Case Study – Process description of "2.1) Have the product sampled and examined" use case within the BPA of frozen shrimp export from Thailand to the United States, Japan, and the European Union

|	
Name of a process area	Ship
Name of a business process (use case)	2.1) Have the product sampled and examined
Related laws, rules, and regulations	• Fisheries Act (1497 as amended in 1953 and 1985) • Good Aquaculture Practice • Code of Conduct for Responsible Shrimp Aquaculture • Practical Guideline for HACCP Regulatory Audit
Process participants	• Authorized Private Inspector • Department of Fisheries by *Fish Inspection* and Quality Control *Division or Fish Inspection* and Research Center in Samutsakorn, Suratthani, or Songkhla • Exporter (or Representative)
Input and criteria to enter/ begin the business process	• Shrimp processing plant has already been registered by Department of Fisheries. • Shrimp processing plant is a member of Thai Frozen Foods Association. • Shrimp processing plant has complied with Department of Fisheries' HACCP-based requirements. (As of 2000, 92% of processors have been implementing HACCP effectively.*)
Activities and associated documentary requirements	2.1.1. Exporter (or Representative) has product ready for sampling. 2.1.2. Exporter (or Representative) contacts Department of Fisheries by phone to schedule the sampling date. 2.1.3. Department of Fisheries notified the date for sample collection 2.1.4. Exporter (or Representative) prepares the Request for Product Sampling and Inspection (DOF./KTS. 2) and submit in person or by fax to Department of Fisheries. Exporter (or Representative) must use the paper with the logo of the processing plant when preparing the Request. Prior to submitting the Request, Exporter (or Representative) must make sure that the Request for Product Sampling and Inspection (DOF./KTS. 2) has the name of the processing plant, type(s) of product(s) to be sampled and inspected, description of product(s) to be sampled and inspected, the name of importing country, the quantity to be exported, the signature of the authorized person, and company's stamp. 2.1.5. After receiving the Request for Product Sampling and Inspection (DOF./KTS. 2), an officer from Department of Fisheries goes to the processing plant to collect sample. There is no fee for product sampling. Exporter (or representative) only has to cover for officer's traveling expense. 2.1.6. An officer from Department of Fisheries records the sampling result. 2.1.7. An officer from Department of Fisheries examines the collected sample according to the standards and requirements of the importing country. The inspection service provided by Department of Fisheries is free of charge. 2.1.8. An officer from Department of Fisheries records the results and prepares the Test Report which more or less contains test report no., date of issue, office of inspector, address of office of inspector, client name, client address, place of destination, description of goods, packing, gross weight per pack, net weight per pack, weight unit, number of package, total number of package, sample characteristic and condition, date of sampling/date of receipt, date of analysis/date of test, test method, microbiological result, chemical result, physical result, overall result (accept/reject), name of inspector, signature of inspector, name of authorized senior inspector, and signature of authorized senior inspector. There is no standard format for Test Report. 2.1.9. Exporter (or Representative) goes to Department of Fisheries to collect Test Report. The Test Report can be collected after the sample has been collected for 10 days. 2.1.10. In case an inspection by Authorized Private Inspector is required, Exporter (or Representative) has to collect the sample. The inspection by Authorized Private Inspector is normally required when Exporter (or Representative) has an urgent need for product inspection or when the scope of product inspection is beyond the standards and requirements of the importing country. 2.1.11. Exporter (or Representative) also has to deliver the sample to Authorized Private Inspector. 2.1.12. Authorized Private Inspector then examines the sample. 2.1.13. Authorized Private Inspector records the results and prepares the Test report. 2.1.14. Exporter (or Representative) collects the Test Report after the sample has been delivering for 7 days. The cost of inspection can be as high as 8,000 Baht.
Output and criteria to exit the business process	Exporter or Representative receives the test report.
Average time required to complete this business process	14 Days

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

    * Suwanrangsi, S. (2002). Experiences in the Application of HACCP for Export and Local Markets: The Case of Thai Fisheries. In E. Hanak, E. Boutrif, P. Fabre, and M. Pineiro. Food Safety Management in Developing Countries: Proceedings of the International Workshop, CIRAD-FAO, 11-13 December 2000, Montpellier, France.

Activity 4.13

Once further revision on process description is no longer required, process analysts work together to integrate all activity diagrams of the business processes associated with all use cases defined earlier into a *single integrated activity diagram*. The integrated activity diagram represents an interconnected view of business processes used in an industry or to provide a particular service. It illustrates relationships between core business processes, process participants, and information flow throughout the area under the scope of the study. An example of an integrated activity diagram is provided in Box 3B-12.

Box 3B-12. Integration (partial) of activity diagrams chart from the BPA of frozen shrimp export from Thailand to the United States, Japan, and the European Union
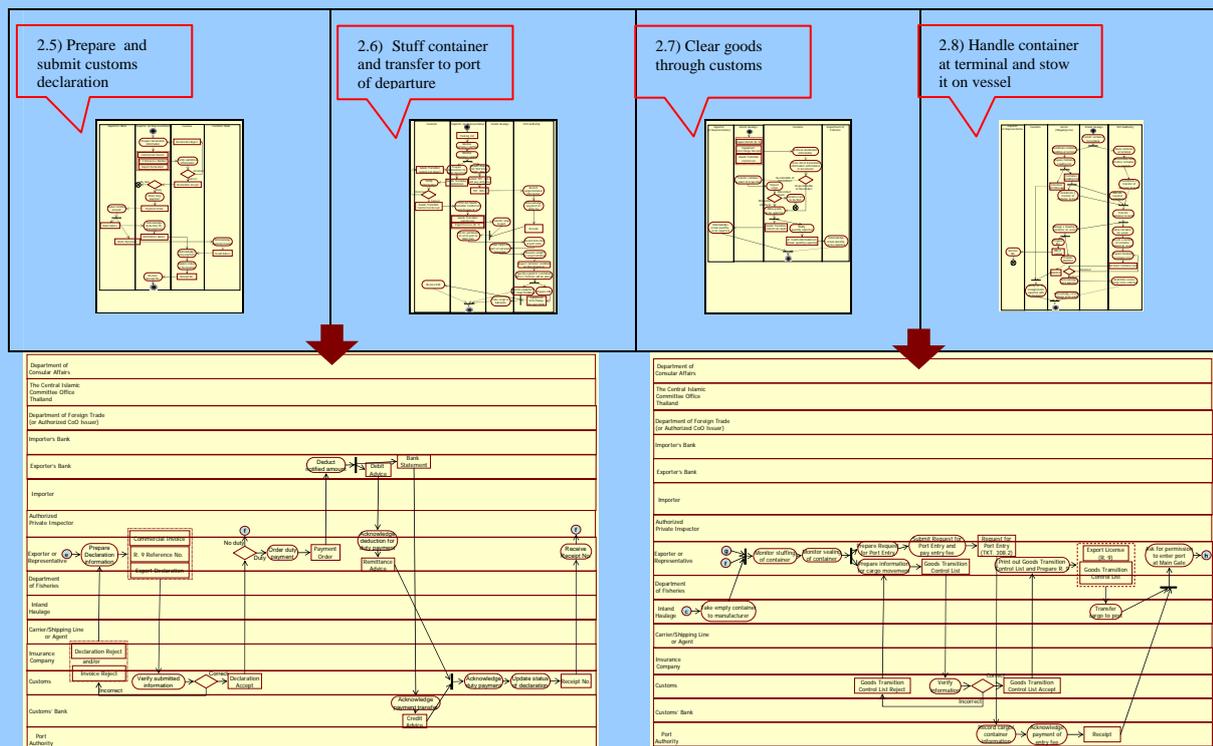
The above diagrams illustrate the integration of some business processes (use cases) that have to be carried out in order to export frozen shrimp from Thailand. The use cases shown in these diagrams include "prepare and submit customs declaration", "load container and transfer to port of departure", "clear goods through customs", and "handle container at terminal and stow it on vessel". In the horizontal swimlanes, all process participants involved in exporting frozen shrimp from Thailand, as also shown in Box 3B-4, are listed.

Source: ESCAP, from the Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University.

Activity 4.14

Process analysts present a time frame (i.e., the average time it takes to complete the processes) and a timeline (i.e., the time in which core business processes occur in relation to other core business processes, e.g., sequential or simultaneous) in which core business processes are carried out in a time-procedure chart.

Box 3B.13. The time-procedure chart from the BPA of frozen shrimp export from Thailand to the United States, Japan, and the European Union

The time-procedure chart corresponds to the use case diagram in Box 3B-4. It summarizes the timeframe and timeline in which core business processes (as represented by use cases in the use case diagram) have to be completed in order to export frozen shrimp from Thailand to its major export markets.

This time-procedure chart, initially used in the World Bank's Doing Business project, is a simple bar chart that assists process analysts in spotting possible bottlenecks. Each bar on the *x axis* represents an individual business process or a use case that has been previously defined in the use case diagram. Each bar is denoted by the number that has previously been assigned to the corresponding use case. The height of the bar indicates the time frame that the business process is completed in a normal situation.
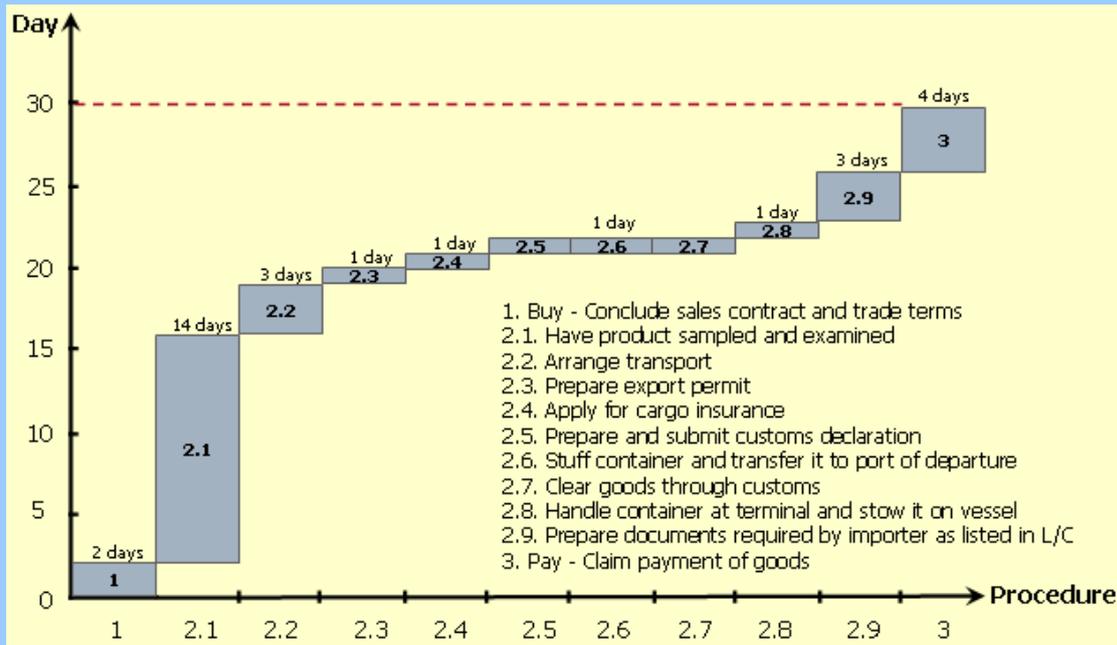
For the time-procedure chart, it is recommended that the time frame is presented in working days. A fragment of a working day should be rounded up to a working day. The business processes represented by the bars are organized in order of their occurrence in the current state of practice. How a particular business process occurs in relation to other business processes, whether sequentially or simultaneously, should also be accurately reflected in the time-procedure chart (e.g. activity 2.5 – 2.7).

These core business processes in the time-procedure chart are presented in sequential order of their occurrence. Special attention is drawn to "2.5. Prepare and submit customs declaration", "2.6. Stuff container and transfer it to port of departure", and "2.7. Clear goods through customs". Note that:

- While the procedures "2.5 Prepare and submit customs declaration" and "2.7 Clear goods through customs" only take each 30 minutes to complete, procedure "2.6 Stuff container and transfer it to port of departure" requires about 7 hours. Nevertheless, the height of the bars representing procedures 2.5, 2.6, and 2.7 is equally high because these business processes are all completed within the same working day (summarized on top of the three activities).
- The order in the diagram results from the sequence of completed activities. Procedures 2.5 and 2.6 can be carried out in parallel whereas procedure 2.7 can only occur after 2.6 is completed. Therefore, it is listed last among the three activities.

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

Activity 4.15
Process participants/business domain experts review the integrated activity diagram and the time-procedure chart, and then provide a feedback.

Activity 4.16

Process analysts, based on the feedback from process participants and/or business domain experts, determine whether the integrated activity diagram and the time-procedure chart need further revision. If it does, process analysts revise and/or refine the integrated activity diagram and time-procedure chart according to the feedback received.

Activity 4.17
Once further revision on the integrated activity diagram and the time-procedure chart is no longer required, project manager/project leader consolidates all deliverables achieved in this step for a submission to project sponsor.

Activity 4.18
Project sponsor acknowledges the completion of the documentation of existing business processes.

Activity 4.19
Project manager/project leader oversees the implementation of Activity 4.1-4.16.

Phase III: Process analysis and recommendations development

A better understanding of the "as-is" processes is obtained once the processes are defined and systematically documented. Activity diagrams, process descriptions listing all documentary requirements, associated laws, rules, and regulations as well as time-procedure chart provide the stakeholders with an overall and integrated view of the current situation and facilitate the discovery of problem areas. Based on these inputs, recommendations for improvement can be developed. International recommendations on trade and transport facilitation, best practices, and standards such as UN/CEFACT Recommendation 18 on Facilitation Measures Related to International Trade Procedures, WCO Revised Kyoto Convention, WCO Customs Guidelines on Integrated Supply Chain Management, and WCO Framework of Standards to Secure and Facilitate Global Trade should be considered and applied. The logical steps in this phase include:

> Step 5 – Analyse the "as-is" processes
> Step 6 – Develop and propose recommendations

Step 5: Analyse the "as-is" processes

The purpose of Step 5 is to identify the bottlenecks and opportunities to improve the "as-is" processes described in the activity diagrams, the process descriptions, and the time-procedure chart. It aims at developing a set of observations related to the current business processes that have potential for improvement, such as the identification of duplicated and redundant procedural and documentary requirements which cause delays. Figure 3B-9 shows stakeholders participating in Step 5.

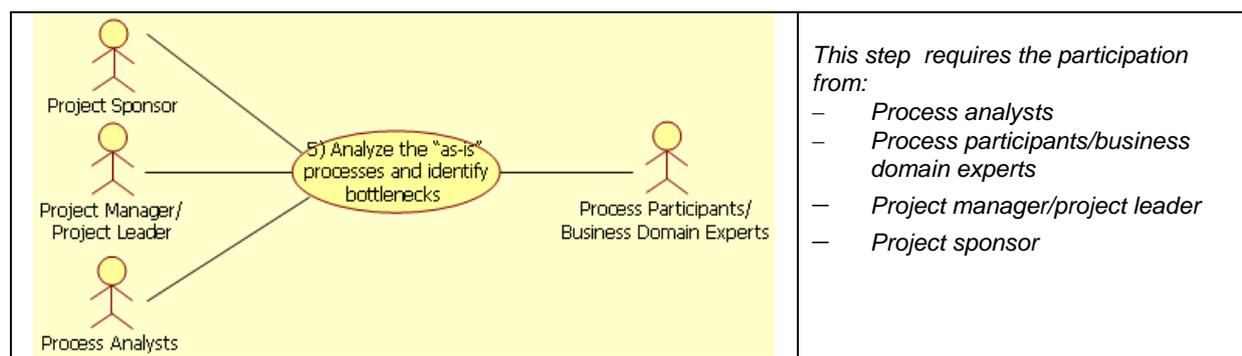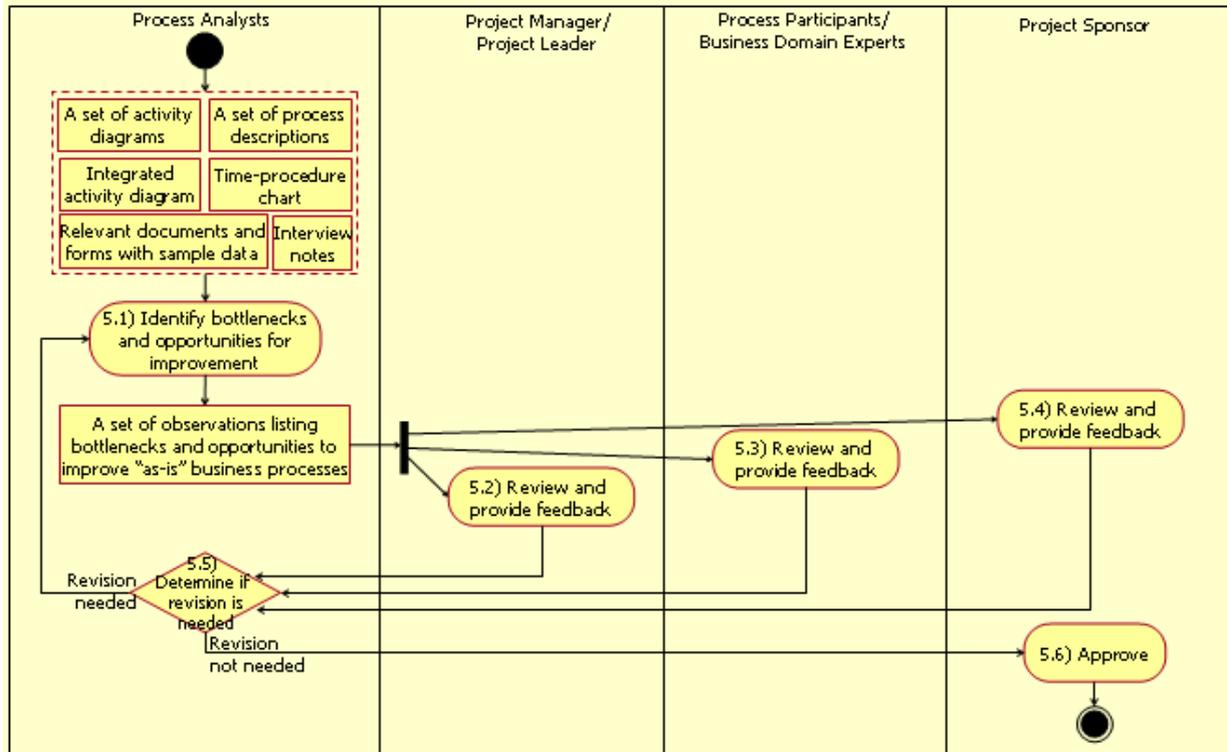**Figure 3B-9. Stakeholders involved in Step 5**

Illustration of necessary activities that have to be conducted in order to analyse the "as-is" business processes and identify the bottlenecks is provided in Figure 3B-10.

**Figure 3B-10. Activities involved in Step 5**

Activity 5.1
Using a set of activity diagrams, a set of process descriptions, an integrated activity diagram, a time-procedure chart, interview notes, and relevant documents and forms with sample data that process analysts have collected as inputs, process analysts identify the bottlenecks and record observations related to the current "as-is" business processes that have the potential for improvement.

Process analysts may first review the time-procedure chart as it visualizes the current state of all business processes under the scope of analysis. As illustrated in Box 3B-13, the time-procedure chart enables process analysts to instantly spot business processes that require extensive time to complete. The time-procedure chart, however, is not informative. It only summarizes the average time required to complete each business process under the scope of the study. To find out the cause of delays, process analysts need to investigate the properties of corresponding business processes by examining relevant activity diagrams, process descriptions, related laws, rules, and regulations as well as interview notes and relevant documents and forms with sample data that process analysts collect from process participants/business domain experts during the interview or from other sources. Issues that process analysts should investigate are the efficiency (e.g., caused by redundant and unnecessary requirements), the effectiveness (e.g. the amount of rework), the reliability, the transparency, and the predictability of business processes.

Box 3B.14. Analyzing the time-procedure chart of frozen shrimp export from Thailand to its major export market including the United States, Japan, and European Union (1)
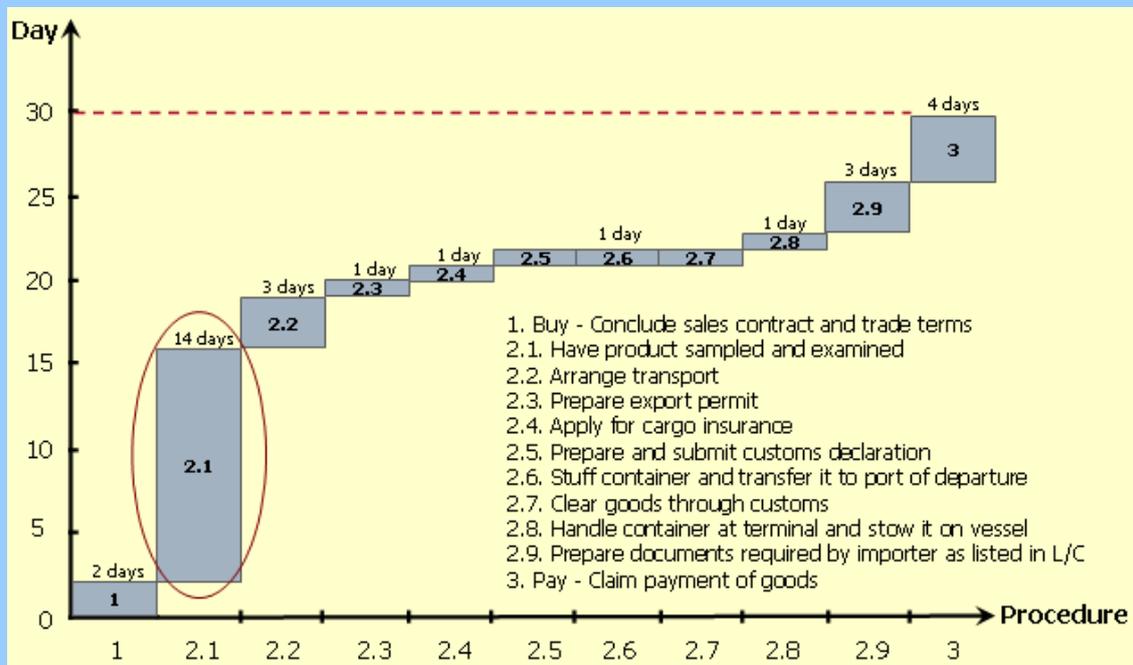

The above time-procedure chart suggests that the major delay in exporting frozen shrimp from Thailand to its major export market lies in the process "2.1. Have product sampled and examined". The corresponding process description (Box 3B-11) further explains that the result of product examination can only be collected after the product has been sampled for 10 days. According to the interview notes, it is due to Department of Fisheries' resource constraints, in terms of both lab technicians and lab facilities.

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

The fact that 'process analysts do not spot any major delays in the time-procedure chart' does not mean that those processes do not have any bottlenecks or rooms for improvement. It is therefore important that process analysts go over each and every activity diagram, process descriptions related laws, rules, and regulations, and interview notes in different angles.

Box 3B-15. Analyzing the time-procedure chart of frozen shrimp export from Thailand to its major export market including the United States, Japan, and European Union (2)
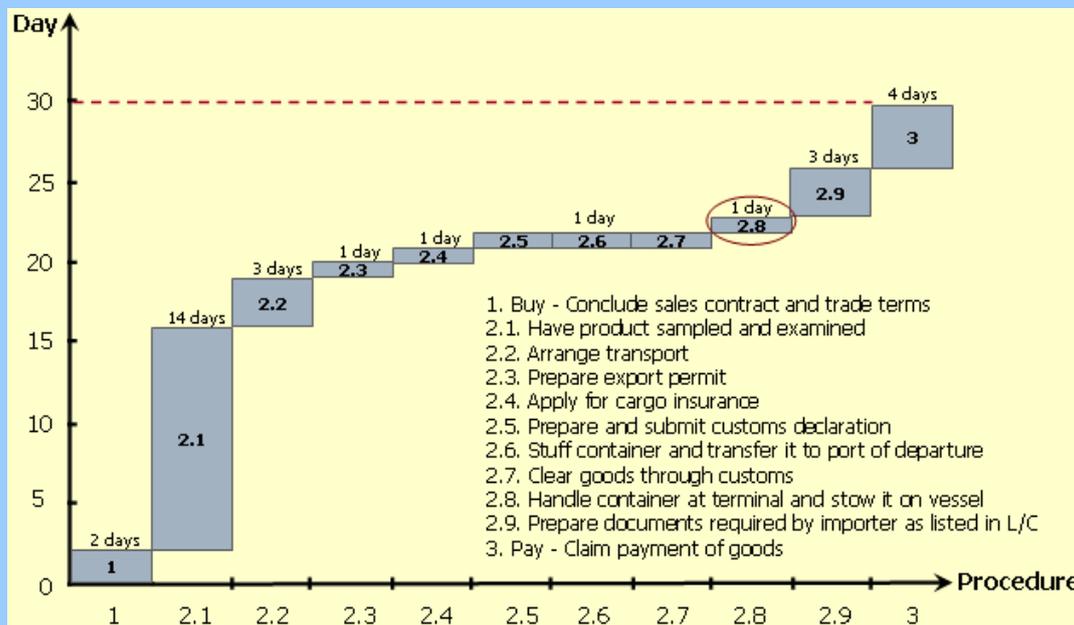
According to the time-procedure chart provided here, process "2.8 Handle container at terminal and stow it on vessel" can be completed in a day on average. The process seems to be completed in a reasonable time. The examination of its corresponding activity diagram, process description, sampled documents, and interview notes, however, leads to the discovery of redundancy and inefficiency in fulfilling documentary requirements.
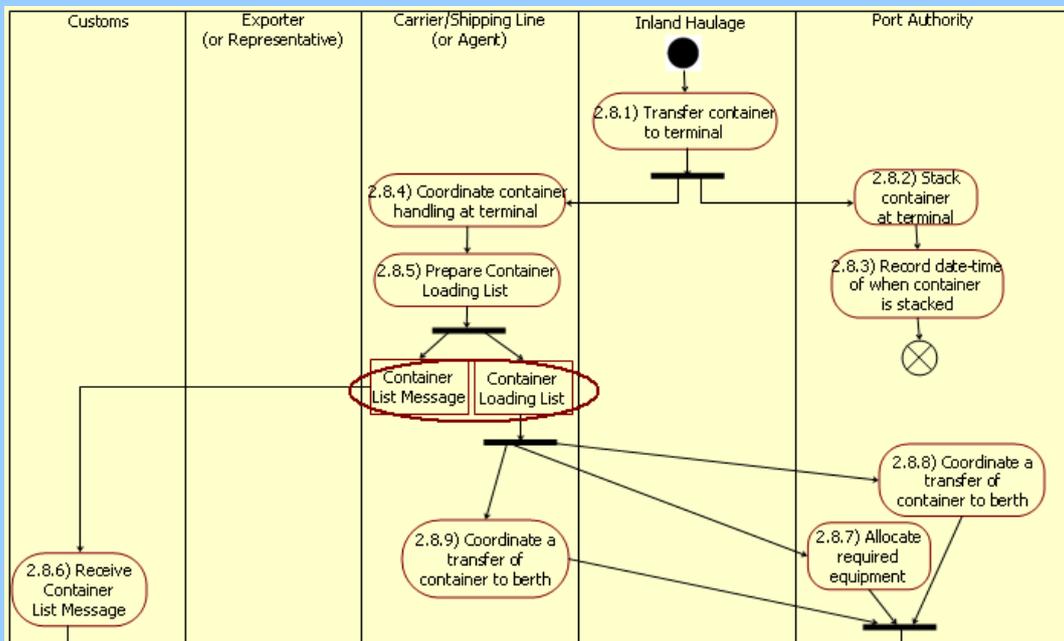
The activity diagram helps spot documentary requirements that carrier/shipping line (or agent) has to fulfill prior to its departure. Following the above activity diagram, it is clear that carrier/shipping line (or agent) has to prepare Container List Message and Container Loading List. Container list Message has to be submitted to Customs whereas Container Loading List has to be submitted to Port Authority. The review of a data dictionary that explains data requirements of Container List Message and a sample Container Loading List reveals that the content of these two documents are very much alike. Nevertheless, according to the corresponding process description, the two documents are prepared in different formats and submitted using different methods.

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

To discover bottlenecks and improvement opportunities, process analysts may also use guiding questions such as those provide in Box 3B-16. The answers to these questions can be derived from activity diagrams, process descriptions, related laws, rules, and regulations as well as interview notes and relevant documents and forms with sample data that process analysts collect from process participants/business domain experts during the interview or from other sources.

Box 3B-16. Examples of questions guiding the analysis of a business process

Questions for each individual business process:
- What are the objectives of the business process?
- Are the objectives in line with the business process in place?
- Does the business process have any value to the delivery of goods, the collection of national revenue, the enhancement of border security, the protection of public health and safety?
- Does every activity comprising the business process add value or contribute to meeting the business processes' objectives?
- Is the business process excessively complicated?
- Are the interaction and communication among process participants smooth enough to allow process participants to accomplish each activity without any difficulties?
- Do any process participants ask for data, reports, and responses that they do not need?
- Are there any unnecessary approvals?
- Are there any duplicated activities?
- Which activities are being done sequentially now that could be done in parallel?
- Is the business process standardized?
- Is the provision and processing of data standardized?
- Have the service levels ever been specified?
- Are the objectives of the business process met within the specified service levels?
- Is the average time reasonable?
- Are there variances in the time it takes to complete a business process? What are causes of variance?
- How often are the applications for permit/certificate rejected? Why?
- Are there any redundant inspections?
- Are all shipments subject to physical inspection?
- Do laws, rules, and regulations prohibit process participants from being more efficient and effective?
- Is there anything that prevents process participants from achieving desired results?
- Is there anything wrong with the current state of the business process?

Questions for the entire business domain of interest:
- How many documents are typically required for administering trade transactions under the business domain of interest?
- Across the business processes, are there any areas of commonality? (e.g., business processes with identical objective, business processes with identical data requirements) If yes, what are they?
- Across the business processes, are there unnecessary duplications of efforts? If yes, are they associated with documentary or procedural requirements? What are they? (e.g. duplicated forms, duplicated decision requirements, etc)
- Are trade- and transport-related data efficiently shared among relevant process participants?

Process analysts may also supplement the use of guiding questions with the checklist that assembles key trade facilitation measures from international recommendations, best practices, and standards, such as UN/CEFACT Recommendation No. 18: Facilitation Measures Related to International Trade Procedures, Revised Kyoto Convention, WCO Customs Guidelines on Integrated Supply Chain Management, and WCO SAFE Framework of Standards. Box 3B-16 provides examples of items that may be included in the checklist.

Box 3B-17. Examples of business process analysis checklist

Procedural requirements
- ☐ Procedures are kept to a minimum.
- ☐ Procedures are standardized.
- ☐ Procedures comply with international standards. For example, customs procedures are in line with the Revised Kyoto Convention, WCO Customs Guidelines on Integrated Supply Chain Management, and Customs SAFE Framework of Standards. In case procedures partially comply with international standards, identify practices that do not.
- ☐ Where goods are required to be physically inspected by multiple government authorities, those government authorities coordinate and carry out the physical inspection at the same time.
- ☐ Sufficient number of modern non-intrusive and radiation detection equipments have been installed and used in the inspection of high-risk shipments.
- ☐ Authorized Economic Operators, who have good record of compliance and demonstrate commitment to supply chain security, benefited from simplified and rapid procedures. The same principle is applied by other controlling government agencies in the context beyond customs.

Data requirements
- ☐ Data requirements are kept to a minimum. (A set of data requirements should be no larger than by the data set for WCO Data Model, given that the WCO Data Model defines a maximum set of data for the accomplishment of export and import formalities.)
- ☐ Data requirements are harmonized and standardized.

Documentary requirements
- ☐ Documentary requirements are kept to a minimum.
- ☐ Documentary requirements are in line with UN Recommendation No. 1: UN Layout Key for Trade Documents. (Identify the documentary requirements that are not in line with UN Recommendation No. 1: UN Layout Key for Trade Documents.)
- ☐ The use of plain paper, documents produced or appearing to be produced by reprographic automated or computerized systems are acceptable. (Identify where the use of plain paper, documents produced or appearing to be produced by reprographic automated or computerized systems are not acceptable.)
- ☐ Hand-written signatures and their equivalents by Authorities are avoided on paper documents (Identify where hand-written signatures or their equivalents are still required).
- ☐ No documents are required to be legalized, verified, or authenticated by representatives abroad.
- ☐ The requirement for authentication can be fulfilled by means of technological solutions and need not be accompanied by a signed and/or authenticated paper document.
- ☐ International standards for electronic information exchange are used as a basis for developing information systems used to facilitate the completion of trade related procedural and documentary requirements.

Transparency and predictability
- ☐ Official publications of existing laws, regulations, and other information regarding procedures and data requirements including rate of duties and taxes, general rule for classification of products for customs purposes, trade-related requirements and restrictions, fees and charges related imposed in connection with the administration of trade, penalty provisions against breaches of trade formalities, and trade-related bilateral or multilateral agreements are systematically available and readily accessible to all parties concerned (Identify laws, regulations, and other information regarding procedures and data requirements are not readily accessible to all parties concerned).
- ☐ The time required, the procedures used, and the fees related to official regulations are predictable.

Source: ADB and UNESCAP. (2009). *Designing and Implementing Trade Facilitation in Asia and the Pacific*. Asian Development Bank. Manila.
   UN/CEFACT. (2001). *UN/CEFACT Recommendation No. 18: Facilitation Measures Related to International Trade Procedures*. United Nations. Geneva.
   WCO. (2007). *WCO SAFE Framework of Standards*. World Customs Organization. Brussels.

Process analysts may also supplement the above techniques with benchmarking. By applying a benchmarking technique, process analysts can determine how well the countries as members of the international community, are doing in terms of trade logistics. To benchmark, process analysts compare the performance of the business processes with relevant performance indicators

(e.g. Logistics Performance Index, Doing Business' Trading Across Borders, and documents that contain relevant business process information[10]) in terms of:

- Efficiency of the customs clearance process
- Quality of trade and transport-related infrastructure
- Competence and quality of logistics services
- Ability to track and trace consignments
- Frequency with which shipments reach the consignee within the scheduled time
- Time for exporting and importing
- Costs associated with completing the procedural requirements for export and import
- Numbers of documents required per shipment to export and import.

Given that the performance indicators are based on certain assumptions, it is therefore important that process analysts clearly understand the assumptions underlying the chosen performance indicators prior to adopting them as baselines for benchmarking trade facilitation performance.

If information about how a particular business process is carried out in other countries is available, process analysts may also compare, partially or fully, the practicalities of the business process.

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[10] UNNExT provides a repository of documents with relevant business process information that may serve as a baseline for benchmarking. The repository can be accessed through http://www.unescap.org/unnext/tools/business_process.asp.

Box 3B-18. Case study – benchmarking Bangladesh's and Thailand's frozen shrimp export to Japan (1)
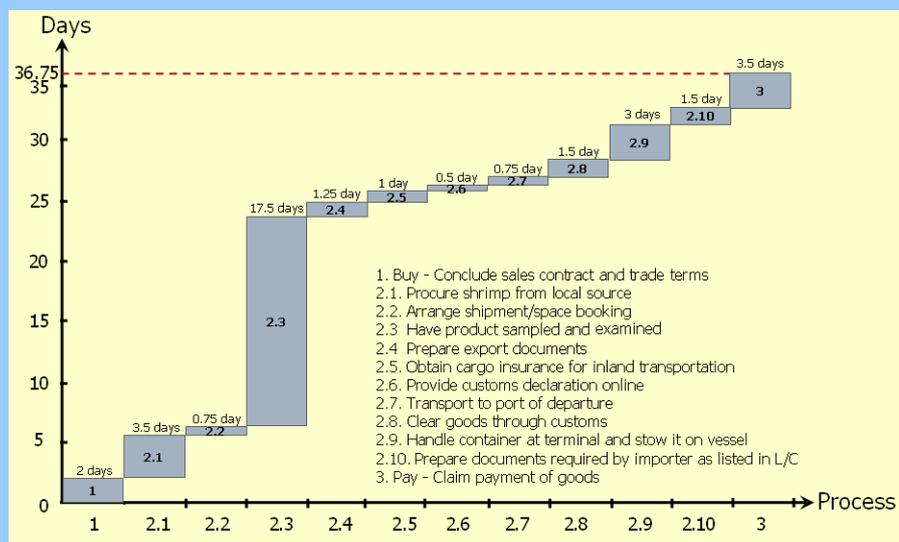
a) Time-procedure chart of frozen shrimp export from Bangladesh to Japan

Source: Hossain, S.S. & Rahman, M.T. (2011). Facilitating Trade through Simplification of Trade Processes and Procedures in Bangladesh. *Asia-Pacific Research and Training Network on Trade: Working Paper Series*, No. 93.
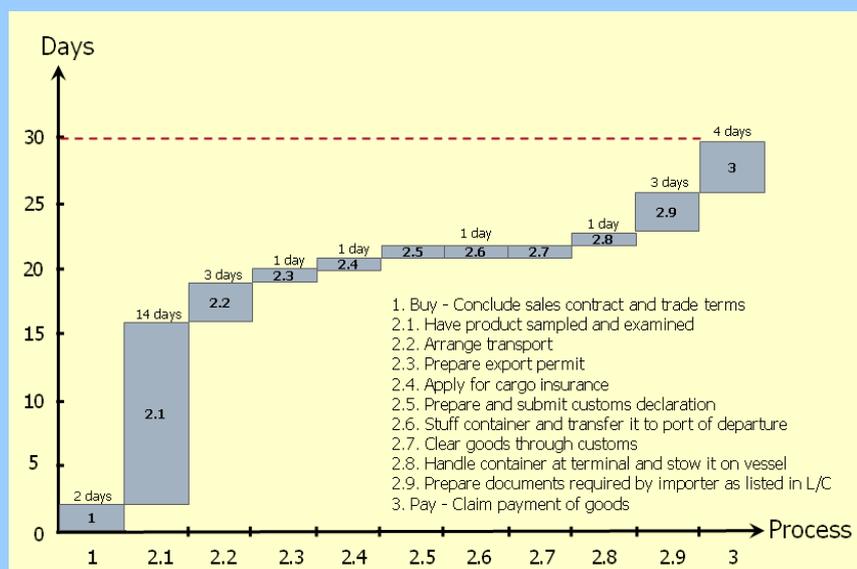
b) Time-procedure chart of frozen shrimp export from Thailand to Japan

Source: ESCAP from The Analysis of Frozen Shrimp Export Process in Thailand, Institute for IT Innovation, Kasetsart University

By comparing the two time-procedure charts, we learn that:

- It takes 6.75 days longer to make necessary arrangements to export frozen shrimp from Bangladesh to Japan than from Thailand to Japan.
- It takes 0.75 day to arrange shipment/space booking in Bangladesh but 3 days in Thailand.
- It requires a Bangladeshi exporter 17.5 days to 'have product sampled and examined.' The same process takes 14 days in Thailand.
- The preparation of export documents for frozen shrimp export take 1.25 days in Bangladesh, but a day in Thailand.
- In Thailand, 'Prepare and submit customs declaration,' 'stuff container and transfer it to port of departure,' and 'clear goods through customs' can be done in a day, but 2.75 days in Bangladesh.
- The preparation for documents required by importer of frozen shrimp takes 3 days in Thailand, but 1.5 days in Bangladesh.
  The claim for payment of good is half a day faster in Bangladesh than in Thailand.

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Box 3B-19. Case study – benchmarking Bangladesh's and Thailand's frozen shrimp export to Japan (2)

Assuming that the studies of business processes for exporting frozen shrimp from Bangladesh and Thailand to Japan follows the methodology proposed by this BPA Guide, and thus produce, in addition to the time-procedure chart, a set of activity diagrams and process descriptions, in this case, process analysts can find out why it takes 14 days to have product sampled and examined in Thailand but 17.5 days in Bangladesh from the activity diagram and process description that explain 'have product sampled and examined' of both Bangladeshi and Thai cases.

a) Activity diagram explaining how to have product sampled and examined in Bangladesh

b) Activity diagram explaining how to have product sampled and examined in Bangladesh
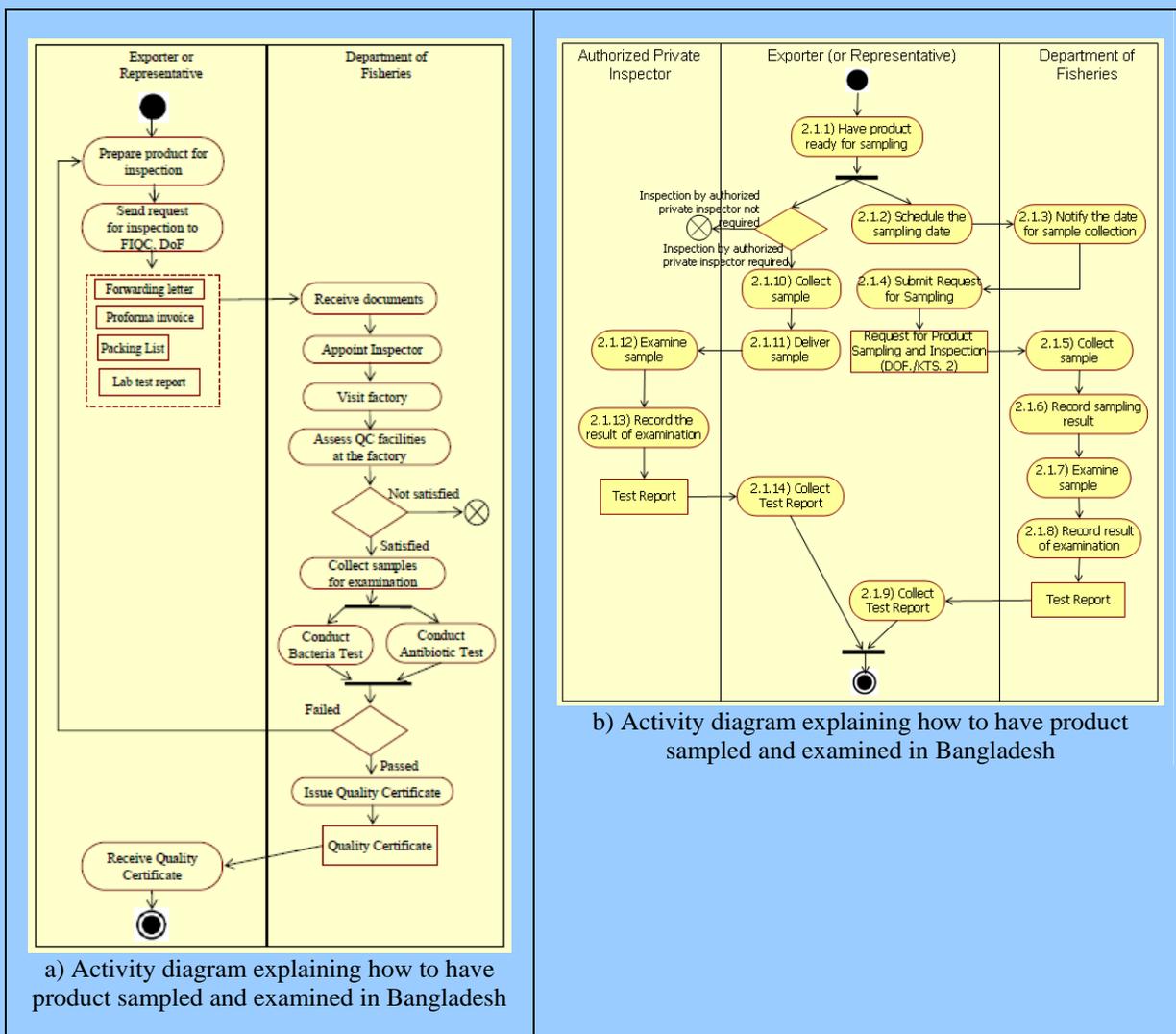
The activity diagrams and process descriptions reveal that the inspection of processing plant is listed as one of the activities in the Bangladeshi case, but input and criteria to enter/ begin the business process in Thai case. To be more precise, the inspection of processing plant in the case of Thailand is part of the HACCP-based inspection integrated quality assurance program for the seafood industry which Thailand's Department of Fisheries has been implementing since 1991. As of 2000, 92% of processors now implementing HACCP effectively. The processing plant that meets the HACCP requirements has a privilege of having product sampled and examined without having the processing plants inspected.

* Suwanrangsi, S. (2002). Experiences in the Application of HACCP for Export and Local Markets: The Case of Thai Fisheries. In E. HANAK, E. BOUTRIF, P. FABRE, and M. PINEIRO. *Food Safety Management in Developing Countries: Proceedings of the International Workshop*, CIRAD-FAO, 11-13 December 2000, Montpellier, France.

Activity 5.2
Project manager/project leader reviews a set of observations listing bottlenecks and opportunities to improve "as-is" business processes and provide feedback.

Activity 5.3
Process participants/business domain experts review a set of observations listing bottlenecks and opportunities to improve "as-is" business processes and provide feedback.

Activity 5.4
Project sponsor reviews a set of observations listing bottlenecks and opportunities to improve "as-is" business processes and provide feedback.

Activity 5.5
Process analysts, based on feedback from project manager/project leader, process participants/business domain experts, and project sponsor, determine if a set of observations listing bottlenecks and opportunities to improve "as-is" business processes needs further revision. If it does, process analysts revise and/or refine it according to the feedback received.

Activity 5.6
Once no further revision is required, project sponsor approves the observations.

Step 6: Develop and propose recommendations

The objective of this step is to develop and propose recommendations that help eliminate bottlenecks and inefficiencies of procedures and documentary requirements in the examined business process. Such recommendations should also aim at enhancing transparency in trade and border procedures in a way that does not impede trade facilitation. The measurable benefits of implementing those recommendations may include improved trade competitiveness resulting from a reduction in trade transaction cost, increased foreign direct investment due to the advent of more business-friendly environment, and greater participation of SMEs in the international trade.

Figures 3B-11 and 3B-12 illustrate the stakeholders and activities involved in this step.
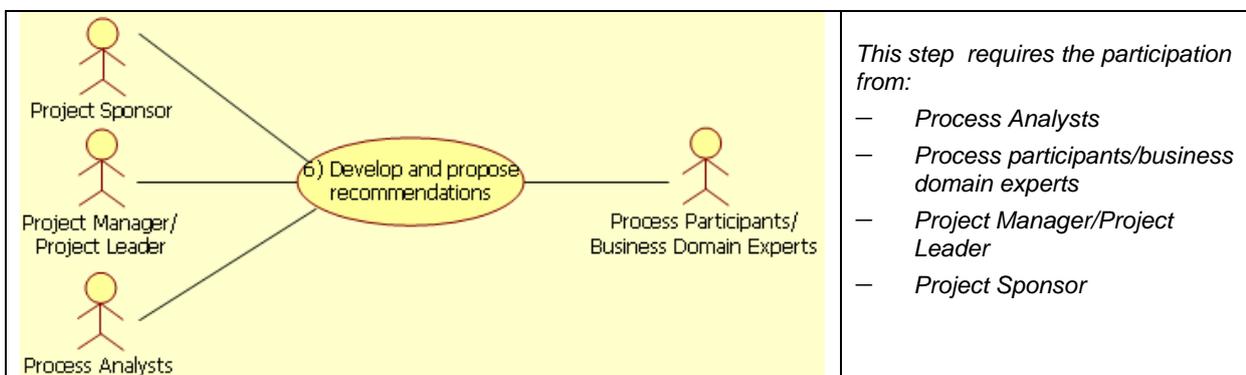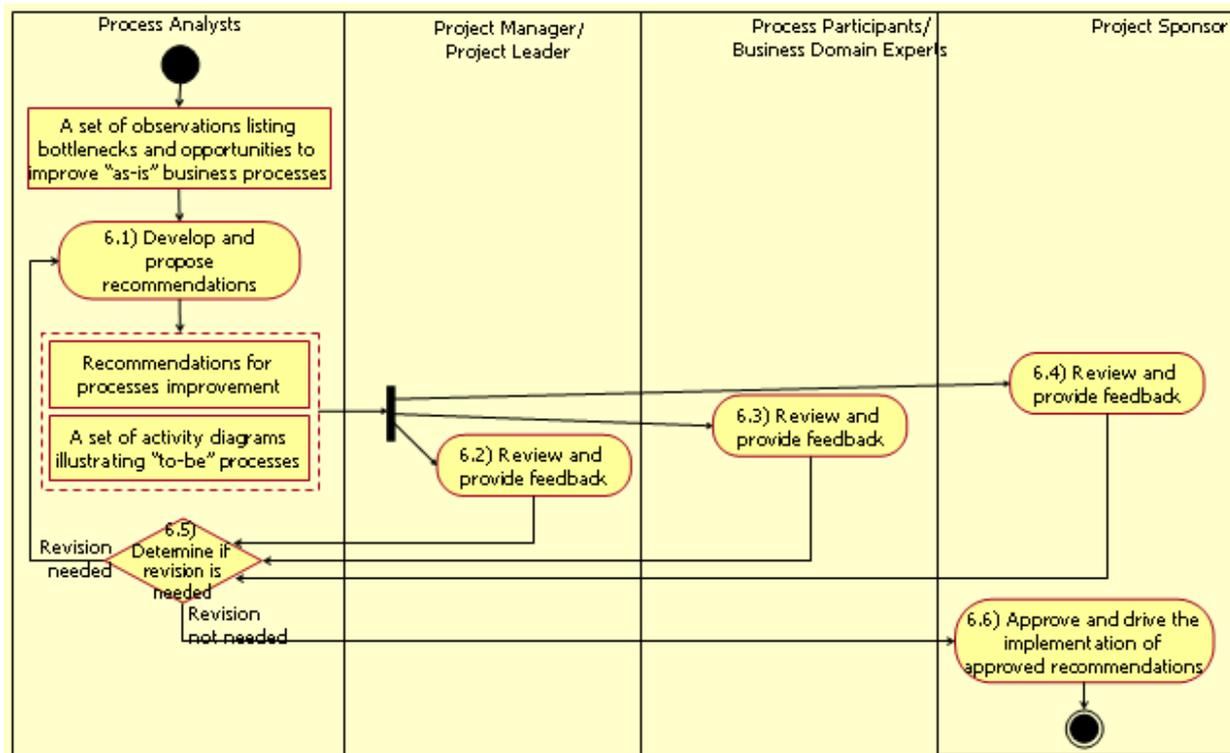
Figure 3B-11. Stakeholders involved in Step 6

Figure 3B-12. Activities involved in Step 6

Activity 6.1

Using a set of observations listing bottlenecks and opportunities to improve "as-is" business processes as an input, process analysts develop recommendations for each bottlenecks and improvement opportunities identified. The recommendations may be accompanied by a set of activity diagrams illustrating "to-be" processes.

Business process improvement can take various forms. General recommendations may include the following measures:

- Re-sequence of activities in a more appropriate order
- Elimination of redundant procedures
- Eliminate business processes or activities that do not add any value to the delivery of goods, the collection of national revenue, the enhancement of border security, the protection of public health and safety
- Integrate business processes that have similar objectives by fostering collaboration between all concerned parties
- Merge of some procedures that may also lead to the elimination of duplicate or unnecessary documentary requirements
- Eliminate redundant data and unnecessary documentary requirements
- Harmonize data requirements with the international standards
- Enhance information sharing among concerned parties through automation such as the automation of paper-based transactional operations, either in a full-scale trade and transport information exchange among stakeholders (paperless trade) such as what

has been implemented under the CASSANDRA project[11] or partly for customs clearance systems such as ASYCUDA.[12]

- Eliminate outdated laws, rules, and regulations
- Privatize quality control related tasks
- Modify existing or create new laws, rules, and regulations to support the implementation of recommendations
- Incorporate appropriate international best practices and standards where possible
- Organize seminars, workshops and trainings to communicate and charter changes
- Implement the Authorized Economic Operator accreditation scheme

It is recommended that process analysts review the following international recommendations and standards as they may provide process analysts ideas for the development of recommendations (See also Box 3B-20):

- UN/CEFACT Recommendation No. 18 on Facilitation Measures Related to International Trade Procedures
- Revised Kyoto Convention
- Customs SAFE Framework of Standards (part of WCO SAFE Package)
- WCO Customs Guidelines on Integrated Supply Chain Management (part of WCO SAFE Package)

Box 3B-20. Examples of international instruments for the simplification of trade related procedures

UN/CEFACT Recommendation No. 18: Facilitation Measures Related to International Trade Procedures
UN/CEFACT Recommendation 18 provides a comprehensive set of recommendations regarding international best practices and standards for the facilitation and harmonization of trade transactions. In order to understand the complexity of international trade, including the key elements of a trade transaction, UN/CEFACT developed a model of an international supply chain. Based on this model, specific measures were developed to cover the key elements of the trade transaction process. These are presented grouped into four major categories, namely: commercial measures; international payment measures; official control measures; and transport-related measures. UN/CEFACT Recommendation No.18 can be downloaded in English, French and Russian from:
http://www.unece.org/cefact/recommendations/rec_index.htm.

Revised Kyoto Convention
The Revised Kyoto Convention is an international convention that sets out standards and recommended practices for the clearance of goods, the payment of duties and taxes, the use of risk management, the establishment of dialogue between customs and trade, and the application of information technology in the context of customs. Given that the Convention promotes the use of simplified practices, its implementation is expected to bring about a reduction in time and cost associated with customs processing (http://unstats.un.org/UNSD/trade/WS%20Bangkok06/Workshop%20materials/KYOTO%20Convention.pdf).

Customs SAFE Framework of Standards
The SAFE Framework sets forth the principles and standards that promote the harmonization of advanced electronic cargo information requirements on inbound, outbound, and transit requirements, the consistent use of risk management approach to address security threats including the conduct of an outbound inspection of high-risk cargo. The SAFE Framework encourages the establishment of cooperative arrangements between customs and other government agencies especially for the integrated border management. Various elements and necessary steps that have to be taken into account when implementing an integrated border management system are summarized in Customs Compendium # 9: Integrated Border Management. The SAFE Framework also supports the establishment

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[11] CASSANDRA (Common Assessment and Analysis of Risk in Global Supply Chain – http://www.cassandra-project.eu/) is a project under the European's Seventh Framework Programme for Security. It is initiated with a strategic goal to enhance supply chain visibility which will eventually lead to an improvement in business operations as well as efficiency and effectiveness of government security inspections.

[12] ASYCUDA (Automated SYstem for CUstoms DAta – http://www.asycuda.org) is a computerized customs management system, developed and provided by UNCTAD. The system handles manifests and customs declarations, accounting procedures, transit and suspense procedures.

Activity 6.2
Project manager/project leader reviews proposed recommendations for the business process improvement, which may be accompanied by a set of activity diagrams representing the future "to-be" business processes and provides feedback.

Activity 6.3
Process participants/business domain experts review proposed recommendations for the business process improvement, which may accompanied by a set of activity diagrams representing the future "to-be" business processes and provide feedback.

Activity 6.4
Project sponsor reviews proposed recommendations for the business process improvement, which may include a set of activity diagrams representing the future "to-be" business processes and provides feedback.

Activity 6.5
Process analysts, based on feedback from project manager/project leader, process participants/business domain experts, and project sponsor, determine if the proposed recommendations and the activity diagrams representing the "to-be" processes needs further revision. If they do, process analysts revise and/or refine them according to the feedback received.

Activity 6.6
Once no further revision is required, project sponsor approves the recommendations and ensure that they are implemented.