Process Analysis for Developing A Single Window - Case of Thailand

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Minister of Information and Communications Technology
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Director, Institute for IT Innovation, Kasetsart University
1. **Why** do we need “**Process Analysis**”?

2. **How** to perform “**Process Analysis**” of the *current* trade and transport related *processes*?

3. **The understanding** of the *current processes* provides opportunities for the next step *(the creation of *future better processes*) — **Process Simplification**

4. **Recommendations**
1. Why do we need “Process Analysis”?

The purpose of process analysis is

- 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)*

Benefits of 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*
Definition of “Process Analysis”

Process analysis is:

- A study of existing process 1) in normal situation and 2) in situations where exception takes place in order to gain insights on
  - Who involved
  - Procedures and documents required, and
  - Related rules and regulations

- An approach that facilitates
  - The development of measurable and quantitative process indicators (e.g. number of steps, time & costs needed)
  - The prioritization of initiatives for process improvement
  - Performance improvement
Components of “Process Analysis”

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
Process Analysis helps benchmarking our country efficiency on trading across borders

Some indicators help our policy makers to understand the important issues of improving our country competitiveness

Average Time for Export and Import in Days

A world bank comparative study on procedural and documents requirements for importing and exporting standardized cargos in 178 countries (from the purchase order, till the ship left its nearest port). www.doingbusiness.com, Dec 2007 (Trading Across Borders)
# Trading Across Borders

Procedures and documents necessary to import and export a standardized cargo of goods

<table>
<thead>
<tr>
<th>Region (average data)</th>
<th>Documents for export (number)</th>
<th>Time for export (days)</th>
<th>Cost to export (US$ per container)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia &amp; Pacific</td>
<td>6.9</td>
<td>24.5</td>
<td>885.3</td>
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<tr>
<td>OECD</td>
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<tr>
<td>Middle East &amp; North Africa</td>
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<tr>
<td>Latin America &amp; Caribbean</td>
<td>7</td>
<td>22.2</td>
<td>1,107.50</td>
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<tr>
<td>South Asia</td>
<td>8.6</td>
<td>32.5</td>
<td>1,179.90</td>
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<tr>
<td><strong>Eastern Europe &amp; Central Asia</strong></td>
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<td><strong>29.3</strong></td>
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<td>Sub-Saharan Africa</td>
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<td>35.6</td>
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<table>
<thead>
<tr>
<th>Economy</th>
<th>Documents for export (number)</th>
<th>Time for export (days)</th>
<th>Cost to export (US$ per container)</th>
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</thead>
<tbody>
<tr>
<td>Hong Kong, China</td>
<td>4</td>
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<td>525</td>
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<tr>
<td>Denmark</td>
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<td>5</td>
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<td>Sweden</td>
<td>4</td>
<td>8</td>
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<td>Thailand</td>
<td>7</td>
<td>17</td>
<td>615</td>
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<td>Sri Lanka</td>
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<td>21</td>
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<tr>
<td>Afghanistan</td>
<td>12</td>
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<td>Kyrgyz Republic</td>
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<td>Uzbekistan</td>
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<tr>
<td>Azerbaijan</td>
<td>9</td>
<td>56</td>
<td>2,715</td>
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<td>Kazakhstan</td>
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<tr>
<td>Tajikistan</td>
<td>10</td>
<td>82</td>
<td>3,000</td>
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</tbody>
</table>

By World Bank [www.doingbusiness.org](http://www.doingbusiness.org) Dec 2007
### Thailand

**Procedures and documents necessary to import and export a standardized cargo of goods**

<table>
<thead>
<tr>
<th>Nature of Export Procedures</th>
<th>Duration (days)</th>
<th>US$ Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents preparation</td>
<td>9</td>
<td>270</td>
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<tr>
<td>Customs clearance and technical control</td>
<td>1</td>
<td>50</td>
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<tr>
<td>Ports and terminal handling</td>
<td>4</td>
<td>75</td>
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<tr>
<td>Inland transportation and handling</td>
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<td>220</td>
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<tr>
<td><strong>Totals:</strong></td>
<td>17</td>
<td>615</td>
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</table>

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<td>Documents preparation</td>
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<td>300</td>
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<tr>
<td>Customs clearance and technical control</td>
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<td>66</td>
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<tr>
<td>Ports and terminal handling</td>
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<tr>
<td>Inland transportation and handling</td>
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<td>220</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td>14</td>
<td>785</td>
</tr>
</tbody>
</table>

**Export documents**

- Bill of lading
- Certificate of origin
- Commercial invoice
- Customs export declaration
- Export license
- Packing list
- Terminal handling receipts

**Import documents**

- Cargo release order
- Commercial invoice
- Consular invoice
- Customs import declaration
- Foreign exchange authorization
- Import license
- Packing list
- Tax certificate
- Terminal handling receipts

Reference - World Bank: [www.doingbusiness.org](http://www.doingbusiness.org) - Oct 2007
### Azerbaijan

Procedures and documents necessary to import and exports a standardized cargo of goods

<table>
<thead>
<tr>
<th>Nature of Export Procedures</th>
<th>Duration (days)</th>
<th>US$ Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents preparation</td>
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<td>90</td>
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<tr>
<td>Customs clearance and technical control</td>
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<tr>
<td>Ports and terminal handling</td>
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<tr>
<td>Inland transportation and handling</td>
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<td>2000</td>
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<tr>
<td><strong>Totals:</strong></td>
<td><strong>56</strong></td>
<td><strong>2715</strong></td>
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<tr>
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<tr>
<td>Ports and terminal handling</td>
<td>6</td>
<td>375</td>
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<tr>
<td>Inland transportation and handling</td>
<td>14</td>
<td>2190</td>
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<tr>
<td><strong>Totals:</strong></td>
<td><strong>56</strong></td>
<td><strong>2945</strong></td>
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</tbody>
</table>

**Export documents**

- Bill of lading
- Certificate of origin
- Commercial invoice
- Customs export declaration
- Export license
- Packing list
- Power of attorney
- Selling contract
- Transit document

**Import documents**

- Bill of lading
- Cargo release order
- Certificate of origin
- Commercial invoice
- Contract with supplier
- Customs import declaration
- Customs transit document
- Import license
- Packing list
- Shipping invoice
- Tax certificate
- Technical standard/health certificate
- Terminal handling receipts
- Transit document
Sweden

Procedures and documents necessary to import and exports a standardized cargo of goods

<table>
<thead>
<tr>
<th>Nature of Export Procedures</th>
<th>Duration (days)</th>
<th>US$ Cost</th>
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<tr>
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<td>Customs clearance and technical control</td>
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<td>Ports and terminal handling</td>
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<tr>
<td>Inland transportation and handling</td>
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<td>293</td>
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<tr>
<td><strong>Totals:</strong></td>
<td><strong>8</strong></td>
<td><strong>561</strong></td>
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<table>
<thead>
<tr>
<th>Nature of Import Procedures</th>
<th>Duration (days)</th>
<th>US$ Cost</th>
</tr>
</thead>
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<td>Ports and terminal handling</td>
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<td>Inland transportation and handling</td>
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<td><strong>Totals:</strong></td>
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<td><strong>619</strong></td>
</tr>
</tbody>
</table>

- Export documents:
  - Bill of lading
  - Commercial invoice
  - Customs export declaration
  - Technical standard/health certificate

- Import documents:
  - Bill of lading
  - Commercial invoice
  - Customs import declaration
Economic Impacts
because of the delay on trading across borders

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


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

1. **Why** do we need “**Process Analysis**”? 

2. **How** to perform “**Process Analysis**” of the current trade and transport related **processes**? 

3. **The understanding** of the current processes provides opportunities for the next step (the creation of **future better processes**) – **Process Simplification** 

4. **Recommendations**
Step by Step towards e-Single Window

1. Process Analysis
   - UN/CEFACT Modeling Methodology, WCO Time Release Study, WB Audit Methodology

2. Process Simplification and Harmonization
   - UN/CEFACT Recommendation 4 & 18 (collaboration between trader and government, establishing e-Document Systems)

3. Document Simplification & Standardization
   - UNLK, TF Toolkit and Form Repository

4. National Data Harmonization
   - UNTDED, Standard Codes (e.g. LOCODE), WCO Data Set, UNeDocs

5. Cross Border Data Exchange
   - UNeDocs, WCO DM, NDR

6. e-Single Window
   - UN/CEFACT Rec 33, 34, 35
Steps for Process Analysis and Simplification

1. **Process Scope**
   - Identify a business domain that is subject to the investigation and all stakeholders
   - 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
   - Verify the use case diagram with stakeholders. Revise and/or refine where necessary

2. **Process Definition**
   - Using the use case diagram as a frame of reference, collect background information and prepare questions for interview

3. **Process Analysis**
   - Develop explanatory notes for each activity diagram
   - Verify each activity diagram with stakeholders. Revise and/or refine where necessary
   - For each process, draw an activity diagram that describes activities and associated documentary requirements
   - Conduct interview to collect:
     - A sequence of steps
     - Documents/forms/data
     - Rules and regulations
     - Average time and cost for each step and entire process
   - For each process, draw an activity diagram that describes activities and associated documentary requirements
   - Conduct interview to collect:
     - A sequence of steps
     - Documents/forms/data
     - Rules and regulations
     - Average time and cost for each step and entire process
   - Verify each activity diagram with stakeholders. Revise and/or refine where necessary
   - Consult with stakeholders if the explanatory notes reflect the process as-is. Revise and/or refine where necessary
   - Combine the activity diagrams into one that illustrate activity and information flow in the business domain and develop Time-Procedure Chart
   - Consult with stakeholders if the explanatory notes reflect the process as-is. Revise and/or refine where necessary
   - Locate bottlenecks and determine what causes them

4. **Recommendations**
   - Develop recommendations
   - Consult with stakeholders the possibility of having proposed recommendations implemented. Revise and/or refine where necessary.
1. Define Project Scope

Scope Example

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

- Carrier scheduling for port use
- Cargo 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 purchase order issued
- Ending point: when cargo is on board and ready to be transferred to the country of importer

- Site Visited
  - No. of Interviews = 45
  - No. of Practices = 3
  - Phone & email interviews
  - No. of Interviews = 16
1. Setting Scope for Implementation:
Importation by Sea

Business Processes
- Enter seaport
- Report cargo manifest
- Unload cargo
- Clear goods through customs
- Arrange for pick-up
- Handle cargo at terminal
- Complete customs requirements

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.

Examples: Capturing the Stakeholders who’re involved in Importation by Air
- Vessel Agent
- Pilot’s Station
- Marine Department
- Port Operator
- Customs
- Other Government Agencies
- Importer or Representative
- Terminal Operator
- Haulage/Truck
2. Process Definition
A Vessel Entering the Seaport (existing)

For each process, draw an activity diagram that describes activities and associated documentary requirements.

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

Sequence of actions carried out to achieve a specific goal.

Document associated with each action.
3. Problem Analysis:
A Vessel Entering the Seaport (existing)

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

![Diagram of process for vessel entering seaport](image-url)
4. Recommendation Development:
Automation of Vessel Entering the Seaport Process

(e.g. reducing the number of steps, or number of documents, ...establishing a system that supports e-document submission, and e-document exchange between agencies)

Business to Government (B2G) – *One to Many*

- Government to Government (G2G) Data Exchange
- Automatic e-Document Workflow
- National Single Window Exchange
4. Process Simplification:
New Vessel Entering the Seaport Process

Stakeholders:
1) Vessel
2) Value Added Service
3) NSW Exchange
4) Marine Dept.
5) Port Authority of Thailand
6) Pilot’s Station

- Documents are converted to Electronic Documents
- Remove unnecessary data elements
- Data Harmonization
- Standardization
4. Process Simplification:
New Vessel Entering the Seaport Process

Stakeholders:
1) Vessel
2) Value Added Service
3) NSW Exchange
4) Marine Dept.
5) Port Authority of Thailand
6) Pilot’s Station

Vessel Agents send electronic documents to Marine Department through NSW Exchange
4. Process Simplification: 
New Vessel Entering the Seaport Process

Process for Vessel Entering

Vessel Agent

Prepare

Pilot Request Form

General Declaration

Application for Vessel Entering The Port Area (Electronic)

Value Added Service

Update Status

Update Log

Send

Receive

NSW Exchange

Update Log

Send

Receive

Port Authority of Thailand

Stakeholders:
1) Vessel
2) Value Added Service
3) NSW Exchange
4) Marine Dept.
5) Port Authority of Thailand
6) Pilot’s Station

Vessel Agent will send electronic documents to Port Authority of Thailand through NSW Exchange
4. Process Simplification:

New Vessel Entering the Seaport Process

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

Vessel Agent will send electronic documents to Pilot's Station through NSW Exchange
Verification and Validation

e.g. through several rounds peer reviews of experts, practitioners and stakeholders
Summary of a study: Number of Steps Export*

<table>
<thead>
<tr>
<th>Transport Mode</th>
<th>No. of Actions (Existing)</th>
<th>Expected No. of Actions (Future)</th>
<th>Expected No. of reduced Actions</th>
<th>Expected No. of reduced Actions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export by Ship</td>
<td>54</td>
<td>47</td>
<td>7</td>
<td>12.96</td>
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<tr>
<td>Export by Airplane</td>
<td>85</td>
<td>65</td>
<td>20</td>
<td>23.53</td>
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<tr>
<td>Export by Truck</td>
<td>35</td>
<td>16</td>
<td>19</td>
<td>54.29</td>
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<tr>
<td>Export by Train</td>
<td>49</td>
<td>18</td>
<td>31</td>
<td>63.27</td>
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<tr>
<td>Export from ICD</td>
<td>79</td>
<td>57</td>
<td>22</td>
<td>27.85</td>
</tr>
</tbody>
</table>

* A process analysis study commissioned by Thailand Ministry of Transport, 2008 including the study of relevant rules, regulations and normal practices.

* Remark: No. of Actions = No. of Manual Actions of Business Process for Export
## Summary of a study: Usage Time for Export

<table>
<thead>
<tr>
<th>Transport Mode</th>
<th>Existing Usage Time (day)</th>
<th>Expected Usage Time (day)</th>
<th>Expected Reduced Time (day)</th>
<th>Expected Reduced Time (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export by Ship</td>
<td>22</td>
<td>15</td>
<td>7</td>
<td>31.82</td>
</tr>
<tr>
<td>Export by Airplane</td>
<td>12</td>
<td>9</td>
<td>3</td>
<td>25.00</td>
</tr>
<tr>
<td>Export by Truck</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>41.67</td>
</tr>
<tr>
<td>Export from ICD</td>
<td>11</td>
<td>9</td>
<td>2</td>
<td>18.18</td>
</tr>
</tbody>
</table>

**Criteria**
- 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
## Summary of a study: Number of Steps for Import

<table>
<thead>
<tr>
<th>Transport Mode</th>
<th>No. of Actions (Existing)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Import by Ship</td>
<td>68</td>
<td>34</td>
<td>34</td>
<td>50.00</td>
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<tr>
<td>Import by Airplane</td>
<td>96</td>
<td>45</td>
<td>51</td>
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<td>Import by Truck</td>
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<td>13</td>
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<tr>
<td>Import by Train</td>
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<td>25</td>
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<td>52.83</td>
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<tr>
<td>Import by ICD</td>
<td>73</td>
<td>46</td>
<td>27</td>
<td>36.99</td>
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</tbody>
</table>

*Remark: No. of Actions = No. of Manual Actions of Business Process for Export*
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<td>11</td>
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<td>2</td>
<td>18.18</td>
</tr>
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**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
Time and Procedure Chart

Illustrating number of days and main procedures needed for exporting through trucks across a border.

**Ship Transportation**

12 days with the recommended new procedures reducing from 20 days with the current procedures.

9 main procedures:
1. Buy (order)
2. Paper preparation before import
3. Paper work during the import
4. Perform cargo insurance
5. Ship docking at the sea port
6. Goods on the ship reporting
7. Cargo Checking on board
8. Cargo Clearance
9. Payment Handling
Main Procedures

1. Ordering
2. Booking a truck
3. Documents preparation for the driver
4. Prepare Customs e-document and clear the cargo
5. Export the cargo at the port
6. Prepare imported documentations
7. Payment

7 days with the recommended new procedures reducing from 12 days with the current procedures

The new process should be more efficient.
Benefits from Process Analysis & Simplification

- Understanding of our own current situations
- Benchmarking with oneself or other better practices
- Raising issues and priorities for further improvement
- Guiding IT Development for related government agencies and business sectors, and also National Single Window Development
- Providing an expectation or impact of the new process recommendations and its IT-supported systems
- Guiding elimination of duplicated data
Recommendations

The concept

☐ Assessing the current situations of our own organization (processes and documents required for import/export goods across the border),

☐ And always looking for opportunities to improve

☐ Securing resources and team for this exercise
Recommendations

The practices

- Process Analysis & Simplification should be an important exercise on a regular basis (e.g. annually)
- Process Analysis Components should be considered
  - Process Scope Setting
  - Process Definition
  - Process Analysis
  - Process Improvement/Recommendations
- Visualizing those processes with diagrams (pictures), e.g. Activity Diagram using UML notations, tables showing indicators, time-procedure chart
- Verification and Validation of the process analysis results is very crucial for correction and completeness
- Using UN/CEFACT Recommendation 18 and other for Process Improvement/Simplification Measures
End

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