Module 2-5
Business Process Analysis (BPA)

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Three (3) Objectives of the BPA Modules
(Day 1: Module 2-5)

The participants will learn:

1. What is Business Process Analysis (BPA): A methodology for
   ▸ Capturing/monitoring "As-Is" (current) processes and documentation requirements related to trade and transport facilitation, and
   ▸ Proposing "To-Be" (target) improvement, e.g. with process simplification, document harmonization, and automation including Single Window implementation;

2. How to describe these processes and documentation with graphical notations (diagrams) and associated descriptions based on a standardized/Unified Modelling Language (UML);

3. How to conduct a business process analysis and to propose recommendations for improvement (managing it as a Project in 3 main phases).

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Module 2
Introduction to Business Process Analysis

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Agenda

1. BPA for Monitoring and Proposing Improvement of Trade and Transport Facilitation

2. Introduction into Unified Modeling Language (UML), i.e. two types of Diagrams (Use-Case Diagrams & Activity Diagrams), and Time-Procedure Chart

3. The Three (3) Phases of a BPA Project

4. Example: A BPA Project as an input for formulating a national logistics development plan

What is a Business Process?

❖ *A Business Process is a collection of related and structured activities or tasks that produce a specific service or product.*

❖ Example

▸ Applying and Issuing procedures of a Phyto-Sanitary Certificate, e.g. for exporting agriculture goods from Bangladesh

▸ Export procedures of garments from Dhaka, through port & customs clearance at Chittagong Port (to the 3rd Country)

▸ Import Customs clearance procedures at Banglabandha border

▸ Import procedures and documentation of Lentils from Nepal, through Kakarvitta-Panitanki-Fulbari-Banglabandha borders, until the cargo arriving at Dhaka, Bangladesh.
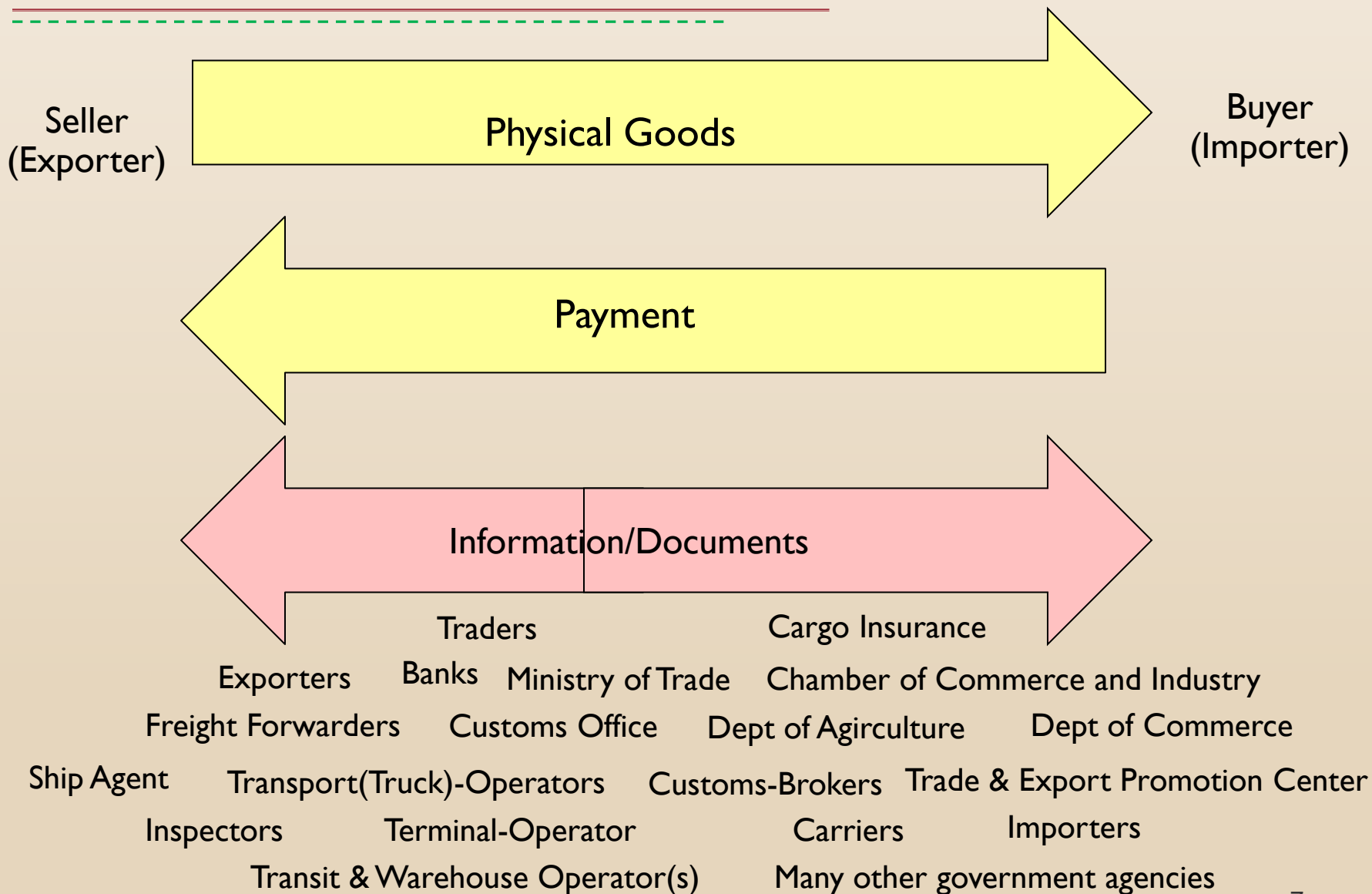
What is a Business Process Analysis (BPA)?

An analysis and modelling of business processes for capturing/monitoring "as-is" (current) conditions and proposing "to-be" (target) improvement.

❖ For example, it may include......

- ▸ Documenting existing practices in an administration/company
- ▸ Describing a "Standard Procedure," e.g. some common cases
- ▸ Identifying related quantitative indicators, e.g. number of steps
- ▸ Collecting information about time and costs at different steps
- ▸ Providing a specification for simplification or automation of the process (to be implemented in the future)

Trade & Transport Facilitation – capturing/monitoring/improving at least 3 Kinds of Flow

Seller (Exporter) → Physical Goods → **Buyer (Importer)**

Payment

Information/Documents

Traders   Cargo Insurance

Exporters   Banks   Ministry of Trade   Chamber of Commerce and Industry

Freight Forwarders   Customs Office   Dept of Agirculture   Dept of Commerce

Ship Agent   Transport(Truck)-Operators   Customs-Brokers   Trade & Export Promotion Center

Inspectors   Terminal-Operator   Carriers   Importers

Transit & Warehouse Operator(s)   Many other government agencies

Documents related to Exportation of Rice

(from purchase order until the cargo container leaving a sea port)

36 Documents involving 15 parties, and more than 1,140 data elements to be filled in

Buy/Pay Docs

1. Proforma Invoice (35)
2. Purchase Order (39)
3. Commercial Invoice (51)
4. Application for Letter of Credit (24)
5. Letter of Credit (32)
6. Packing List (25)

Transport Docs

7. Cargo Insurance Application Form (20)
8. Cover Note (23)
9. Insurance Policy (24)
10. Booking Request Form – Border Crossing (25)
11. Booking Confirmation – Border Crossing (30)
12. Booking Request Form – Inland Transport (16)
13. Booking Confirmation – Inland Transport (18)
14. Bill of Lading (42)
15. Empty Container Movement Request (TKT 305) (20)
16. Request for Port Entry (TKT 308.2) (27)
17. Equipment Interchange Report (EIR) (24)
18. **Container Loading List (28)**
19. Container List Message (32)
20. Outward Container List (34)

21. Master Sea Cargo Manifest (17)
22. House Sea Cargo Manifest (37)

Regulatory Docs

23. *Export Declaration (114)*
24. **Good Transition Control List (27)**
25. *Application for Permission to Export Rice (KP. 2) (24)*
26. Sales Report (KP 3) (21)
27. **Application for the Collection of the Permit for the Export of Rice (A. 3) (35)**
28. **Permit for the Export of Rice (A. 4) (35)**
29. **Application for Certificate of Standards of Product (MS. 13/1) (44)**
30. **Certificate of Analysis (17)**
31. **Certificate of Product Standards (MS. 24/1) (45)**
32. **Certificate of Fumigation (21)**
33. **Application for Phytosanitary Certificate (PQ. 9) (29)**
34. **Phytosanitary Certificate (33)**
35. *Application for Certificate of Origin (42)*
36. *Certificate of Origin (38)*
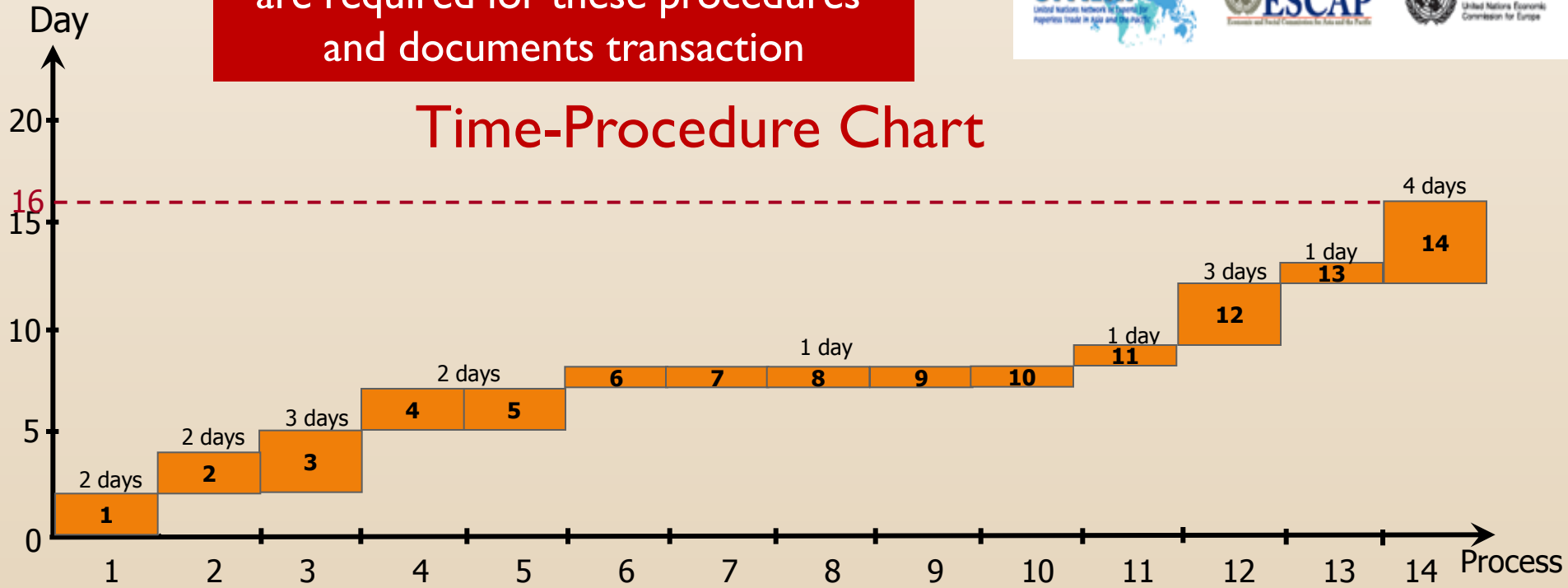
* Number in parenthesis is the no. of data elements

A Business Process Analysis
- in Exporting Jasmine Rice from Thailand -

BUSINESS PROCESS ANALYSIS
GUIDE
TO SIMPLIFY TRADE PROCEDURES

UNNExT • ESCAP • UNECE

16 days are required for these procedures and documents transaction

Time-Procedure Chart

Day

Process	Duration
1	2 days
2	2 days
3	3 days
4	2 days
5	(part of 2 days)
6	
7	
8	1 day
9	
10	
11	1 day
12	3 days
13	1 day
14	4 days

Process

1. Buy - Conclude sales contract and trade terms
2. Obtain export permit
3. Arrange transport
4. Arrange the inspection and fumigation
5. Obtain cargo insurance
6. Provide customs declaration
7. Collect empty container(s) from yard
8. Stuff container(s)
9. Transfer to port of departure
10. Clear goods through customs
11. Handle container at terminal and stow on vessel
12. Prepare documents required by importer
13. Verify the accuracy/authenticity of exported cargo
14. Pay - Claim payment of goods

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The issue is about

Increasing
National Trade Competitiveness

**by improving
Import/Export Procedures and Documents Handlings
among Government Agencies,
Business Entities and
Transport/Logistics Service Providers**

(this is called "Trade/Transport Facilitation" improvement)

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Indicators can help decision makers to understand the importance of import/export procedures related to national trade competitiveness

World Bank's Trading Across Borders Report 2014 (comparing 188 economies)

Indicators	Bangladesh	Bhutan	India	Nepal	Thailand
Documents to export (number)	6	9	9	11	5
Time to export (days)	25	38	16	42	14
Cost to export (US$ per container)	1,075	2,230	1,170	2,295	595

Reference - World Bank's Doing Business – Trading Across Border Reoprt 2014 (5 March 2014) www.doingbusiness.org

Comparing among 188 countries, the costs and procedures involved in exporting (and importing) a standardized shipment of goods are studied.

Every official procedure involved is recorded – starting from the final contractual agreement between the two parties, and ending with the delivery of the goods.

Training Workshop on TTFMM, Dhaka, Bangladesh, 28-29 April 2014

What is a Supply Chain?

A supply chain is a system of organizations, people, technology, activities, information and resources involved in moving a product or service from seller to buyer.

Buy	Ship	Pay

Prepare for export	Export	Transport	Prepare for import	Import

Commercial Procedures	Transport Procedures	Regulatory Procedures	Financial Procedures
• Establish contract • Order goods • Advise on delivery • Request payment	• Establish transport contract • Collect, transport and deliver goods • Provide waybill, gods receipt and status reports	• Obtain export/import licences, etc. • Provide customs declaration • Provide cargo declaration • Apply trade security procedures • Clear goods for import/export	• Provide credit rating • Provide insurance • Provide credit • Execute payment • Issue statements

Why we should conduct a Business Process Analysis?

Business Process Analysis is a practical study
☐ to understand attributes of business processes, and their relationships

What are the benefits of Business Process Analysis?

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
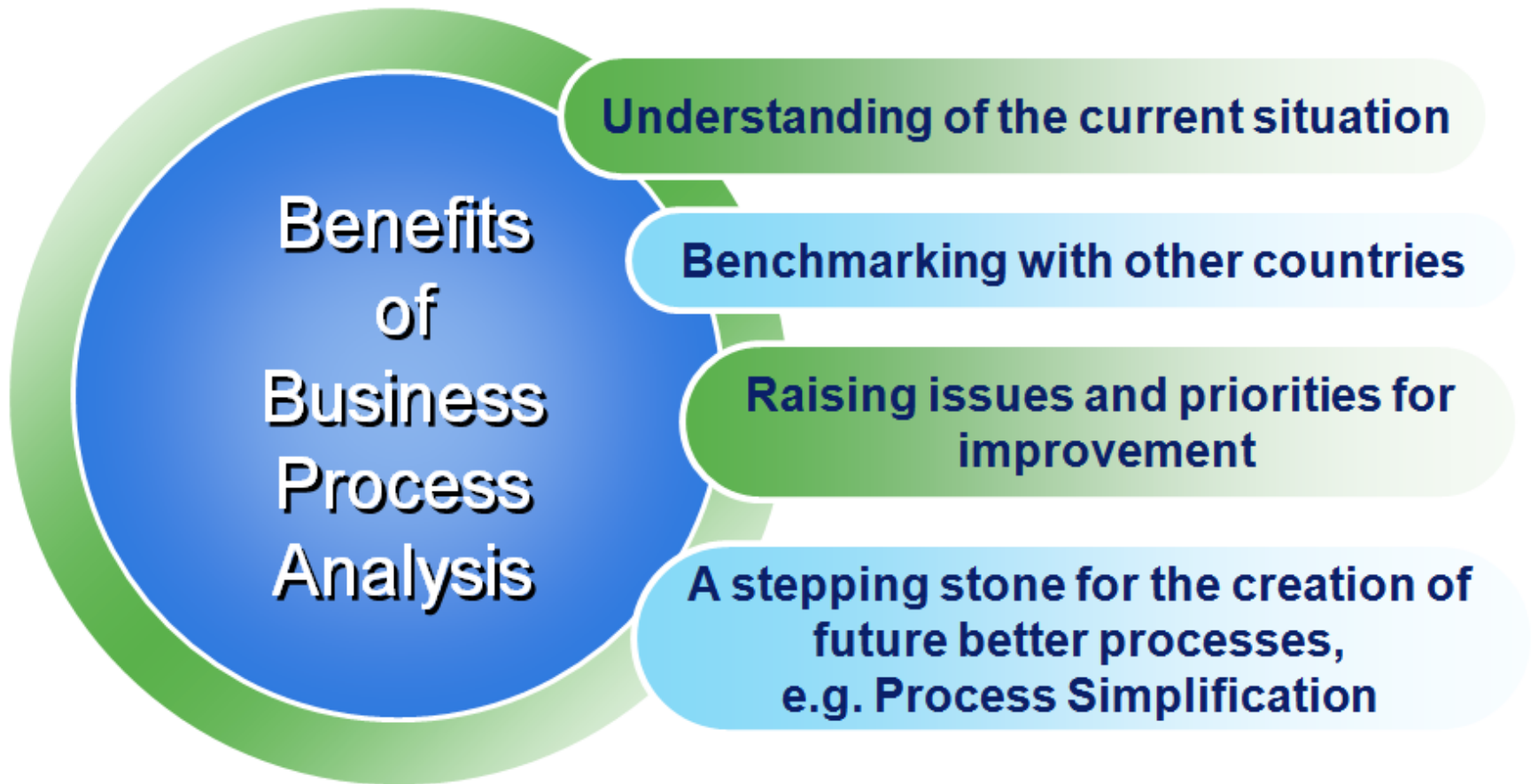
Why trading across borders in some countries are more difficult, time consuming and expensive?

❖ Procedures and documents handling remain largely paper dependent.

❖ Missing and incorrect documentation slows progress through the supply chain

❖ Keeping documents & freight in sync is complex and costly

❖ Multiple parties capturing the same data is inefficient and error prone

❖ We acknowledge other factors that makes trade in developing countries more difficult, including infrastructure, corruption, land locked, …
(but these are not the main scope of discussion in this workshop)

BPA to understand the current trade processes, and then propose improvement.

❖ BPA is the first technical step in preparing for trade facilitation measures including process simplification and automation.

❖ It provides
- ‣ Inventory of processes, documents, data, parties, rules & regulations
- ‣ Description of the processes
- ‣ Specifications for harmonizing data and development of electronic documents
- ‣ Specifications to develop software for the automation of procedures
- ‣ Business Models for the operation of Single Window environment
- ‣ A basis for maintenance and improvement

Economic impacts of the bottlenecks due to trade/transport facilitation processes & documentation

❖ **Each additional day of delay** (e.g. because of trade/transport procedures) **reduces trade by at least 1%.**

Source: Simeon Djankov, Caroline Freund, and Cong S. Pham. (2007). *Trading on Time*. Washington, D.C.: World Bank.

❖ "**Direct** and **Indirect Cost from import/export-related procedures** and **required documents** is about **1-15% of product cost**."

Source: OECD. (2003). *Quantitative Assessment of the Benefits of Trade Facilitation*. Paris: OECD Publications

Agenda

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4. Example: A BPA Project for
   a national logistics development plan

Business Process Modeling

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
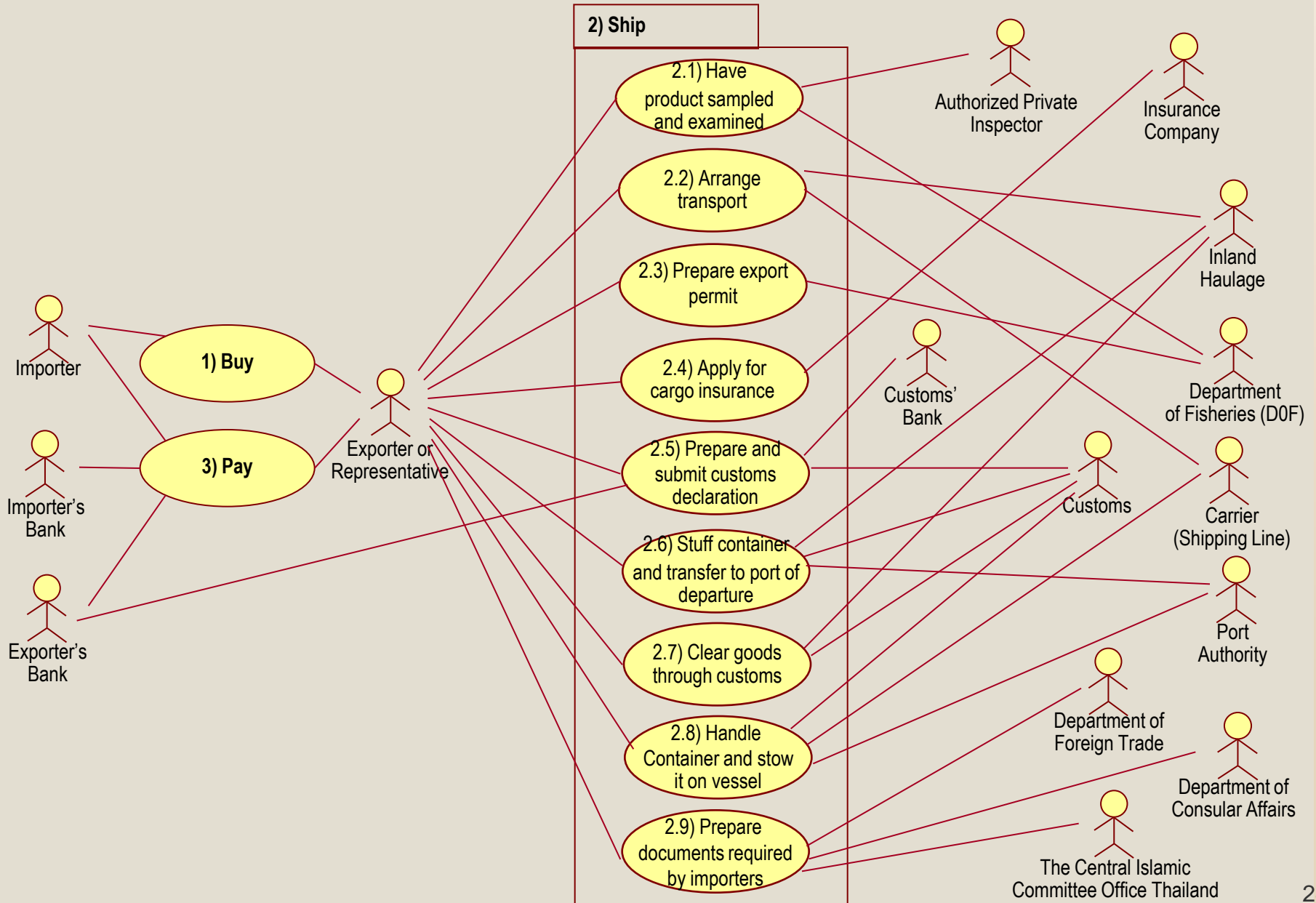
▸ Relationships among actors

▸ 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

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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
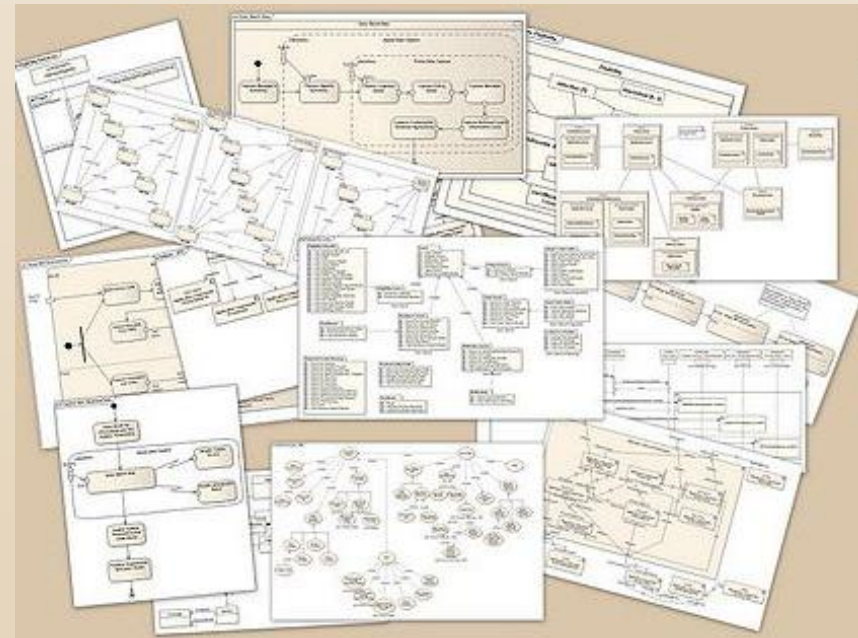
http://en.wikipedia.org/wiki/Unified_Modeling_Language

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UML Diagrams for BPA
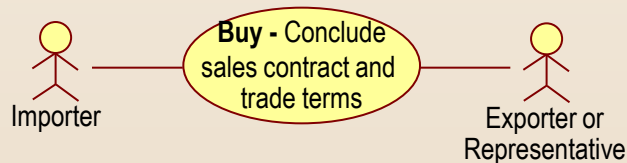
Use Case Diagram (What)
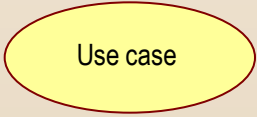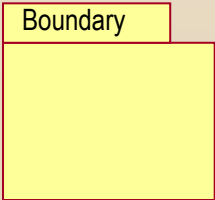
❖ A frame of reference illustrating a high level business process and its associated actors

Activity Diagram (How)

❖ 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
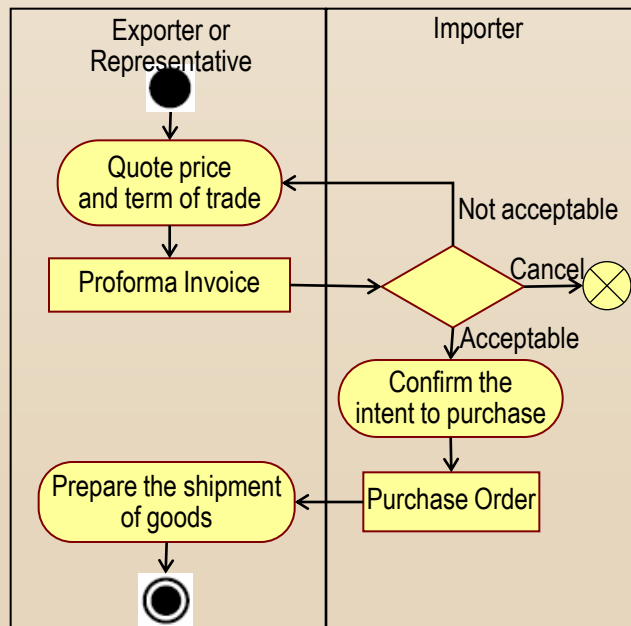
UML Notations for Use Case Diagram
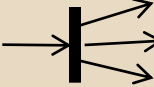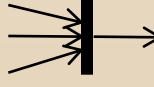
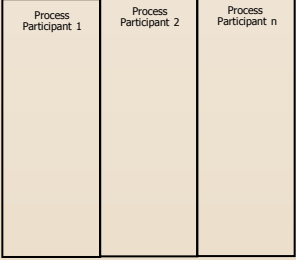| Notation	Description
Actor/Role	**Actor** ☐ Represents a role in a particular business process ☐ Is labeled with a role name
Use case	**Use Case** ☐ Represents a business process ☐ Is labeled with a descriptive verb phrase
────────	**Relationship Association** ☐ Link actors with business processes that they participate in
Boundary	**Subject Boundary** ☐ Represents a process area ☐ Includes the name of a subject boundary on top

Exercise – Read the Use Case Diagram
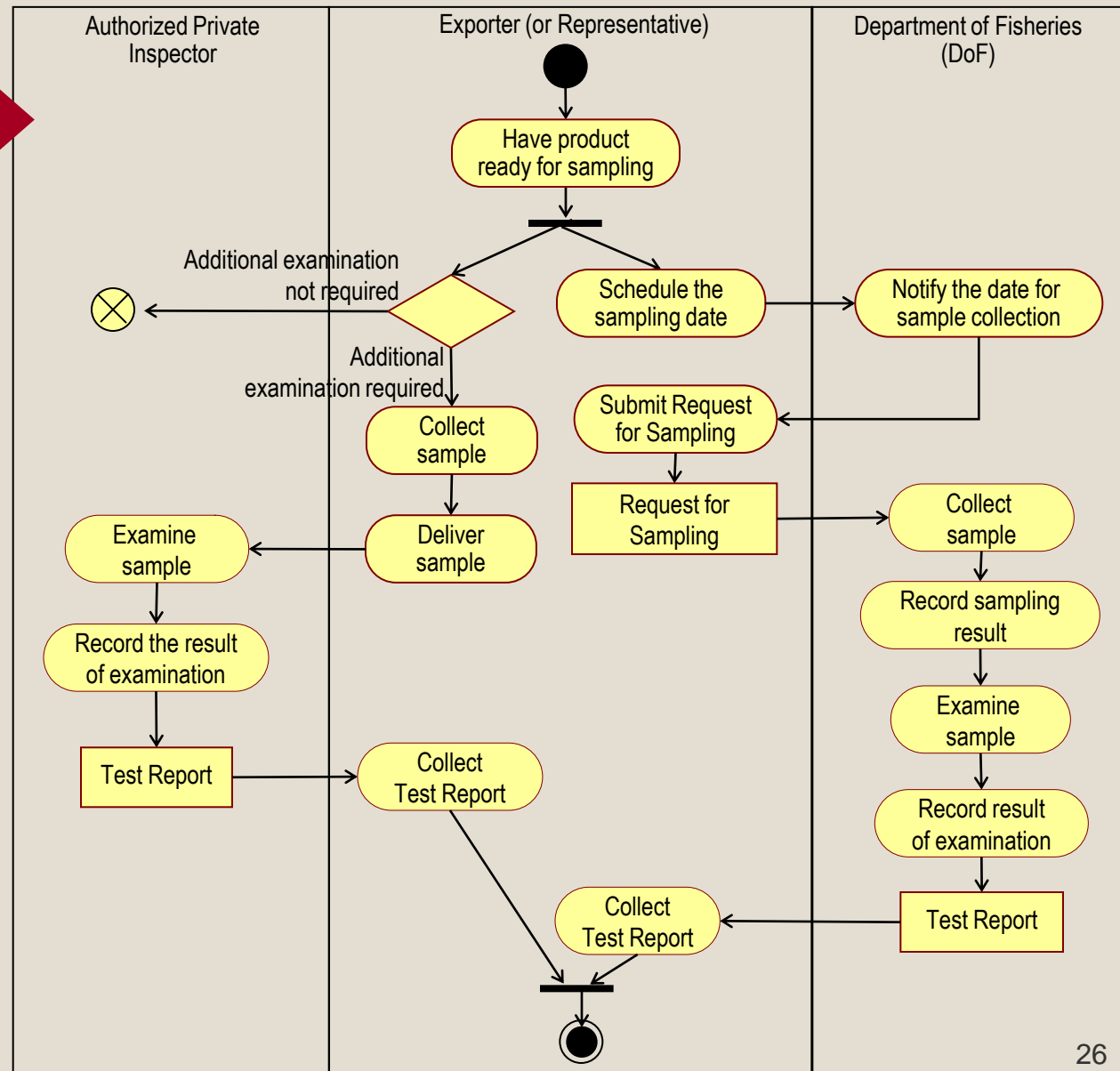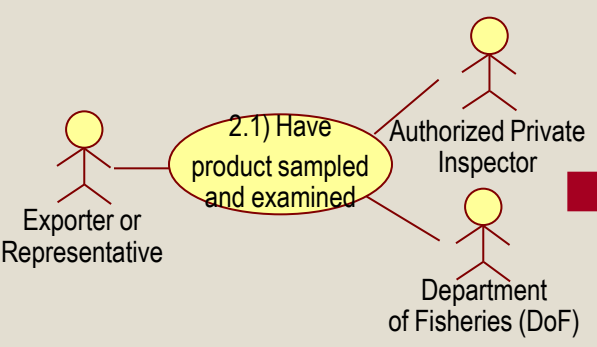## Thailand's Export of Frozen Shrimp

2) Ship

- 2.1) Have product sampled and examined
- 2.2) Arrange transport
- 2.3) Prepare export permit
- 2.4) Apply for cargo insurance
- 2.5) Prepare and submit customs declaration
- 2.6) Stuff container and transfer to port of departure
- 2.7) Clear goods through customs
- 2.8) Handle Container and stow it on vessel
- 2.9) Prepare documents required by importers

1) Buy
3) Pay

Importer
Importer's Bank
Exporter's Bank
Exporter or Representative
Authorized Private Inspector
Insurance Company
Inland Haulage
Customs' Bank
Customs
Department of Fisheries (D0F)
Carrier (Shipping Line)
Port Authority
Department of Foreign Trade
Department of Consular Affairs
The Central Islamic Committee Office Thailand

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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
▭	**Object** ☐ Represents a document or information that flows from one activity to another activity (labeled with the name of a document)

Notation	Description
Process Participant 1 / Process Participant 2 / Process Participant n	**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
(rounded rectangle)	**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

Using UML Modeling Tool for BPA

Training Workshop on TTFMM, Dhaka, Bangladesh, 28-29 April 2014

Agenda

1. BPA for Monitoring and Proposing Improvement of Trade and Transport Facilitation

2. Introduction into Unified Modeling Language (UML)

3. The Three (3) Phases of a BPA Project

4. Example: A BPA Project for a national logistics development plan

BPA: Three (3) Phases

I. **Scope setting/Planning** – 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)

II. **Data collection and process documentation** – 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 regulation

III. **Process analysis** – Locate bottlenecks, examine what causes them, and develop measurable and quantitative process indicators (e.g. the number of steps, time and costs required to fulfill those processes)

  Recommendation development – Determine how to eliminate each bottleneck and prioritize improvement actions

Three(3) Phases of a BPA Project

Outputs of BPA

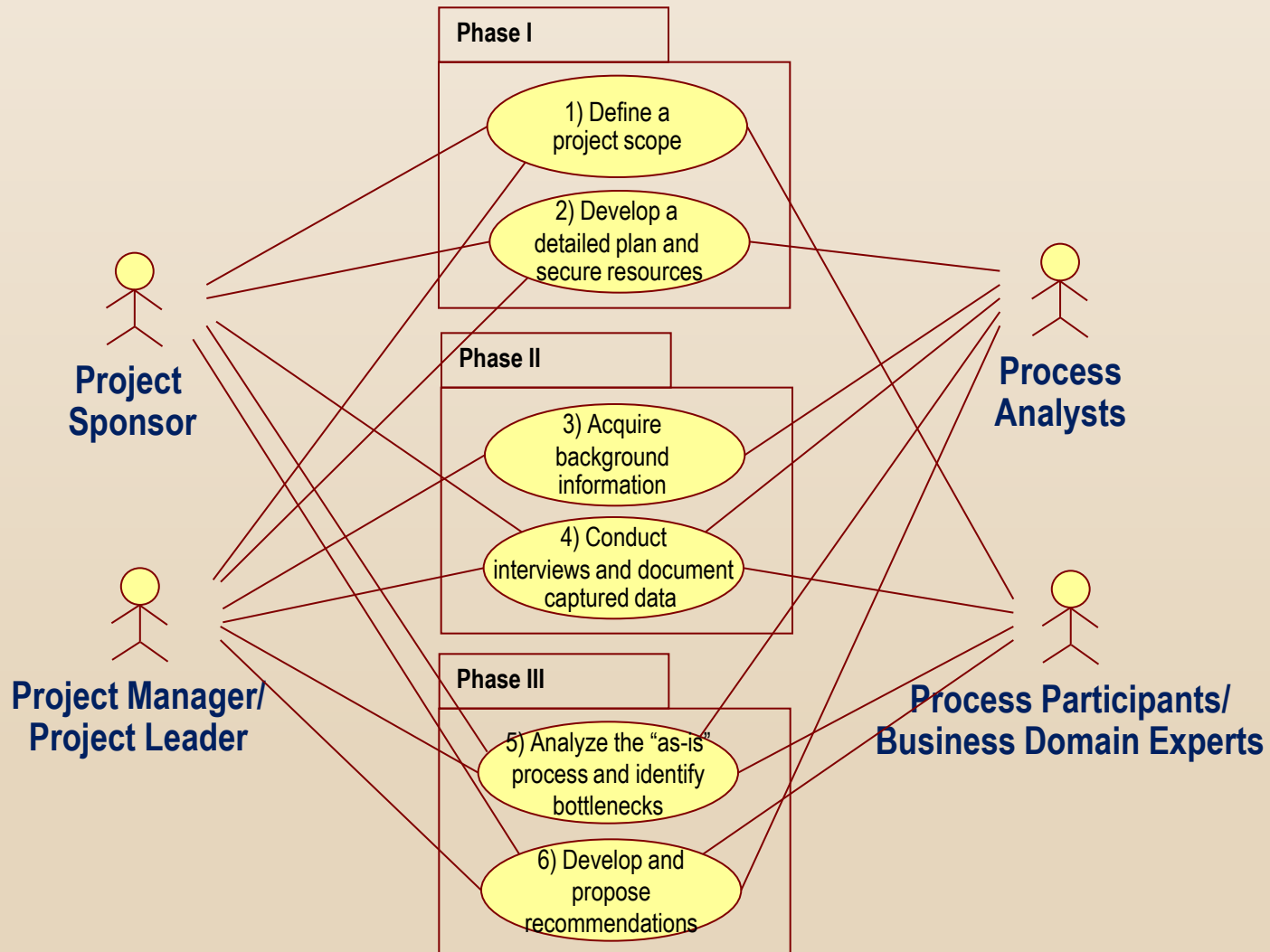|	Step	Deliverable
Phase I	**Step 1: Define project scope**	☐ Use case diagram illustrating business domain, process areas, process participants, and key business processes
	Step 2: Develop a detailed plan and secure resources	☐ Detailed project plan including an estimation of human resources required, schedules, and software supported tools ☐ A list of potential interviewees and their contact information
Phase II	**Step 3: Acquire background information**	☐ A folder of background information about the business processes under the investigation ☐ A list of guiding questions for the interview
	Step4: Conduct interview and document captured data	☐ 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 ☐ A set of business process descriptions that describes activity diagram and lists all related rules and regulations ☐ Activity diagram illustrating integrated processes in the business domain ☐ Time-Procedure chart displaying time required to complete each business process
Phase III	**Step 5: Analyze the "as-is" processes and identify bottlenecks**	☐ A set of observations of the as-is business processes that have the potential for improvement
	Step 6: Develop and propose recommendations	☐ Final report with recommendations which may include diagrams of "to-be" business processes

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Phase I: Scope Setting

- •Dry Port (Mukdahan)
- •Dry Port (Nongkai)

- •Airport (Chiengmai)
- •Sea Port (Chiengsan)
- •Dry Port (Maesai)

- •ICD (Ladkrabang)
- •Suvannabhumi Airport
- •Sea Port (Unithai)
- •Etc.

- •Train Station
- •Dry Port

a Port (Lamchabang)

- Site Visited
  No. of Interviews = 45
- Phone & email interviews
  No. of Interviews = 16
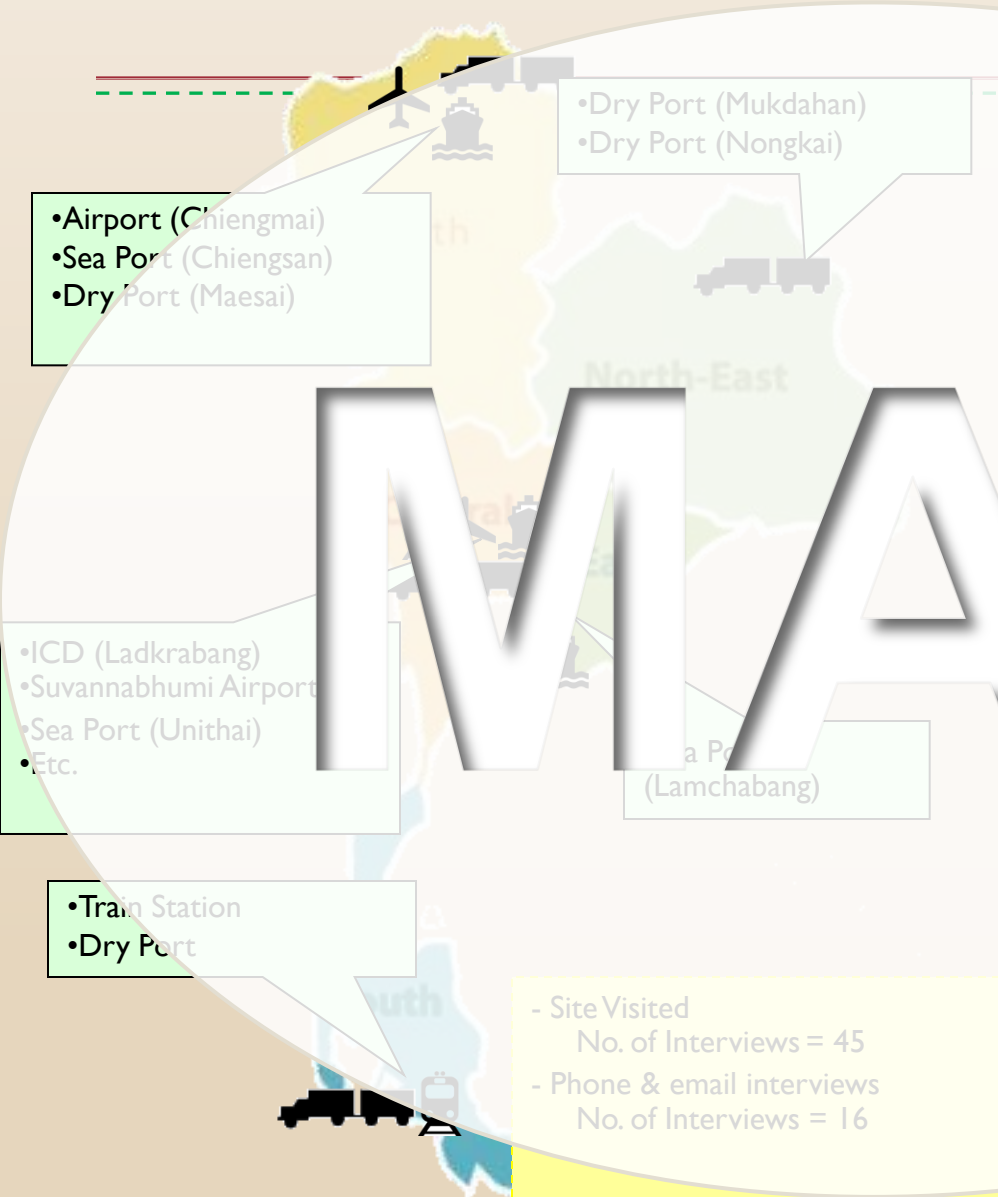
Example:

❖ Regulatory and business **requirements** related to the operation and **management** of port before, upon, and after the *import and export of containerized ordinary cargoes* through all mode of transportations (*road, rail, air, and sea*)

  ▸ Con____ for port use
  ▸ C___ handling

Import

  ▸ Starting point: when a carrier enters port
  ▸ Ending point: when cargo is picked up and transferred to an importer

❖ Export

  ▸ Starting point: when cargo arrives port
  ▸ Ending point: when cargo is on board and ready to be transferred to the country of importer

Phase I: Scope Setting

Example: Importation by Sea

Business Processes

- Prepare documents for import
- Prepare to enter a seaport
- Report cargo manifest
- Enter a seaport
- Unload cargo
- Clear goods through customs
- Arrange the transport for the pick-up of goods
- Handle cargo at the terminal
- Pay for goods

Actors:
- Maritime Pilot's Station
- Vessel Agent
- Other Government Agencies
- Haulage/Truck
- Bank
- Marine Department
- Port Operator
- Customs
- Importer or Representative
- Terminal Operator

Actor

Draw a **use case diagram** to illustrate the business domain with process areas and high-level business processes as well as stakeholders associated with each of them

Example: Capturing the Stakeholders involved in importation by sea

- Vessel Agent
- Maritime Pilot's Station
- Marine Department
- Port Operator
- Customs
- Other Government Agencies
- Importer or Representative
- Terminal Operator
- Haulage/Truck

Phase II: Data Collection and Process Documentation

Example: Prepare to Enter a Seaport Process
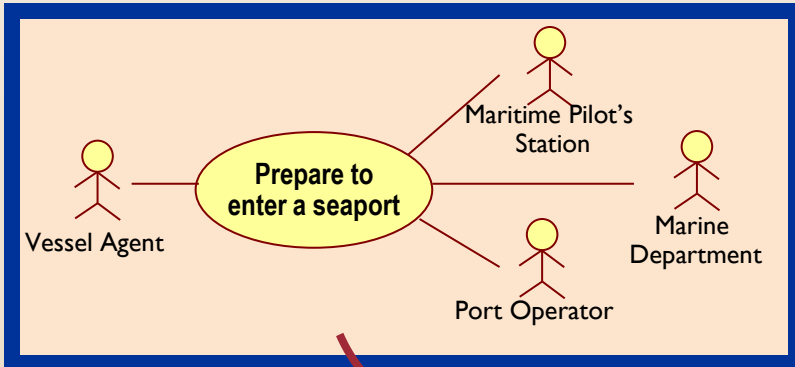
For each process, draw an **activity diagram** that describes activities and associated documentary requirements
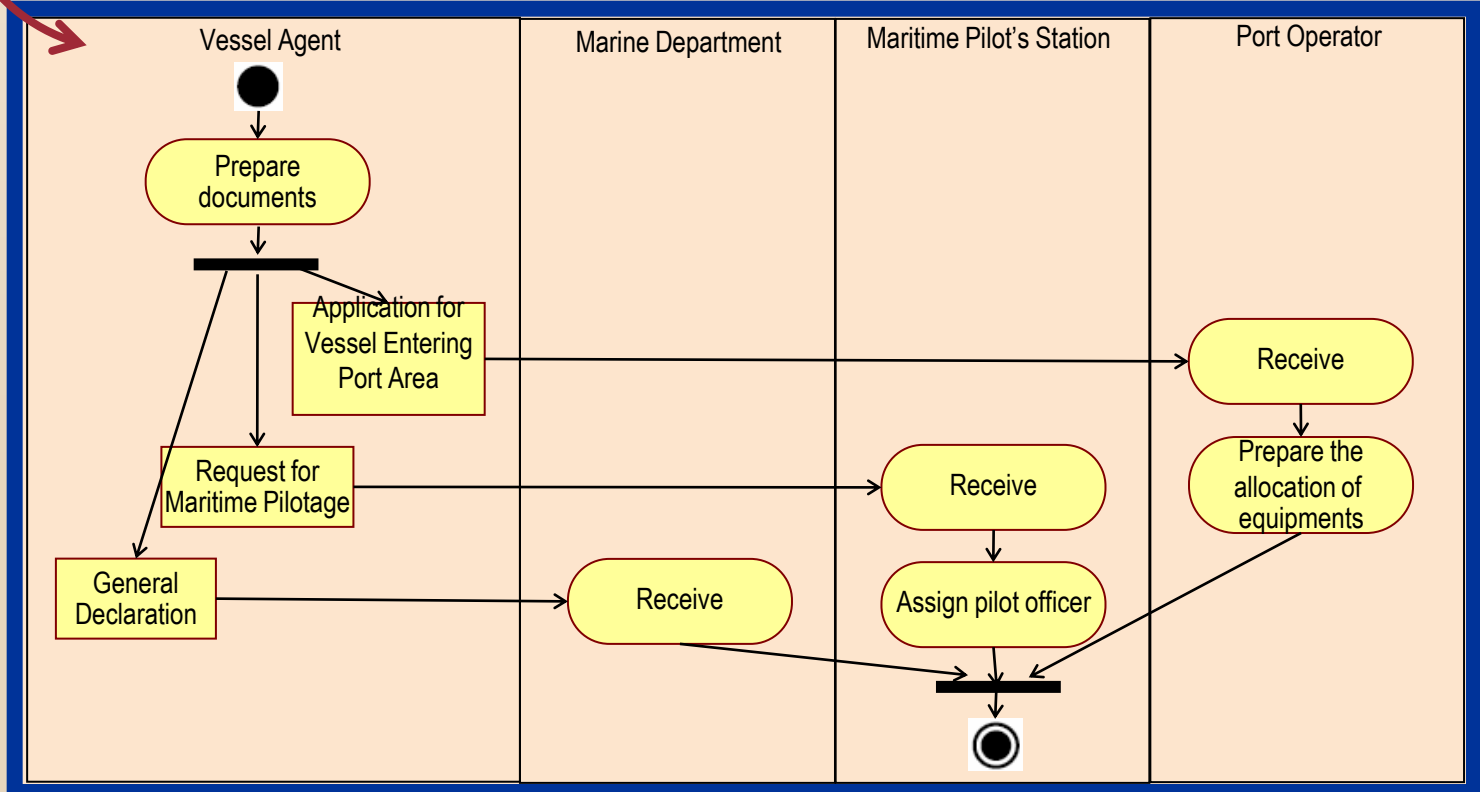
Phase II: Data Collection and Process Documentation

Example: Activity Diagram of Prepare to Enter a Seaport Process

Swimlane shows a boundary of activities to be carried out by a responsible actor.

Initial State shows the starting point for the sequence of activities.

Sequence of actions carried out to achieve a specific goal

| Vessel Agent | Marine Department | Maritime Pilot's Station | Port Operator |

- Prepare documents
- Application for Vessel Entering Port Area
- Request for Maritime Pilotage
- General Declaration
- Receive
- Receive
- Assign pilot officer
- Receive
- Prepare the allocation of equipments

Document associated with each action

Final State shows where the sequence of activities reaches its end.

Phase III-1: Process Analysis
Example: Prepare to Enter a Seaport Process (Existing Process)

Vessel Agent	Marine Department	Maritime Pilot's Station	Port Operator

Duplicated data submission: Three documents with almost identical data are handed-in to different receivers.

Prepare documents

Application for Vessel Entering Port Area

Request for Maritime Pilotage

General Declaration

Receive

Receive

Assign pilot officer

Receive

Prepare the allocation of equipments

Problems :
- **Duplicated Information**
- **High Cost and Time for sending and receiving documents**
- **Data Inconsistency**

Phase III-2: Recommendation Development
Example: Prepare to Enter a Seaport Process
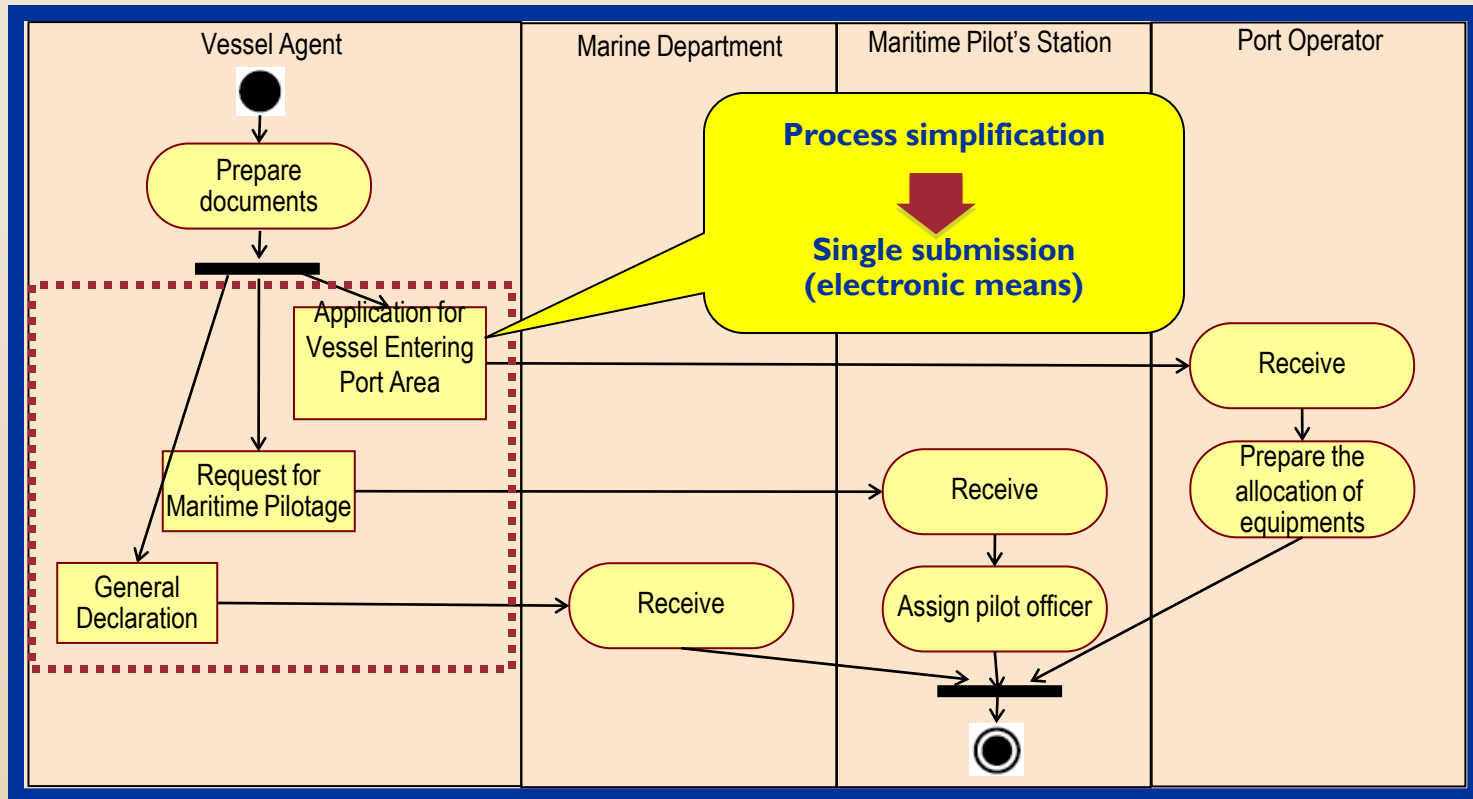
Proposed Recommendations :
- Remove unnecessary data requirements
- Harmonize and standardize data requirements
- Automate "prepare to enter a seaport" process

Phase III-2: Recommendation Development

Example: Prepare to Enter a Seaport Process (Proposed New Process)

Vessel Agents send electronic documents to Marine Dept through NSW Exchange
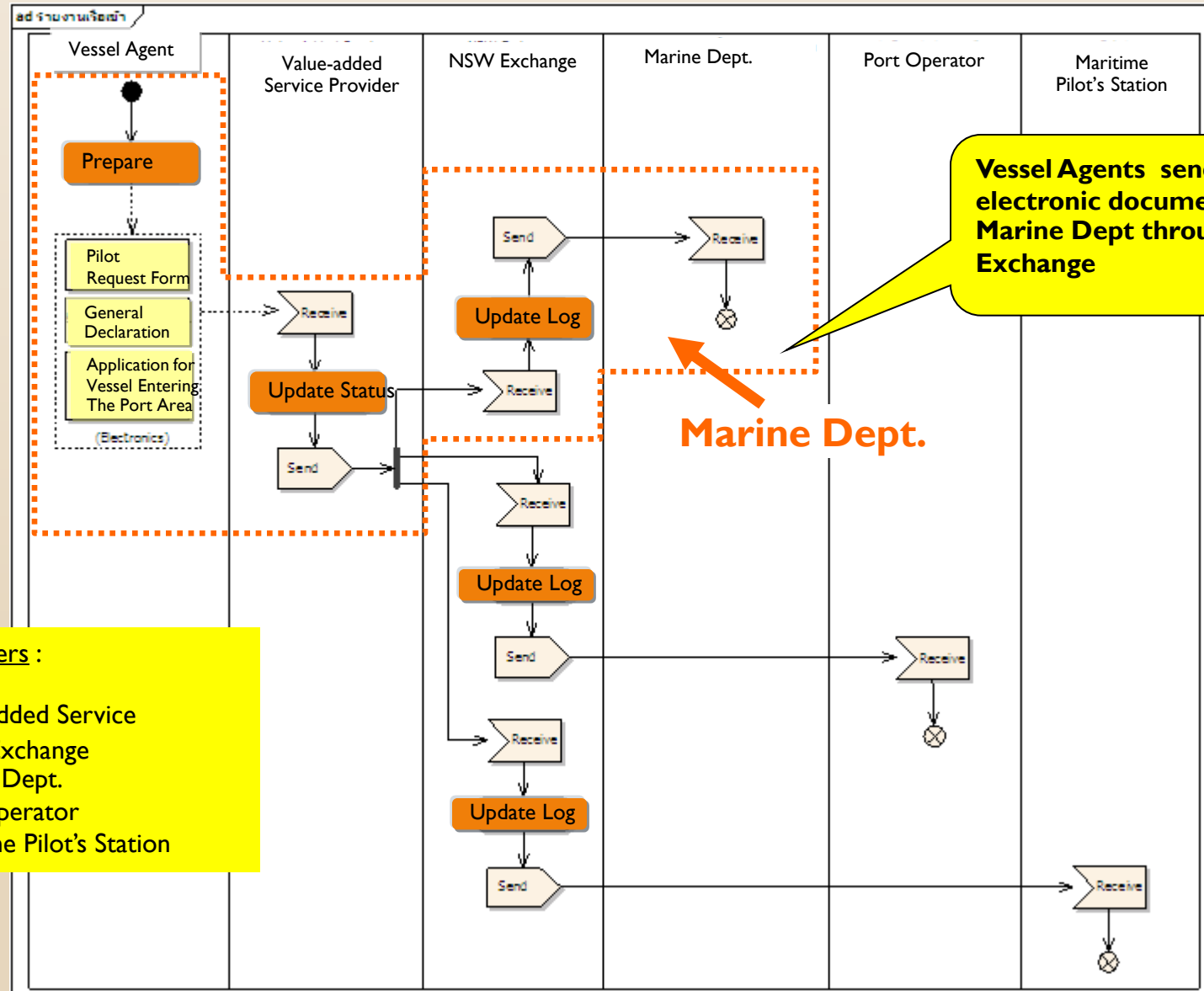
Marine Dept.

Stakeholders :
1) Vessel
2) Value Added Service
3) NSW Exchange
4) Marine Dept.
5) Port Operator
6) Maritime Pilot's Station

Phase III-2: Recommendation Development

Example: Time – Procedure Chart of Importation by Sea
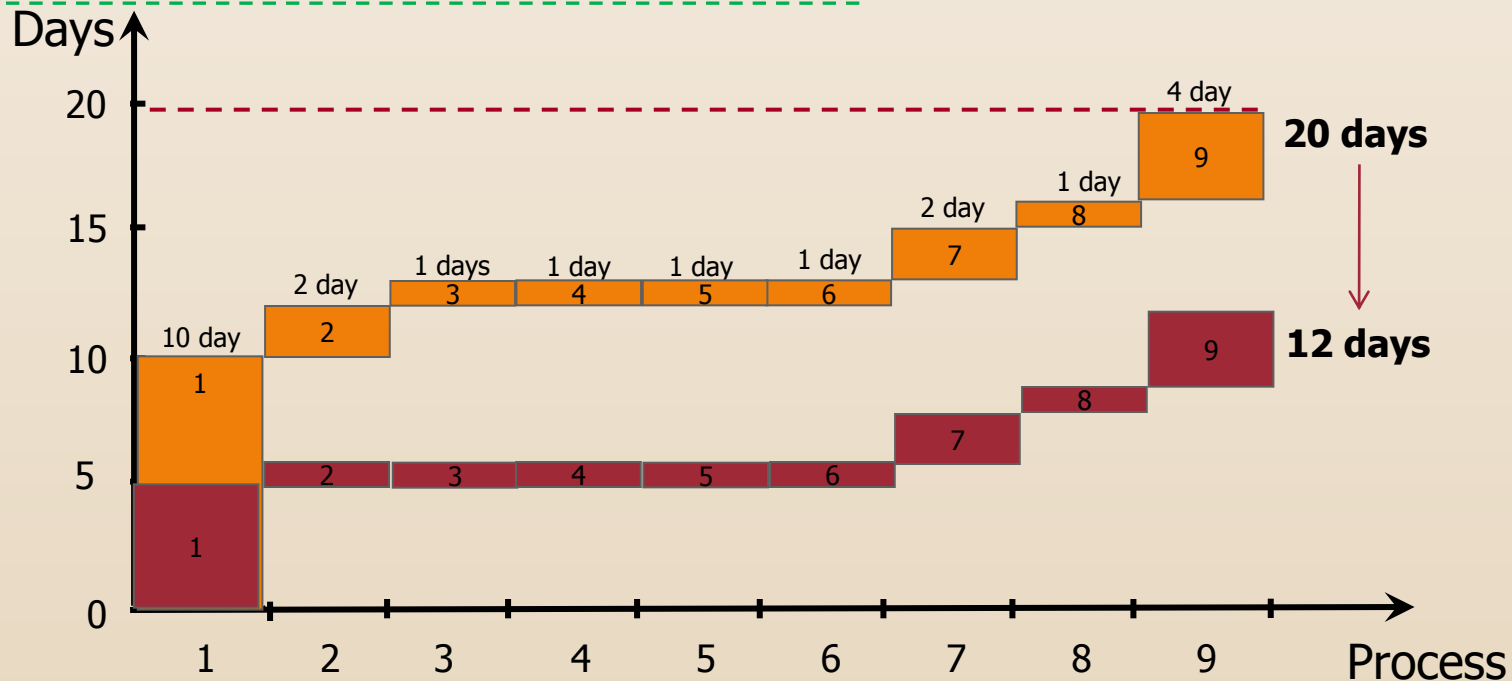
9 Main processes
1. Prepare documents for import
2. Prepare to enter a seaport (Vessel)
3. Enter a seaport (Vessel)
4. Report cargo manifest
5. Unload cargo
6. Clear goods through customs
7. Arrange the transport for the pick-up of goods
8. Handle cargo at the terminal
9. Pay for goods

Training Workshop on TTFMM, Dhaka, Bangladesh, 28-29 April 2014

Summary of a study: Usage Time for Import

Transport Mode	As-Is Usage Time (day)	To-Be Usage Time (day)	Expected Reduced Time (day)	Expected Reduced Time (%)
Import by Ship	20	12	8	40.00
Import by Airplane	10	8	2	20.00
Import by Truck	10	7	3	30.00
Import by Train	11	9	2	18.18

Criteria (following UN/CEFACT Recommendation No 18, and other)
• Reduce time for Traveling, Sending and Receiving Documents by humans
• Reduce time for Preparing Documents for next step
• Reduce time for Making Payment
• Reduce time for Searching Information
• Reduce time for Verifying Information

Lessons learned from Implementing BPA

❖ 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

Conclusions

1. BPA is a very simple but powerful methodology to capture/monitor the "as-is" conditions, and to propose "to-be" processes and documentation requirements for trade and transport facilitation improvement.

2. UML Diagrams: Use Case Diagrams & Activity Diagrams, and also Time-Procedures Chart are introduced.

3. Three (3) Phases of a BPA Project is recommended. (1. scoping/planning, 2. capturing/modelling the as-is, and 3. analyzing/proposing recommendations for improvement)

4. A BPA Project Example is briefly discussed.

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Exercise: Try to explain the meaning of the following Use Case Diagram and An Activity Diagram

A Use Case Diagram:

Showing main procedures for exporting Rice from Thailand (through a sea port)

2) Ship

2.1) Obtain Export Permit
2.2) Arrange transport
2.3) Arrange the inspection and fumigation
2.4) Obtain cargo insurance
2.5) Provide customs declaration
2.6) Stuff a container or a lighter
2.7) Transfer to port of departure
2.8) Clear goods through customs
2.9) Handle cargo and stow on vessel
2.10) Prepare documents required by importer
2.11) Verify the accuracy/authenticity of exported cargo

1) Buy
3) Pay

Importer
Importer's Bank
Exporter's Bank
Exporter or Representative

Insurance Company
Authorized Private Inspector
Inland Haulage
Board of Trade of Thailand
Office of Commodity Standards
Department of Foreign Trade
Department of Agriculture
Customs
Carrier (Shipping Line)
Port Authority
Department of Consular Affairs
Department of Disease Control
Thai Chamber of Commerce

An Activity Diagram:

Showing detailed procedures and document requirements for obtaining a Rice Export Permit

Obtain export permit

Exporter or Representative	Department of Foreign Trade
Prepare documents for the application of export permit	
Application for Permission to Export Rice (KP. 2)	
Sales Report (KP 3)	
Application for the Collection of the Permit for the Export of Rice (A. 3)	Verify submitted information
Draft Permit for the Export of Rice (A. 4)	Incorrect
Evidence of Sales (Purchase Order or Sales Contract)	Correct
	Sign and authenticate A. 4
Collect A. 4	Permit for the Export of Rice (A. 4)