"Business Innovation in e-Business and Paperless Trading Using Open Standard"

Single Window Data Harmonization in Thailand

Ministry of Information and Communication Technology

National Economic and Social Development Board

Institute for IT Innovation, Kasetsart University Thailand

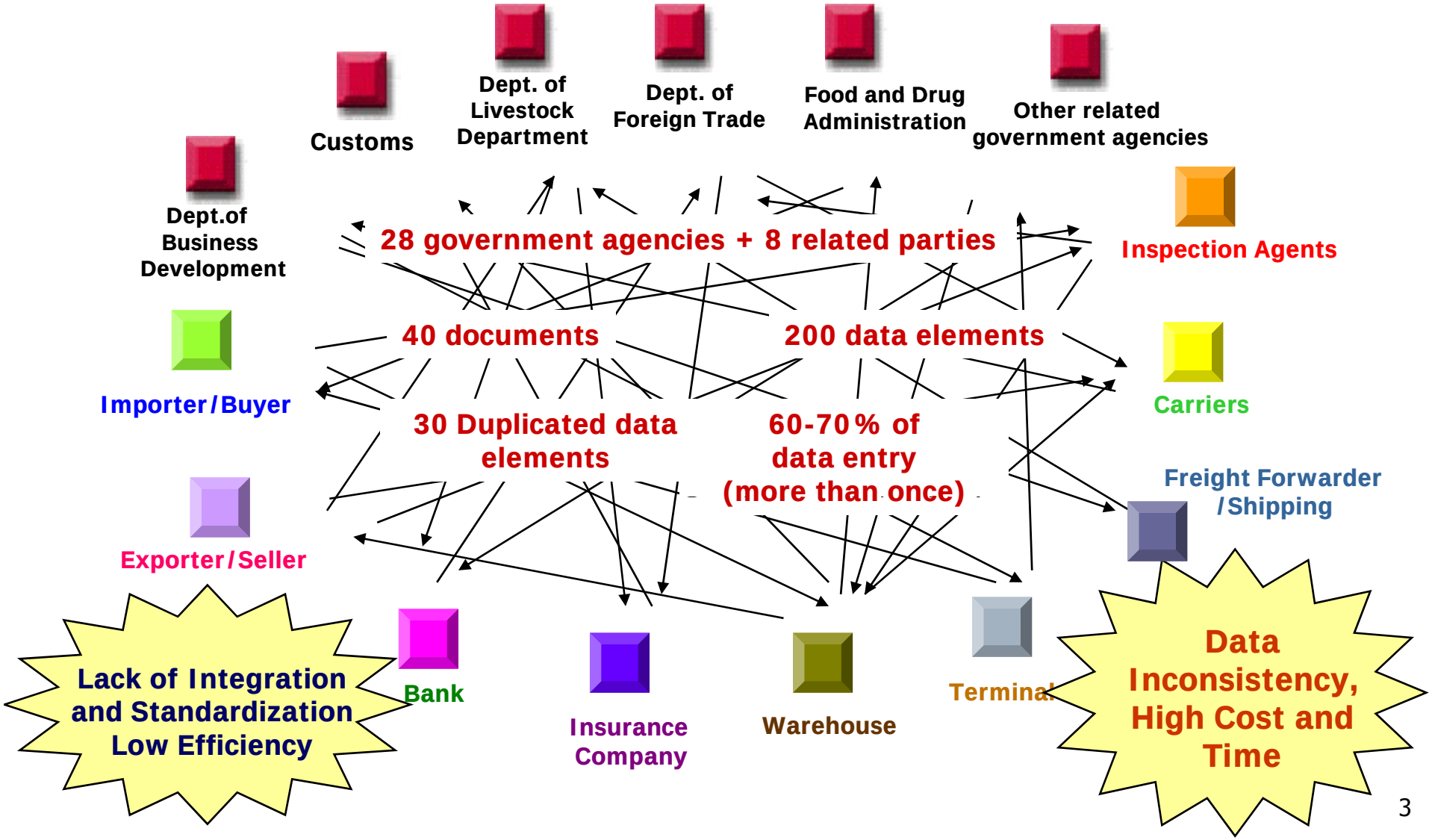
EDICOM 2008
Textile Center, Seoul
16 October 2008

附件四

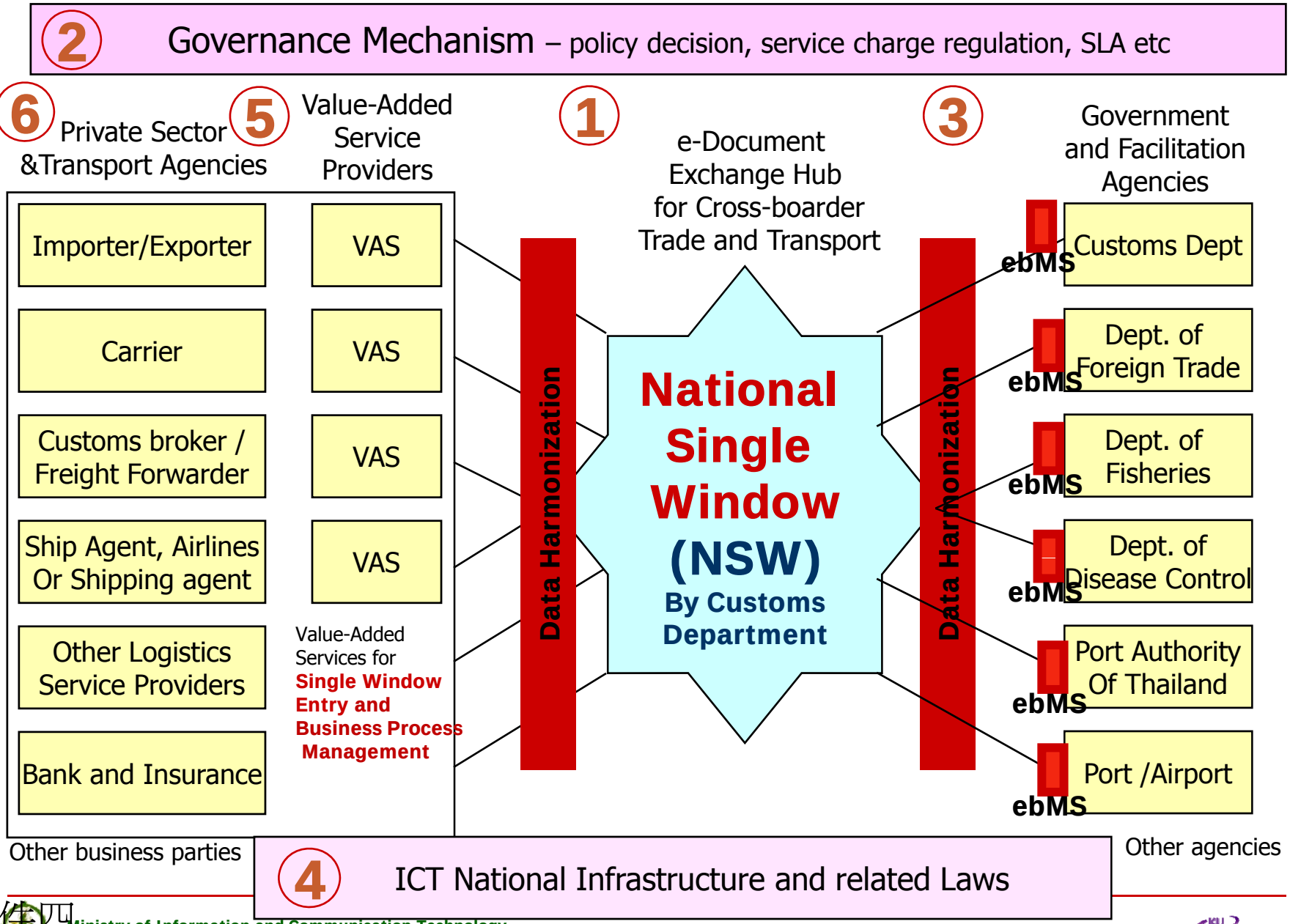
Outline

- Needs and Requirements for Data Harmonization
- Scope of Data Harmonization in Thailand
- Step-by-Step Guide for Data Harmonization
  - Example – Exportation of Rice
- Lessons Learnt & Recommendations

Needs and Requirements of Data Harmonization Project



Thailand National Single Window Framework



Importance of Data Harmonization

Benefits

- Common standards for Import, Export and Logistics Information.
- Decrease data redundancy.
- Facilitate information exchange between Government Agencies and Traders.
- Enhance competency for international electronic information exchange.
- Data Harmonization is necessary for implementing NSW Exchange and Single Window Entry

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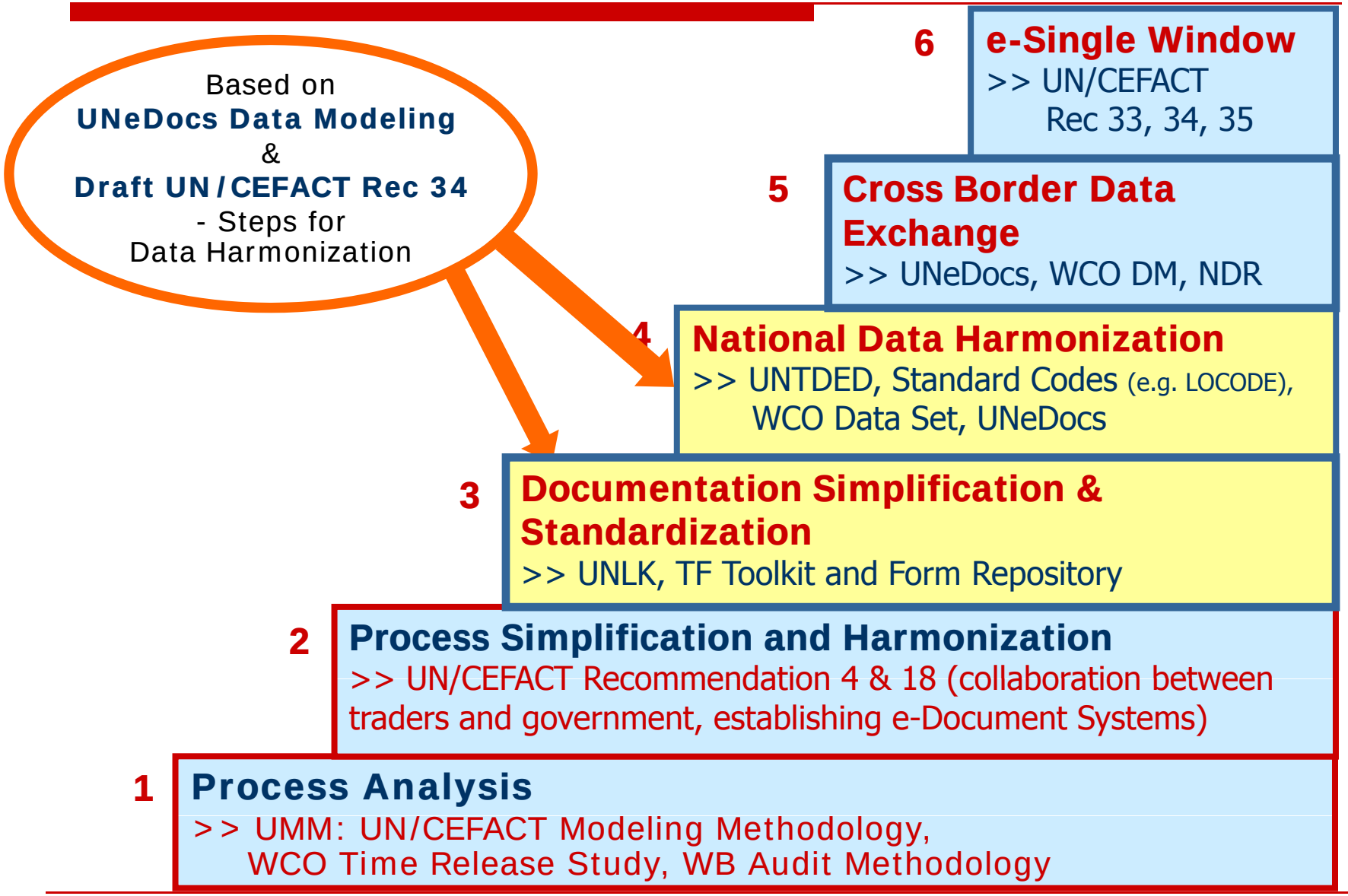
  - Example – Exportation of Rice
- Conclusion

Step by Step Guide towards Paperless Trade Single Window



Thailand's Data Harmonization Project
based on UNeDocs Data Model

- The exercise to **capture, define, analyze, reconcile** (and propose for its adoption & implementation)
  1. **A** set of **common data elements** (**names & meanings**), called, ***National Standardized Data Set (SDS)***
  2. ***Its Data Models (Structures)***
  3. ***e-Documents Formats*** (e.g. in XML Schema)

     all documents required by
     - Royal Thai Customs
     - Other Government Agencies
     - Transport providers
     - Trading Partners
     - Banks (for payment of related tax, services, ..)
     - and Insurance-related agencies (for cargo insurance)

Such that National Single Window Facilities can enable services where information is submitted once and used many times between many different ICT platforms of those organizations.

Data Harmonization Project

- **Referenced Standards :** WCO Data Set, UNTDED, UNeDocs
- **Deliverables**
  - Thailand's Standardized Data Set
  - Data Model and XML Schema for Request Forms, Permits and Licenses
  - Thailand XML Naming and Design Rules
- **Key Outcome**

Description	Result
Number of involved agencies	**20**
Number of paper forms	**186**
Number of data elements collected	**6,671**
Number of common data elements	**252**

Commissioned by MICT

Participating Government Agencies

1	Department of Agriculture
2	Department of Energy Business
3	Department of Primary Industries and Mines
4	Industrial Estate Authority of Thailand
5	Royal Forest Department
6	Department of Civil Aviation
7	National Park, Wildlife and Plant Conservation Department
8	Department of Livestock Development
9	Department of Fisheries
10	Department of Mineral Fuels
11	Department of Industrial Works
12	Department for Thriving Economy, Better Society and Improved Environment
13	Department of Foreign Trade
14	The Board of Investment of Thailand
15	Food and Drug Administration
16	Office of atoms for peace
17	Thai Industrial standards institute
18	The Thai Chamber of Commerce
19	Board of Trade of Thailand
20	Office of the Rubber Replanting Aid Fund

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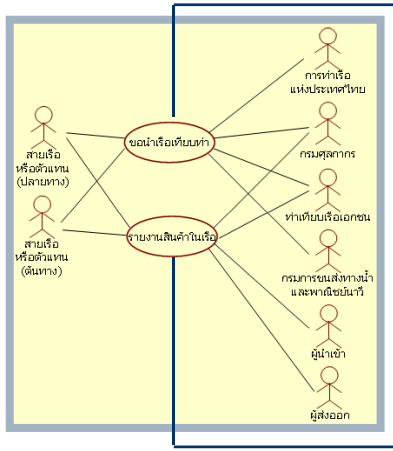
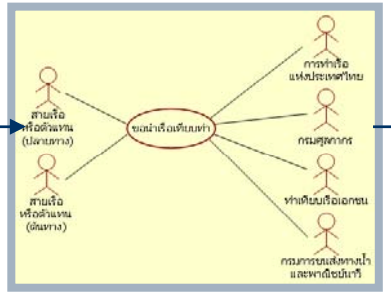
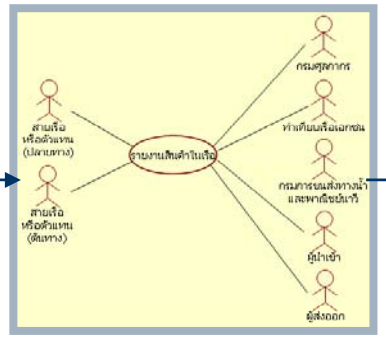
1) To Collect Documents, Forms and Requests from Business Processes

Capturing → **Defining** → **Analyzing** → **Reconciling**

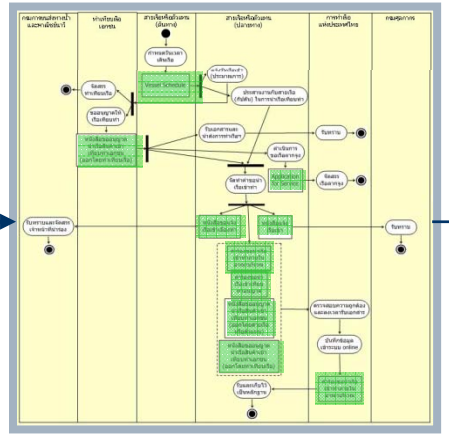
Business Domain View: Use Case Diagram

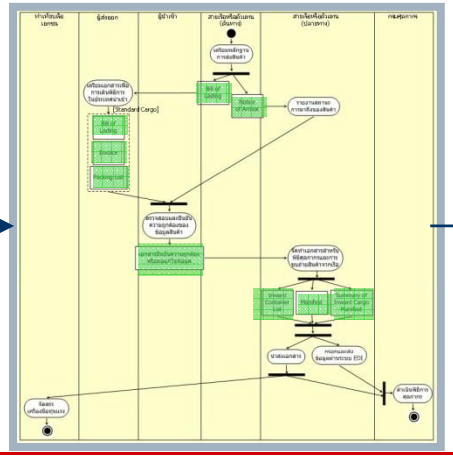






Business Requirement View: Activity Diagram





1. Vessel Schedule
2. Form for Vessel Berthing at Bangkok port
3. Application for Service
4. General Declaration
5. หนังสือแจ้งเรือเข้า
6. Application for Vessel Entering the Port Area
7. คำร้องขอนำเรือเข้าเทียบท่าอนุญาต
8. Bill of Lading
9. Notice of Arrival
10. Invoice
11. Packing List
12. Inward Container List
13. Manifest
14. Summary of Inward Cargo Manifest

Uses UMM (UN/CEFACT Modeling Methodology) for capture business process and documents

2) To Understand the Objective and Meaning of the Documents and Data Items and Provide Each Data Item a Definition

Capturing → **Defining** → **Analyzing** → **Reconciling**

Document Name:
Inward Container List

Data Element Name	Data Element Source	TDED ID	Definition
Carrier	Inward Container List	3036	The party providing the transport of this cross-border consignment of goods between named points as stipulated in the transport contract by the party
Carrier's Agent	Inward Container List	3036	The party authorized to act for, or on behalf of, the carrier as stipulated in the transport contract by the party ordering the transportation of this cross-border consignment of goods.
Address	Inward Container List		A specified address for this referenced party.
Inward Container List for	Inward Container List	8212	The name of this means of cross-border transport such as the vessel name
Voy	Inward Container List	8213	A unique identifier of this means of cross-border transport such as the International Maritime Organization number of a vessel
เที่ยววันที่	Inward Container List	2193	The scheduled date and optionally time of an occurrence of this event.
พิธีการ	Inward Container List		
เครื่องหมาย/เลขหมาย	Inward Container List	8260	A unique number, mark or name which identifies this cross-border related piece of transport equipment
Item	Inward Container List	1052	A unique identifier of a specific item in this cross-border document.
Type	Inward Container List	8053	Code specifying a type of equipment.
Size	Inward Container List	8155	Code specifying the characteristics, i.e. size and type of a piece of transport equipment
Consignee (ตัวแทนเจ้อ)	Inward Container List	3036	The party authorized to act for, or on behalf of, the carrier as stipulated in the transport contract by the party ordering the transportation of this cross-border consignment of goods.
Gross Weight	Inward Container List	6294	Weight (mass) of transport equipment, such as container or similar unit load device, with goods, including packing and carrier's equipment.
Status	Inward Container List	8249	The textual description of a cross-border instruction or a set of cross-border instructions.
หมายเหตุ	Inward Container List	4014	Textual information relating to a cross-border piece of transport equipment.

Trade Data Element Directory (TDED)

- **Group 1:** Documentation references (0001-1699)
- **Group 2:** Dates, times, periods of time (2000-2799)
- **Group 3:** Parties, address, places, countries (3000-3799)

.....

- **Group 9:** Other data elements (Custom, etc.) (9000-9799)

3) To Reduce Data Items of Different Names but have Similar Meanings or are Unnecessary

Data Element Name	Data Element Source	TDED ID	Definition	Documents Owner
Name of Vessel	Form for Vessel Berthing at Bangkok port	8212	The name of this means of cross-border transport such as the vessel name	PAT
Name of Vessel	Application for Vessel Entering The port area	8212	The name of this means of cross-border transport such as the vessel name	PAT
Name of Ship	General Declaration	8212	The name of this means of cross-border transport such as the vessel name	Marine Department
Vessel Name	Vessel/Flight Schedule Message	8212	The name of this means of cross-border transport such as the vessel name	Customs

Name of Vessel
Name of Ship
Vessel Name

→

TDED ID 8212
The name of this means of cross-border transport such as the vessel name

→

"Transport Means. Name. Text"
Standardized data element to be included in National "Standardized Data Set"

4) Data Model Created based on UNeDocs Data Modeling >> Semantic Interoperability

Data Element Name	Data Element Source	TDED ID	Definition	CCTS Dictionary Entry Name (ASBIE)	CCTS Dictionary Entry Name (BBIE)
Carrier	Inward Container List	3036	The party providing the transport of this cross-border consignment of goods between named points as stipulated in the transport contract by the party ordering transport.	Cross-Border_ Consignment. Carrier. Referenced_ Party	Referenced_ Party. Name. Text
Carrier's Agent	Inward Container List	3036	The party authorized to act for, or on behalf of, the carrier as stipulated in the transport contract by the party ordering the transportation of this cross-border consignment of goods.	Cross-Border_ Consignment. Carrier Agent. Referenced_ Party	Referenced_ Party. Name. Text
Address	Inward Container List		A specified address for this referenced party.	Referenced_ Party. Specified. Cross-Border_ Address	
Inward Container List for	Inward Container List	8212	The name of this means of cross-border transport such as the vessel name		Transport Means. Identifier.Text
Voy	Inward Container List	8213	A unique identifier of this means of cross-border transport such as the International Maritime Organization number of a vessel		Cross-Border_ Transport Means. Identification. Identifier
เทียบวันที่	Inward Container List	2193	The scheduled date and optionally time of an occurrence of this event.	Cross-Border_ Transport Means. Arrival. Cross-Border_ Event	Cross-Border_ Event. Estimated_ Occurrence. Date Time
พิธีการ	Inward Container List				
เครื่องหมาย/เลขหมาย	Inward Container List	8260	A unique number, mark or name which identifies this cross-border related piece of transport equipment	Generic Container. Cross-Border_ Transport Equipment. Cross-Border_ Transport Equipment	Cross-Border_ Transport Equipment. Identification. Identifier
Item	Inward Container List	1052	A unique identifier of a specific item in this cross-border document.	Cross-Border_ Consignment. Transport Contract. Cross-Border_ Document	Cross-Border_ Document. Item Identification. Identifier
Type	Inward Container List	8053	Code specifying a type of equipment.	Generic Container. Cross-Border_ Transport Equipment. Cross-Border_ Transport Equipment	Transport Equipment. Category.Code
Size	Inward Container List	8155	Code specifying the characteristics, i.e. size and type of a piece of transport equipment	Generic Container. Cross-Border_ Transport Equipment. Cross-Border_ Transport Equipment	Cross-Border_ Transport Equipment. Characteristic. Code
Consignee (ตัวแทนเรือ)	Inward Container List	3036	The party authorized to act for, or on behalf of, the carrier as stipulated in the transport contract by the party ordering the transportation of this cross-border consignment of goods.	Cross-Border_ Consignment. Carrier Agent. Referenced_ Party	Referenced_ Party. Name. Text
Gross Weight	Inward Container List	6294	Weight (mass) of transport equipment, such as container or similar unit load device, with goods, including packing and carrier's equipment.	Generic Container. Cross-Border_ Transport Equipment. Cross-Border_ Transport Equipment	Cross-Border_ Transport Equipment. Gross Weight. Measure
Status	Inward Container List	8249	The textual description of a cross-border instruction or a set of cross-border instructions.	Cross-Border_ Transport Equipment. Handling. Cross-Border_ Instructions	Cross-Border_ Instructions. Description. Text
หมายเหตุ	Inward Container List	4014	Textual information relating to a cross-border piece of transport equipment.	Generic Container. Cross-Border_ Transport Equipment. Cross-Border_ Transport Equipment	Cross-Border_ Transport Equipment. Information. Text

- Cross-Border_ Consignment. Consignee. Referenced_ Party
  - Referenced_ Party. Identification. Identifier
  - Referenced_ Party. Name. Text
  - Referenced_ Party. Role. Code
  - Referenced_ Party. Defined. Cross-Border_ Contact
  - Referenced_ Party. Specified. Cross-Border_ Address
  - Referenced_ Party. Specified. Cross-Border_ Organization
- Cross-Border_ Consignment. Carrier. Referenced_ Party
  - Referenced_ Party. Identification. Identifier
  - Referenced_ Party. Name. Text
  - Referenced_ Party. Role. Code
  - Referenced_ Party. Defined. Cross-Border_ Contact
  - Referenced_ Party. Specified. Cross-Border_ Address
  - Referenced_ Party. Specified. Cross-Border_ Organization
- Cross-Border_ Consignment. Carrier Agent. Referenced_ Party
  - Referenced_ Party. Identification. Identifier
  - Referenced_ Party. Name. Text
  - Referenced_ Party. Role. Code
  - Referenced_ Party. Defined. Cross-Border_ Contact
  - Referenced_ Party. Specified. Cross-Border_ Address
  - Referenced_ Party. Specified. Cross-Border_ Organization

Mapping agreed data elements with UN/CEFACT Core Component based cross border reference data model

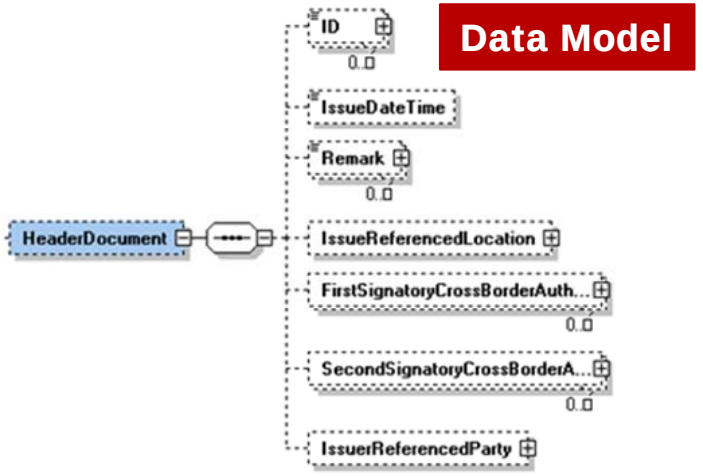
4) Data Model Created based on UNeDocs (Continued)
>> Data Models and XML Schema are generated

- Cross-Border_Consignment. Consignee. Referenced_Party
  - Referenced_Party. Identification. Identifier
  - Referenced_Party. Name. Text
  - Referenced_Party. Role. Code
  - Referenced_Party. Defined. Cross-Border_Contact
  - Referenced_Party. Specified. Cross-Border_Address
  - Referenced_Party. Specified. Cross-Border_Organization
- Cross-Border_Consignment. Carrier. Referenced_Party
  - Referenced_Party. Identification. Identifier
  - Referenced_Party. Name. Text
  - Referenced_Party. Role. Code
  - Referenced_Party. Defined. Cross-Border_Contact
  - Referenced_Party. Specified. Cross-Border_Address
  - Referenced_Party. Specified. Cross-Border_Organization
- Cross-Border_Consignment. Carrier Agent. Referenced_Party
  - Referenced_Party. Identification. Identifier
  - Referenced_Party. Name. Text
  - Referenced_Party. Role. Code
  - Referenced_Party. Defined. Cross-Border_Contact
  - Referenced_Party. Specified. Cross-Border_Address
  - Referenced_Party. Specified. Cross-Border_Organization

Exported to

Exported to

Data Model

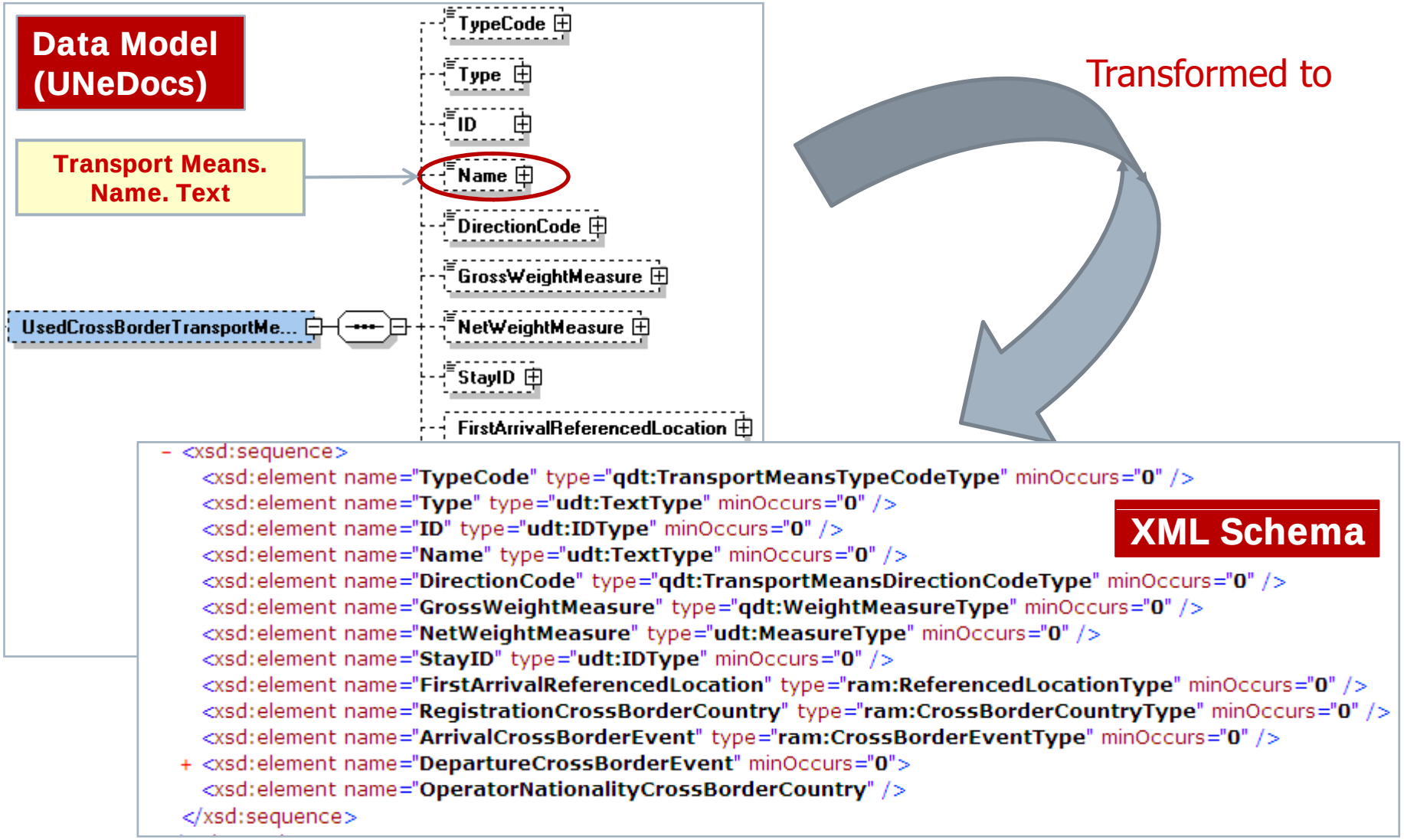


Data Elements that are mapped to UNeDocs by using GEFEG.FX Tool

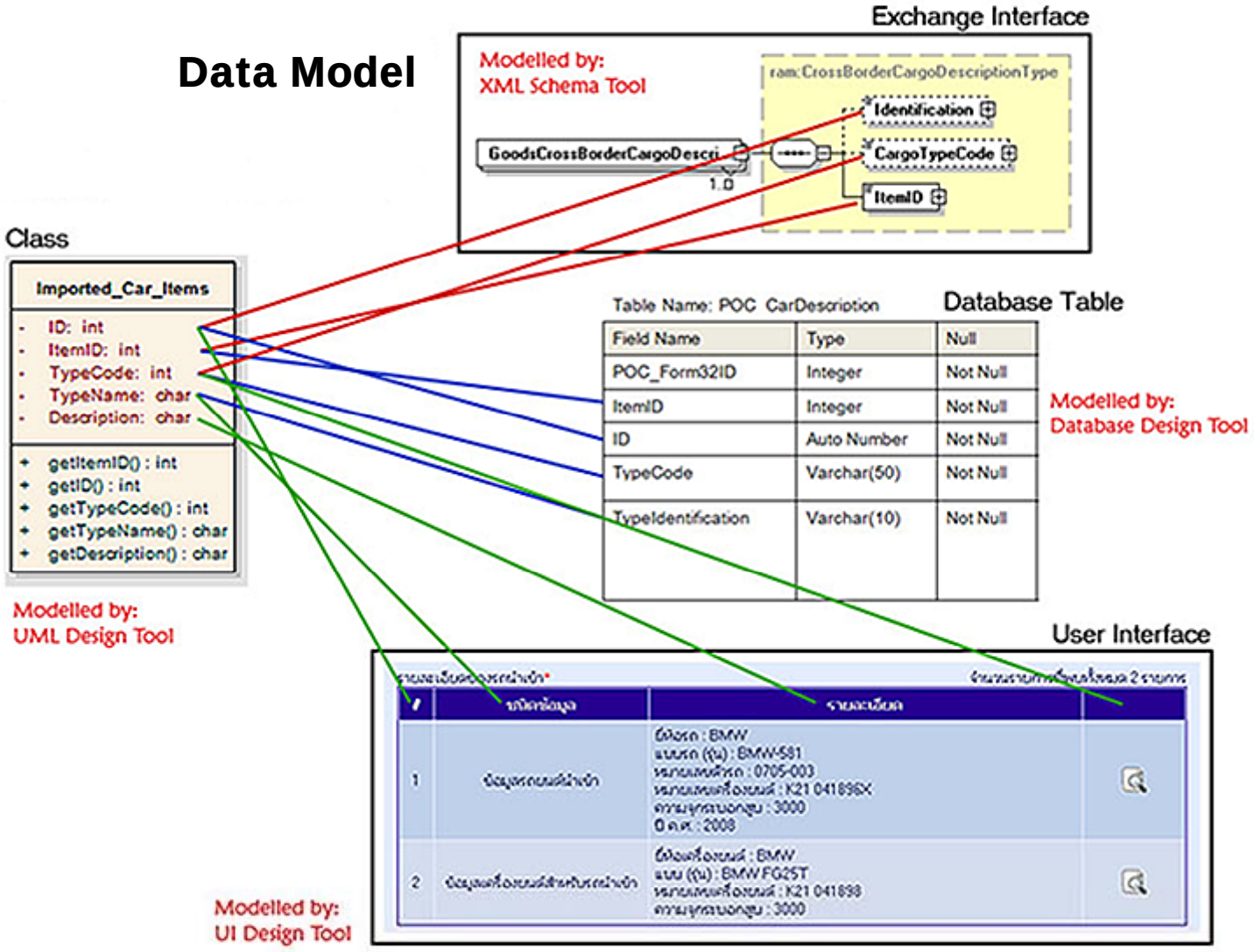
XML Schema

```
- <xsd:sequence>
    <xsd:element name="TypeCode" type="qdt:TransportMeansTypeCodeType" minOccurs="0" />
    <xsd:element name="Type" type="udt:TextType" minOccurs="0" />
    <xsd:element name="ID" type="udt:IDType" minOccurs="0" />
    <xsd:element name="Name" type="udt:TextType" minOccurs="0" />
    <xsd:element name="DirectionCode" type="qdt:TransportMeansDirectionCodeType" minOccurs="0" />
    <xsd:element name="GrossWeightMeasure" type="qdt:WeightMeasureType" minOccurs="0" />
    <xsd:element name="NetWeightMeasure" type="udt:MeasureType" minOccurs="0" />
    <xsd:element name="StayID" type="udt:IDType" minOccurs="0" />
    <xsd:element name="FirstArrivalReferencedLocation" type="ram:ReferencedLocationType" minOccurs="0" />
    <xsd:element name="RegistrationCrossBorderCountry" type="ram:CrossBorderCountryType" minOccurs="0" />
    <xsd:element name="ArrivalCrossBorderEvent" type="ram:CrossBorderEventType" minOccurs="0" />
  + <xsd:element name="DepartureCrossBorderEvent" minOccurs="0">
    <xsd:element name="OperatorNationalityCrossBorderCountry" />
  </xsd:sequence>
```

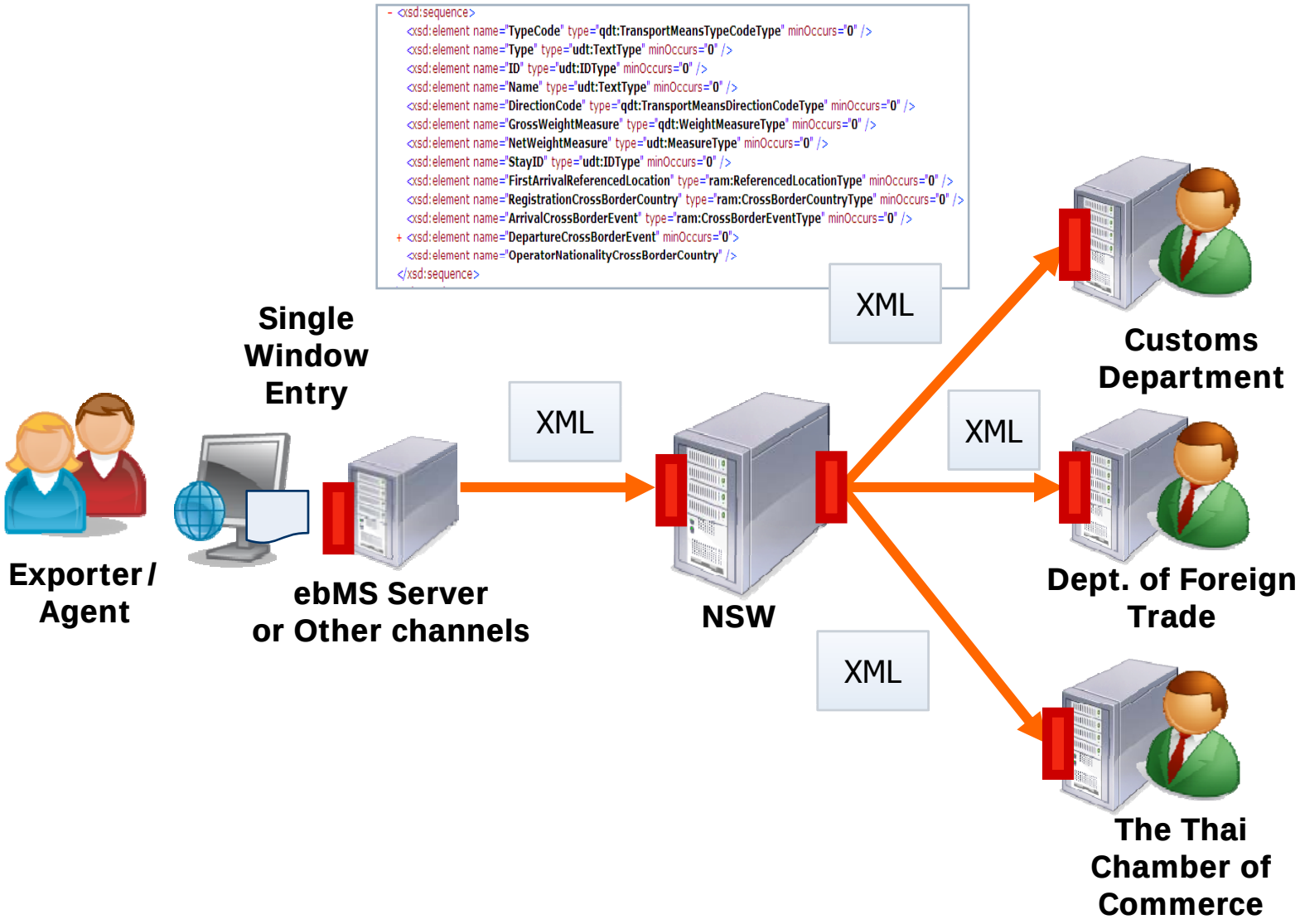
Data Harmonization Results



Next Step – Adoption and Implementation



Next Step – Deployment



Example – Thailand's Standardized Data Set: TH-SDS

Definition followed to UN Trade Data Element Directory (UNTDED)[1]

Owner of the document (Form D)

Thailand's Standardized Data Set
Department of Foreign Trade

Document Name

Certificate of Origin (Form D)

Data Element Name on the document

ASBIE: Associate Business Information Entity

BBIE: Basic Business Information Entity

Data Element Name	Definition (En)	Definition (Th)	ASBIE	BBIE	For mat	Certificate of Origin (Form D) (กรมการค้าต่างประเทศ)
ที่อยู่ผู้รับสินค้า (Address of Consignee)	[TDED 3148] To identify a communication address.	หมายเลขโทรศัพท์ของผู้รับสินค้า หรือ ผู้ซื้อ	Cross-Border_ Consignment. Consignee. Referenced Party		51	Consignee's address
ประเทศต้นกำเนิดสินค้า (Country of origin)	TDED[3207] Identification of the name of the country or other geographical entity as specified in ISO 3166 and UN/ECE Rec 3 TDED[3206] Name of the country or other geographical entity as specified in ISO 3166 and UN/ECE Rec 3	ประเท... สินค้า	...untry. Name.		an..3 an..35	Issued in (country) produce in country(exporting country)
หมายเลขยานพาหนะ (Transport No.)	[TDED 8028] The unique identifier of a journey of a means of transport, for example, boyage number, flight number, trip number	หมายเลขยานพาหนะทั้งบรรทุกสินค้า หมายรวมถึงหมายเลขเที่ยวบิน	UNeDocs Ship BIM. Transport Contract. Cross-Border_ Consignment Cross-Border_ Consignment. Main Carriage. Cross-Border_ Transport Movement	Cross-Border_ Transport Movement. Identification. Identifier	an..17	voy no./flight no.
วิธีการขนส่ง (Mode of Transport)	[TDED 8067] The code specifying a mode, such as by air, sea, rail, road or inland waterway, for this cross-border transport movement.	วิธีการขนส่ง เช่น ทางเรือ อากาศ เป็นต้น	UNeDocs Ship BIM. Transport Contract. Cross-Border_ Consignment Cross-Border_ Consignment. Main Carriage. Cross-Border_ Transport Movement	Cross-Border_ Transport Movement. Mode. Code	an..3	Mean of transport

Format	Description
an	alphabetic characters
n	Numeric
de	decimal
3	Length
..17	Variable Length

Outline

- Needs and Requirements for Data Harmonization
- Scope of Data Harmonization in Thailand
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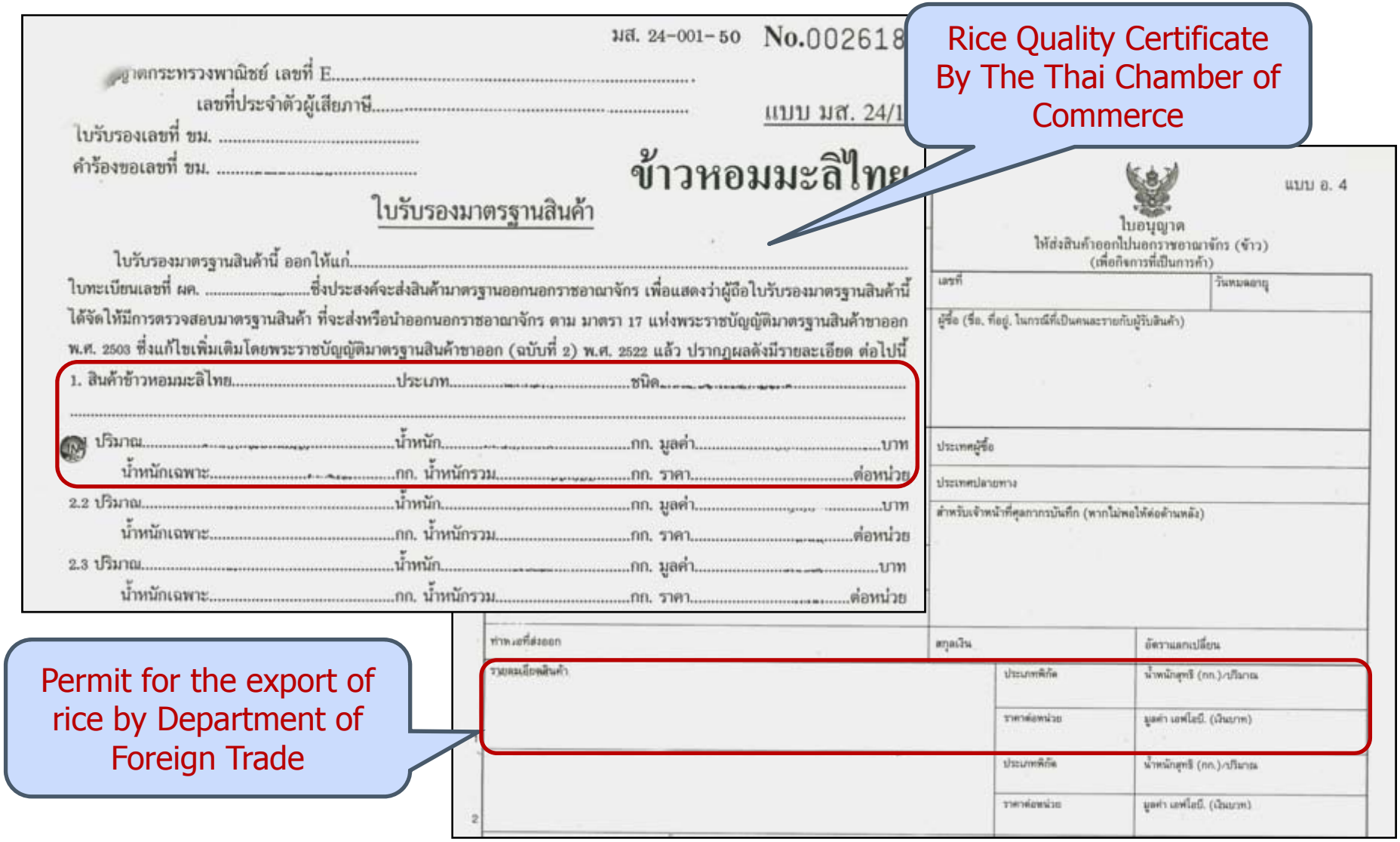
  - Example – Exportation of Rice
- Conclusion

Example – Exchanged Documents



มส. 24-001-50 No.002618

กระทรวงพาณิชย์ เลขที่ E.....

เลขที่ประจำตัวผู้เสียภาษี.....

แบบ มส. 24/1

ใบรับรองเลขที่ ขม. .....

คำร้องขอเลขที่ ขม. .....

ข้าวหอมมะลิไทย

ใบรับรองมาตรฐานสินค้า

ใบรับรองมาตรฐานสินค้านี้ ออกให้แก่.....

ใบทะเบียนเลขที่ ผค. .....ซึ่งประสงค์จะส่งสินค้ามาตรฐานออกนอกราชอาณาจักร เพื่อแสดงว่าผู้ถือใบรับรองมาตรฐานสินค้านี้ ได้จัดให้มีการตรวจสอบมาตรฐานสินค้า ที่จะส่งหรือนำออกนอกราชอาณาจักร ตาม มาตรา 17 แห่งพระราชบัญญัติมาตรฐานสินค้าขาออก พ.ศ. 2503 ซึ่งแก้ไขเพิ่มเติมโดยพระราชบัญญัติมาตรฐานสินค้าขาออก (ฉบับที่ 2) พ.ศ. 2522 แล้ว ปรากฏผลดังมีรายละเอียด ต่อไปนี้

1. สินค้าข้าวหอมมะลิไทย.....ประเภท.....ชนิด.....

ปริมาณ.....น้ำหนัก.....กก. มูลค่า.....บาท

น้ำหนักเฉพาะ.....กก. น้ำหนักรวม.....กก. ราคา.....ต่อหน่วย

2.2 ปริมาณ.....น้ำหนัก.....กก. มูลค่า.....บาท

น้ำหนักเฉพาะ.....กก. น้ำหนักรวม.....กก. ราคา.....ต่อหน่วย

2.3 ปริมาณ.....น้ำหนัก.....กก. มูลค่า.....บาท

น้ำหนักเฉพาะ.....กก. น้ำหนักรวม.....กก. ราคา.....ต่อหน่วย

Rice Quality Certificate By The Thai Chamber of Commerce

แบบ อ. 4

ใบอนุญาต

ให้ส่งสินค้าออกไปนอกราชอาณาจักร (ข้าว)

(เพื่อกิจการที่เป็นการค้า)

เลขที่ | วันหมดอายุ

ผู้ซื้อ (ชื่อ, ที่อยู่, ในกรณีที่เป็นคนละรายกับผู้รับสินค้า)

ประเทศผู้ซื้อ

ประเทศปลายทาง

สำหรับเจ้าหน้าที่ศุลกากรบันทึก (หากไม่พอให้ต่อด้านหลัง)

ท่าหรือที่ส่งออก | สกุลเงิน | อัตราแลกเปลี่ยน

รายละเอียดสินค้า | ประเภทพิกัด | น้ำหนักสุทธิ (กก.)/ปริมาณ | ราคาต่อหน่วย | มูลค่า เอฟโอบี. (เป็นบาท)

2 | ประเภทพิกัด | น้ำหนักสุทธิ (กก.)/ปริมาณ | ราคาต่อหน่วย | มูลค่า เอฟโอบี. (เป็นบาท)

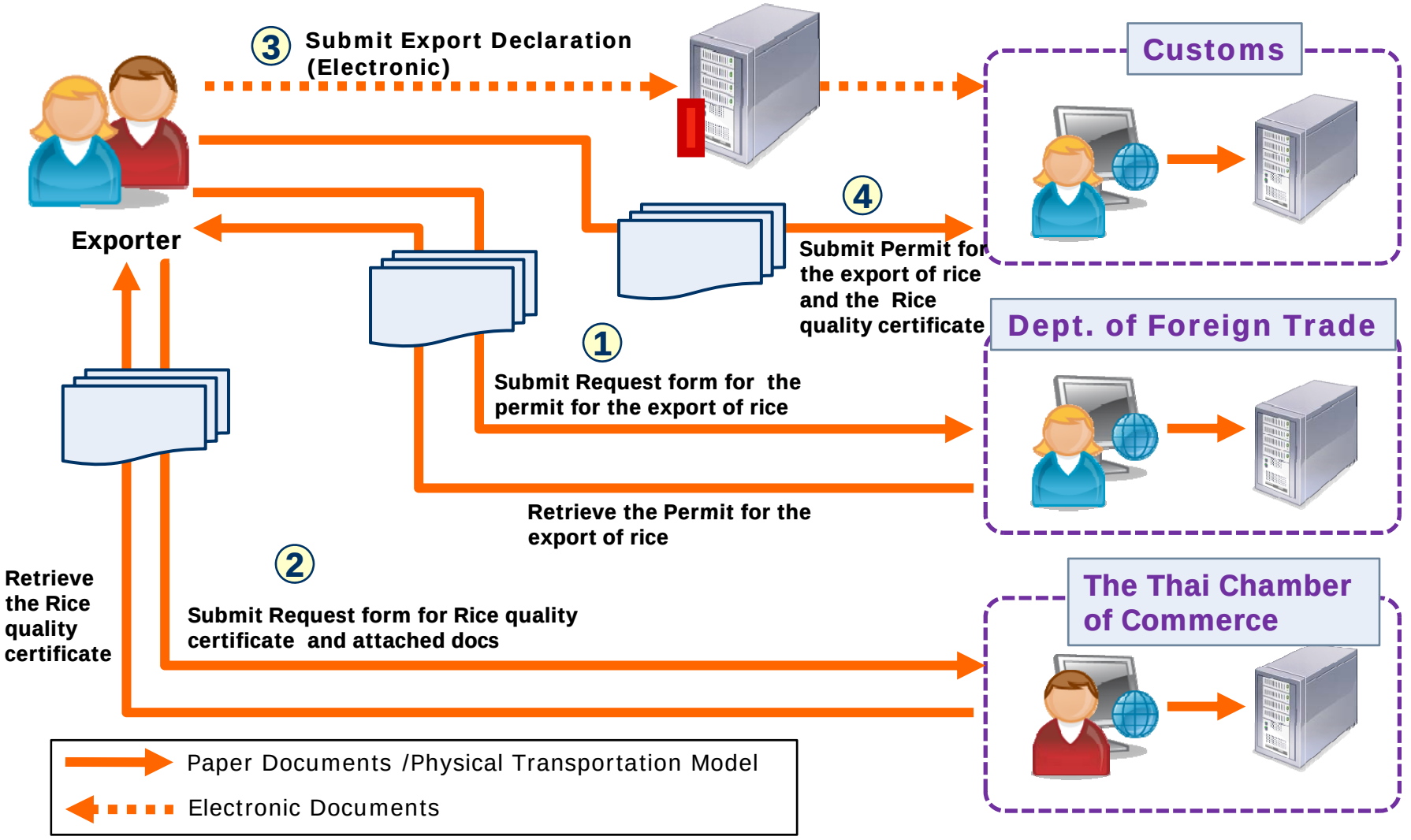
Permit for the export of rice by Department of Foreign Trade

Example – Defining data element names and definitions for 2 documents by comparing each data element with TDED

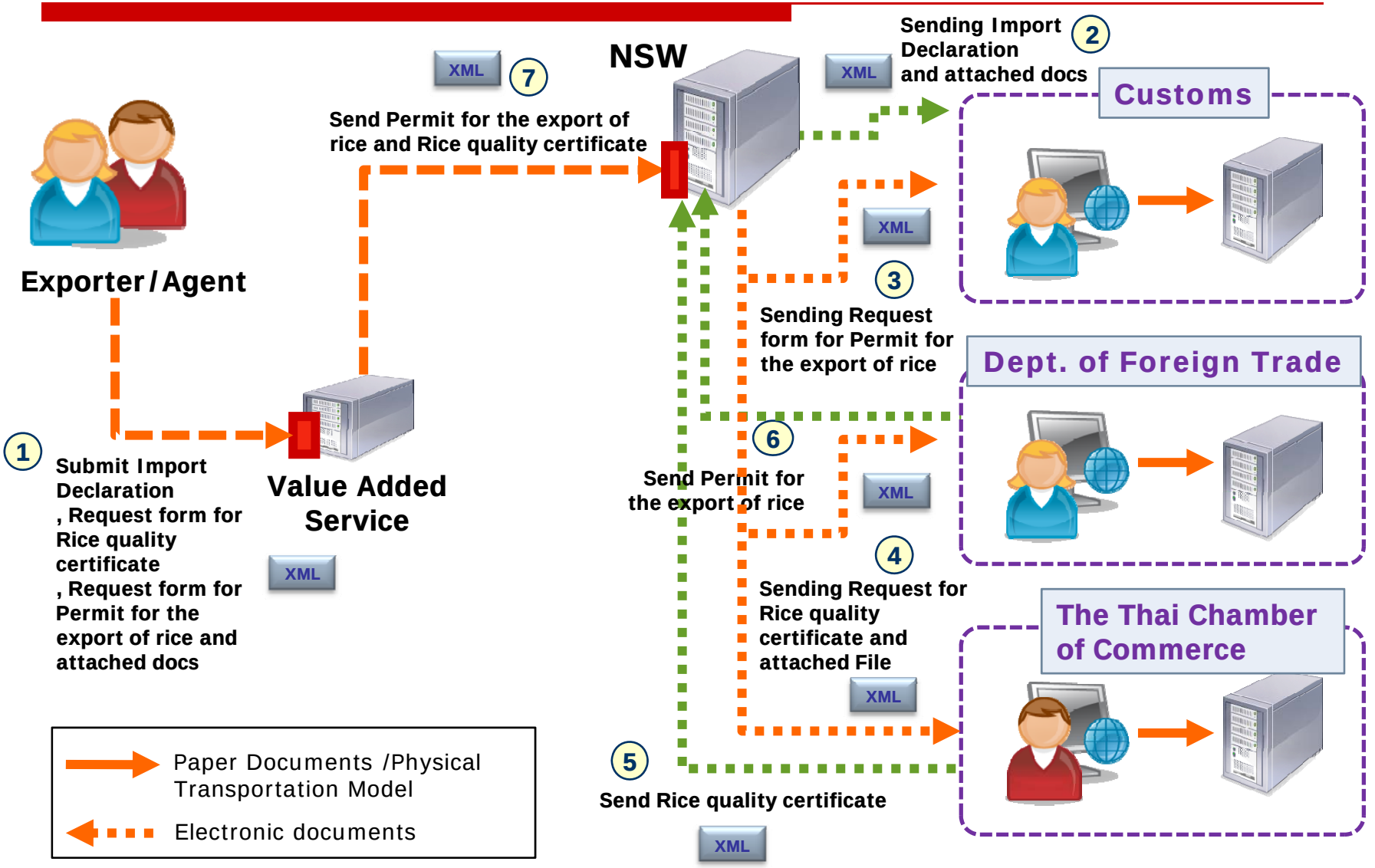
2 documents about exportation of rice

Permit for the export of rice	Rice Quality Certificate	Data Element Name	Definition
weight (kg.)	Net Weight (kg.)	Net Weight (item)	[TDED 6020] The measure of the net weight (mass) of this cross-border trade line item, excluding all packaging.
Unit Price	Price	Unit Price (item)	[TDED 5110] Price per unit of quantity on which an article item amount is calculated.
Name of transport	Ship's name	Name of Transport	[TDED 8212] Name of a specific means of transport such as the vessel name

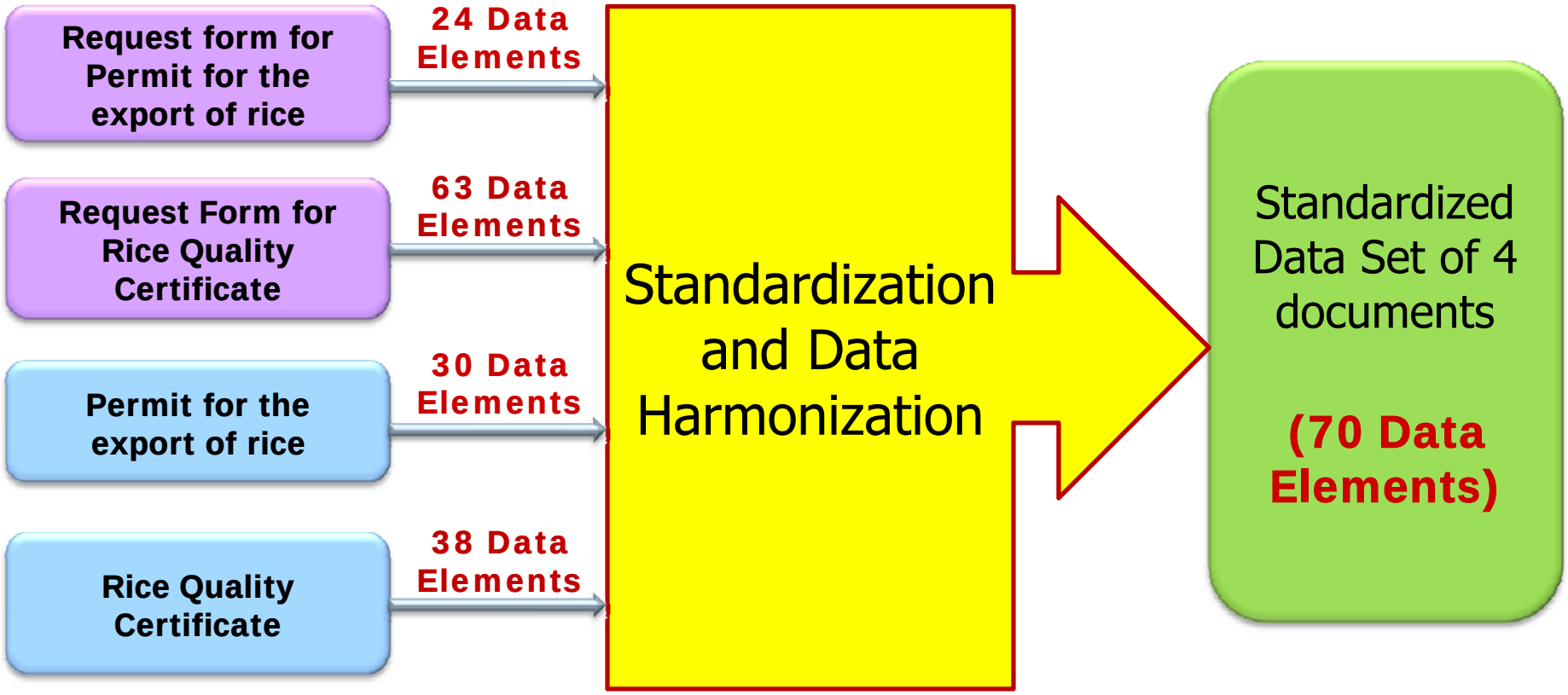
Example – Existing Process for Exportation of Rice



Example – New Process for Exportation of Rice

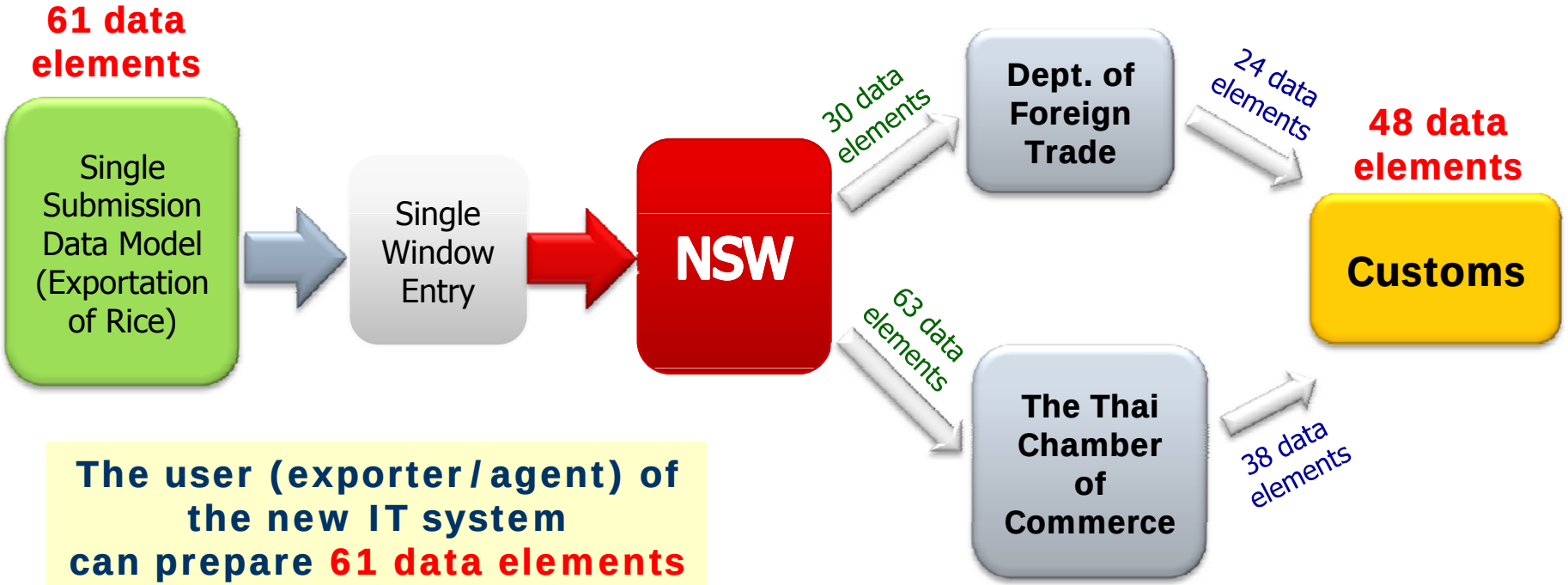


Example - Data Harmonization of 4 documents



Standardization and Data Harmonization can reduce the data elements from 24+63+30+38=155 data elements from 4 documents to 70 data elements for a standardized data set

Example - Data Harmonization of 4 documents



The user (exporter/agent) of the new IT system can prepare 61 data elements electronically only once instead of preparing 30+63=93 data elements and submitting paper-based documents twice

The customs can retrieve and store 48 data elements instead of storing 24+38=62 data elements

Outline

- Needs and Requirements for Data Harmonization
- Scope of Data Harmonization in Thailand
- Step-by-Step Guide for Data Harmonization
  - Example – Exportation of Rice
- Conclusion

Thailand DH Project - Results and Next Steps

DH Phase 1 (2007) – Data Harmonization of documents needed for import /export procedures through 4 modes of transportation (trains, trucks, ships and airplanes)*

- 58 documents - 1,346 data elements are simplified & harmonized
- Results -> 212 data elements (core components)

Phase 2 (2008) – other documents required by government agencies, logistics providers, and business** (including permits, licenses, etc.)

- 186 documents
- Total Data elements = 6,671
- No. of harmonized data elements reduced to = 252 data elements

Adoption & Implementation (2008-2009)

- Development of e-Documents Systems in 12 government agencies

* commissioned by Ministry of Transport
** commissioned by MICT with collaboration with Customs Dept

Conclusion

- *Data Harmonization* among documents /data requirements of all import /export-related procedures (government agencies, business and logistics-related providers) is a very important exercise to *enable data interoperability*, thereby realizing the Single Window Paperless Trade Development.
  - *UNeDocs data model & WCO Data Model* are good candidates to provide *a way to harmonize* our data requirements at the economy level as well as at *regional levels*,
    - e.g. harmonizing the work of National Single Windows, ASEAN SW, and APEC SW Initiatives (*complying with UNeDocs, Core Components Library, etc.)*

- *Implementation Plan & Resources must be secured.*

Thank you for your kind attention

Ministry of Information and Communication Technology

National Economic and Social Development Board

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附件四