

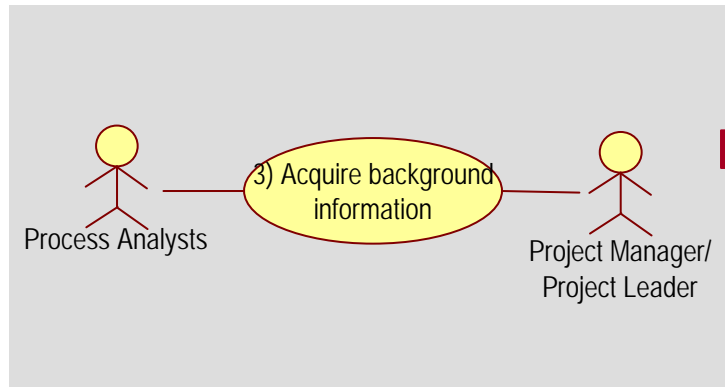
Business Process Modeling and Analysis

**High-level Business Process Analysis Workshop
for South Asian Logistics and Connectivity
16 October 2012
UNCC, Bangkok, Thailand**

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Trade Facilitation Section
Trade and Investment Division, ESCAP**

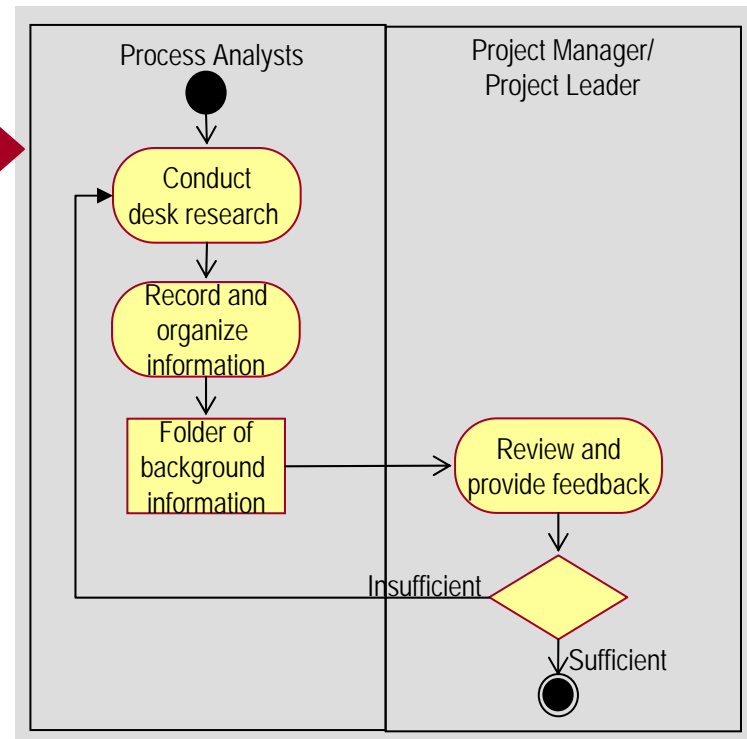
☐ . Business Process Modeling

Acquiring Background Information

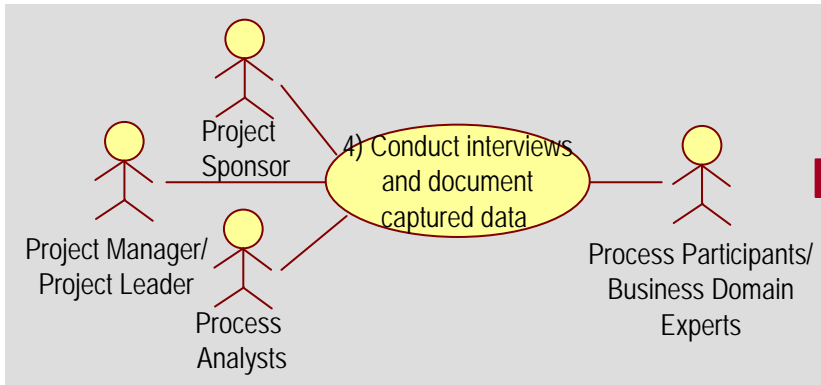


Objective – To gain as much as possible firsthand information about existing business processes in the scope of investigation including:

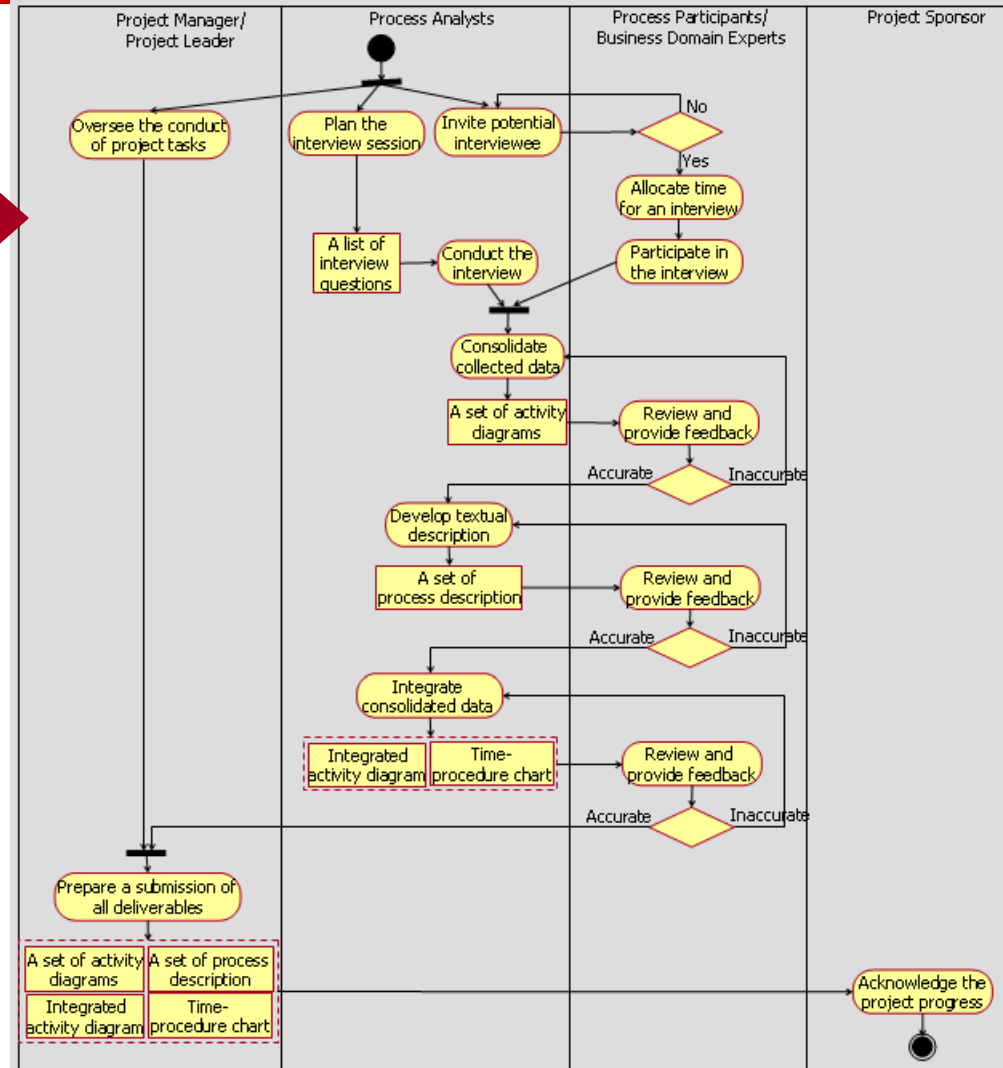
- Related laws and regulations
- Sequence of activities required to complete each business process
- Related forms and documents
- Contact details of potential interviewees



Conducting Interviews and Documenting Captured Data



- Objective – To capture and document in-depth knowledge about existing business processes in the scope of investigation in:**
- Activity diagrams
 - Process descriptions
 - Integrated activity diagram that represents an interconnected view of all involved business processes
 - Time-procedure chart



Inviting Potential Interviewees

Potential interviewees – Process participants or business domain experts who are in charge in carrying out activities required to complete a particular business process and dealing with respective procedures and formalities associated with that business process on a daily basis

- Give self-introduction
- Inform potential interviewees about:
 - Purpose of the interview
 - Contribution of the information to be captured during the interview on the project
 - Final outputs of the project
 - Expected project outcome and impact

Sample Interview Questions (1)

Business Process Analysis:

- ☐ How many people are involved in this business process?
- ☐ What are necessary activities that an exporter/an importer has to take in order to acquire a particular document?
- ☐ What are supplementary documents that an exporter/an importer has to submit along with the application form when a particular document is requested?
- ☐ How can an exporter/ importer submit the application form collect the requested document (manually or electronically)?
- ☐ Are copies of documents accepted in lieu of original documents?
- ☐ Is there any fee that an exporter/an importer has to pay in order to acquire the document? If so, how much?
- ☐ What are the laws or regulations associated with these procedural and documentary requirements?
- ☐ Which business processes can be carried out in parallel?
- ☐ Which business process has to be carried out simultaneously after business process “A”?

Sample Interview Questions (2)

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 in average 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 in average does it cost to complete this particular activity in this business process or to process one document?

Suggestions for Improvement:

- ☐ What are problems/ bottlenecks you encounter in procedures and regulations to import or export?
- ☐ What are improvements that you would like to see in the near future?

Conducting the Interview




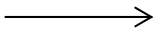
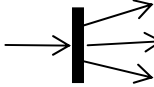
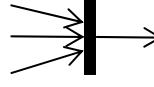

- ❑ 1 – 2 Process analysts per an interview session
- ❑ Obtain permission from the interviewee prior to recording the interview.
- ❑ Keep the interview free-flowing and conversational, yet within a basic structured framework
- ❑ Seek interviewees' opinions and observations on bottlenecks and issues that should be improved, why, and how to improve them.
- ❑ Write down everything
- ❑ Summarize key points to confirm with interviewees correct understanding
- ❑ Respect time schedule

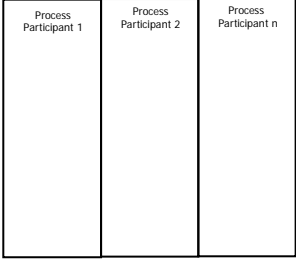

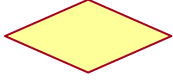
Drawing an Activity Diagram for each Use Case

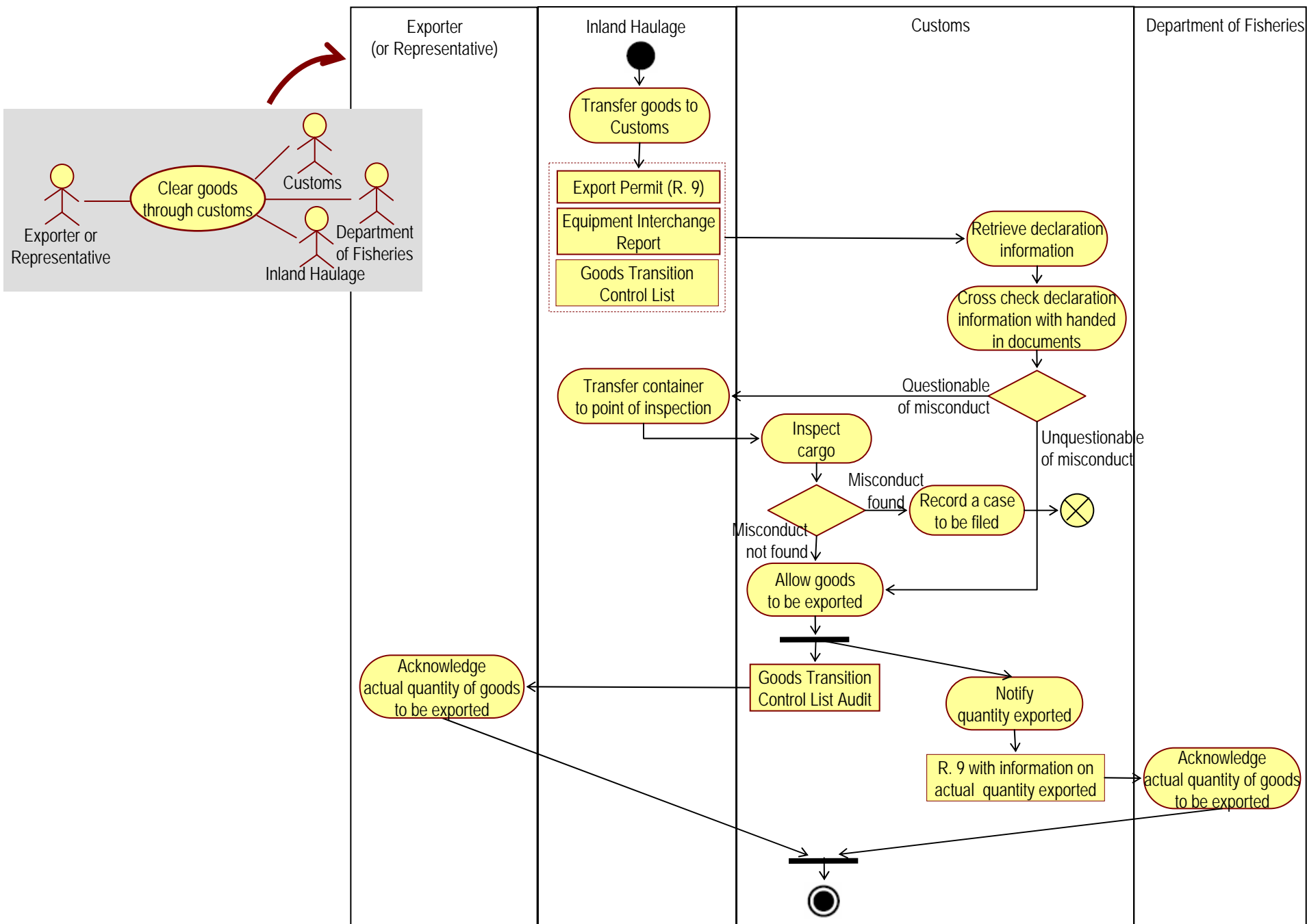
Based on information from the interview,

- ☐ Prepare swimlanes for parties involved in a business process
- ☐ List activities and decision points involved in the business process in a sequential order and categorize them according to the party who carry them out
- ☐ For each decision points, provide conditional statement for each transition
- ☐ If applicable, list documents required as inputs to each activity and categorize them according to the party who provide the documents
- ☐ If applicable, list documents that are outputs of each activity
- ☐ Create a starting point, an ending point, and connections for all activities and documents

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)

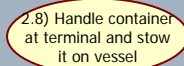
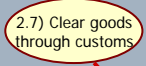
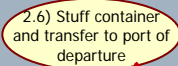
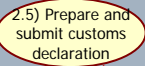
Notation	Description
	Swimlane □ Is used to break up individual actions to individuals/ agencies that are responsible for executing their actions □ Is labeled with the name of the responsible individual or agency
	Activity □ Represents a non-decomposable piece of behavior □ Is labeled with a name that 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



Writing Process Description for each Activity Diagram

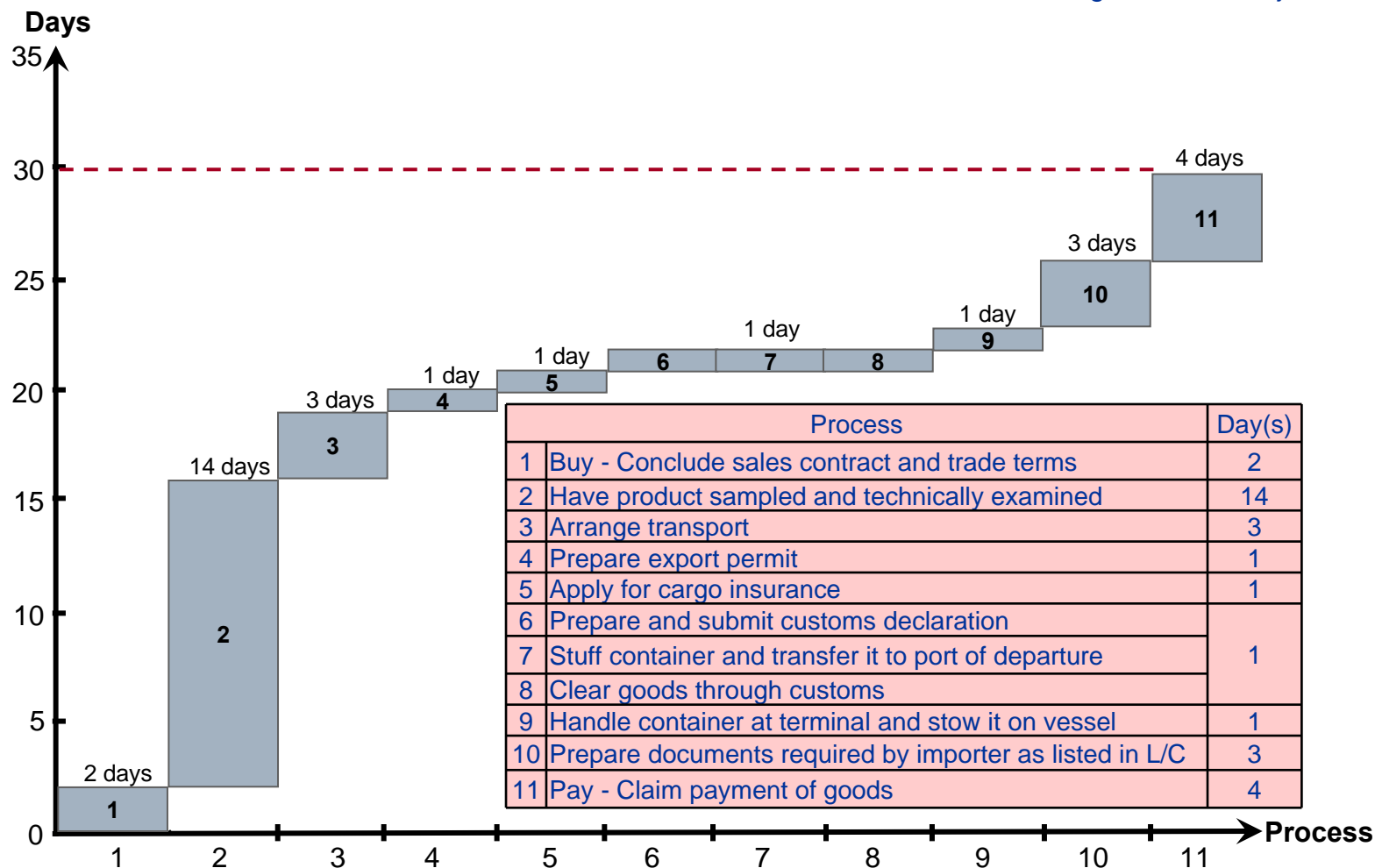
Process description has to include the following elements:

- ☐ The name of a process area which this particular business process belongs to
- ☐ The name of a business process
- ☐ Related rules and regulations
- ☐ The name of responsible parties
- ☐ Input and criteria to enter/begin the business process
- ☐ Procedures and associated documentary requirements to complete the process
- ☐ Output and criteria to exit the business process
- ☐ The average time required to complete the process and/or durations for each involved transaction

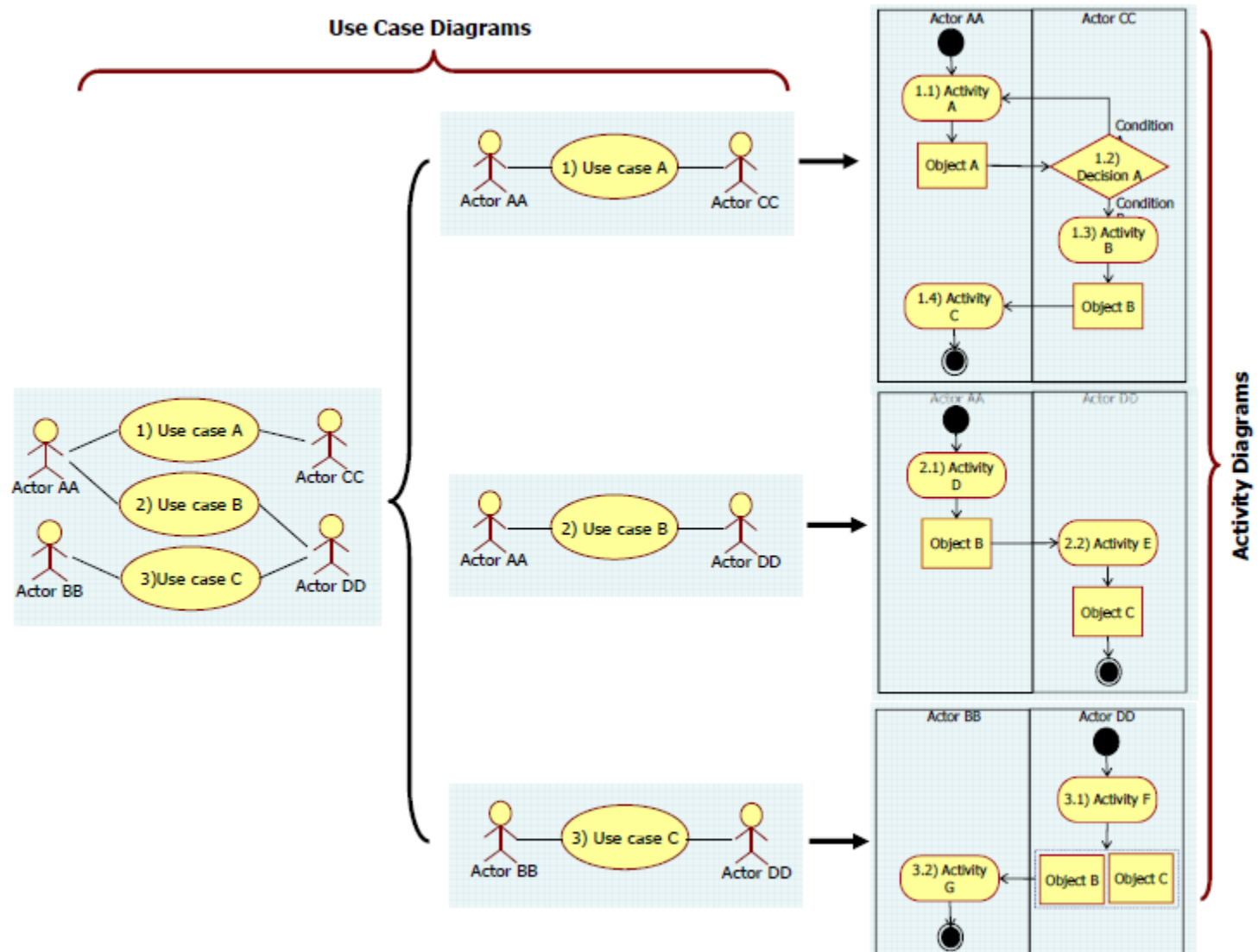


Drawing a Time-Procedure Chart*

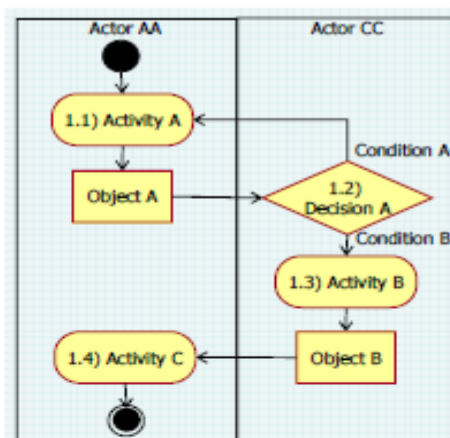
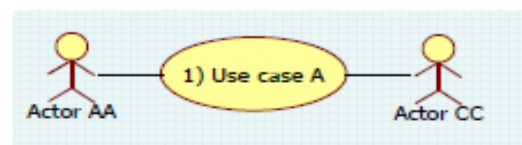
*World Bank's Doing Business Project



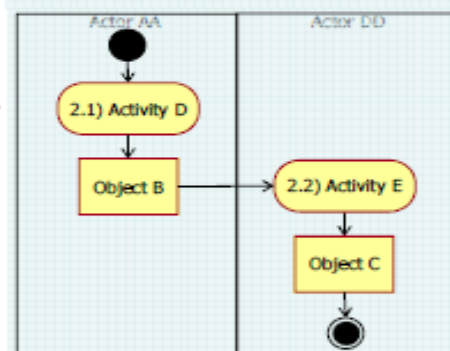
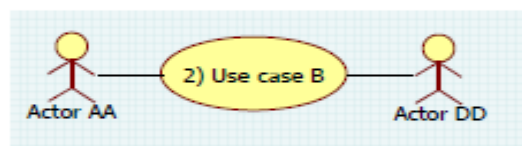
UseCase to Activity Diagram



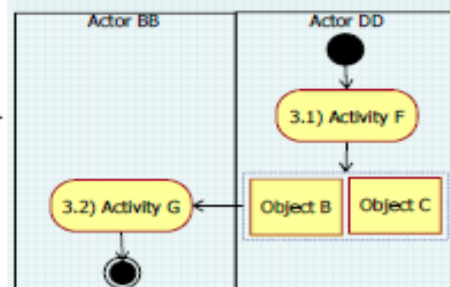
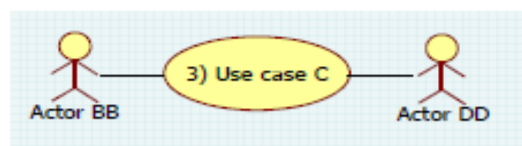
UseCase to Process Description



Name of a process area	N/A
Name of a business process (use case)	1) Use case A
Related laws, rules, and regulations	Regulation A
Process participants	<ul style="list-style-type: none"> Actor AA Actor CC
Input and criteria to enter/begin the business process	N/A
Activities and associated documentary requirements	1.1) Actor AA conducts Activity A. Actor AA derives Object A as an output. 1.2) Actor CC makes Decision A using Object A as an input. Actor AA needs to redo Activity A if Condition A occurs. 1.3) In case of Condition B, Actor CC continues with Activity B. Actor CC derives Object B as an output. 1.4) Actor AA conducts Activity C which is the collection of Object B.
Output and criteria to exit the business process	Actor AA obtains Object B.
Average time required to complete this business process	3 Days

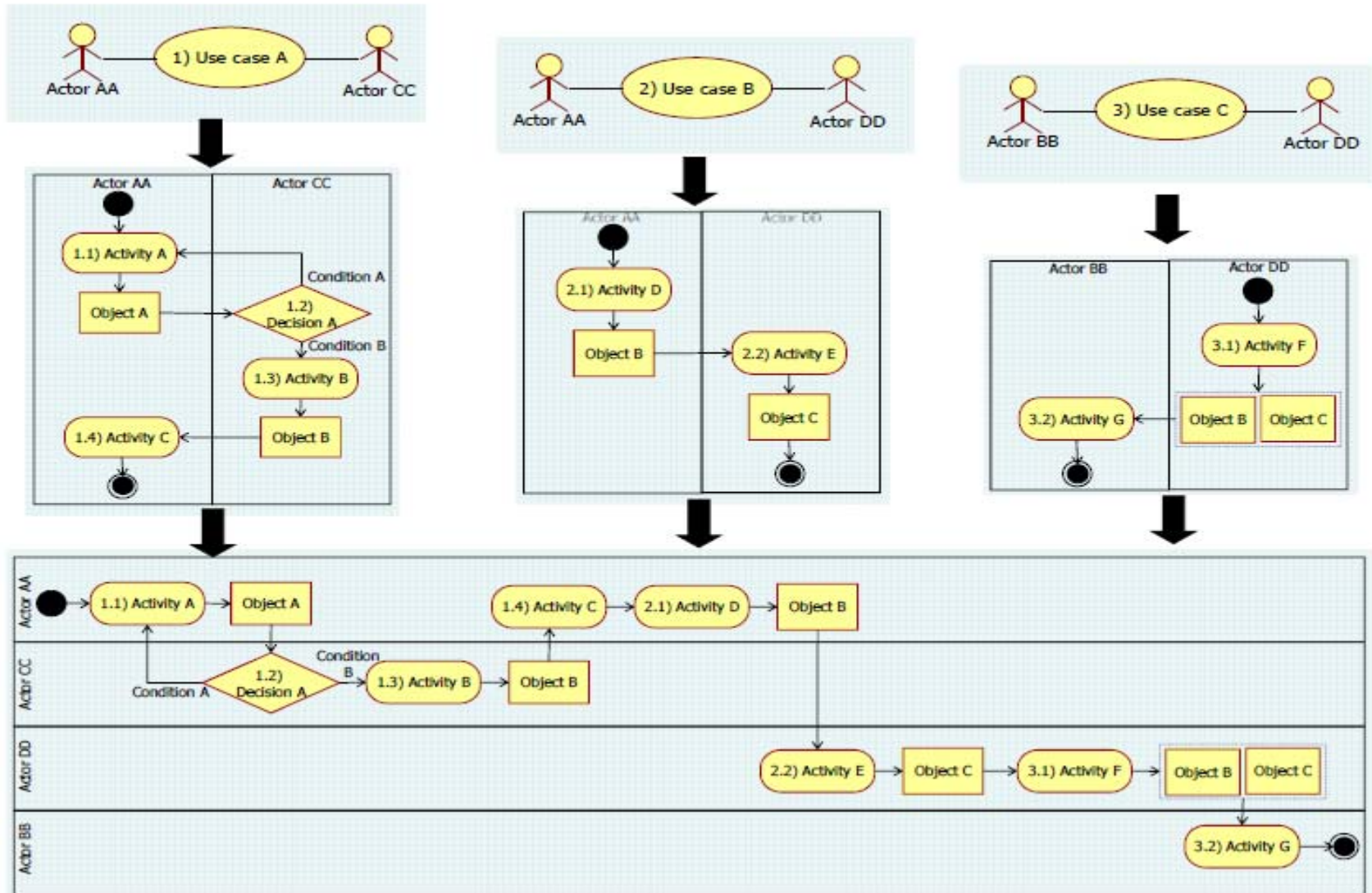


Name of a process area	N/A
Name of a business process (use case)	2) Use case B
Related laws, rules, and regulations	Regulation B
Process participants	<ul style="list-style-type: none"> Actor AA Actor DD
Input and criteria to enter/begin the business process	Actor AA obtains Object B.
Activities and associated documentary requirements	2.1) Actor AA conducts Activity D which is to pass Object B to Actor DD. 2.2) Actor DD conducts Activity E using Object B as an input. Actor DD derives Object C as an output.
Output and criteria to exit the business process	Actor DD obtains Object B and Object C.
Average time required to complete this business process	1 Day



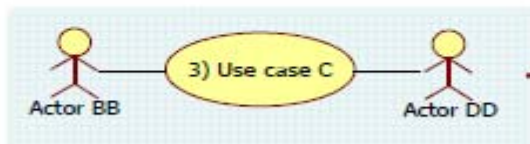
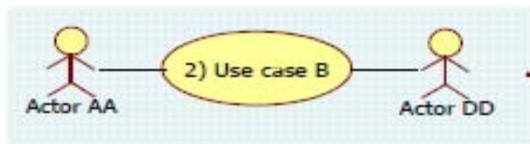
Name of a process area	N/A
Name of a business process (use case)	3) Use case C
Related laws, rules, and regulations	Regulation B
Process participants	<ul style="list-style-type: none"> Actor BB Actor DD
Input and criteria to enter/begin the business process	Actor AA obtains Object B.
Activities and associated documentary requirements	3.1) Actor DD conducts Activity F which is to pass Object B and Object C to Actor BB. 3.2) Actor BB conducts Activity G using Object B and Object C as inputs.
Output and criteria to exit the business process	Actor BB and Actor DD fulfill the requirements of Regulation B.
Average time required to complete this business process	1 Day

UseCase to Integrated Activity Diagram



UseCase to Time-Procedure Chart

Use Case Diagrams



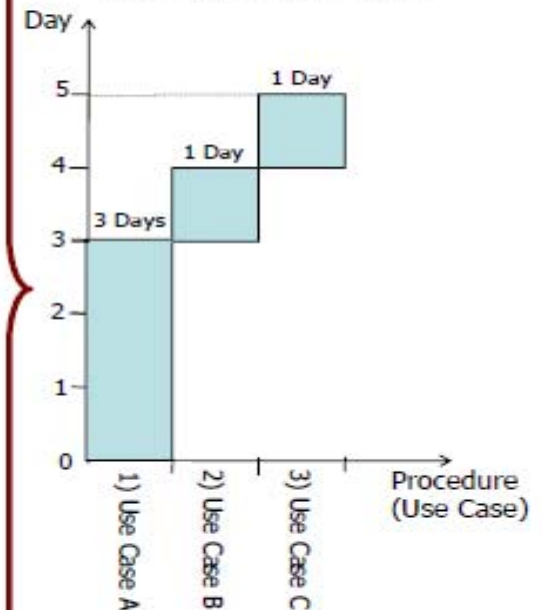
Process Descriptions

Name of a process area	N/A
Name of a business process (use case)	1) Use case A
Related laws, rules, and regulations	Regulation A
Process participants	<ul style="list-style-type: none"> Actor AA Actor CC
Input and criteria to enter/ begin the business process	N/A
Activities and associated documentary requirements	1.1) Actor AA conducts Activity A. Actor AA derives Object A as an output. 1.2) Actor CC makes Decision A using Object A as an input. Actor AA needs to redo Activity A if Condition A occurs. 1.3) In case of Condition B, Actor CC continues with Activity B. Actor CC derives Object B as an output. 1.4) Actor AA conducts Activity C which is the collection of Object B.
Output and criteria to exit the business process	Actor AA obtains Object B.
Average time required to complete this business process	3 Days

Name of a process area	N/A
Name of a business process (use case)	2) Use case B
Related laws, rules, and regulations	Regulation B
Process participants	<ul style="list-style-type: none"> Actor AA Actor DD
Input and criteria to enter/ begin the business process	Actor AA obtains Object B.
Activities and associated documentary requirements	2.1) Actor AA conducts Activity D which is to pass Object B to Actor DD. 2.2) Actor DD conducts Activity E using Object B as an input. Actor DD derives Object C as an output.
Output and criteria to exit the business process	Actor DD obtains Object B and Object C.
Average time required to complete this business process	1 Day

Name of a process area	N/A
Name of a business process (use case)	3) Use case C
Related laws, rules, and regulations	Regulation B
Process participants	<ul style="list-style-type: none"> Actor BB Actor DD
Input and criteria to enter/ begin the business process	Actor AA obtains Object B.
Activities and associated documentary requirements	3.1) Actor DD conducts Activity F which is to pass Object B and Object C to Actor BB. 3.2) Actor BB conducts Activity G using Object B and Object C as input.
Output and criteria to exit the business process	Actor BB and Actor DD fulfill the requirements of Regulation B.
Average time required to complete this business process	1 Day

Time-Procedure Chart



In a nutshell,

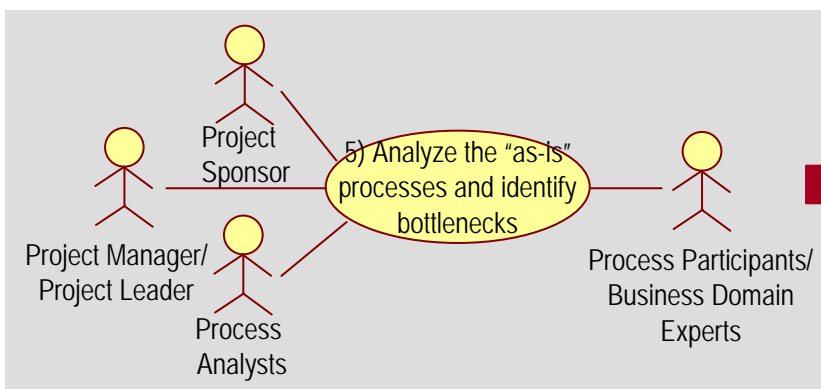
- ☐ No special tool required
- ☐ Preparation for an interview – desk research
- ☐ Iterative and incremental process of business process modeling
- ☐ Onsite observation
- ☐ Verification of business process modeling outputs by relevant stakeholders
- ☐ Revision and refinement of outputs until they reflect what actually happens
- ☐ Critical thinking
- ☐ Interpersonal skills

II. Business Process Analysis & Recommendation Development

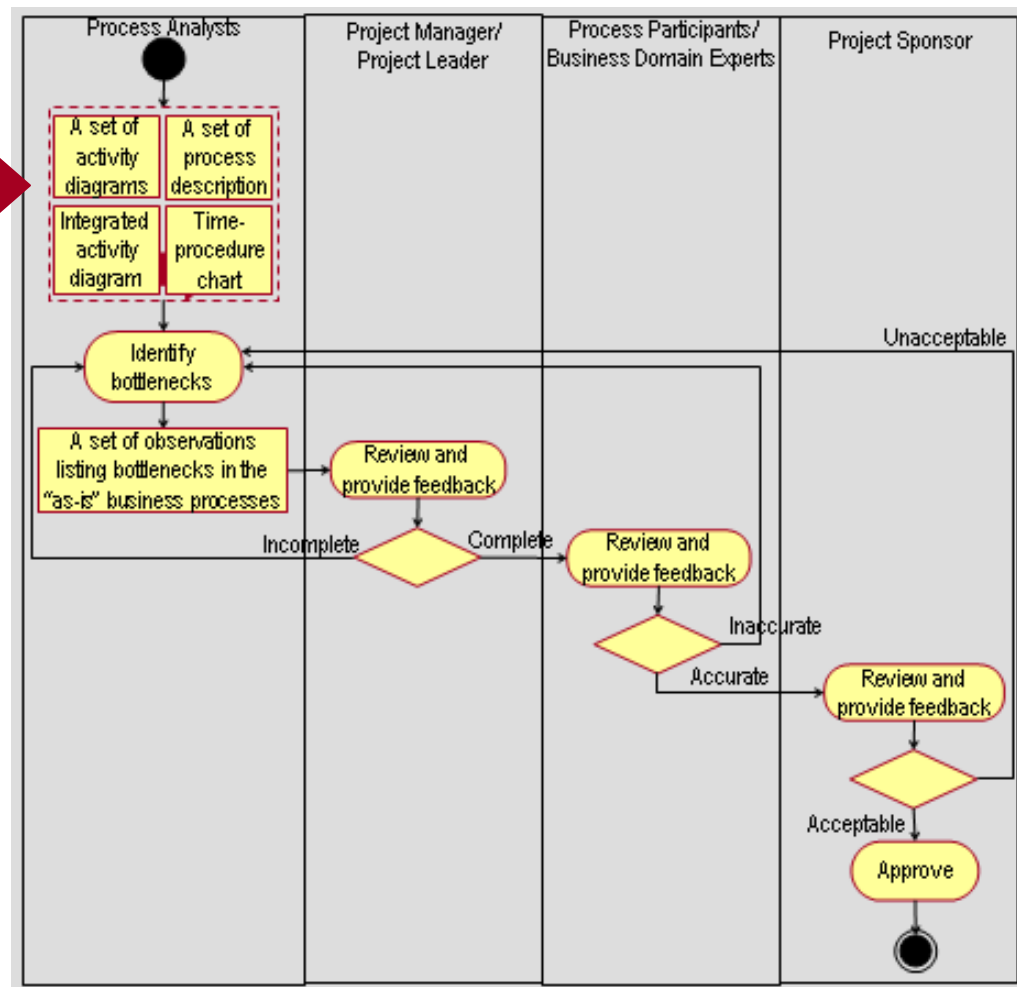
Business Process Analysis and Business Process Simplification

- ❑ Merge some procedures
- ❑ Eliminate redundant procedures and unnecessary documentary requirements
- ❑ Automate procedures and promote the sharing of trade and transport data among relevant stakeholders
- ❑ Modify related laws and regulations to facilitate the operation of the newly designed business processes

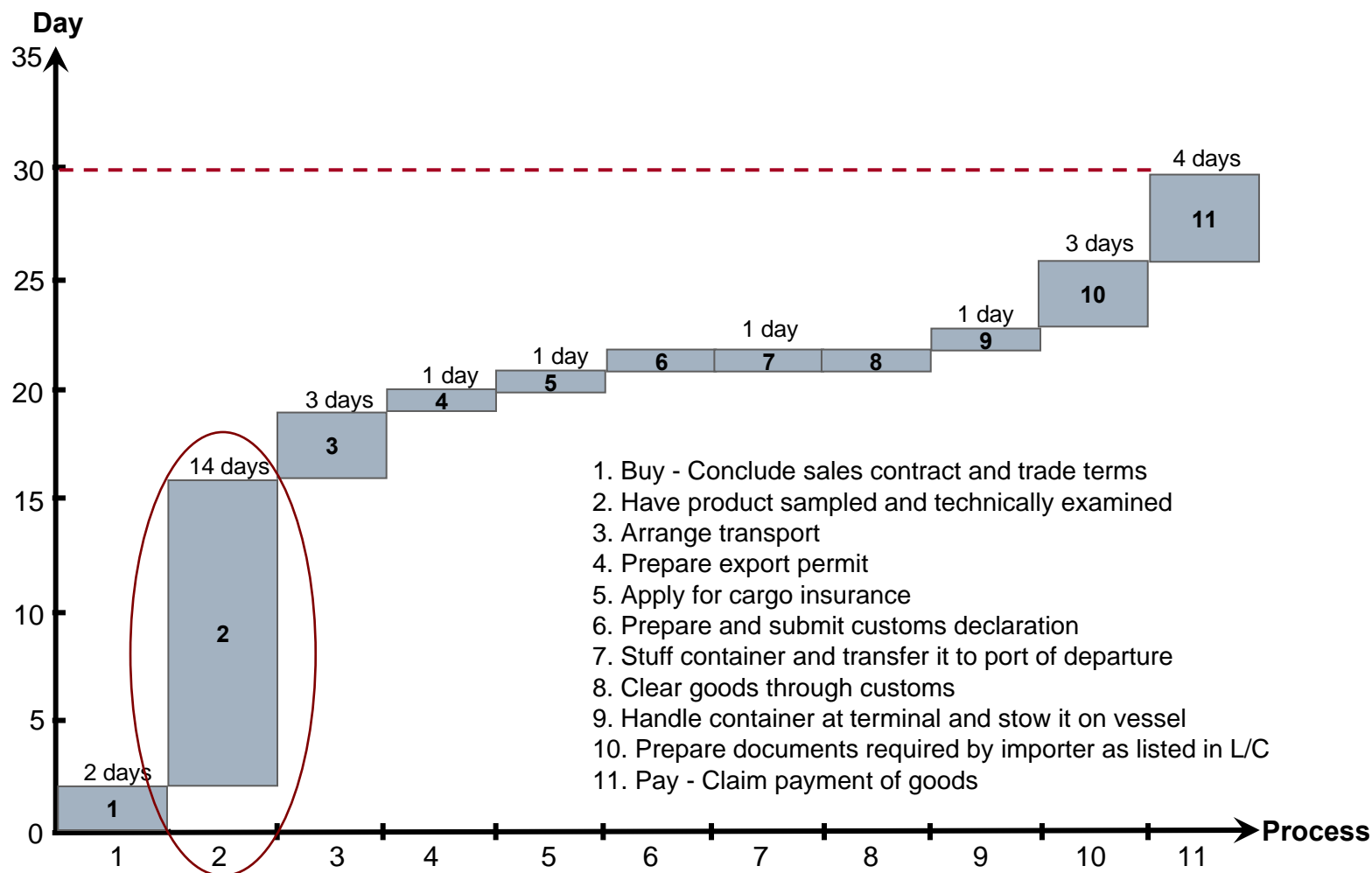
Analyzing the “As-Is” Business Processes



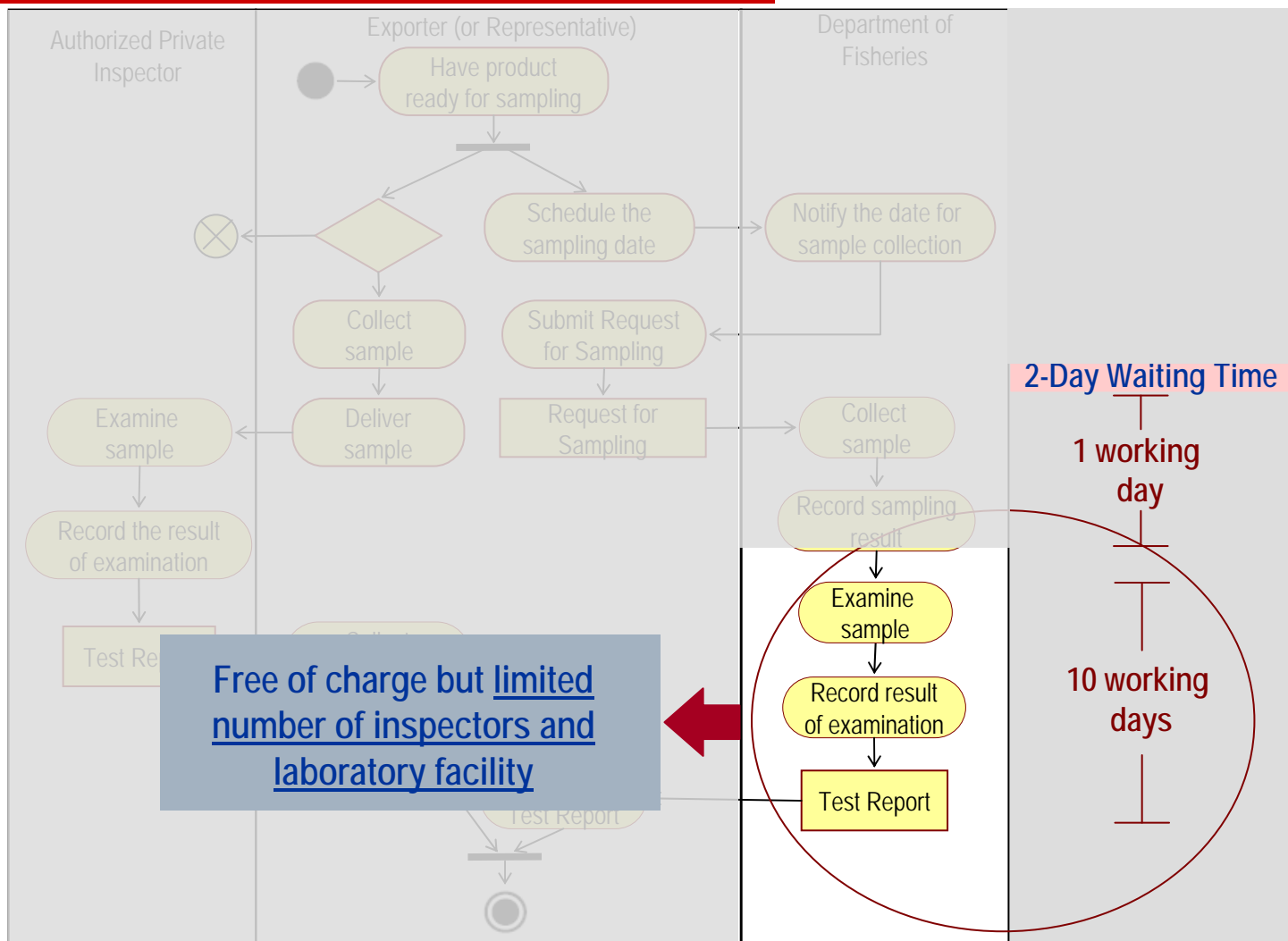
Objective – To identify the bottlenecks, redundancies, and non-value-added activities in procedural and documentary requirements of the “as-is” business processes described in the activity diagrams, process descriptions, and time-procedure chart.



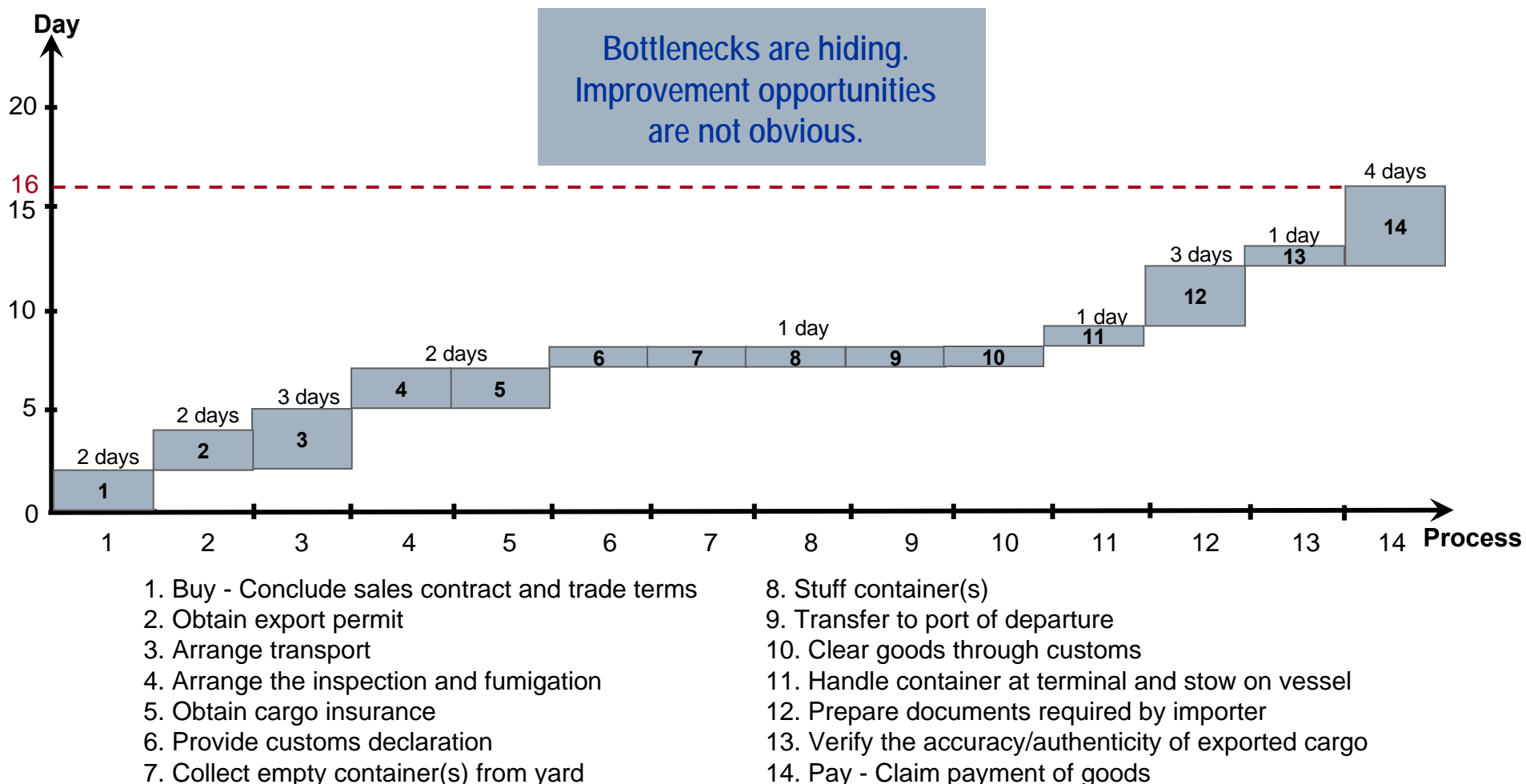
Case 1: Thailand's Export Process of Frozen Shrimp



Case 1: Thailand's Export Process of Frozen Shrimp



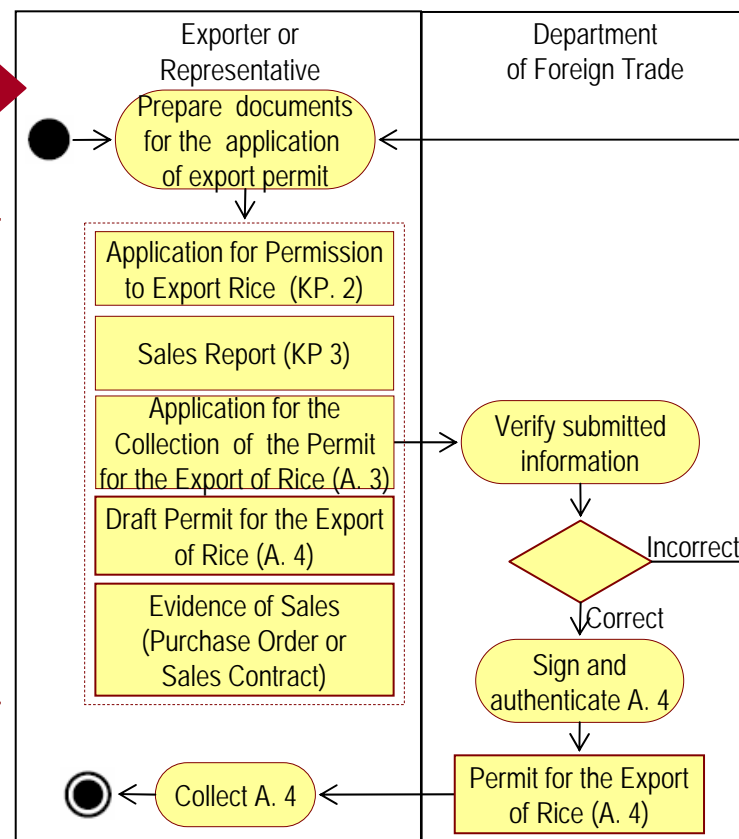
Case 2: Thailand's Export Process of Jasmine Rice



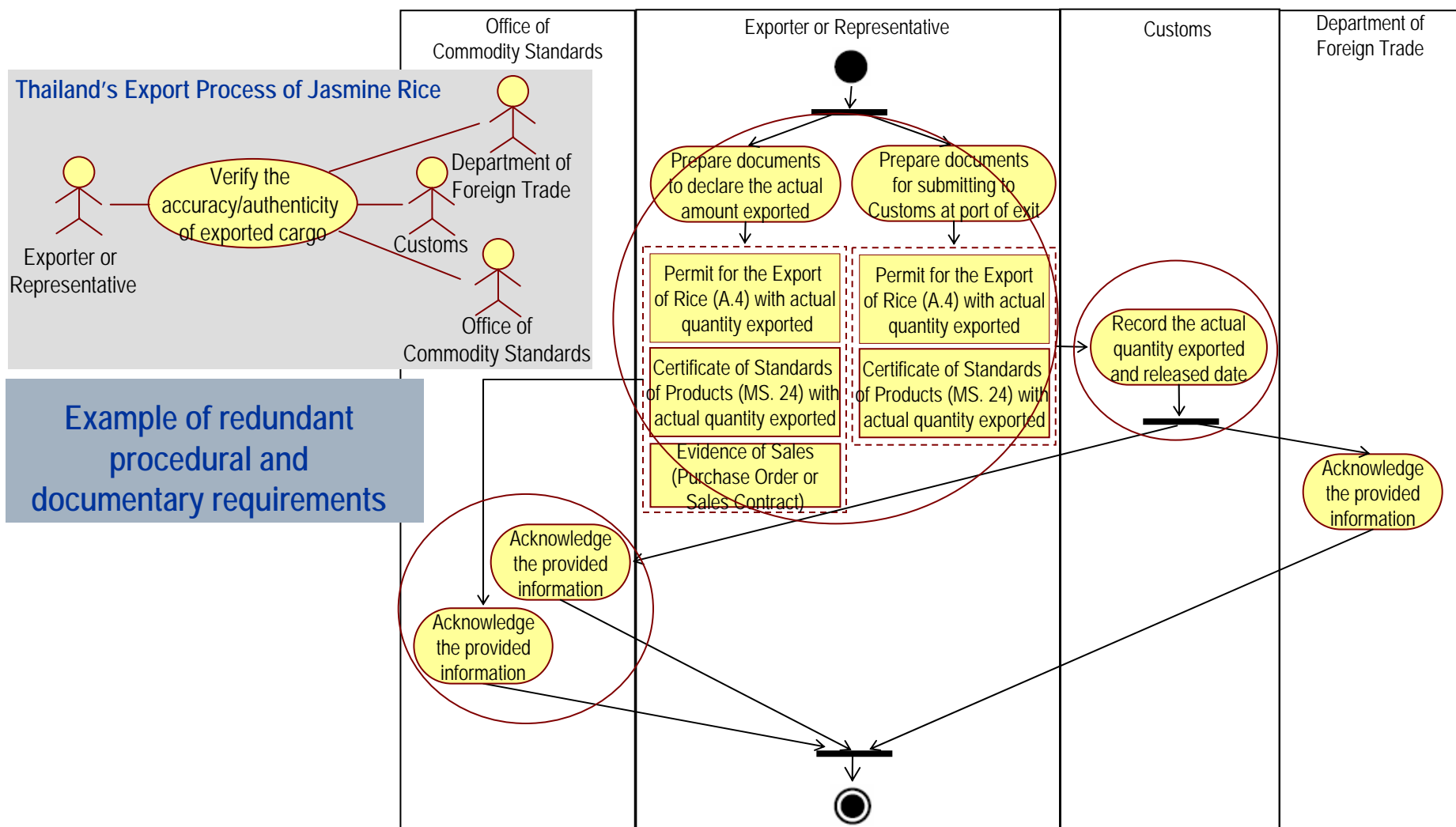
- Review each activity diagram, its accompanied process description, and relevant forms and documents
- Look for redundancies and non-value-added activities in procedural and documentary requirements



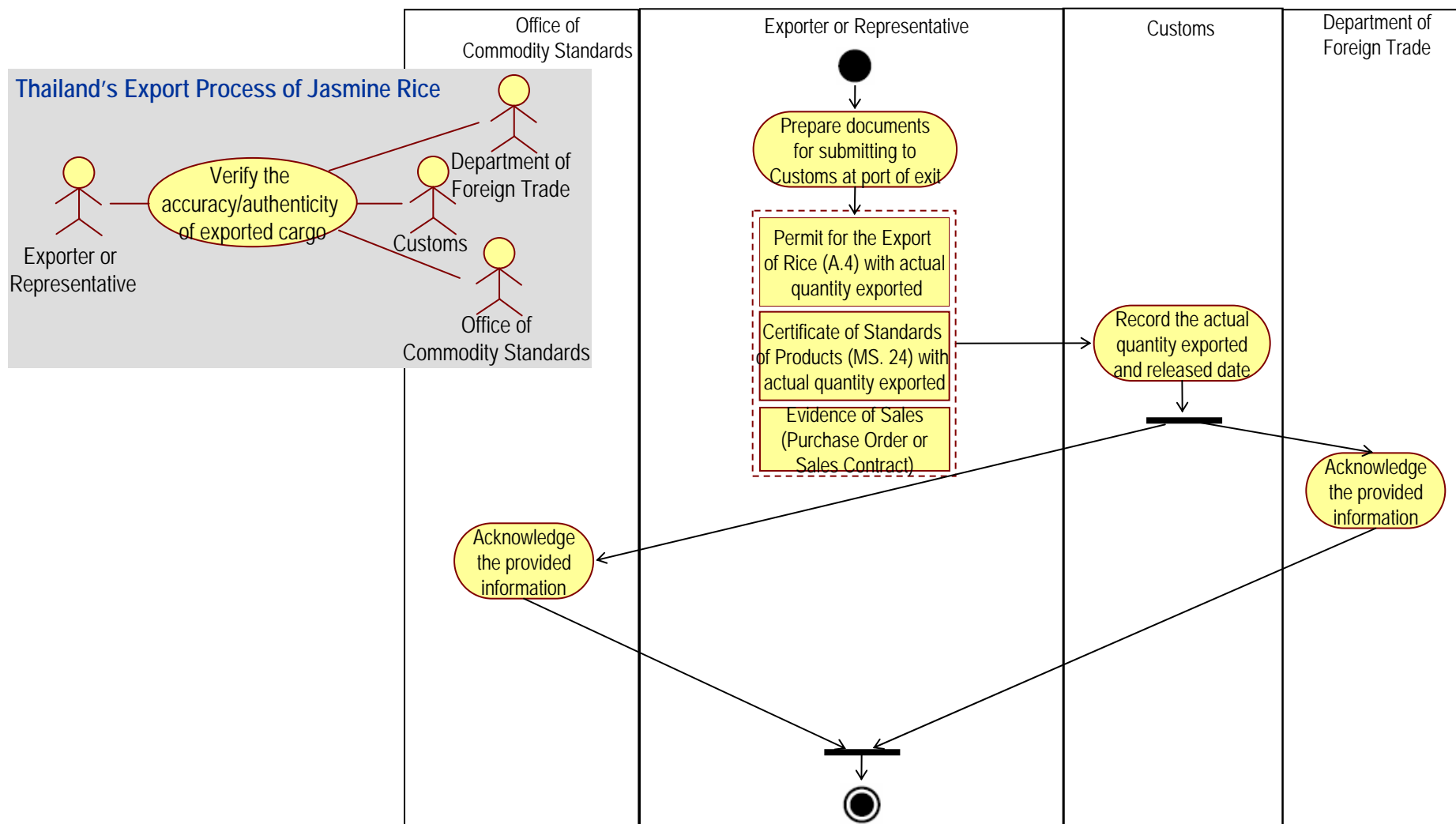
Documentary requirements of these documents are very much identical.



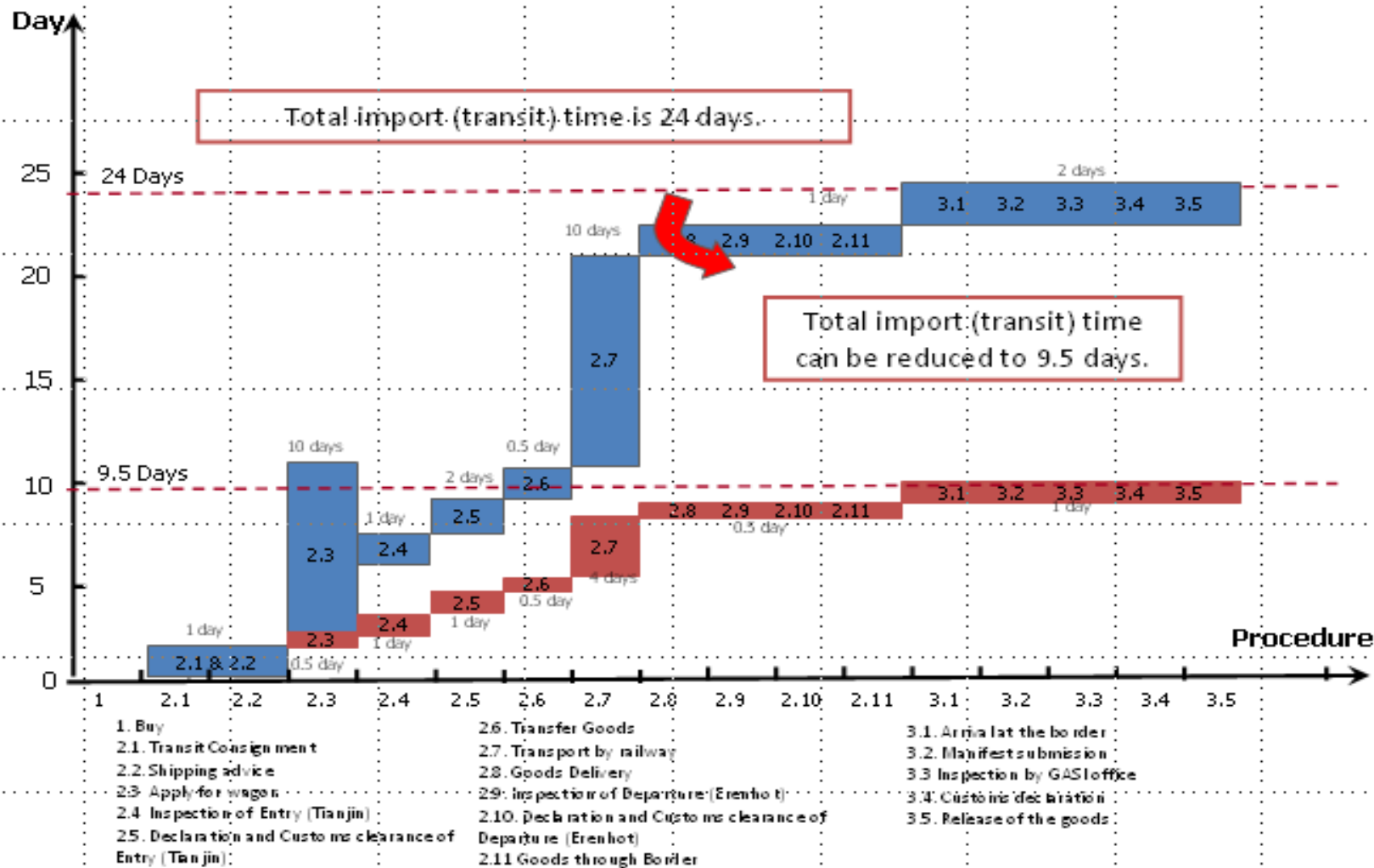
Example: Identify Bottlenecks and Redundancies



Example I: Remove Redundancies



The Time-Procedure Chart of Used Car Transit through China to Mongolia



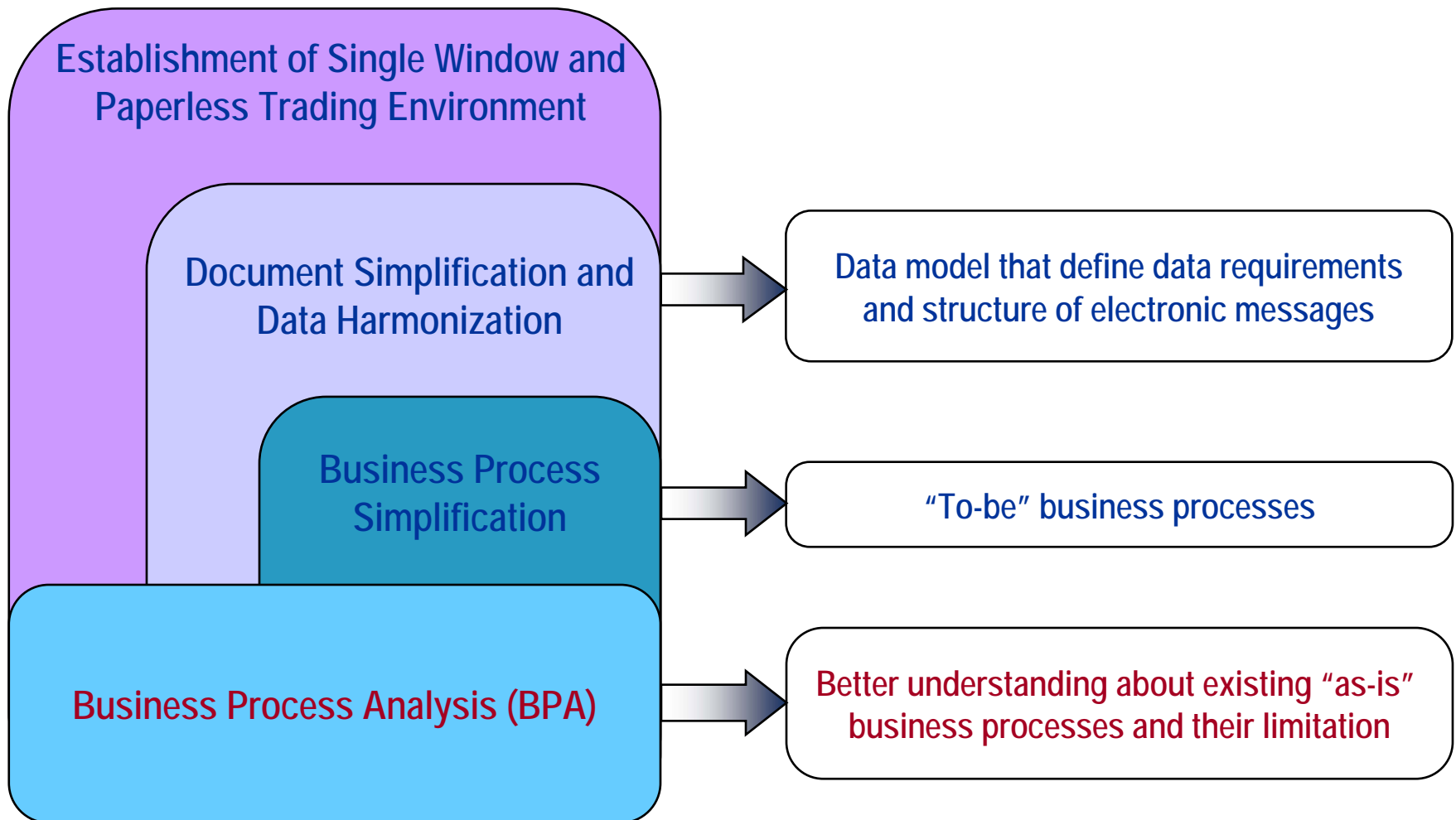
Expected Outputs of the BPA project

Step		Deliverables
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
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
Step4: 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
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

Business Process Analysis and Data Harmonization

- **Step 1:** Capture business processes to identify documents in the information flow
 - UN/CEFACT Modeling Methodology (UMM)
 - Unified Modeling Language (UML)
- } BPA
- **Step 2:** Define each data element extracted from each document in terms of definition, data type, data format, and data constraints in actual operation
 - United Nations Trade Data Elements Directory
 - WCO Data Set
 - UN/CEFACT Core Component Library
 - **Step 3:** Analyze data elements across various documents and organize them in a comparable manner
 - United Nations Layout Key (UNLK) Document Family
 - Single Consignment V.S. Multiple Consignments V.S. Transport Equipment
 - **Step 4:** Map the data elements to the reference data model
 - Complies with UN/CEFACT Core Component Specification
 - Covers data requirements of the international supply chain

Business Process Analysis and Single Window Development



Thank you

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