

## Business Process Analysis for Business Process Simplification and Automation

**Workshop on Launch of the Implementation Master Plan for  
Mongolia's Single Electronic Window  
December 15 - 17, 2009, Ulaanbaatar, Mongolia**

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Trade Facilitation Section  
Trade and Investment Division, ESCAP

# BPA Training Overview

## □ Schedule and Activities

Date	Time	Program
15 <sup>th</sup>	14:00 ~ 15:00	- BPA Overview with Case Study
	15:00 ~ 15:15	Coffee Break
	15:15 ~ 16:30	- BPA Overview with Case Study (Cont'd) - Group Formation
16 <sup>th</sup>	09:30 ~ 10:30	- Practicum 1: Scope Setting & Process Definition
	10:30 ~ 10:45	Coffee Break
	10:45 ~ 12:00	- Practicum 2: Problem Analysis
	12:00 ~ 13:00	Lunch Break
	13:00 ~ 14:30	- Practicum 3: Recommendation Development
	14:30 ~ 14:45	Coffee Break
	14:45 ~ 16:00	- Group Report and Conclusion - Evaluation and Follow-up Action Plan

# Business Process Analysis for Business Process Simplification and Automation

## Part 1

### Introduction to Business Process Analysis and Business Process Modeling



# International Trade Transaction



Source: UNECE (2006), Towards an Integrated Strategy for UN/CEFACT, Geneva.

# International trade is complex...a lot of time and money is spent on cumbersome paperwork.

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- ❑ International trade transaction in average involves 27 to 30 different parties, 40 documents, 200 data elements (30 of which are repeated at least 30 times) and the re-keying of 60 to 70 per cent of data at least once.<sup>1</sup>
- ❑ Administrative hurdles from cumbersome procedural and documentary requirements can account for up to 75% delay of shipments. Each additional day of delay may reduce trade volume by at least 1% or approximately 7% if the products are agricultural commodity.<sup>2</sup>
- ❑ The costs of paperwork account for 3.5 – 7% of the value of the goods.<sup>3</sup> It can be as high as 10 – 15% if there are typing and other error.<sup>4</sup>

<sup>1</sup> APEC (1996), *APEC Means Business: Building Prosperity for our Community*, APEC Secretariat, Singapore.

<sup>2</sup> Djankov, S., Freund, C., and Pham, C. (2008), *Trading on Time*, The World Bank, Washington DC.

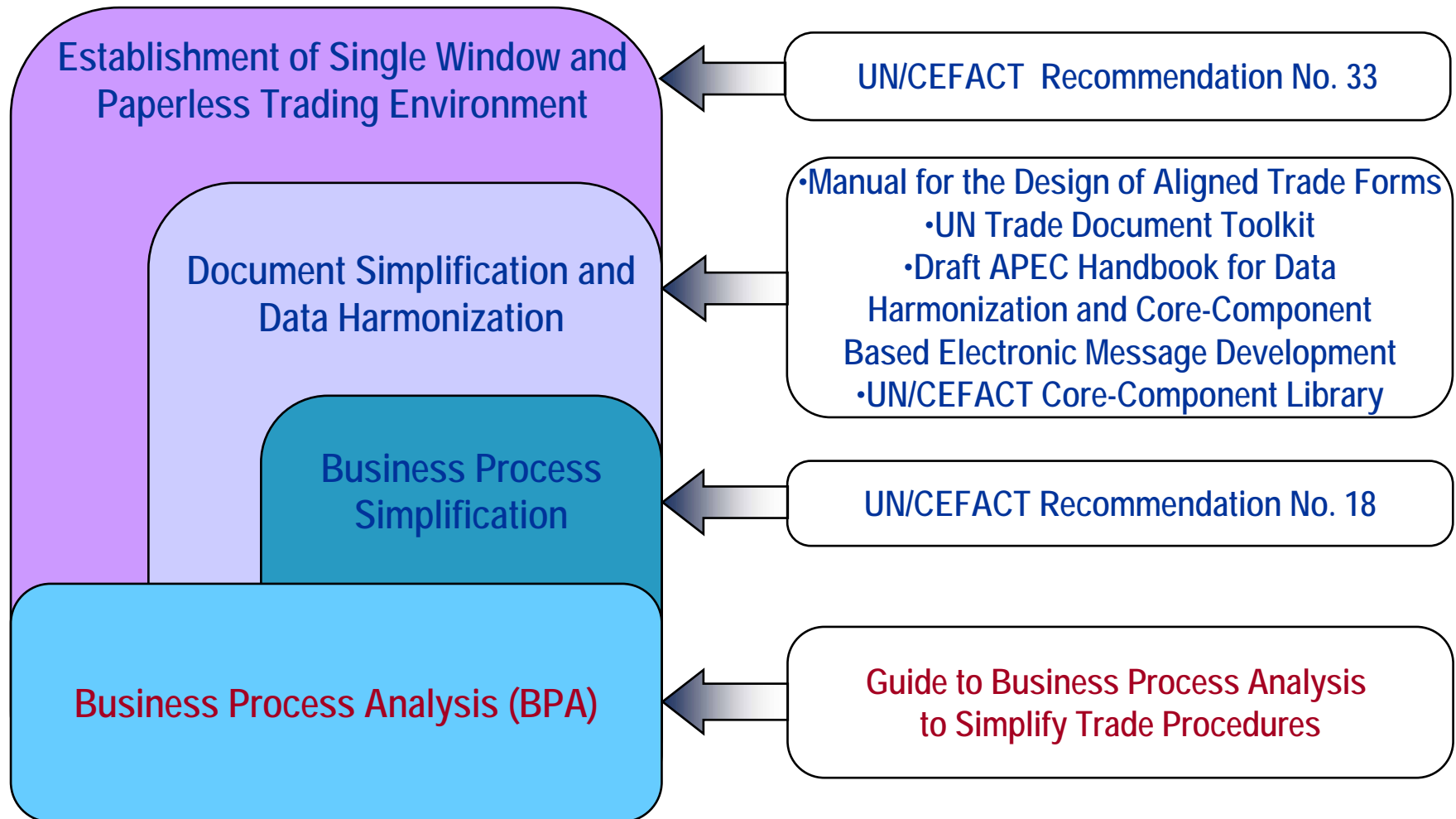
<sup>3</sup> OECD (2002) *Business Benefits of Trade Facilitation*, OECD Publications, Paris.

<sup>4</sup> UNCTAD (1994) *Fact Sheet 5*, United Nations International Symposium on Trade Efficiency, Columbus.

# What is Trade Facilitation?

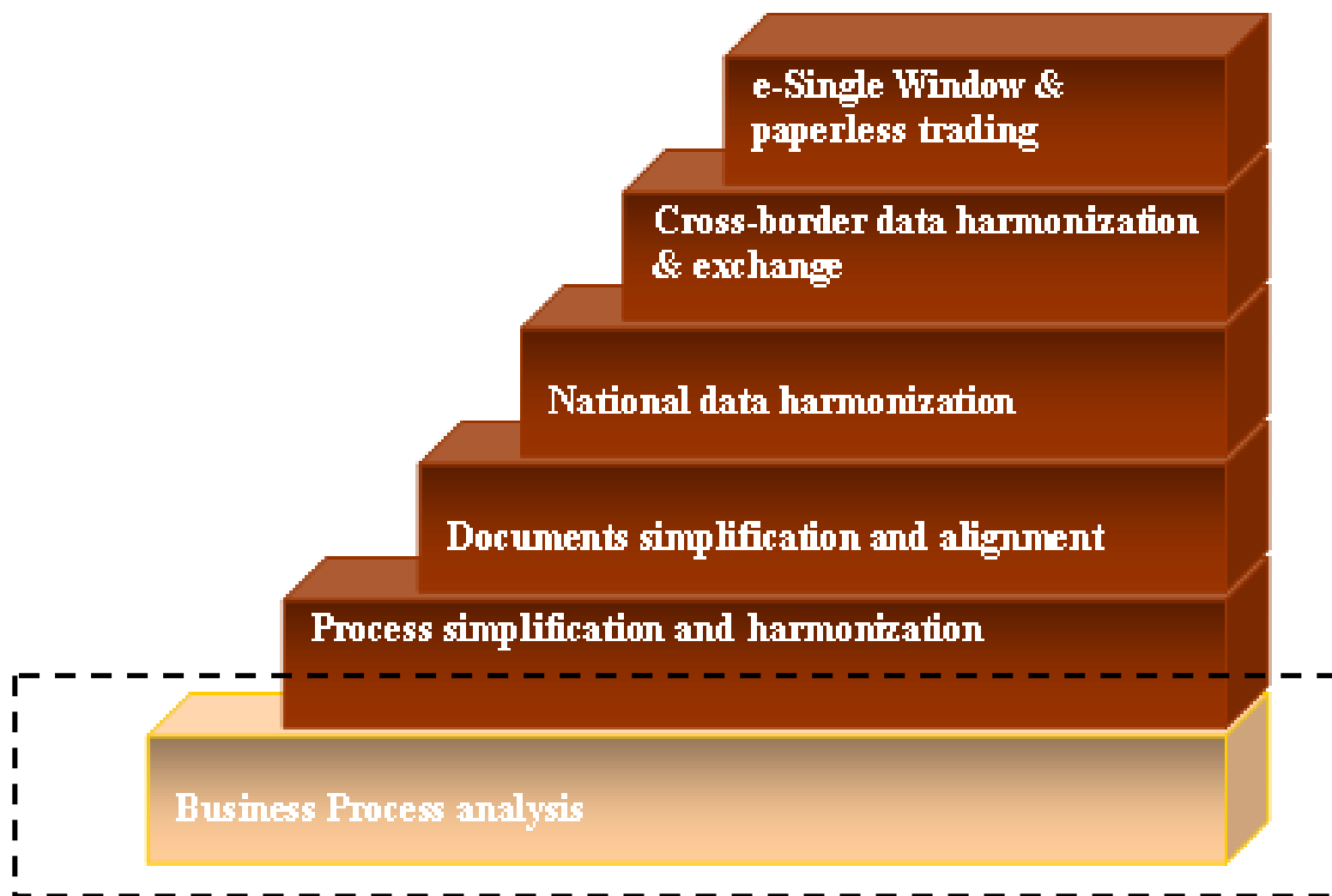
Trade Facilitation	APEC	OECD	UN/CEFACT	UNECE	WB	WTO
The simplification and harmonization of <b>trade procedures and formalities</b> involved in involved in collecting, presenting, communicating, and processing data required in the international trade	✓	✓	✓	✓	✓	✓
The harmonization and standardization of <b>information and information flows</b> associated with the international trade transaction		✓	✓	✓		
The use, standardization, and improvement of <b>physical infrastructure and facilities</b>	✓			✓		
The harmonization of applicable <b>laws and regulations</b> with the international standards				✓	✓	

# Trade Facilitation Measures and BPA



# Step Towards Paperless SW Environment

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# Business Process Analysis (BPA)

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## What

- The close examination of an as-is business process and related information flow within one organization or across organizations in normal operation and in consequences where exceptions take place
  - A business process is *a chain of logically connected activities to move goods and related information across borders from buyer to seller and to provide related services.*

## Purpose

- To understand the current processes and its attributes
  - *Who involved,*
  - *Procedures and documents required,*
  - *Related rules and regulations, and*
  - *Some quantitative indicators (e.g. number of steps, time & costs needed)*

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## Why

- To identify bottlenecks and redundancies in terms of procedural and documentary requirements
- To serve as an input for designing improvement strategies e.g.,
  - The design of a to-be business process that is simpler and free from previously identified inefficiencies
  - The harmonization of data requirements
  - The automation of business processes and information exchange

## Benefits of business process analysis

- Understanding of the current situation
- Benchmarking with other countries
- Raising issues and priorities for improvement
- A stepping stone for the creation of future better processes, e.g. **Process Simplification**

# Business Process Modeling

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## What

- A technique for documenting a business process and its attributes
  - Activities that come in a specific order and decision points
  - Actors who perform those activities
  - Defined inputs and outputs of each activity
  - Criteria for entering and exiting the business process
  - Relationships among actors
  - Information flow
  - Associated rules and regulations
  - Quantitative indicators such as number of steps as well as time and cost required to complete a particular business process

## Why

- To establish a common understanding about a business process that is shared by all relevant parties
- To communicate better all aspects of a business process

# UN/CEFACT Modeling Methodology (UMM)

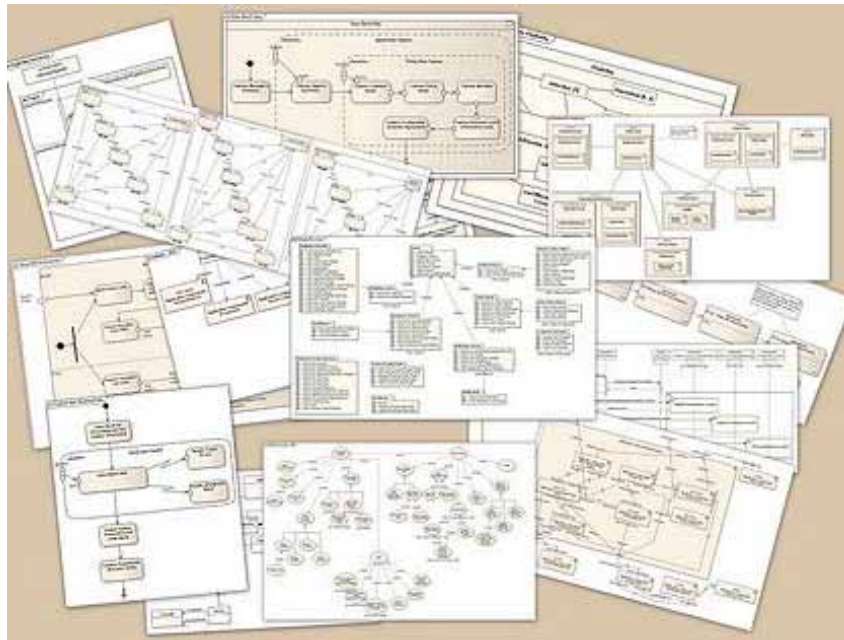
- ❑ Provides a guideline for modeling inter-organizational business processes and data requirements
- ❑ Employs a top-down approach that describes in detail how process analysts should document knowledge about related process attributes

UMM View	Description
Business Domain View	<ul style="list-style-type: none"><li>❑ Partition business domain into business areas, process areas, and business processes</li><li>❑ Establish the business context of business process to be studied</li></ul>
Business Requirement View	<ul style="list-style-type: none"><li>❑ Capture business process attributes, their relationships, and information flow between participants who perform business activities in a business process</li></ul>
Business Transaction View	<ul style="list-style-type: none"><li>❑ Elicit definition and characteristic of business information that flow in a business process</li></ul>
Business Service View	<ul style="list-style-type: none"><li>❑ Identify possible features of automated system and corresponding messages</li></ul>

BPA

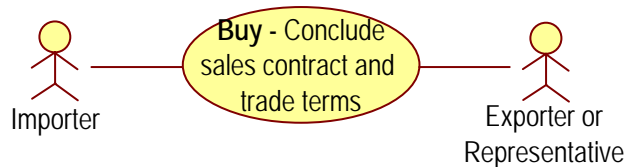
# Unified Modeling Language (UML)

- A set of standard graphical notations for documenting a business process and business requirements
  - Is widely recognized and used among practitioners in business community as well as those in IT and software industry
  - Allows business domain experts to communicate procedural and documentary requirements with IT implementation or software development team



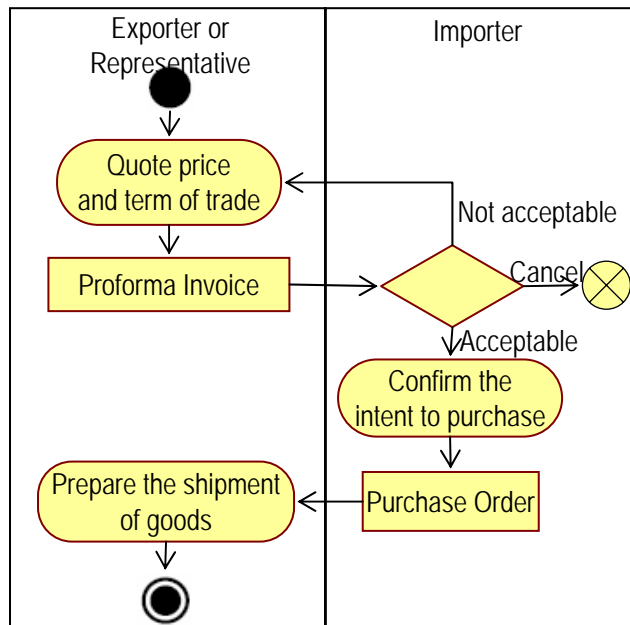
[http://en.wikipedia.org/wiki/Unified\\_Modeling\\_Language](http://en.wikipedia.org/wiki/Unified_Modeling_Language)

# UML Diagrams for BPA



## Use Case Diagram

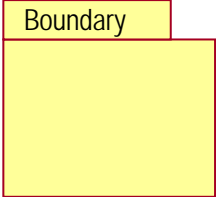
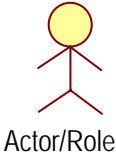
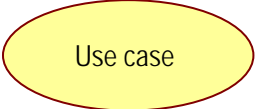

- A frame of reference illustrating a high level business process and its associated actors



## Activity Diagram

- A detailed elaboration of a use case diagram
- A graphical representation of a business process and its attributes
  - Activities that come in a specific order and decision points
  - Actors who perform those activities
  - Defined inputs and outputs of each activity
  - Criteria for entering and exiting the business process
  - Relationships among actors
  - Information flow

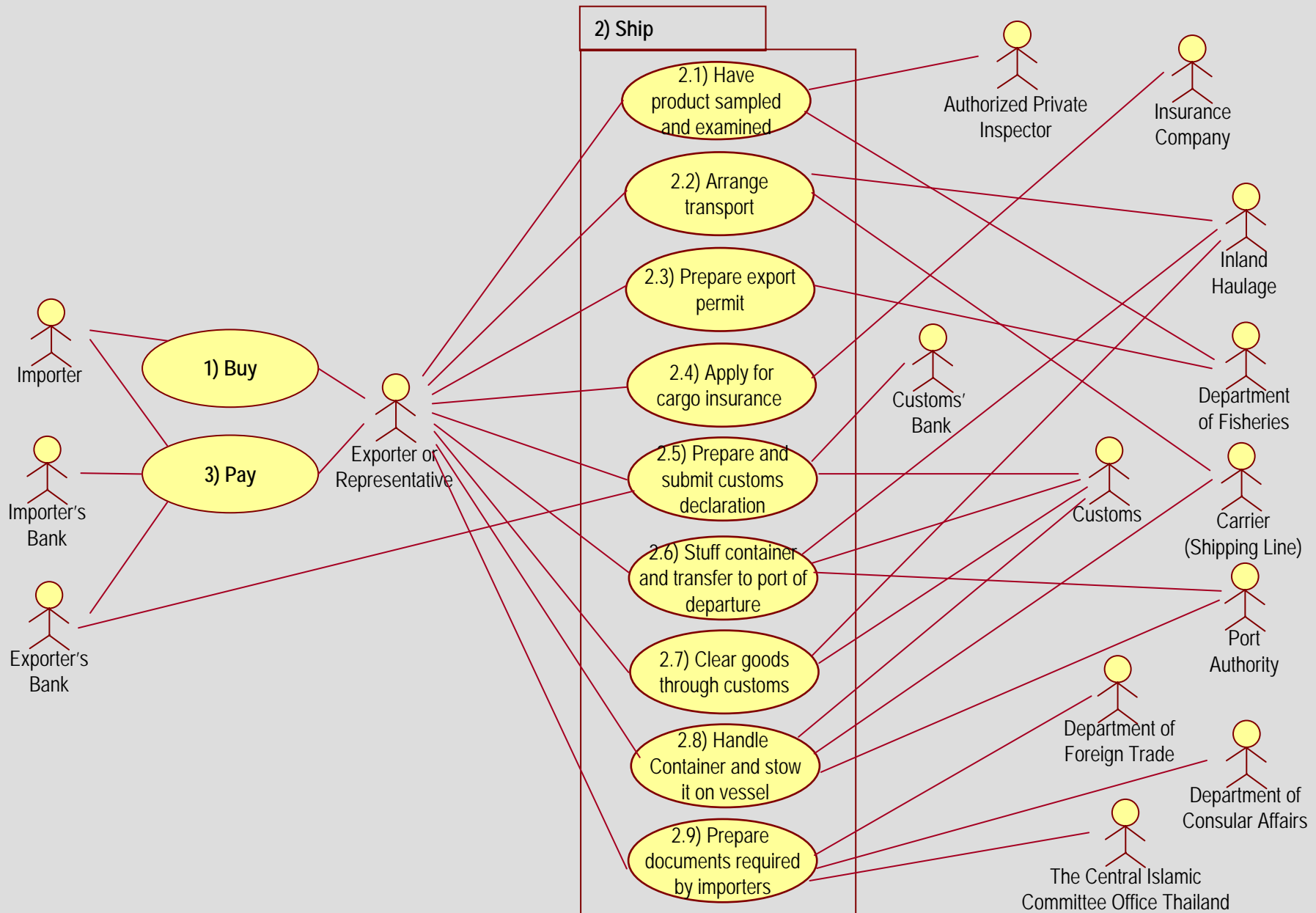
# UML Notations for Use Case Diagram

Notation	Description
	<p>Subject Boundary</p> <ul style="list-style-type: none"> <li>□ Represents a process area</li> <li>□ Includes the name of a subject boundary on top</li> </ul>
	<p>Actor</p> <ul style="list-style-type: none"> <li>□ Represents a role in a particular business process</li> <li>□ Is labeled with a role name</li> </ul>
	<p>Use Case</p> <ul style="list-style-type: none"> <li>□ Represents a business process</li> <li>□ Is labeled with a descriptive verb-noun phrase</li> </ul>
	<p>Relationship Association</p> <ul style="list-style-type: none"> <li>□ Link actors with business processes that they participate in</li> </ul>




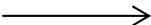
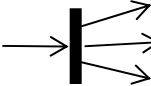
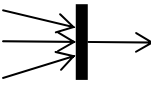


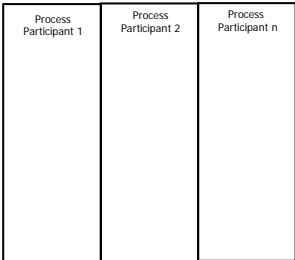

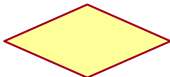
# Exercise – Read the Use Case Diagram

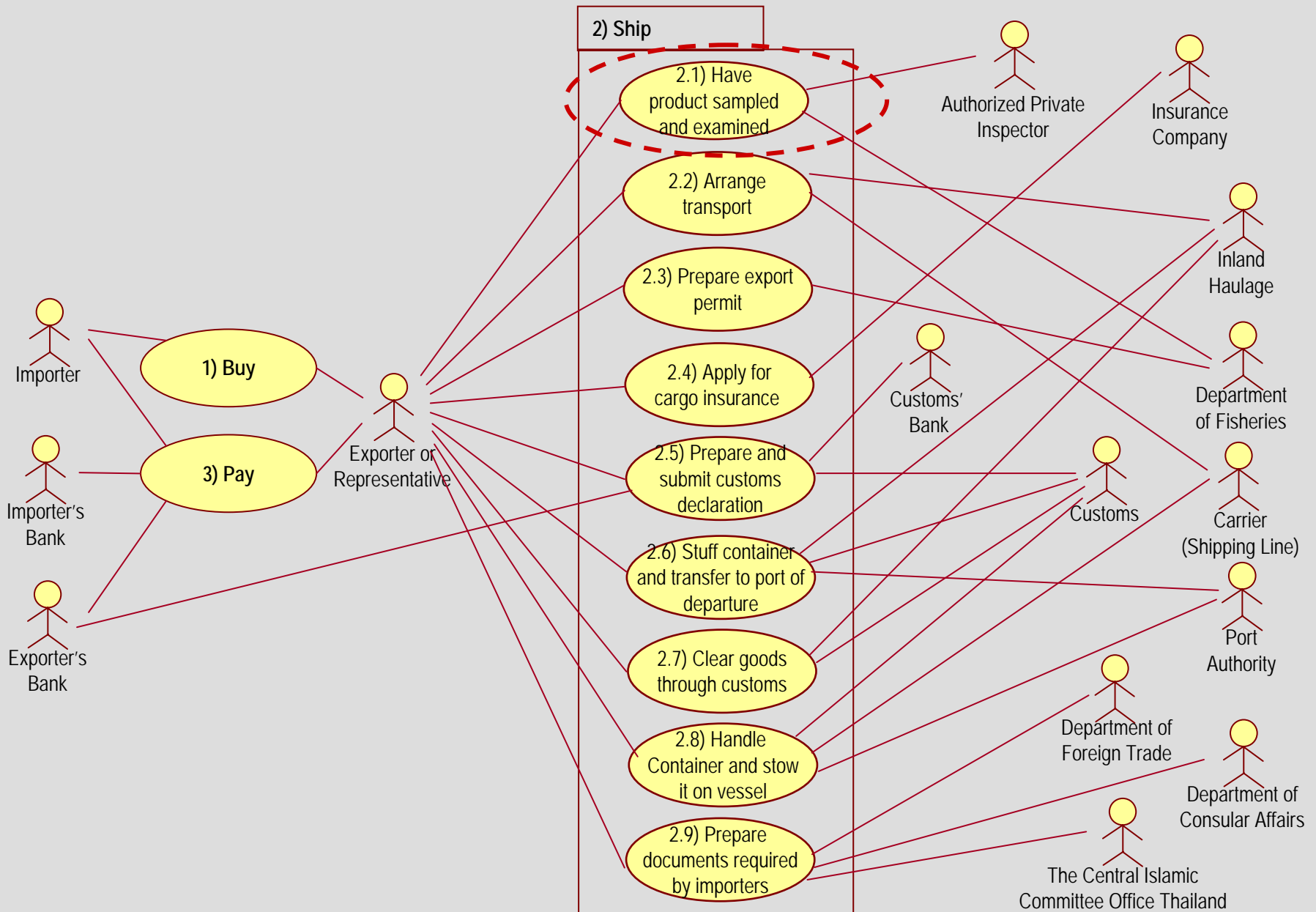
## Thailand's Export of Frozen Shrimp



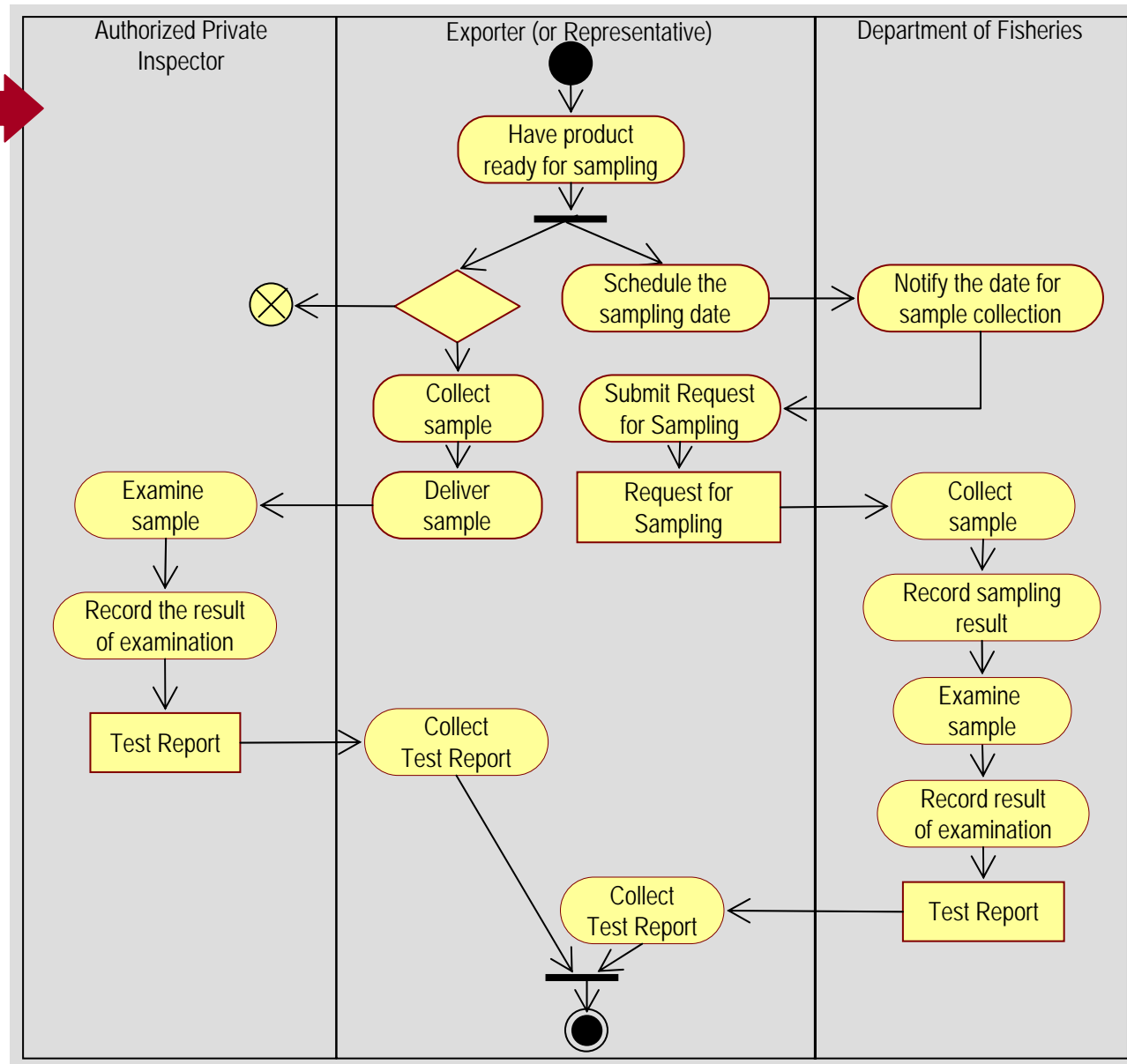
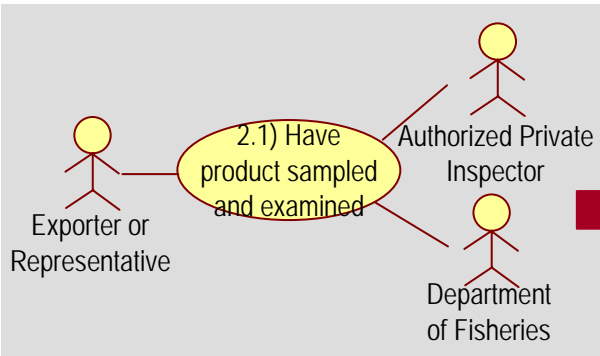
# UML Notations for Activity Diagram

Notation	Description
	Initial State □ Represents the beginning of a set of activities
	Final Activity State □ Indicates the completion of the business process
	Final Flow State □ Indicates that further activities cannot be pursued
	Transition Line □ Indicates a sequential flow of actions and information in an activity diagram
	Fork (Splitting of Control) □ Visualizes a set of parallel or concurrent flow of actions
	Join (Synchronization of Control) □ Indicates the end of parallel or concurrent flow of activities

Notation	Description
	Swimlane □ Is used to break up individual actions to individuals/ agencies that are responsible for executing their actions □ Is labeled with the name of the responsible individual or agency
	Activity □ Represents a non-decomposable piece of behavior □ Is labeled with a name that 1) begins with a verb and ends with a noun; and 2) is short yet contain enough information for readers to comprehend
	Decision □ Represents the point where a decision has to be made given specific conditions □ Attached with labels addressing the condition on each transition line that comes out of an activities and connects to a decision point or vice versa



# Exercise – Read the Activity Diagram



# 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: Analyze the “as-is” processes and identify bottlenecks	Step 6: Develop and propose recommendations
Project Sponsor	<input type="checkbox"/> Finalize and approve the project scope	<input type="checkbox"/> Approve changes to project scope <input type="checkbox"/> Commit specific resources	<input type="checkbox"/> Provide management support and direction when needed <input type="checkbox"/> Participate in major project reviews and approve key deliverables <input type="checkbox"/> Ensure timely resolution of issues affecting project success			
Project Manager/ Project Leader	<input type="checkbox"/> Acquire information to define project scope	<input type="checkbox"/> Develop a detailed plan <input type="checkbox"/> Organize resources	<input type="checkbox"/> Oversee and control the execution of the plan <input type="checkbox"/> Participate in the review of milestone deliverables and the final outputs			
Process Analysts	-	<input type="checkbox"/> Review plan and propose adjustment if needed	<input type="checkbox"/> Conduct desk research <input type="checkbox"/> Prepare questions for the interview	<input type="checkbox"/> Conduct the interviews <input type="checkbox"/> Collect and consolidate data <input type="checkbox"/> Document the as-is processes	<input type="checkbox"/> Analyze and identify bottlenecks and opportunity for improvement	<input type="checkbox"/> Develop recommendations <input type="checkbox"/> Report the final outputs
Process Participants/ Business Domain Experts	<input type="checkbox"/> Verify the proposed project scope	-	<input type="checkbox"/> Provide relevant knowledge about business processes under investigation <input type="checkbox"/> Verify the accuracy of deliverables			<input type="checkbox"/> Participate in the review of the final output

# Skills of Process Analysts

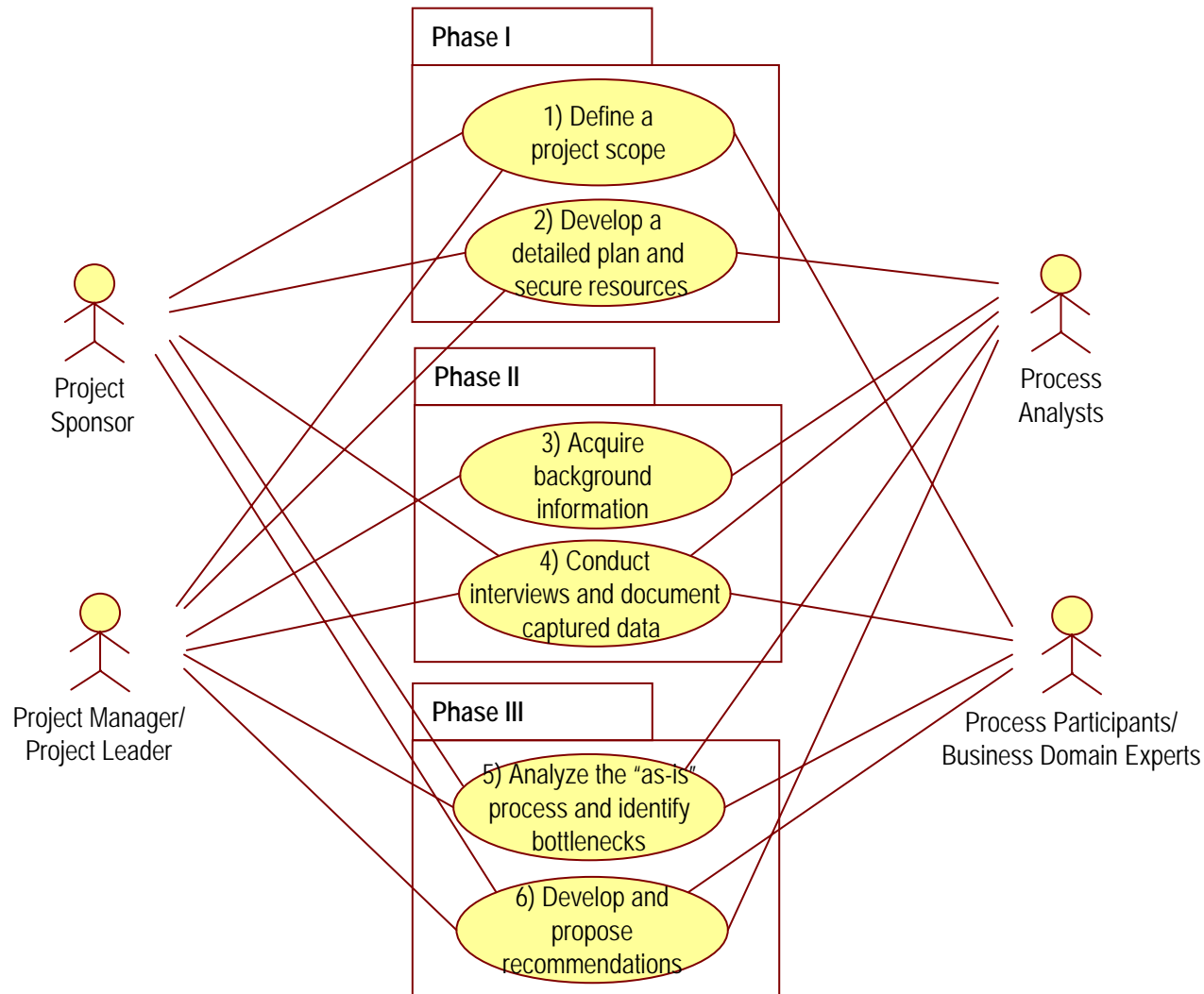
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- ❑ **Technology skills:** The basic knowledge of UML notations, especially in use case diagrams and activity diagrams is desirable. Related work experience is complementary.
- ❑ **Business/ organization skills:** It is important that the selected process analysts know or have an access to the individuals of the business domain under investigation. It is also very useful if they have knowledge of a particular organization or industry associated with the targeted business domain.
- ❑ **Interpersonal/ communication skills:** Process analysts' ability to effectively communicate and interact with other project members is mostly 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:** Process analysts should be able to capture relevant information from verbal expression and written documents, and then formalize them in various types of BPA output.

# Outputs of BPA

	Step	Deliverable
Phase I	Step 1: Define project scope	<input type="checkbox"/> Use case diagram illustrating business domain, process areas, process participants, and key business processes
	Step 2: Develop a detailed plan and secure resources	<input type="checkbox"/> Detailed project plan including an estimation of human resources required, schedules, and software supported tools <input type="checkbox"/> A list of potential interviewees and their contact information
Phase II	Step 3: Acquire background information	<input type="checkbox"/> A folder of background information about the business processes under the investigation <input type="checkbox"/> A list of guiding questions for the interview
	Step 4: Conduct interview and document captured data	<input type="checkbox"/> A set of activity diagrams illustrating activities that come in a specific order and decision points, actors who perform those activities, defined inputs and outputs of each activity, criteria for entering and exiting the business process, relationships among actors, and information flow <input type="checkbox"/> A set of business process descriptions that describes activity diagram and lists all related rules and regulations <input type="checkbox"/> Activity diagram illustrating integrated processes in the business domain <input type="checkbox"/> Time-Procedure chart displaying time required to complete each business process
Phase III	Step 5: Analyze the “as-is” processes and identify bottlenecks	<input type="checkbox"/> A set of observations of the as-is business processes that have the potential for improvement
	Step 6: Develop and propose recommendations	<input type="checkbox"/> Final report with recommendations which may include diagrams of “to-be” business processes

# Step-by-Step Approach to BPA



# BPA Activities in a Nutshell

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1. **Scope setting** – Specify a scope of processes to be analyzed
  - e.g. import and/or export processes of a specified product, through a certain mode of transportation (trucks, trains, ships or airplanes)
2. **Process definition** – Define and document a sequence of steps in actual practices and their attributes
  - *Who involved (stakeholders/actors)*
  - *Procedures and documents required (input to/output from),*
  - *Related rules and regulations*
3. **Problem analysis** – Develop measurable and quantitative process indicator (*e.g. the number of steps, time and costs required to fulfill those processes*), locate bottlenecks and examine what causes them
4. **Recommendation development** – Determine how to eliminate each bottleneck and prioritize improvement actions

# Recommendations in Implementing BPA

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- **Get Buy-in from the officials**
- **Secure Adequate resources**
- **Clear Roles and responsibilities of the project stakeholders**
- **Choose a Champion**
- **Start Small, and then Evolve**
- **Profit from experience**
- **Invest in Training**
- **Performance measurement**

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# Thank you

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[www.unescap.org/tid](http://www.unescap.org/tid)

[www.unece.org/trade](http://www.unece.org/trade)