

# Single Window: Its Evolution and Implementation Framework

Somnuk Keretho, PhD  
Director, Institute for IT Innovation   
Kasetsart University, Bangkok

## UNNExT Masterclass 2013: Implementing Single Window and Paperless Trade

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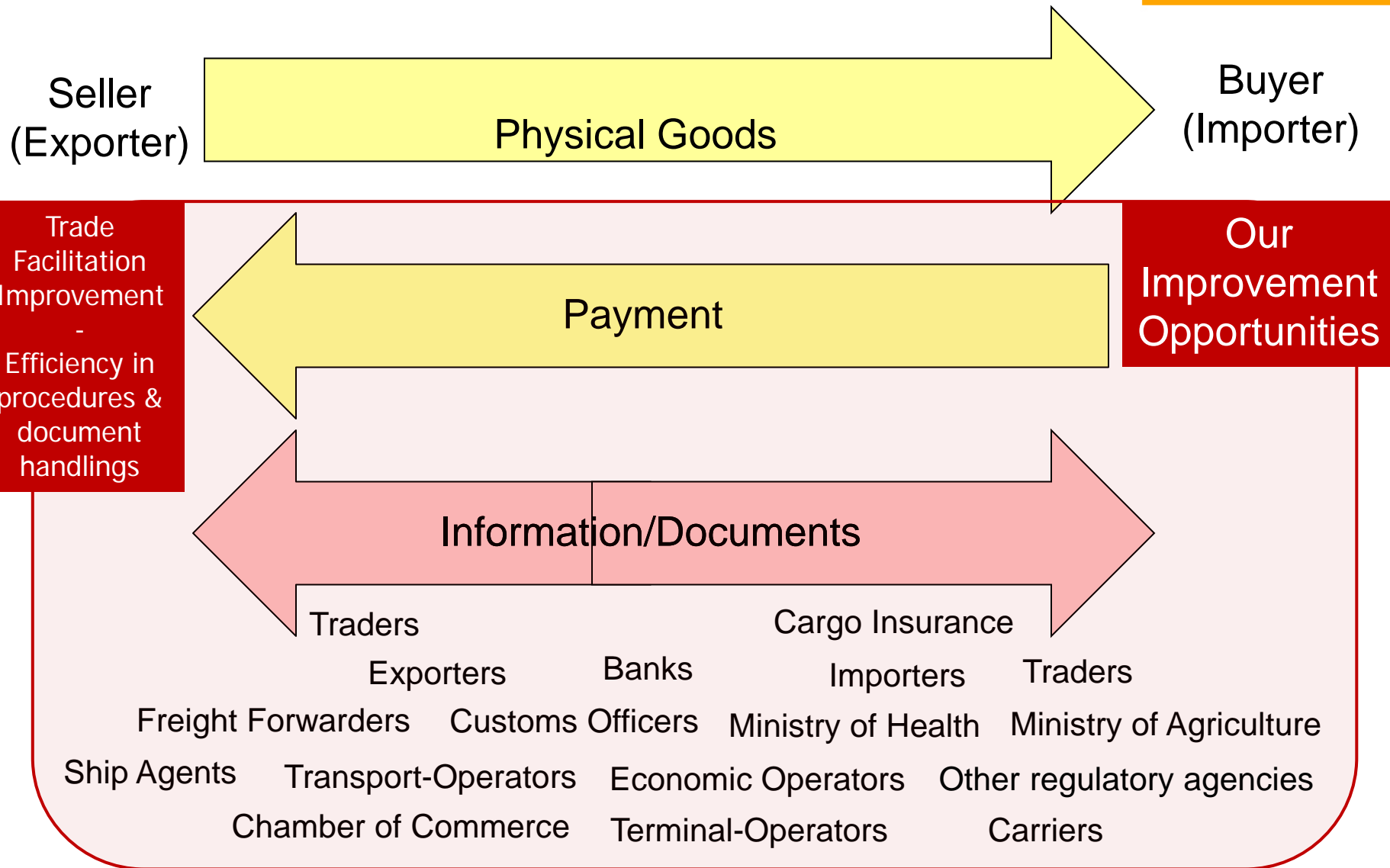
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  - What are the areas of our improvement opportunities?
2. A SW Evolutionary Long-term Roadmap for planning and implementing Single Window (SW) for continuous trade facilitation improvement.
3. A systematic framework is proposed to guide policy managers, decision makers and relevant stakeholders in planning and managing the implementation of the SW development projects.
4. Summary & Recommendations

# Trade Logistics – 3 Kinds of Flow



# The issue is about Increasing National Trade Competitiveness

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

(this is called **“Trade Facilitation”** improvement)

# Documents related to Exportation of Rice

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

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

1. Proforma Invoice (35)  
2. Purchase Order (39)

## Buy/Pay Docs

3. Commercial Invoice (51)  
4. Application for Letter of Credit (24)  
5. Letter of Credit (32)

6. Packing List (25)

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)

## Transport Docs

21. Master Sea Cargo Manifest(17)

22. House Sea Cargo Manifest (37)

**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)**

## Regulatory Docs



\* Number in parenthesis is the no. of data elements

# A Business Process Analysis

- in Exporting Jasmine Rice from Thailand -

BUSINESS PROCESS ANALYSIS

GUIDE

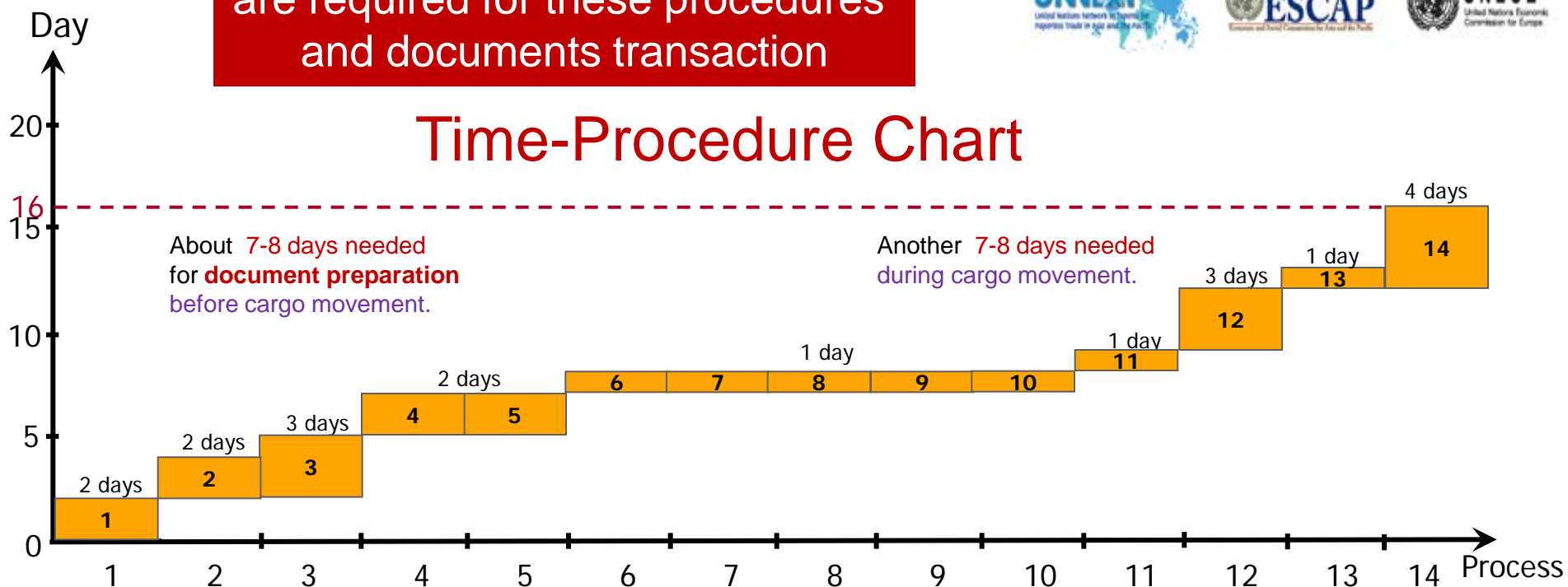
TO SIMPLIFY TRADE PROCEDURES

16 days

are required for these procedures  
and documents transaction



## Time-Procedure Chart



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

# Trade Facilitation Performance

According to World Bank's Trading Across Borders Database (2013 Report)

## World Bank's Trading Across Borders Report (comparing 185 countries)

Economy Name	Ranking	Documents to export (number)	Time to export (days)	Cost to export (US\$ per container)	Documents to import (number)	Time to import (days)	Cost to import (US\$ per container)
Singapore	1	4	5	456	4	4	439
Korea, Rep.	3	3	7	665	3	7	695
Japan	19	3	10	880	5	11	970
Thailand	20	5	14	585	5	13	750
New Zealand	25	5	10	870	6	9	825
Sri Lanka	56	6	20	720	6	19	775
Vietnam	74	6	21	610	8	21	600
Cambodia	118	9	22	755	10	26	900
Bangladesh	119	6	25	1025	8	34	1430
India	127	9	16	1120	11	20	1200
Maldives	138	8	21	1550	9	22	1526
Lao PDR	160	10	26	2140	10	26	2125
Nepal	171	11	41	1975	11	38	2095
Bhutan	172	9	38	2230	12	38	2330
Kyrgyz Republic	174	8	63	4160	10	75	4700
Mongolia	175	10	49	2555	11	50	2710

Ref: [www.doingbusiness.org](http://www.doingbusiness.org) (October 2013)

Comparing among 185 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 through the sea vessel.



# 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 (comparing 185 countries)

Indicators	Mongolia	Lao PDR	Cambodia	Thailand	Singapore
Documents to export (number)	10	10	9	5	4
Time to export (days)	49	26	22	14	5
Cost to export (US\$ per container)	2,550	2,140	755	585	456

Reference - World Bank's Doing Business – Trading Across Border (Oct 2013) [www.doingbusiness.org](http://www.doingbusiness.org)

Comparing among 185 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.



# Looking for ideas to improvement

(on processes & documentation needed for exporting a standardized cargo\*)



Ease of Doing Business in  
**Lao PDR**

Nature of Export Procedures	Duration (days)	US\$ Cost
Documents preparation	15	275
Customs clearance and technical control	2	110
Ports and terminal handling	4	155
Inland transportation and handling	5	1,600
Totals	26	2,140

## Export documents

Bill of lading  
Certificate of origin  
Commercial Invoice  
Customs export declaration  
Customs transit document (for Thailand)  
Export permit  
Inspection report  
Packing List  
Technical standard/health certificate  
Terminal Handling receipts

**10 documents needed**



Ease of Doing Business in  
**Thailand**

Nature of Export Procedures	Duration (days)	US\$ Cost
Documents preparation	8	175
Customs clearance and technical control	1	50
Ports and terminal handling	3	160
Inland transportation and handling	2	200
Totals	14	585

## Export documents

Bill of Lading  
Certificate of Origin  
Commercial invoice  
Customs export declaration  
Terminal handling receipts

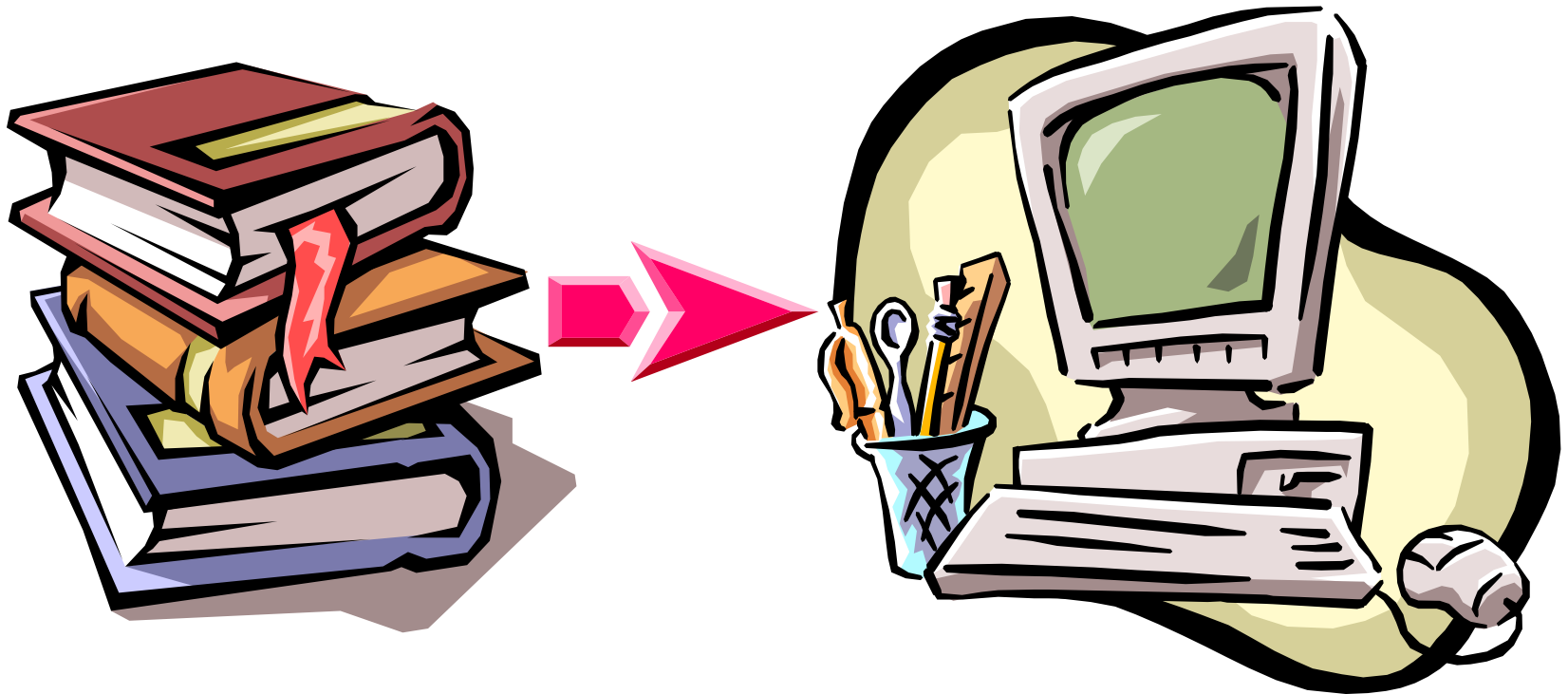
**5 documents needed**

\* More documents will be needed for agriculture or dangerous goods.

Reference - World Bank's Doing Business – Trading Across Border (18 July 2012) [www.doingbusiness.org](http://www.doingbusiness.org)

# Why trading across borders in some countries are easier, faster and less risky?

Mainly because those countries gradually **simplify/transform/reform** their paper-based environment into **Collaborative e-Government/e-Business** platform.



**Paper-based  
Environment**



**Paperless or e-Document  
Environment**

# 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%*

Ref: “**Trading on Time**,” Simeon Djankov, Caroline Freund, and Cong S. Pham, World Bank (2007).

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

Ref: “**Quantitative Assessment of the Benefits of Trade Facilitation**,” OECD (2003).

# National Trade Improvement

because of NSW in Thailand (2009) - through reform, and applying ICT in Paperless Customs and NSW

Trading Across Borders (183 countries)	2007	2008	2009	2010	2011
<b>World Bank Ranking of Thailand</b>	<b>108</b>	<b>50</b>	<b>10</b>	<b>12</b>	<b>12</b>
<b>No. of Documents to Export (number)</b>	<b>9</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Time to Export (days)</b>	<b>24</b>	<b>17</b>	<b>14</b>	<b>14</b>	<b>14</b>
<b>Cost to Export (US\$ per container)</b>	<b>848</b>	<b>615</b>	<b>625</b>	<b>625</b>	<b>625</b>
<b>No. of Documents to Import (number)</b>	<b>12</b>	<b>9</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>Time to Import (days)</b>	<b>22</b>	<b>14</b>	<b>13</b>	<b>13</b>	<b>13</b>
<b>Cost to Import (US\$ per container)</b>	<b>1042</b>	<b>786</b>	<b>795</b>	<b>795</b>	<b>795</b>

**Logistics cost was being saved about \$1.5 billion annually**

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# Original Definition of Single Window (2005)\*

- **Single Window is a facility** that allows parties involved in trade and transport to lodge standardized information and documents with **a single entry point** to fulfill all import, export, and transit-related **regulatory requirements**. If information is electronic, then individual data elements should only be submitted once.

Aiming to

1. enhance the **efficient information exchange** and **coordination** of traders, transport and government for **regulatory transactions**, and
2. facilitate **single submission of data** or **reduction of the same data/same document submissions**.

\*UN/CEFACT Recommendation and Guidelines on establishing a Single Window, UNECE, 2005  
[http://www.unece.org/cefact/recommendations/rec33/rec33\\_ecetrd352\\_e.pdf](http://www.unece.org/cefact/recommendations/rec33/rec33_ecetrd352_e.pdf)

# Single Window contributes positively with better Trade Facilitation Performance in many economies

- According to World Bank's Trading Across Border Database, most of the economies with the "good trading-across-borders indicators" have utilized electronic information systems for
  - Allowing traders to exchange **electronic information with Customs and other regulatory agencies**, and also **among logistics service providers**
  - Using **risk-based analysis** (with electronic information) to limit physical inspections to a small percentage of shipments, etc.

Most of these are the features offered by various forms of electronic Customs and SW platforms.

Practice	Economies	Examples
Allowing electronic submission and processing	149 <sup>a</sup>	Belize; Chile; Estonia; Pakistan; Turkey
Using risk-based inspections	133	Morocco; Nigeria; Palau; Vietnam
Providing a single window	71 <sup>f</sup>	Colombia; Ghana; Republic of Korea; Singapore
Making all judgments in commercial cases by first-instance courts publicly available in practice	121 <sup>g</sup>	Chile; Iceland; Nigeria; Russian Federation; Uruguay

## Various types of electronic systems for trade across borders

71 out of 185 economies have implemented SW systems (2013 WB Report).

Positive results from SW implementation have been reported.



# After about 10 years of experiences\*

## Different forms of Single Window

### Pre-Single Window Evolution

- Basic Customs Automation
- Trade Points Portals, e.g. Lao PDR's Trade Portal
- Trade Electronic Data Interchange (EDI)/Value Added Network (VAN)

### Single Window Evolution

- A limited form of SW - **Customs Single Window**, e.g. Pakistan Customs SW
- A limited form of SW - **Port Community System**, e.g. India Port Community Systems
- **Trade-regulatory National Single Windows**, evolving from few number of regulatory agencies, e.g. Azerbaijan NSW (with 11 agencies), Thai NSW (from 4, to 15 to 36)
- **Extended Trade National Single Window**, e.g. Korea uTradeHub, HK DTTN
- **Transport-regulatory National Single Windows**, e.g. China LOGINK (Maritime SW)
- **Integrated National Single Window (all-regulation NSW+PCS)**, e.g. Japan NACCS
- **Integrated Sub-National Single Window**, e.g. Shanghai e-Port SW
- **Regional/Global Single Windows**, e.g. ASEAN Single Window (regional trade SW), NEAL-NET (connecting China, Japan, Korea maritime SWs)

\* "Ten Years of Single Window Implementation: Lessons Learned for the Future," J. Tat Tsen - Global Trade Facilitation Conference, 2011

# Some Observations

- several opportunities for improvement -

## 1. One size does not fit all

- there are many different SW models & approaches, e.g.
  - e-Customs, Customs-Oriented Single Window
  - Trade- and Cargo-Oriented Regulatory Single Window
  - Transport-Oriented Regulatory Single Window, e.g. EU e-Maritime or Maritime Single Window

## 2. Different models other than regulatory-oriented SWs

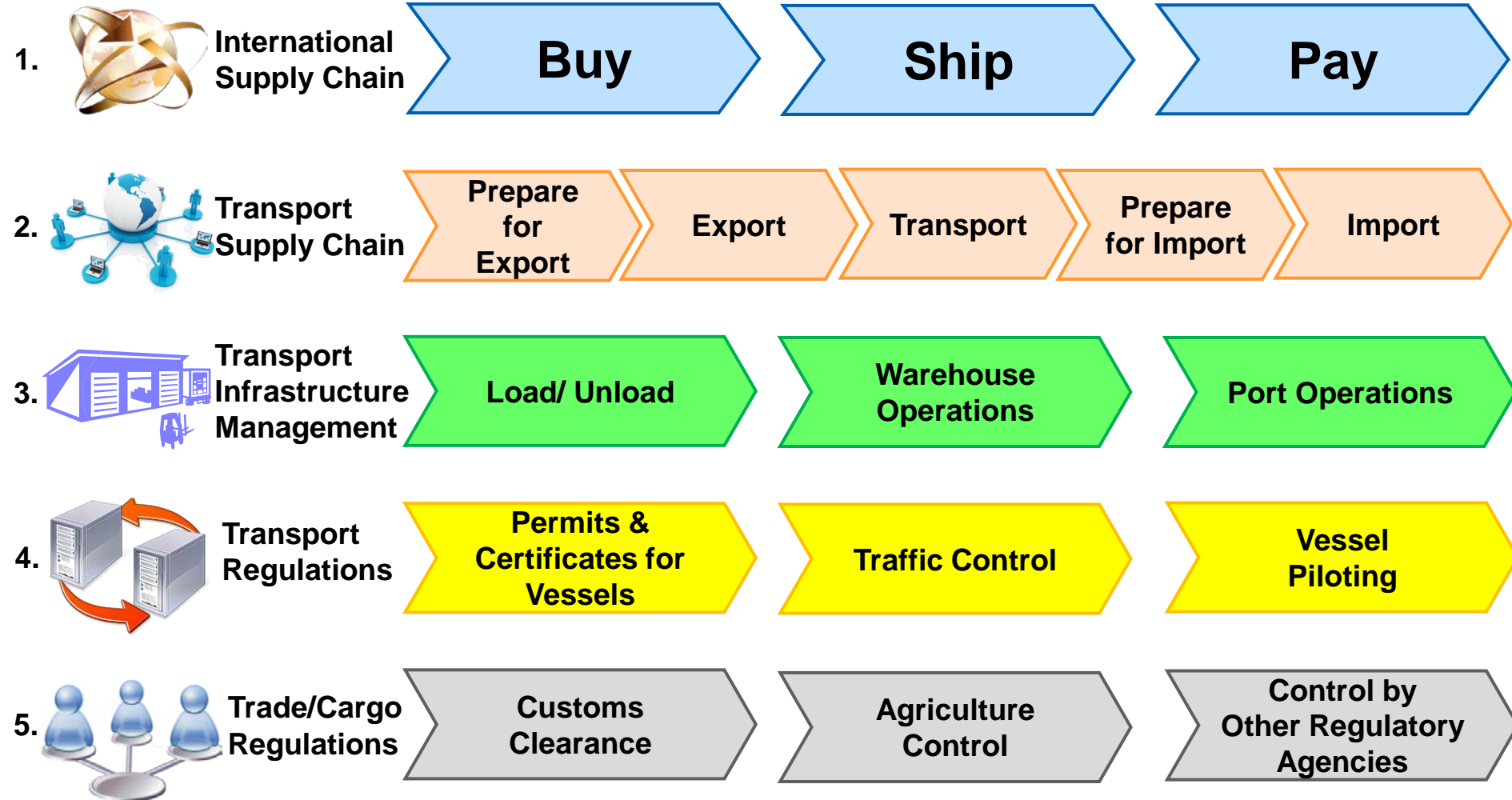
- Other types of “Inter-Organization Information Systems” (IOSs) exist and emerge for facilitating information flow among different sets of stakeholders (not just for regulatory requirements as in the original UNECE definition of SW), e.g.
  - Port Community Systems (PCSs)
  - e-Navigation
  - e-Freight
  - e-Commerce, etc.

# Some Observations

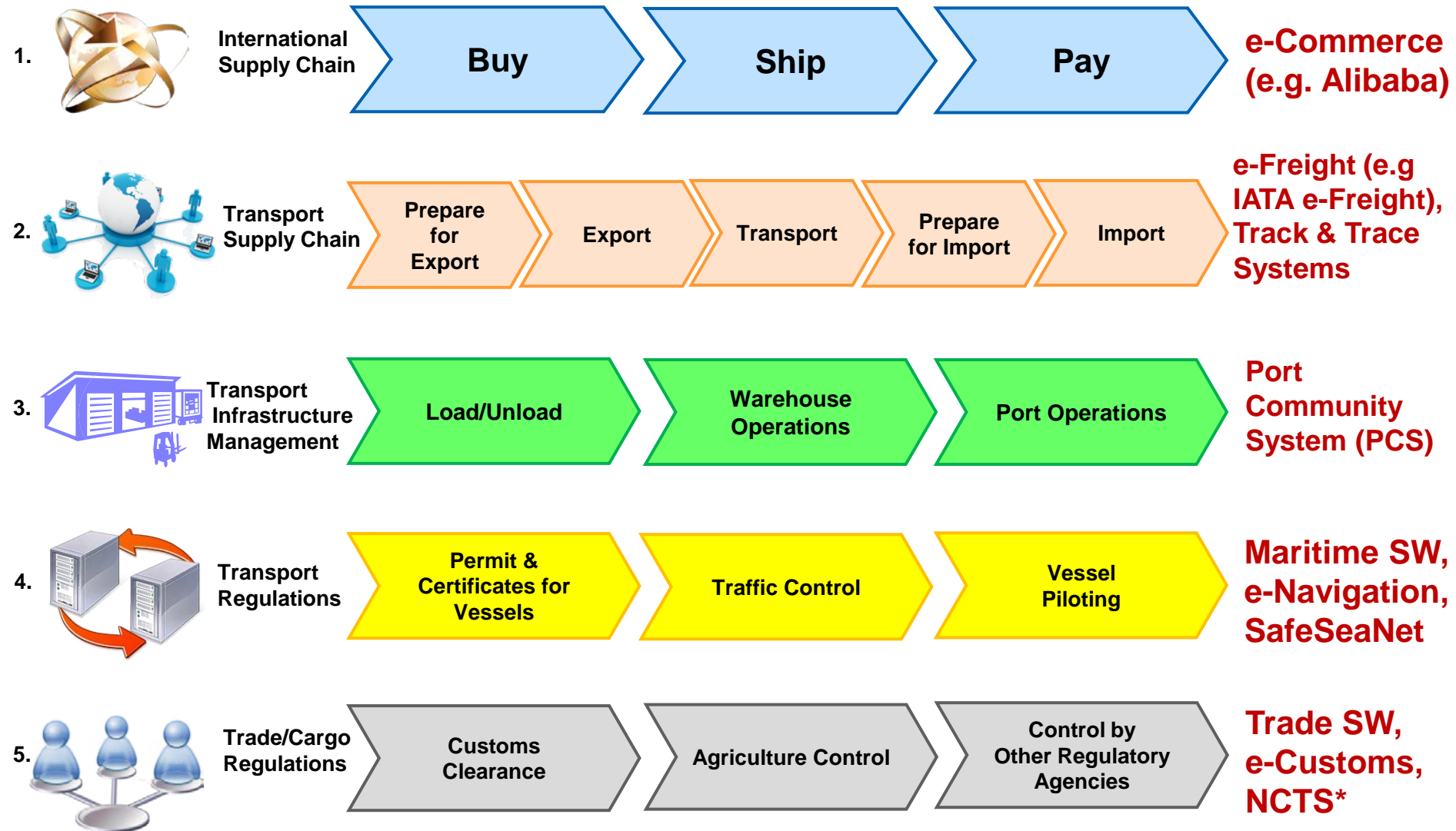
- several opportunities for improvement -

3. Different inter-organization collaborative platforms are normally created based on some closely-related processes, and consequently they establish different Inter-Organization Information Systems (IOSs), e.g.
  - those related to port operations, e.g. Port Community Systems
  - those related to transport services, e.g. e-Freight
  - those related to transportation regulations, e.g. maritime and clearance of ships like e-Maritime
  - those related to trade- and cargo-oriented regulations, e.g. NSW for Customs and import/export-related procedures of OGAs
4. Interoperability among those different IOSs has potential benefits, especially those involved with overlapping information among different IOSs along the international Supply Chain.

# Layers of Business Process Areas in the international supply chain



# Layers of business process areas and related IOS systems

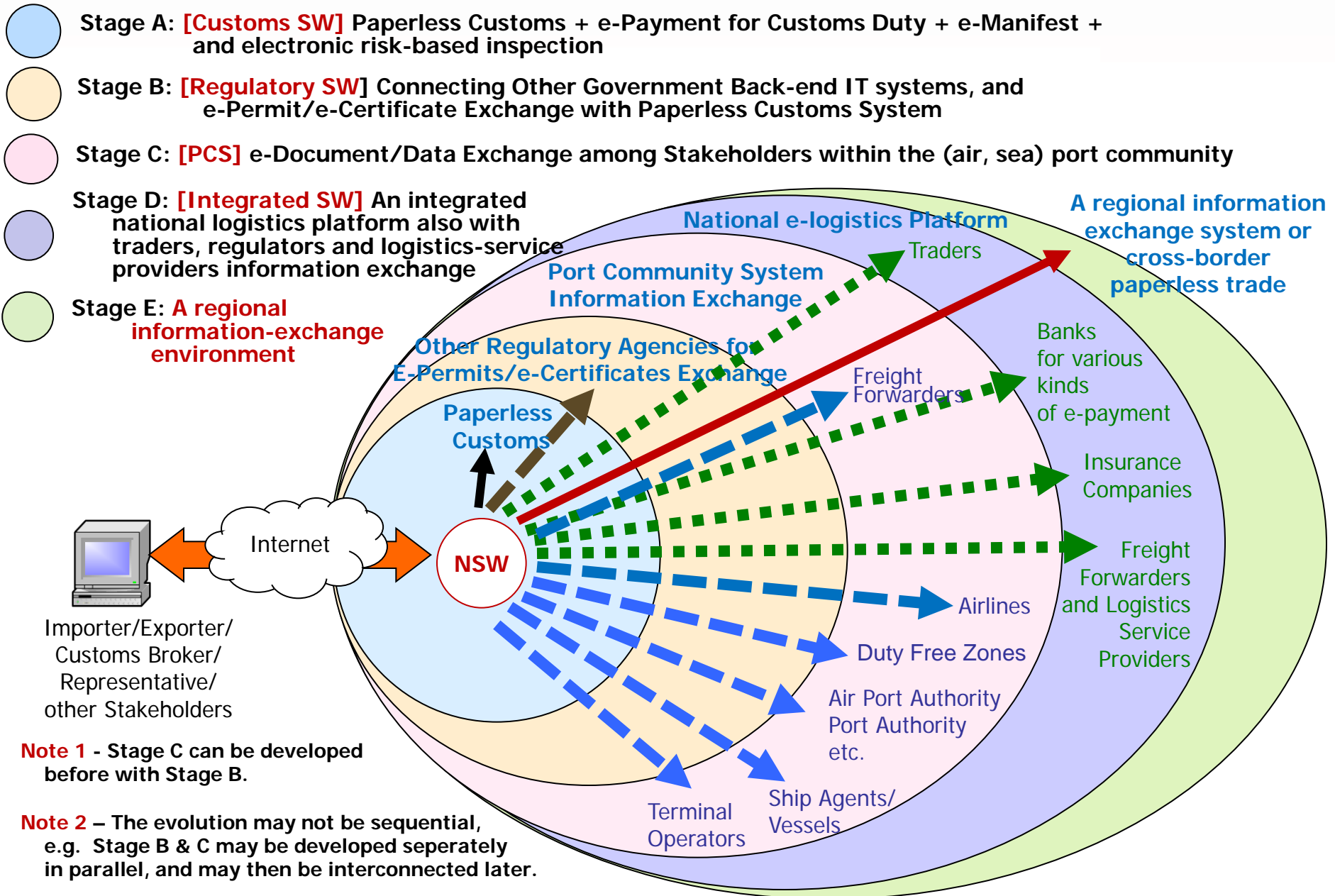


\*NCTS: New Computerized Transit System

# Recommendation 1: A Staged Approach be adopted to develop SW.

- A long-term & continuously-improved development roadmap but a bite size SW project(s) should be implemented iteratively.
  - [Customs SW] – Economies with traditional customs automation systems should upgrade them to paperless Customs SW.
  - [Port Community System] - Economies with Customs SW should then electronically link with business/transport stakeholders in their major ports.
  - [Regulatory NSW] - Economies with Customs SW can extend their systems to a small set of selected OGAs in the 1<sup>st</sup> phase, then involving more OGAs gradually, e.g. Thailand NSW now extends interconnection to all 36 agencies.
  - [Integrated NSW] – Few economies now combining PCS & Regulatory NSW into an integrated logistics NSW environment, e.g. Japan's NACCS
  - [Integrated Sub-national SW] – For some economies, they can decide to establish a sub-national or provincial-level Integrated SW.
  - [Regional or cross-border SW] – Electronic information exchange between economies shall be implemented incrementally based on business cases.

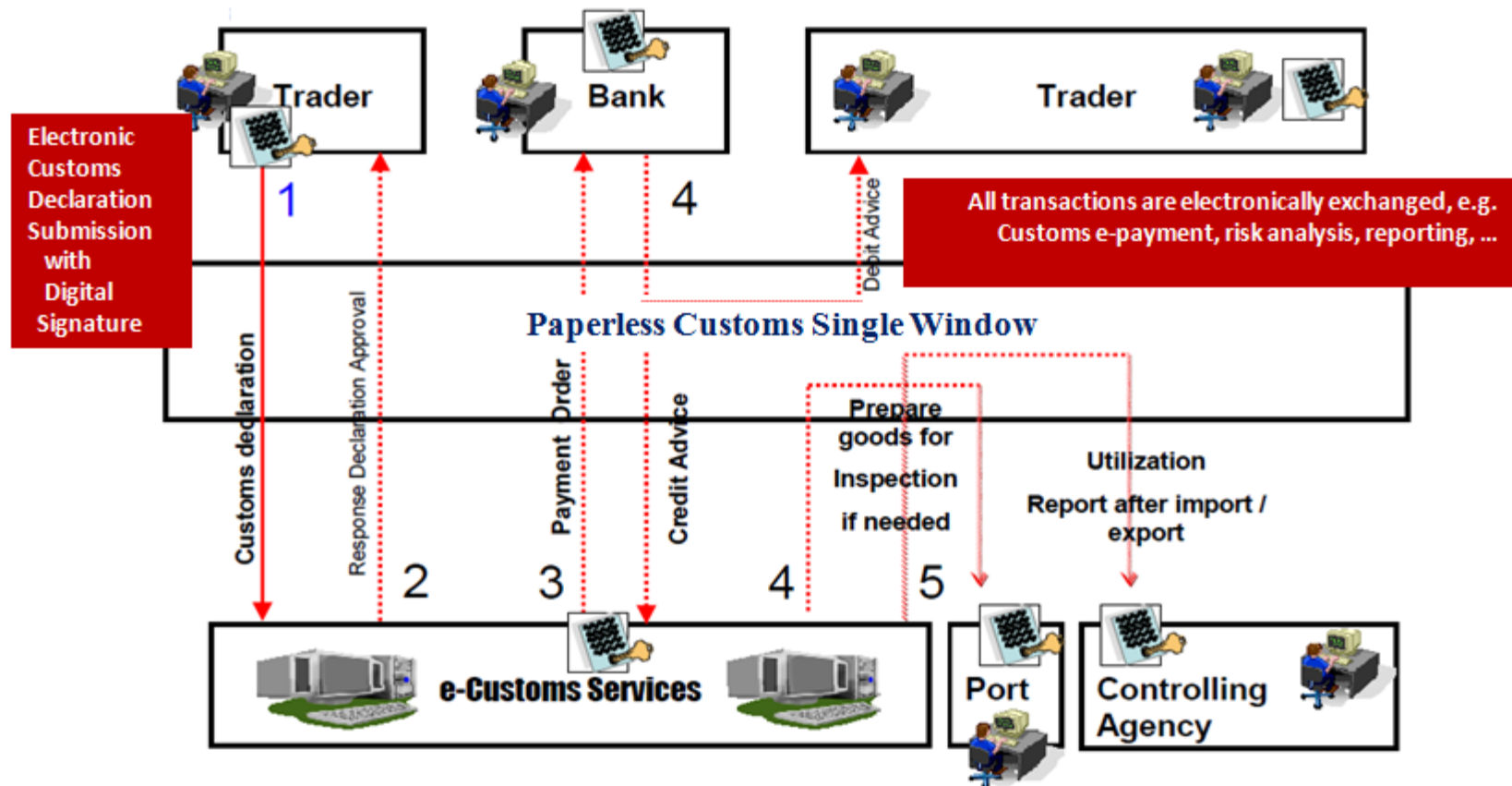
# An Evolutionary Long-term Roadmap for SW Development (but not necessary in a sequential fashion)





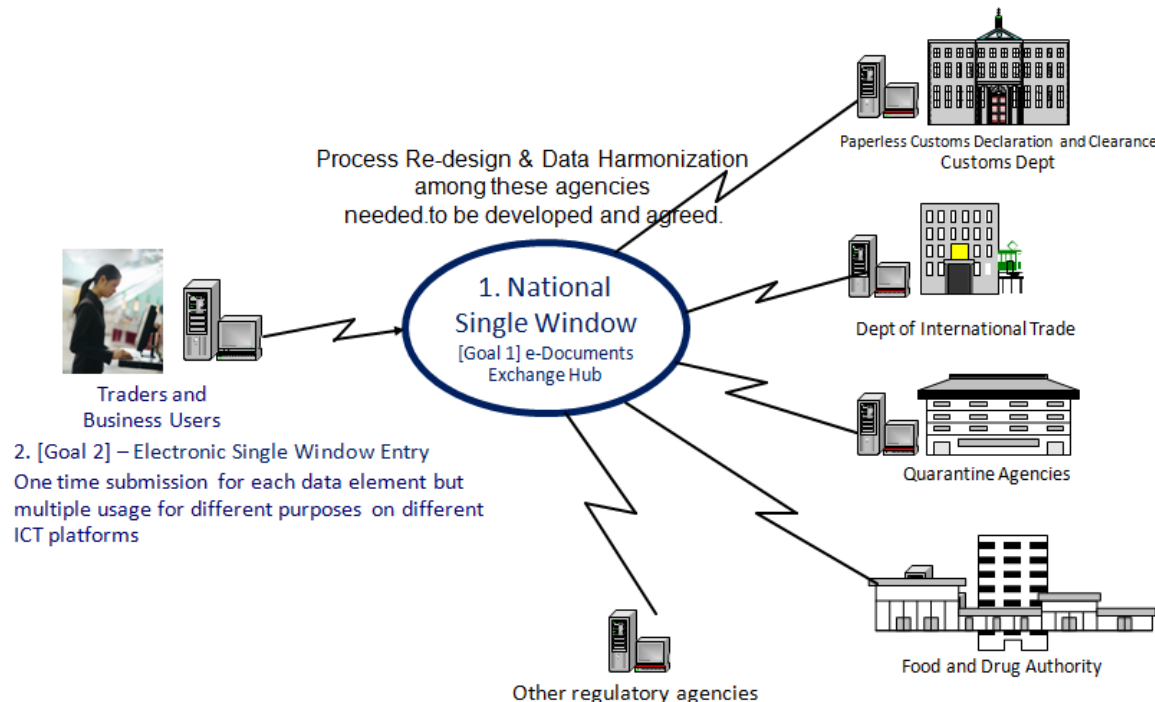
# A. Customs Single Window

**Preferred Features/Functions for Paperless Customs Single Window –**  
Electronic Customs Declaration Submission with electronic signature +  
e-Payment for Customs Duty +  
e-Manifest + and electronic risk analysis  
for speeding up customs clearance and reducing # of physical inspections



# B. Regulatory Single Window

- Gradually linking Customs SW to few selected OGAs first (based upon key strategic goods, economic gains, willingness and readiness etc.)
  - **Thailand NSW** (1<sup>st</sup> Phase) connecting electronically only to 4 other government agencies (with high volumes of electronic permits issuing), then later to all 36 trade/transport regulatory agencies (in the 2<sup>nd</sup> Phase)
  - **Azerbaijan NSW** in operation with firstly 4 gov agencies (now to 11 agencies)



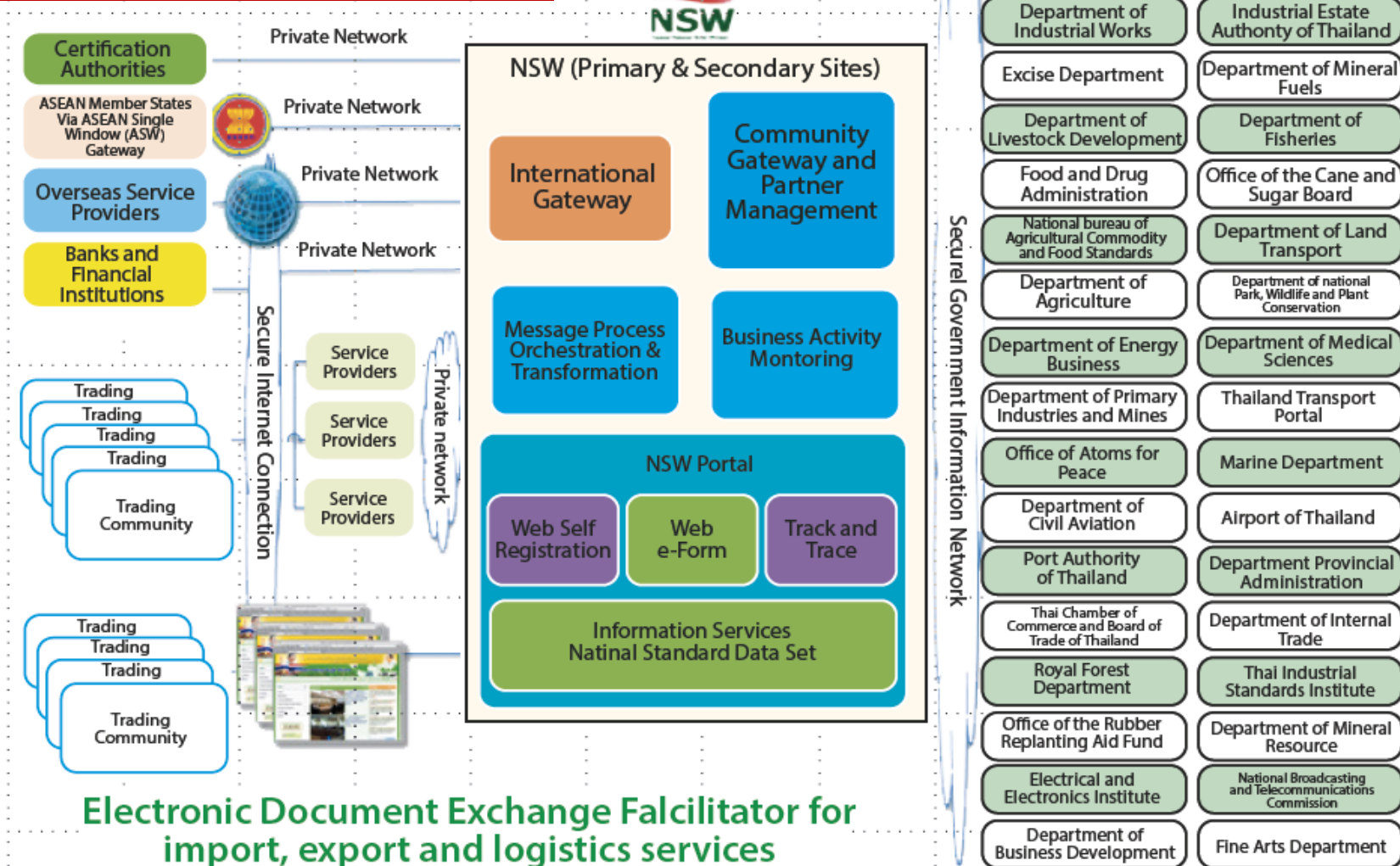
**Goal 1- Electronic information exchange** for better Customs clearance coordination and other import/export permits, licences and certificates.

**Goal 2 – Single Window Entry for different regulatory agencies** is more difficult to achieve (e.g. data harmonization exercise must be implemented)

# Thailand (Regulatory) NSW Environment

(single data submissions for all agencies have not been achieved yet)

Single Window exchange among 32 regulatory agencies has been established.



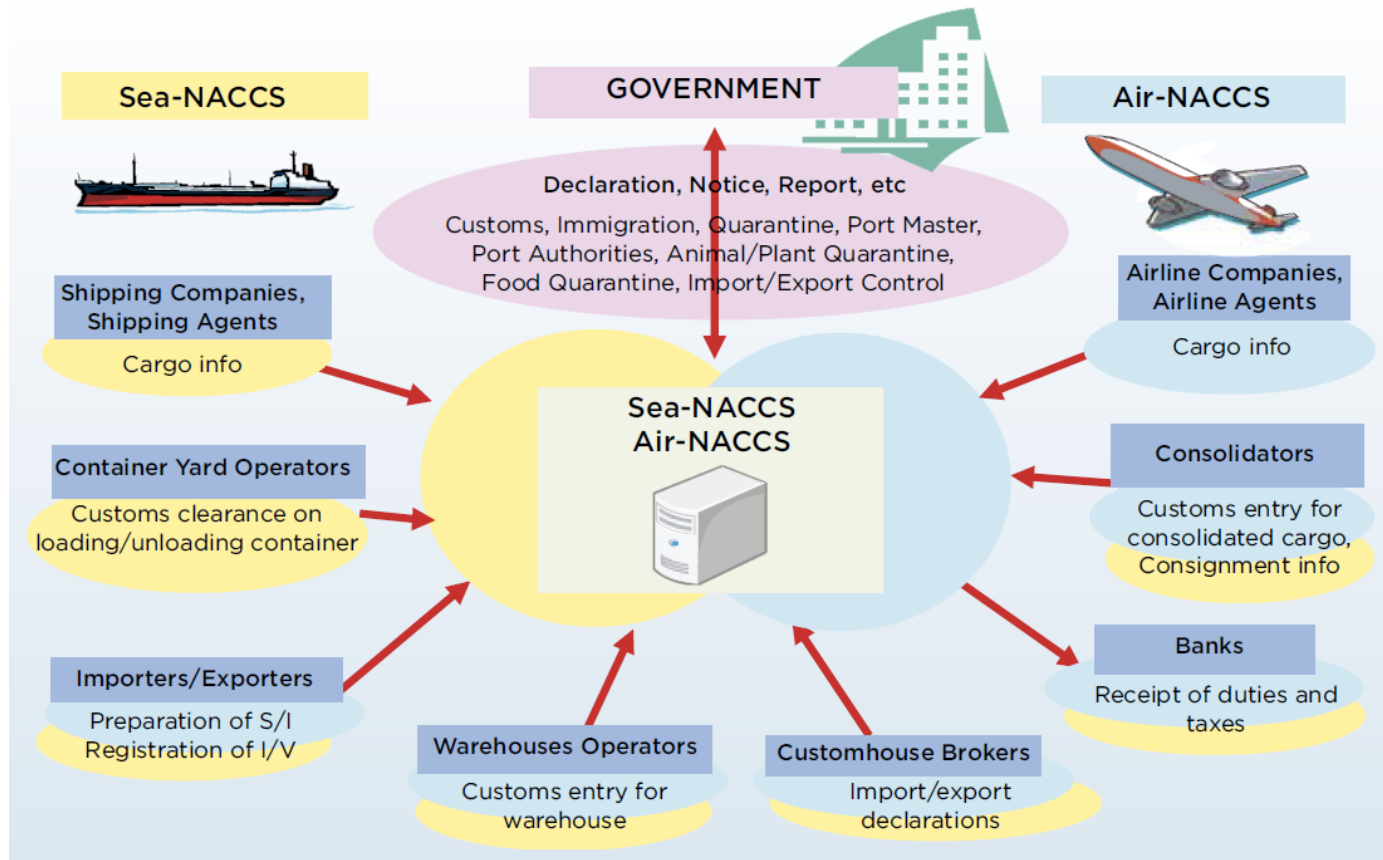
# C. Port Community System (PCS)

For port coordination and efficiency

- PCS is an **electronic platform** which connects several systems operated by a variety of organizations that make up a sea port, air port or inland ports, e.g. **freight forwarders, transporters, terminal operators, ship agents, vessels**, etc.
  - Normally, connecting also with some regulatory agencies including **Customs** and **transport-related agencies**, e.g. Maritime department, and Port Authority.
- PCSs are very advanced in many EU countries, but poorly developed in many Asia-Pacific countries, except some major ports in **China, Hong Kong, Singapore, India** and **Malaysia**, etc.
- **Recommendations:** PCSs should be **the national development agenda for Asia-Pacific countries (all major airports, seaports).**

# D. Integrated NSW

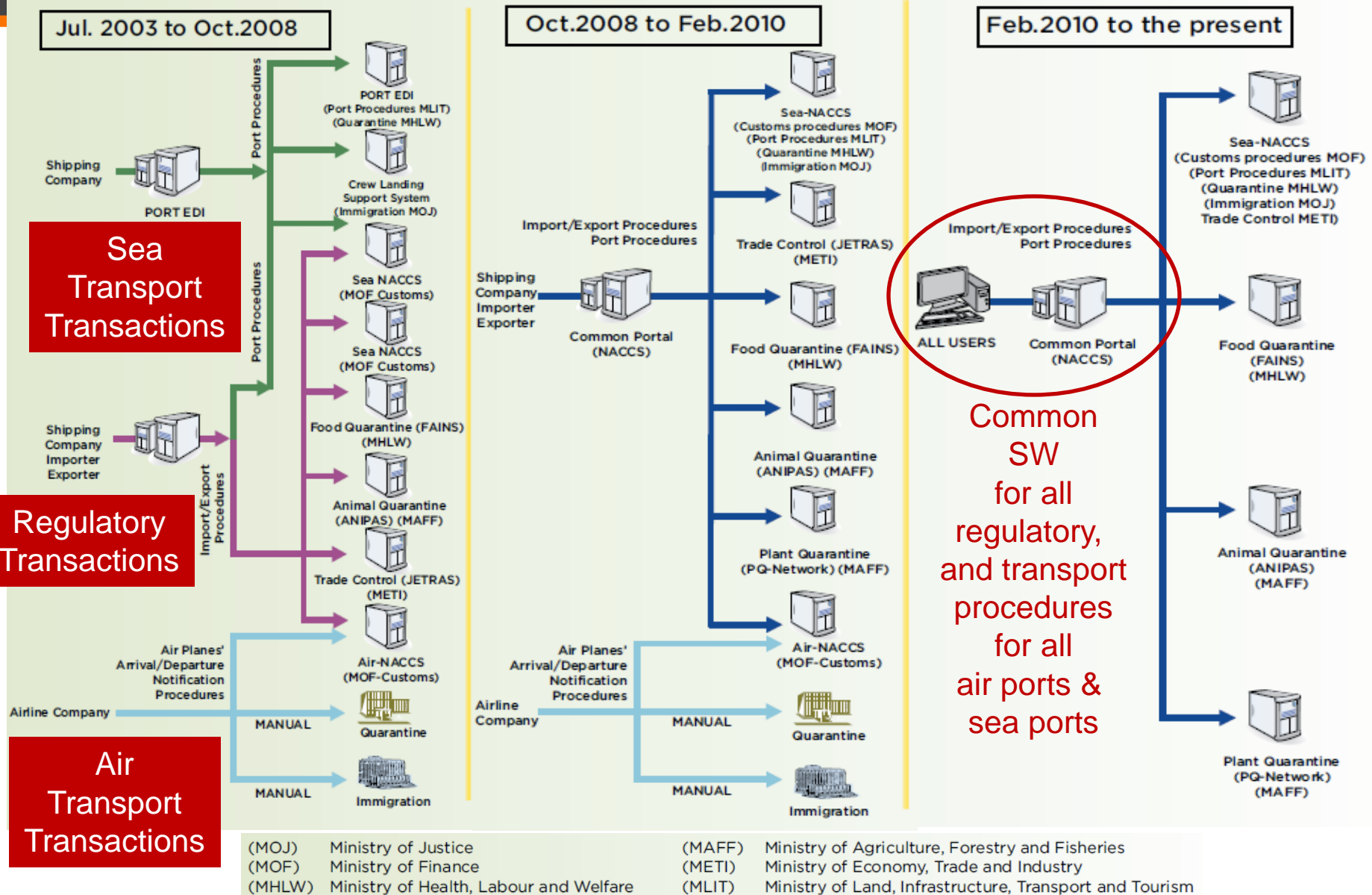
- Integration of **regulatory SW** and **PCS** to streamlining all regulatory, transport and payment procedures and documentations in a SW environment, e.g. **Japan's NACCS**



Ref: <http://www.naccs.jp/e/aboutnaccs/aboutnaccs.html>



# Evolutionary Development of Japan Integrated SW (NACCS) (long-term & continuous improvement from 1977 to 2013)



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# Why a systematic approach is needed?

Because there are so many complicated challenges to be managed such that the SW Vision could be transformed into reality.



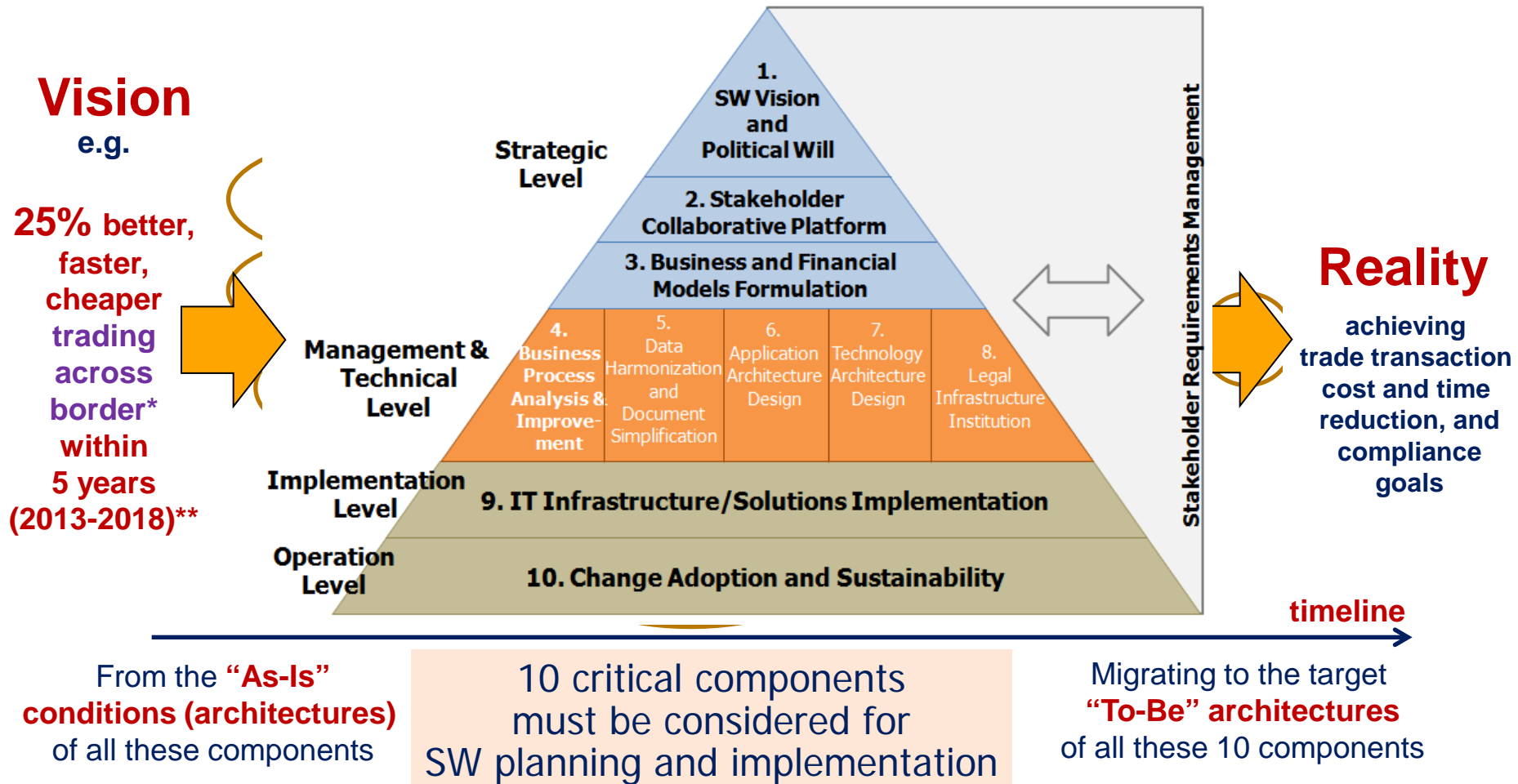
\* Referring to World Bank's Trading Across Border Indicators ([www.doingbusiness.org](http://www.doingbusiness.org))

\*\* Within an economy or a regional economic cooperation, measurable goals should be mandated by its Leaders.

# Recommendation 2: Applying Enterprise Architecture Concept\*

for strategic planning, detailed design, implementation & operations

Complexity of Single Window can be handled by decomposing its challenges into smaller and more manageable sub-components.



For large-scale e-government projects, EA frameworks are recommended in many literatures and in practices, e.g. TOGAF, and US FEA.  
Refer to UNNExT SW Planning and Implementation Guide, 2012.

# Recommendation 2: Ten Critical Success Components

must be analyzed to understand the "as-is" and its bottlenecks, propose the "to-be", reconcile and agree.

1. SW Vision Articulation and Political Will Creation

2. Stakeholder Collaborative Platform Establishment

3. Governance & Finance Model

4. Business process analysis and improvement

5. Data Harmonization and document simplification

6. Application architecture design

7. Technology architecture design including  
standards & technical interoperability

8. Legal Infrastructure

9. IT infrastructure & solutions design

10. Change adoption, operations, and sustainability

Strategic

Management  
& Technical

IT Systems  
Implementation

Operations

# The First Three (3) Critical Challenges cited in several SW case studies\*

## ❖ Creating Political Will, e.g.

- ❑ Establishing it as the national commitment (by developing national strategic plan, and obtaining endorsement by the highest political institution, e.g. the Prime Minister, the Cabinet, the President, ....).
- ❑ Establishing it as a regional commitment, e.g. MOU signing among the Head of States to develop the National SW and the Regional SW.

## ❖ Institutionalizing the Policy, i.e. transforming the policy mandates into normal routine management, e.g.

- ❑ Institutionalize the **National High-level Committee**, and **Project Management Group** for steering and overseeing the SW implementation, by the Cabinet's mandates and by laws (with the support from **several working groups, governments, business sectors and academia**)
- ❑ Securing the necessary budgets to finance the project.

## ❖ Establishing an effective inter-agency collaboration platform

\* As cited by case studies of Singapore's TradeNet, Korea's uTradeHub, Malaysia NSW, Japan's NACCS, and Thailand NSW in the UNNExT Policy Brief No. 02, 03, 04, 06 and 08 respectively, and also in the UNECE Single Window Repository.

# Other critical success factors\*

that have also been cited in many SW case studies

- ❖ Conductive **legal** framework
- ❖ Other **planning and implementation challenges**
- ❖ Sustainability and **Business/Financial Models**, e.g.
  - In several economies,  
    **“Special Corporate Vehicles(SCV)”** have been established,  
    e.g. Japan’s NACCS, Inc.,  
    Korea’s KNet,

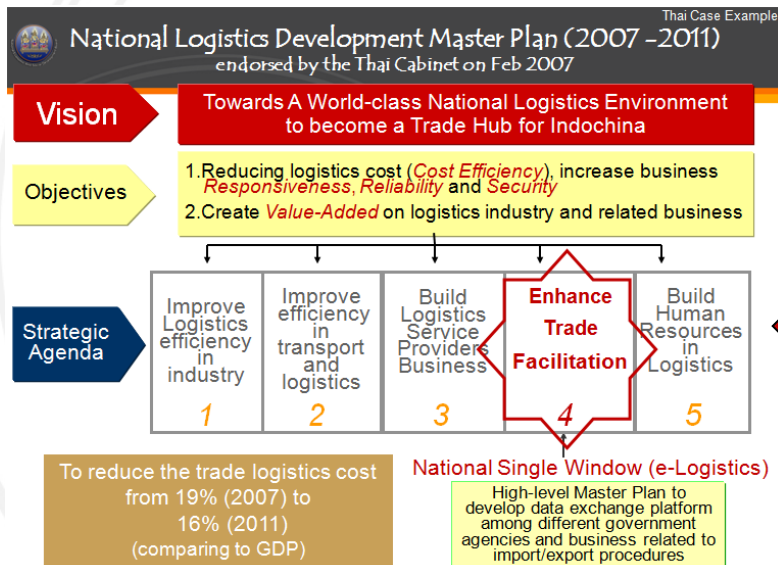
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# Recommendation 3:

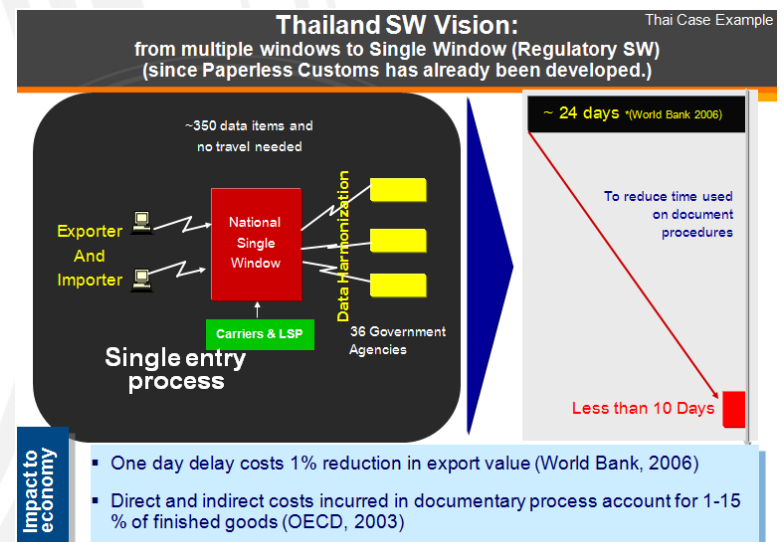
## SW Vision & Goals Alignment

National SW Vision, measureable Goals and its Planning should be aligned and integrated as a part of the related national/regional development agenda (quantitative goals with a time frame should be defined and mandated)

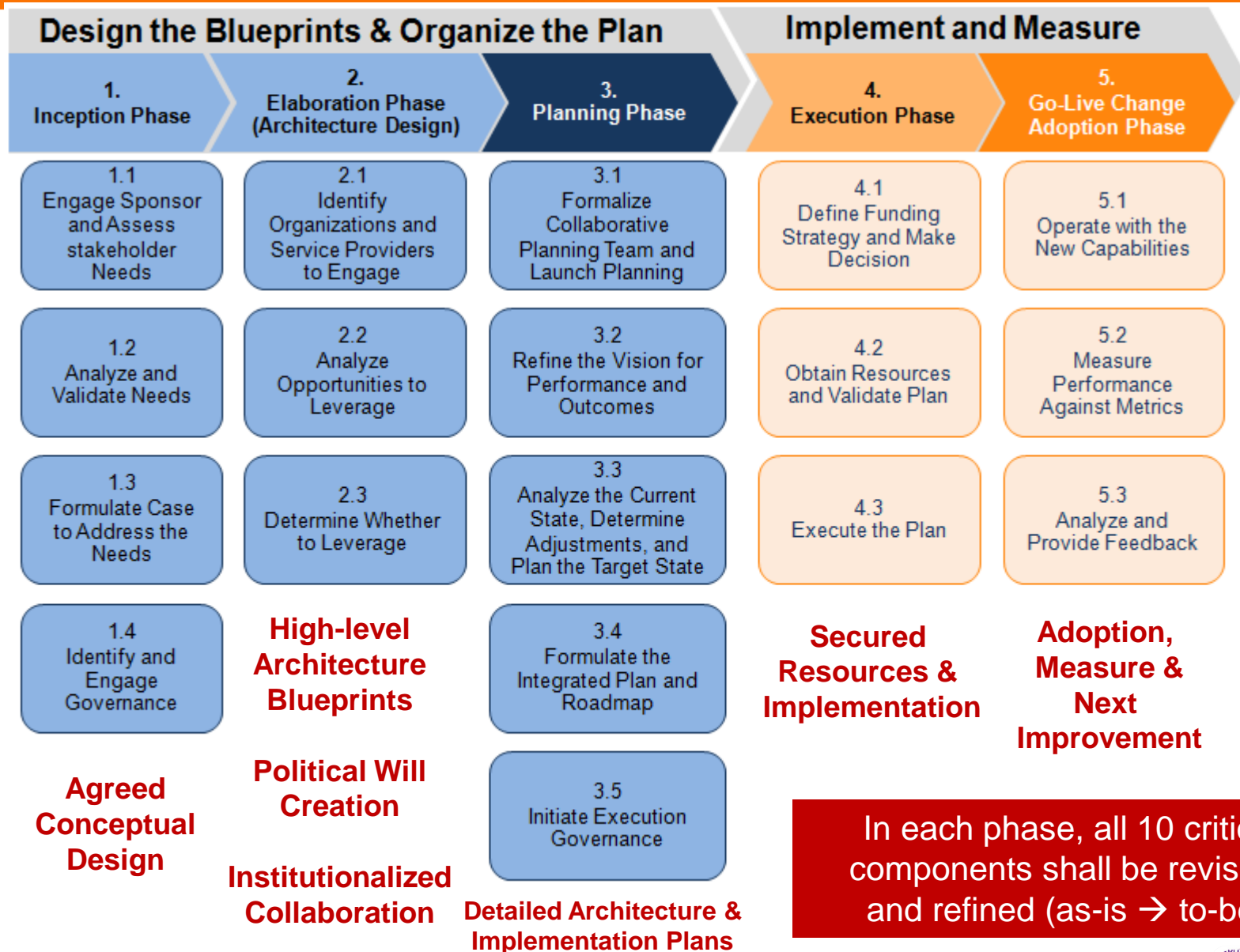
Thailand Case – Trade Facilitation & SW agenda is holistically integrated within the National Logistics Development Plan



NSW Vision & Goals are aligned with National and Regional Agenda



# Recommendation 4: Systematically managing NSW projects with Collaborative Project Management Methodology (5 phases)





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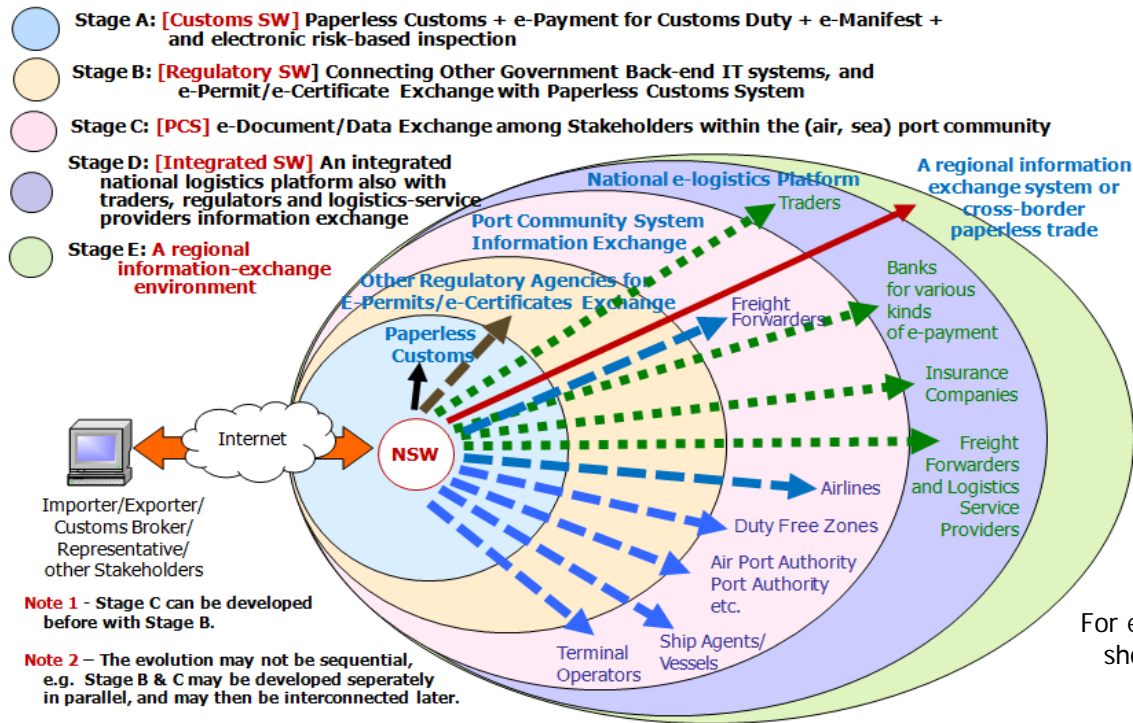
# Summary

- ❑ Trade Facilitation (TF) improvement is about the improvement of import/export/transit/trade procedures, document handlings and better coordination among government agencies, business entities and logistics service providers.
- ❑ Simplification and automation of TF is a very important development strategy for national trade competitiveness.
- ❑ Different forms of electronic Single Window have been adopted worldwide for TF improvement with significant positive results.
- ❑ SW development typically follows an evolutionary/staged pathway.

# Recommendation #1

1. A simplified **Evolutionary Long-term Roadmap** for SW Development is proposed such that policymakers/managers can use this model to

- assess their current status in the country by comparing with different stages and their preferred functions in this model, and
- determine the next stage for their phased SW development.



For example, not just regulatory SW that should be developed, but the countries with major sea/air ports should also develop PCS platforms.

# Recommendation #2

2. A systematic approach based on Enterprise Architecture concept is proposed such that policymakers/managers can manage the complexity of project initiation, SW feasibility study, strategic and detailed planning and overseeing the SW implementation, e.g.
- ❑ Decomposing complicated challenges into smaller sub-components.
  - ❑ Ten (10) critical components are proposed.
  - ❑ And each of these ten (10) critical components must be systematically analyzed to understand the "as-is" conditions and its bottlenecks, propose better "to-be" conditions (architectures), collaboratively refine and agree before escalating them into actual implementation.
  - ❑ For example, the "as-is" business processes & bottlenecks must be analyzed, then propose "to-be" business process, refine and agree among key stakeholders before IT systems implementation.

# Recommendation #3

## 3. SW Vision & Goals Alignment:

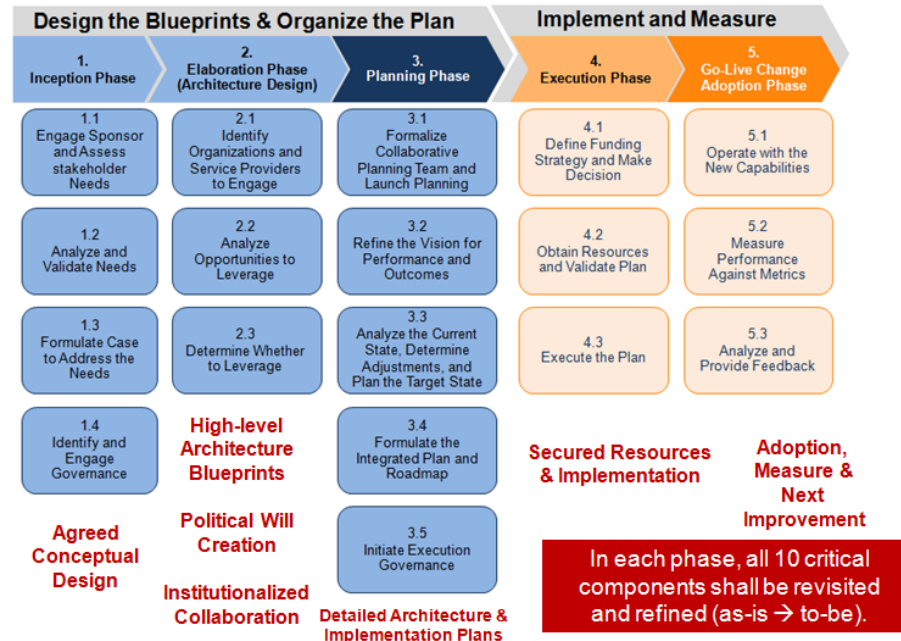
National SW Vision, **measureable Goals** and its planning should be clearly articulated, aligned and **integrated** as a part of the related **national (and regional) economic development agenda**.

- a) quantitative goals with a time frame should be defined and mandated by the highest-possible policy decision makers, e.g. by the Cabinets or Leaders of the State.
- b) Institutionalizing the policy agenda, i.e. transforming those policy mandates into normal routine management, e.g.
  - ❑ Institutionalize the National High-level Committee, and Project Management Group for steering and overseeing the SW implementation, by the Cabinet's mandates and by laws (with the support from several working groups, governments, business sectors and academia)

# Recommendation #4

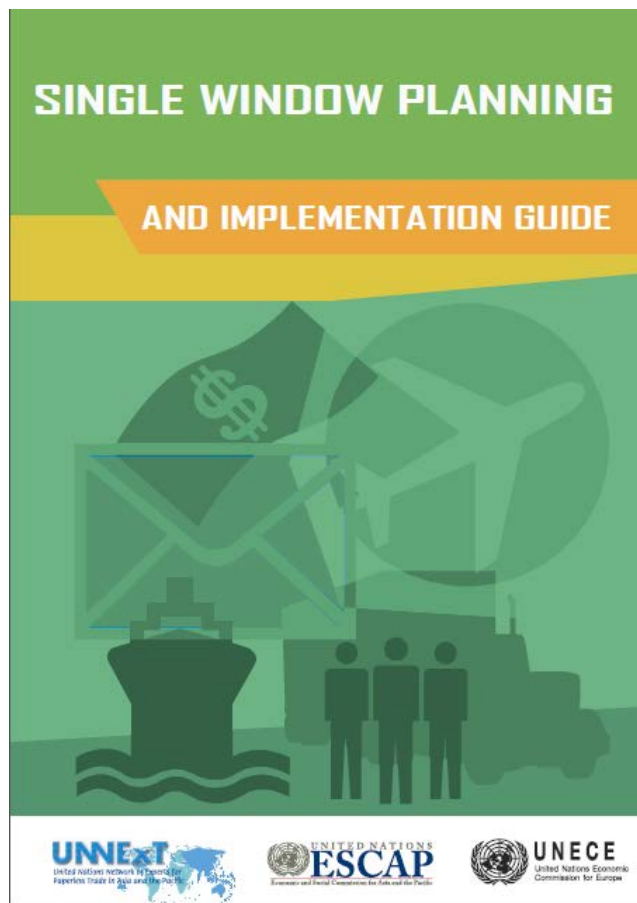
4. An effective **Collaborative Project Management Approach** is needed to systematically manage and drive the SW vision into reality.

- ❑ 5-phase collaborative project management approach is proposed.  
(Inception, Elaboration, Planning, Execution/Implementation, Change Adoption)
- ❑ In each phase, the ten (10) critical components will be analyzed (as-is & bottlenecks analyzed, and the to-be are proposed), refined and agreed **iteratively** from the strategic level, to management and implementation levels with different depths.



# Reference

UNNExT Single Window Planning and Implementation Guide, 2012.  
[www.unescap.org/unnnext](http://www.unescap.org/unnnext)





# Q & A

# Thank you.

Somnuk Keretho, PhD  
Director, Institute for IT Innovation   
Kasetsart University, Bangkok  
[sk@ku-inova.org](mailto:sk@ku-inova.org)

## **UNNEXT Masterclass 2013: Implementing Single Window and Paperless Trade**

7 – 18 October 2013  
Customs Border Control Training Center (CBCTC)  
Cheon-An, Republic of Korea

# Speaker - Somnuk Keretho, PhD



**Somnuk Keretho** is an assistant professor of Computer Engineering Department, and the founding Director of Institute for IT Innovation (INOVA), a research and development institute of Kasetsart University, Thailand, specializing in ICT-enabled innovation, trade facilitation and e-logistics initiatives including National Single Window strategic planning and implementation, enterprise information architecture for e-government and e-business, business process analysis and improvement, data harmonization and modeling, ICT-related standards and interoperability, e-transaction related laws, and process-oriented quality software engineering.

He has led several ICT strategic projects at organizational, national and regional levels. For the past nine years, he has assisted Ministry of Information and Communication Technology, National Economic and Social Development Board, Ministry of Transport, Port Authority of Thailand, and Ministry of Agriculture in architecting “Thailand Single-Window e-Logistics” related projects including its national e-logistics strategy, implementation plans, interoperability and standards, harmonization and simplification of trade and transport-related documents and procedures, automatic electronic-gate systems development for the Bangkok Port and the Leamchabang Sea Port, and related software development projects.

Several of those projects are being aligned with some regional and international collaborations, in which Mr. Keretho has actively engaged mostly related to trade facilitation, single window and paperless trading initiatives through UNESCAP, UNECE, APEC, ASEAN and GMS. He has played several roles in catalyzing the creation of and actively contributing to the United Nations Network of Experts for Paperless Trade in Asia and the Pacific ([www.unescap.org/unnext](http://www.unescap.org/unnext)), and providing several technical supports to the APEC Paperless Trading and ASEAN Single Window Initiatives. He is the main author of the UNNExT Business Process Analysis Guide, the UNNExT Data Harmonization Guide and the UNNExT Guide for Single Window Planning and Implementation.