The Developments of CC in Chinese Taipei

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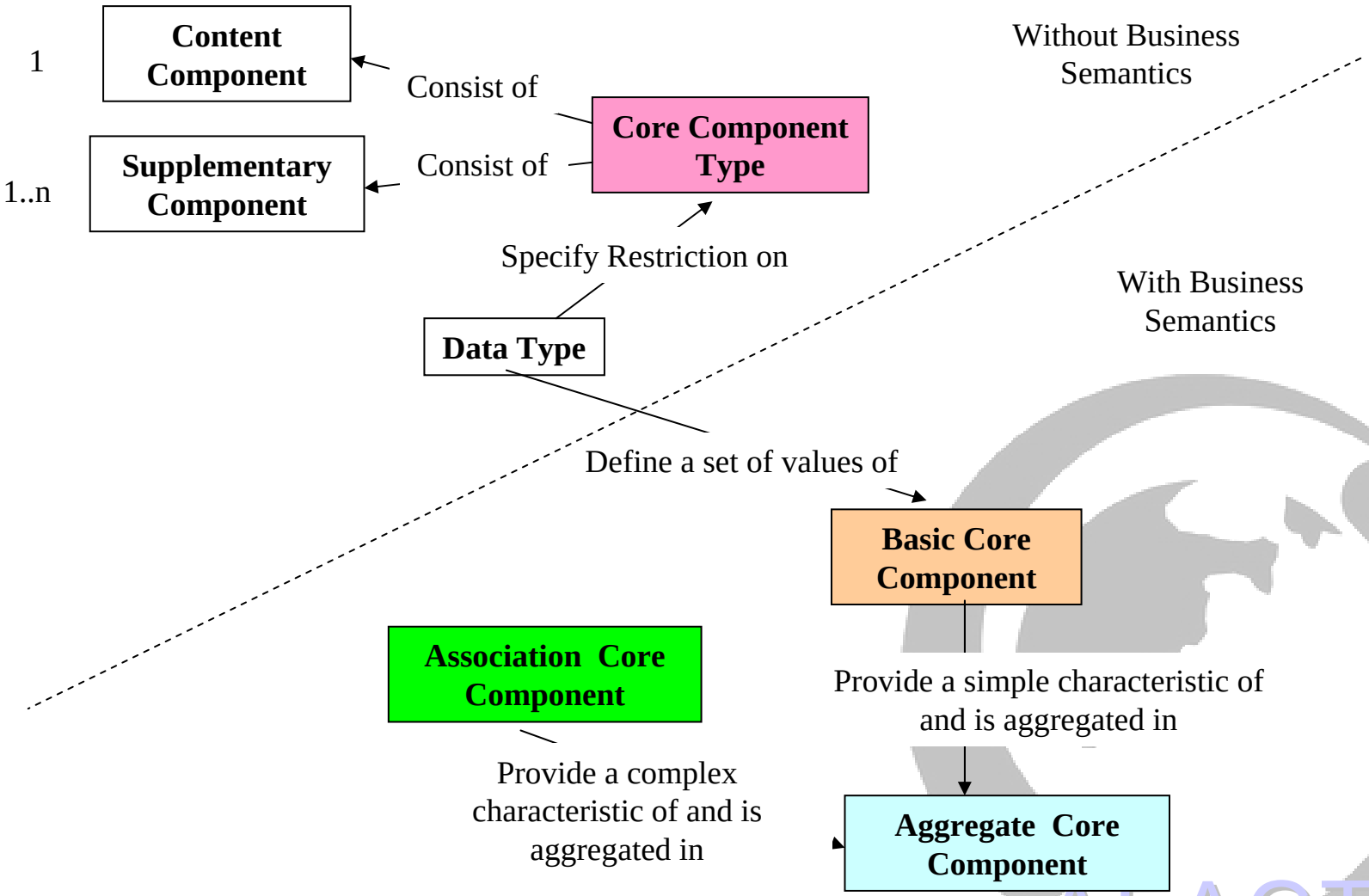
Contents

- Introduction to CCTS
- WCO CDM
- CBRDM (Cross Border Reference Data Model)
- Conceptual Design of Single Window Message
  - CC in NSW of Chinese Taipei
  - CC in Public Construction of Chinese Taipei
- CC in Legal Regulation of Chinese Taipei

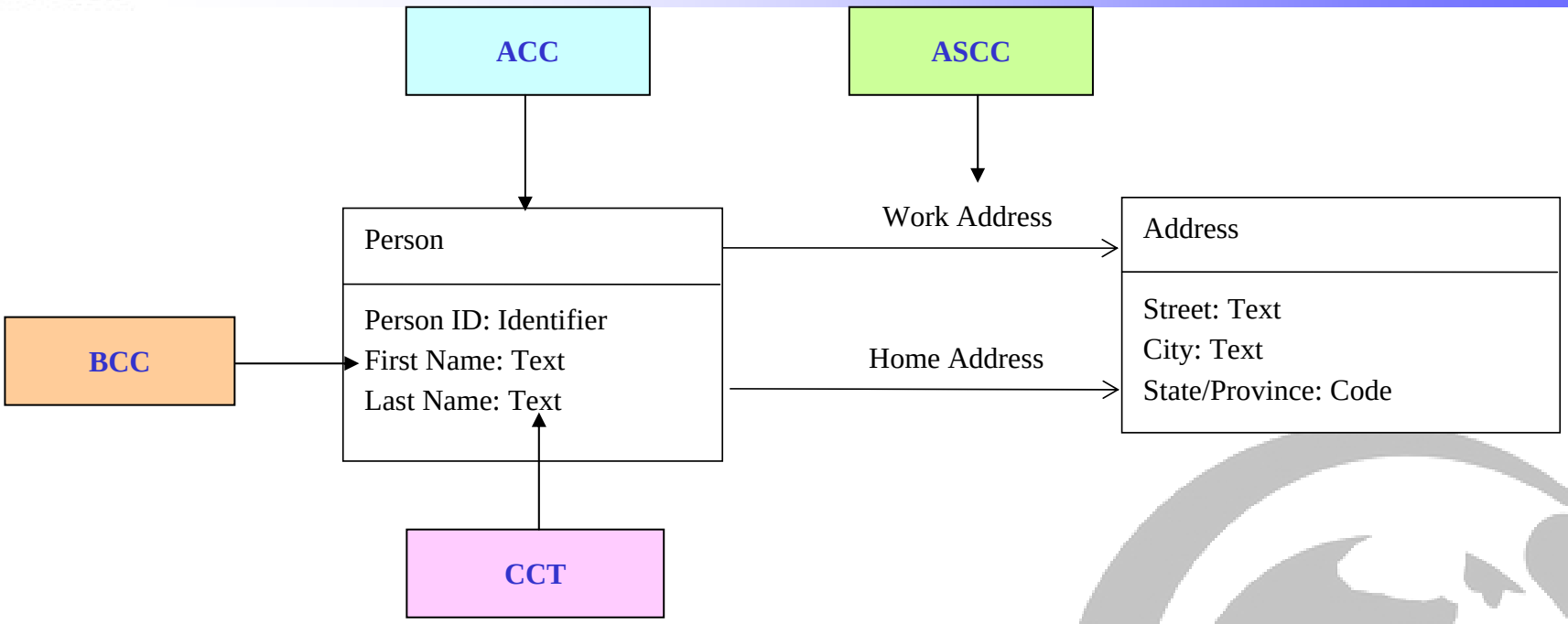
Introduction to CCTS

- CCTS (ISO 15000-5) can be regarded as the most important and useful (mature) technical specification for ebXML and UN/CEFACT in business aspect.
- CCTS is the methodology for developing a common set of semantic building blocks
  - It is a way to identify, capture and maximize the re-use of business information
  - to support and enhance information interoperability across multiple business situations
  - by direct implementations of interfaces and
  - with minimized mapping efforts.

Core Components



Core Components



- ACC (Aggregate Core Components)：Person, Address
- BCC (Basic Core Components) ：Person ID、First Name、Last Name
- ASCC (Association Core Components)：Work Address、Home Address
- CCT (Core Components Type) ：Identifier、Text、Date、Time、Code

Core Component

<<Business Term >>
Charge Card Expiration Date

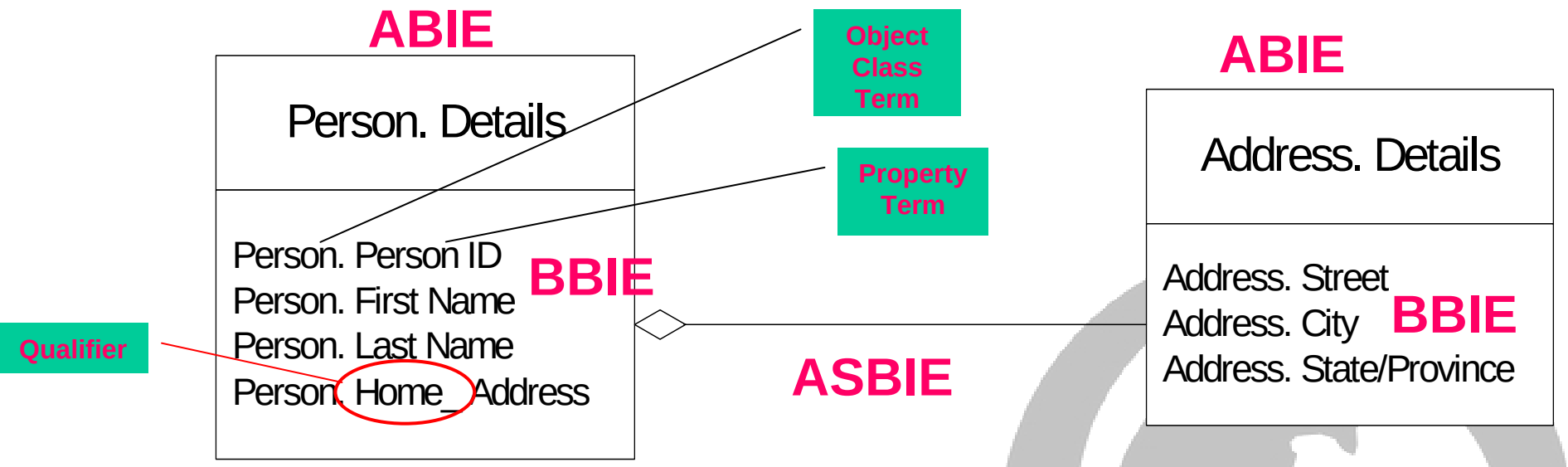
Definition:

The expiration date of a payment card that is associated with an a Core Component account

<<Core Component>>
Payment Card. Expiration Date

- **Object Class :** Payment Card
- **Property Term :** Expiration Date
- **Representation Term :** Date

ACC, ASCC, BCC, ABIE, ASBIE, BBIE



Approved Context Categories

Context Category	Description
Business Process	The business process as described using the ebXML Catalogue of Common Business Processes as extended by the user.
Product Classification	Factors influencing semantics that are the result of the goods or services being exchanged, handled, or paid for, etc. (e.g. the buying of consulting services as opposed to materials)
Industry Classification	Semantic influences related to the industry or industries of the trading partners (e.g., product identification schemes used in different industries).
Geopolitical	Geographical factors that influence business semantics (e.g., the structure of an address).
Official Constraints	Legal and governmental influences on semantics (e.g. hazardous materials information required by law when shipping goods).
Business Process Role	The actors conducting a particular business process, as identified in the Catalogue of Common Business Processes.
Supporting Role	Semantic influences related to non-partner roles (e.g., data required by a third-party shipper in an order response going from seller to buyer.)
System Capabilities	This context category exists to capture the limitations of systems (e.g. an existing back office can only support an address in a certain form).

Core Component Type

CC Type	Explanation
Amount. Type	Monetary amounts
Binary Object. Type	Binary objects like pictures or sounds
Code. Type	Codes
Date Time. Type	Dates, times or combinations of date and time.
Identifier. Type	Identifiers
Indicator. Type	yes/no, on/off, present/not present kind of indication
Measure. Type	All kinds of measurements
Numeric. Type	Numeric values.
Quantity. Type	Countable quantities
Text. Type	Text

Core Component Type Components

CCT Dictionary Entry Name	Definition	Remarks	*Object Class*	*Property Term*	CCT Components
Amount. Type	A number of monetary units specified in a currency where the unit of currency is explicit or implied.		Amount	Type	• Amount. Content • Amount Currency. Identifier • Amount Currency. Code List Version. Identifier
Binary Object. Type	A set of finite-length sequences of binary octets.	Shall also be used for *Data Types* representing graphics (i.e., diagram, graph, mathematical curves or similar representations), pictures (i.e. visual representation of a person, object, or scene), sound, video, etc.	Binary Object	Type	• Binary Object. Content • Binary Object. Format. Text • Binary Object. Mime. Code • Binary Object. Encoding. Code • Binary Object. Character Set. Code • Binary Object. Uniform Resource. Identifier • Binary Object. Filename. Text

Core Component Type Components

CCT Dictionary Entry Name	Definition	Remarks	*Object Class*	*Property Term*	CCT Components
Code. Type	A character string (letters, figures or symbols) that for brevity and/or language independence may be used to represent or replace a definitive value or text of an *Attribute* together with relevant supplementary information.	Should not be used if the character string identifies an instance of an *Object Class* or an object in the real world, in which case the Identifier. Type should be used.	Code	Type	• Code. Content • Code List. Identifier • Code List. Agency. Identifier • Code List. Agency Name. Text • Code List. Name. Text • Code List. Version. Identifier • Code. Name. Text • Language. Identifier • Code List. Uniform Resource. Identifier • Code List Scheme. Uniform Resource. Identifier

Core Component Type Components

Date Time. Type	A particular point in the progression of time together with relevant supplementary information.	Can be used for a date and/or time.	Date Time	Type	• Date Time. Content • Date Time. Format. Text
Identifier. Type	A character string to identify and distinguish uniquely, one instance of an object in an identification scheme from all other objects in the same scheme together with relevant supplementary information.		Identifier	Type	• Identifier. Content • Identification Scheme. Identifier • Identification Scheme. Name. Text • Identification Scheme Agency. Identifier • Identification Scheme. Agency Name. Text • Identification Scheme. Version. Identifier • Identification Scheme Data. Uniform Resource. Identifier • Identification Scheme. Uniform Resource. Identifier

Core Component Type Components

CCT Dictionary Entry Name	Definition	Remarks	*Object Class*	*Property Term*	CCT Components
Indicator. Type	A list of two mutually exclusive Boolean values that express the only possible states of a *Property*.		Indicator	Type	• Indicator. Content • Indicator. Format. Text
Measure. Type	A numeric value determined by measuring an object along with the specified unit of measure.		Measure	Type	• Measure. Content • Measure Unit. Code • Measure Unit. Code List Version. Identifier
Numeric. Type	Numeric information that is assigned or is determined by calculation, counting, or sequencing. It does not require a unit of quantity or unit of measure.	May or may not be decimal	Numeric	Type	• Numeric. Content • Numeric. Format. Text

Core Component Type Components

Quantity. Type	A counted number of non-monetary units possibly including fractions.		Quantity	Type	• Quantity. Content • Quantity. Unit. Code • Quantity Unit. Code List. Identifier • Quantity Unit. Code List Agency. Identifier • Quantity Unit. Code List Agency Name. Text
Text. Type	A character string (i.e. a finite set of characters) generally in the form of words of a language.	Shall also be used for names (i.e. word or phrase that constitutes the distinctive designation of a person, place, thing or concept).	Text	Type	• Text. Content • Language. Identifier • Language. Locale. Identifier

Content and Supplementary Components

Name	Primitive data-type	Definition	Remarks
Amount. Content	decimal	A number of monetary units specified in a currency where the unit of currency is explicit or implied	
Amount Currency. Code List Version. Identifier	string	The *Version* of the UN/ECE Rec. 9 code list.	
Amount Currency. Identifier	string	The currency of the amount	Reference UN/ECE Rec. 9, using 3-letter alphabetic codes. The UN/ECE Rec. 9 is also published as ISO 4217, but is available in electronic form and free of charge.
Binary Object. Content	binary	A set of finite-length sequences of binary octets.	
Binary Object. Format. Text	string	The format of the binary content.	
Binary Object. Mime.Code	string	The mime type of the binary object.	Reference IETF RFC 2045, 2046, 2047
Binary Object. Character Set. Code	string	The character set of the binary object if the mime type is text.	Reference IETF RFC 2045, 2046, 2047
Binary Object. Encoding. Code	string	Specifies the decoding algorithm of the binary object.	Reference IETF RFC 2045, 2046, 2047
Binary Object. Uniform Resource. Identifier	string	The Uniform Resource Identifier that identifies where the Binary Object is located.	
Binary Object. Filename. Text	String	The filename of the binary object.	Reference IETF RFC 2045, 2046, 2047

... etc.

Permissible Representation Terms

Primary Representation Terms	Secondary Representation Terms
Amount	
Binary Object	Graphic, Picture, Sound, Video
Code	
Date Time	Date, Time
Identifier	
Indicator	
Measure	
Numeric	Value, Rate, Percent
Quantity	
Text	Name

Core Component / BIE Naming Convention

1.Core Component

- ACC：

Object class Term		Representation Term
Address	● space	Details

Dictionary Entry Name: Address. Details

- BCC：

Object class Term		Property Term		Representation Term
Goods	● space	Delivery Date Time	● spcae	Date Time

Dictionary Entry Name: Goods. Delivery Date Time. Date Time
Dictionary Entry Name can be simplified as：Goods. Delivery. Date Time

Party. Identification. Identifier ⟶ Party. Identifier

Core Component / BIE Naming Convention

- CCT / Data Type：

Representation Term
Date Time

● space

Term
Type

Dictionary Entry Name: Date Time. Type

Qualifier Term
Expiration

_ space

Representation term
Date Time

● space

Term
Type

Dictionary Entry Name: Expiration_ Date Time. Type

- ASCC：

Object class Term
Person

● space

Property Term
Residence

● space

Object class Term
Adddress

Dictionary Entry Name: Person. Residence. Address

Core Component / BIE Naming Convention

2. BIE

- ABIE：

Qualifier Term		Object class Term		Representation Term
Temporary	_ space	Address	● space	Detatil

Dictionary Entry Name: Temporary_ Address. Detail

- BBIE：

Qualifier Term		Object class Term		Qualifier Term		Property Term		Representation Term
Partial	_ space	Cost	● space	Period	_ space	Total Amount	● space	Amount

Dictionary Entry Name: Partial_ Cost. Period_ Total Amount. Amount

Despatch_ Shipment Information. Carrier_ Identification. GLN_ Identifier

Core Component / BIE Naming Convention

- ASBIE：

Dictionary Entry Name: Important_ Person. Temporary_ Residence. Address

UN/CEFACT XML NDR (XML Naming and Design Rules)

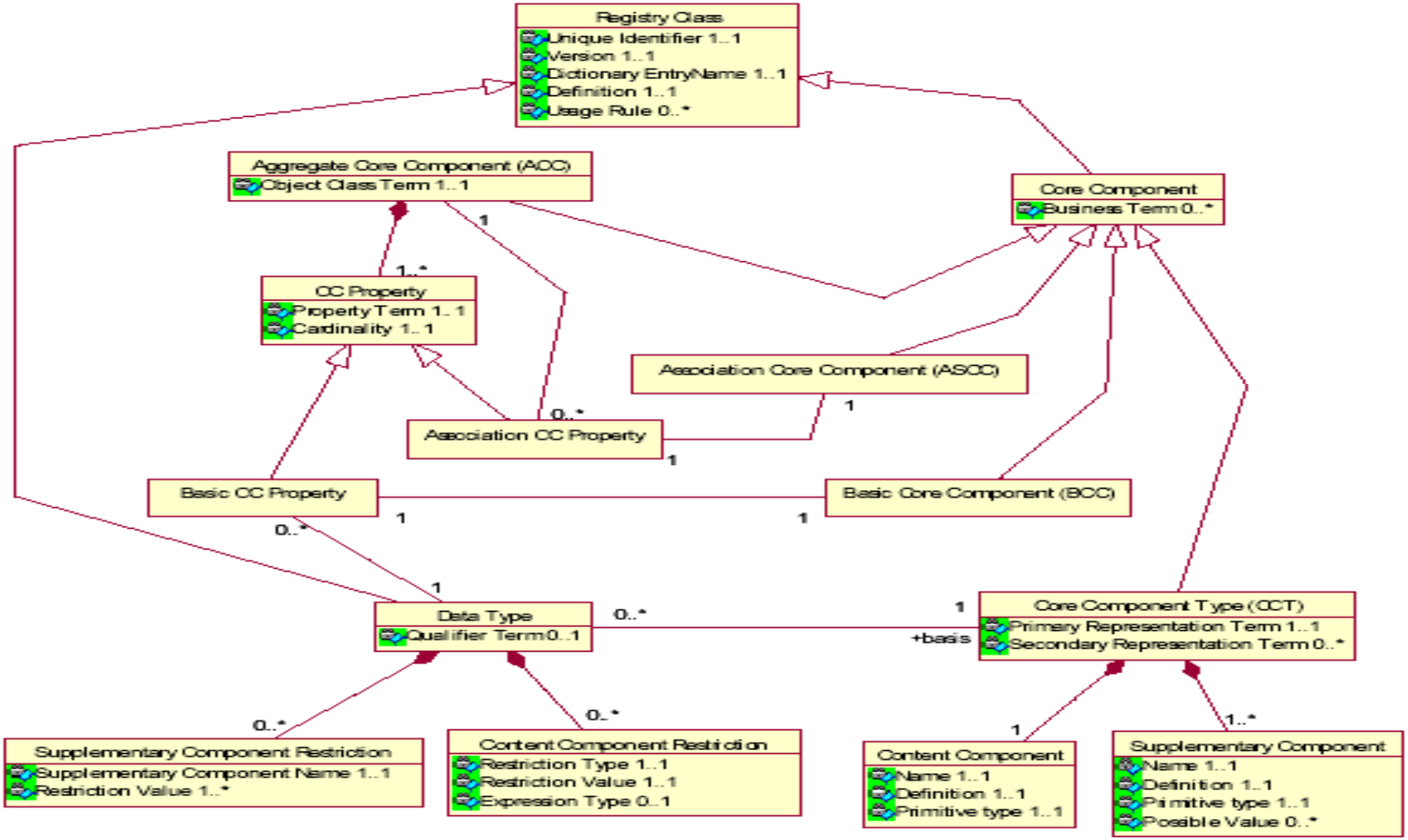
XML NDR

Sources for UN/CEFACT XML NDR

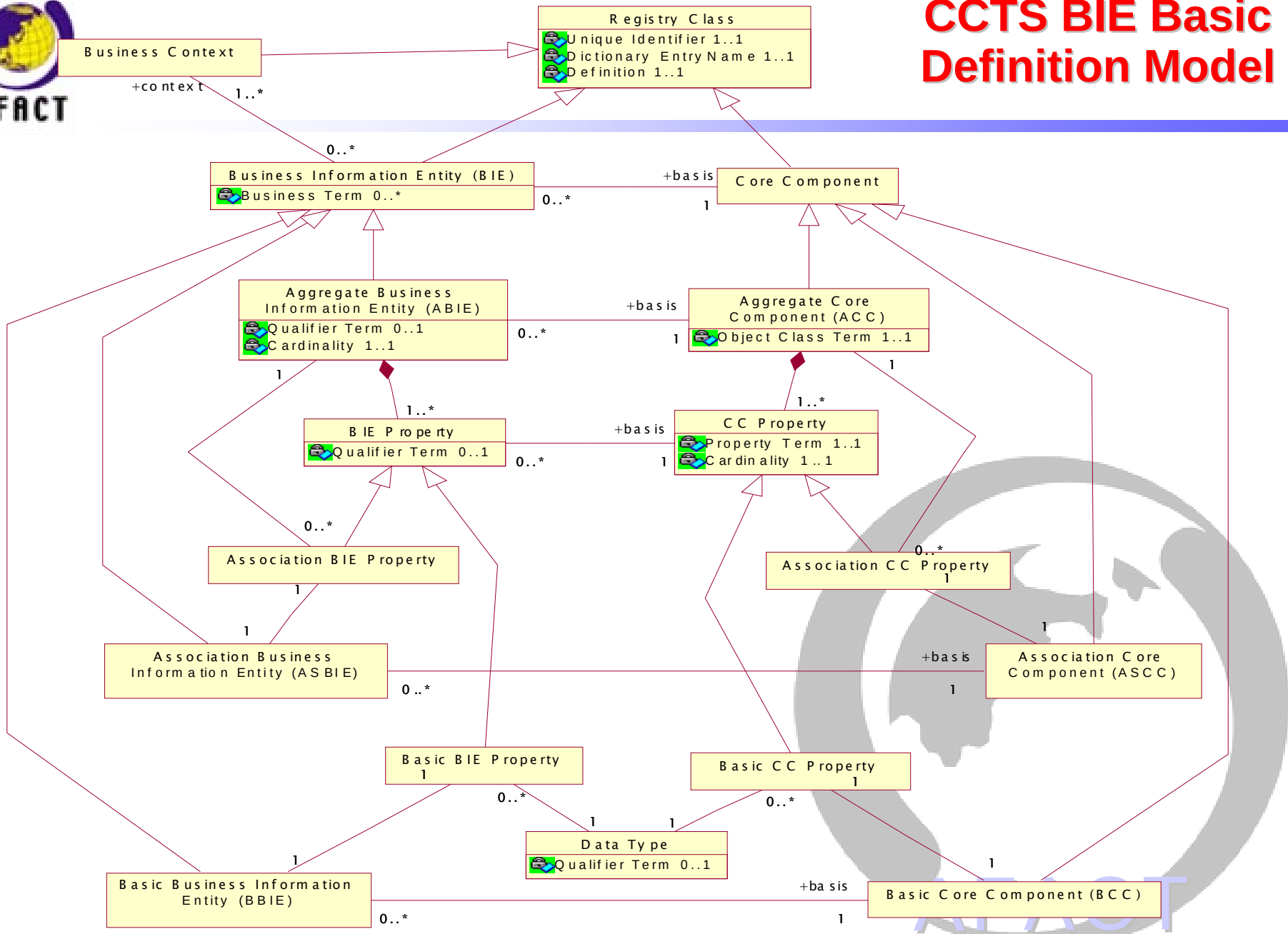
First and foremost, UN/CEFACT XML NDR was relied heavily on the OASIS UBL NDR document. Others include:

- SWIFT
- U.S. Department of the Navy
- U.S. Environmental Protection Agency
- U.S. Federal CIO Council XML Working Group
- Open Travel Alliance
- Australia Electricity & Gas Industry
- CIDX
- EAN/UCC
- European Transmission System Operators
- PIDX

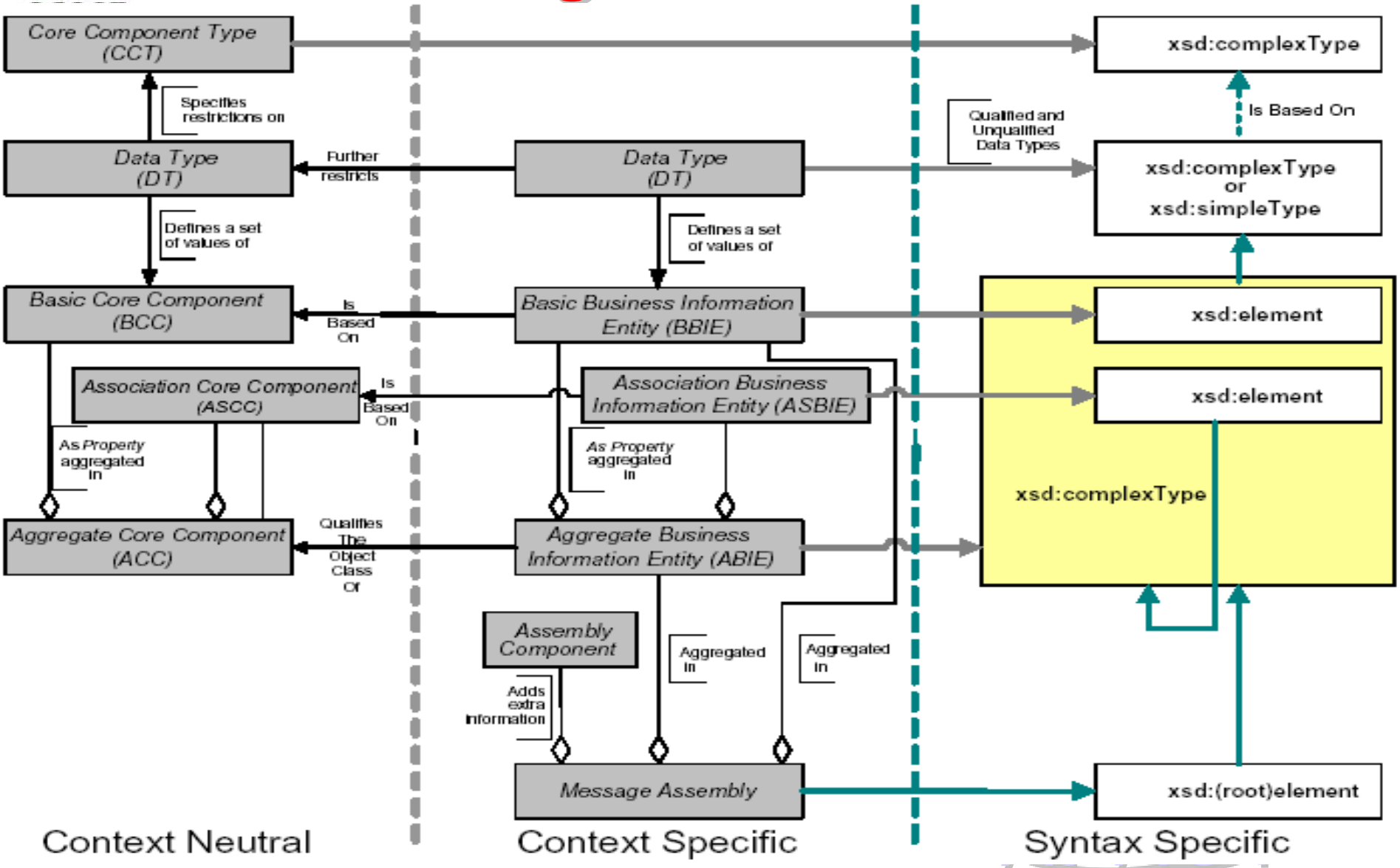
Core Components and Data Types Metamodel



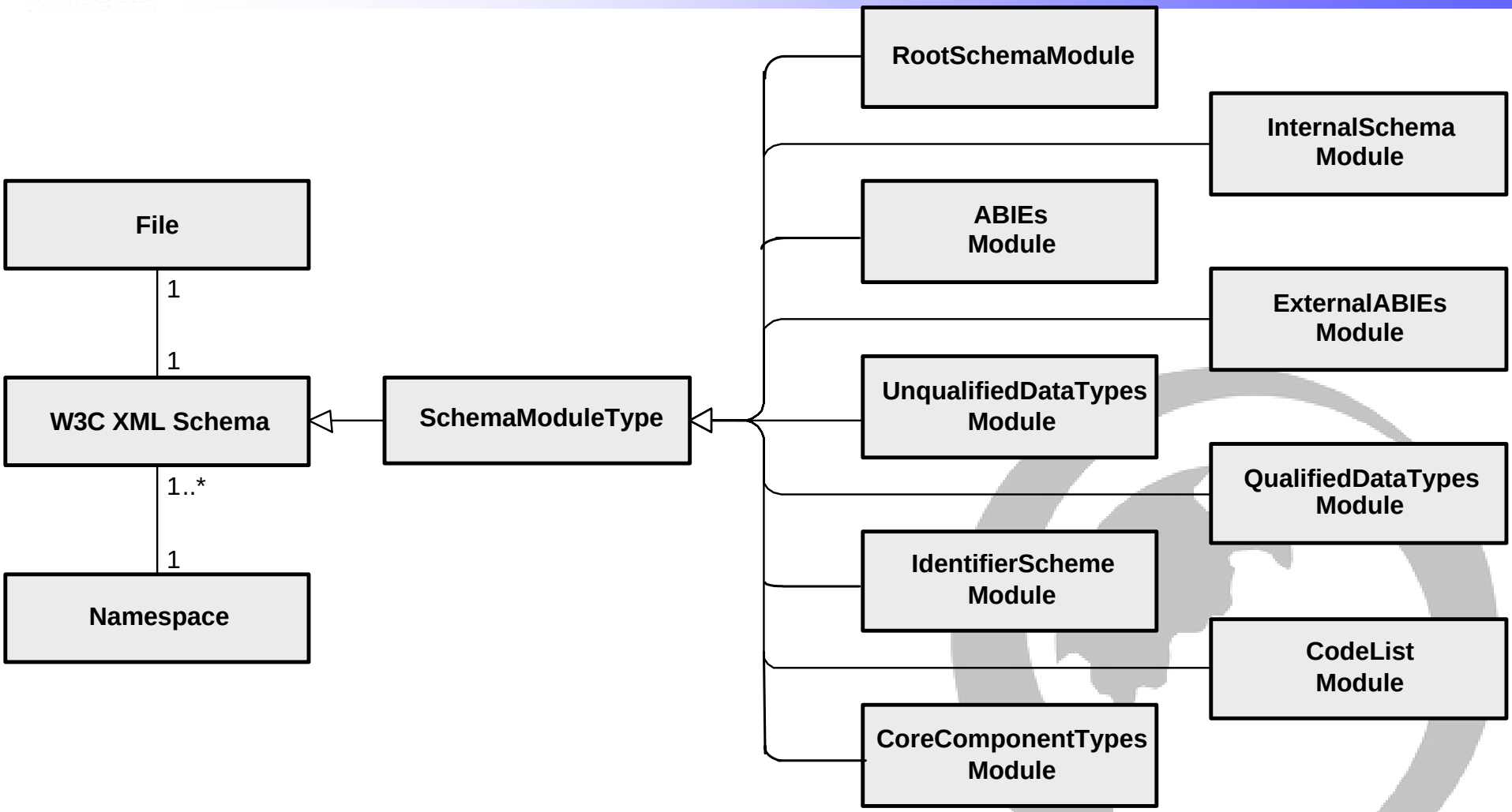
CCTS BIE Basic Definition Model

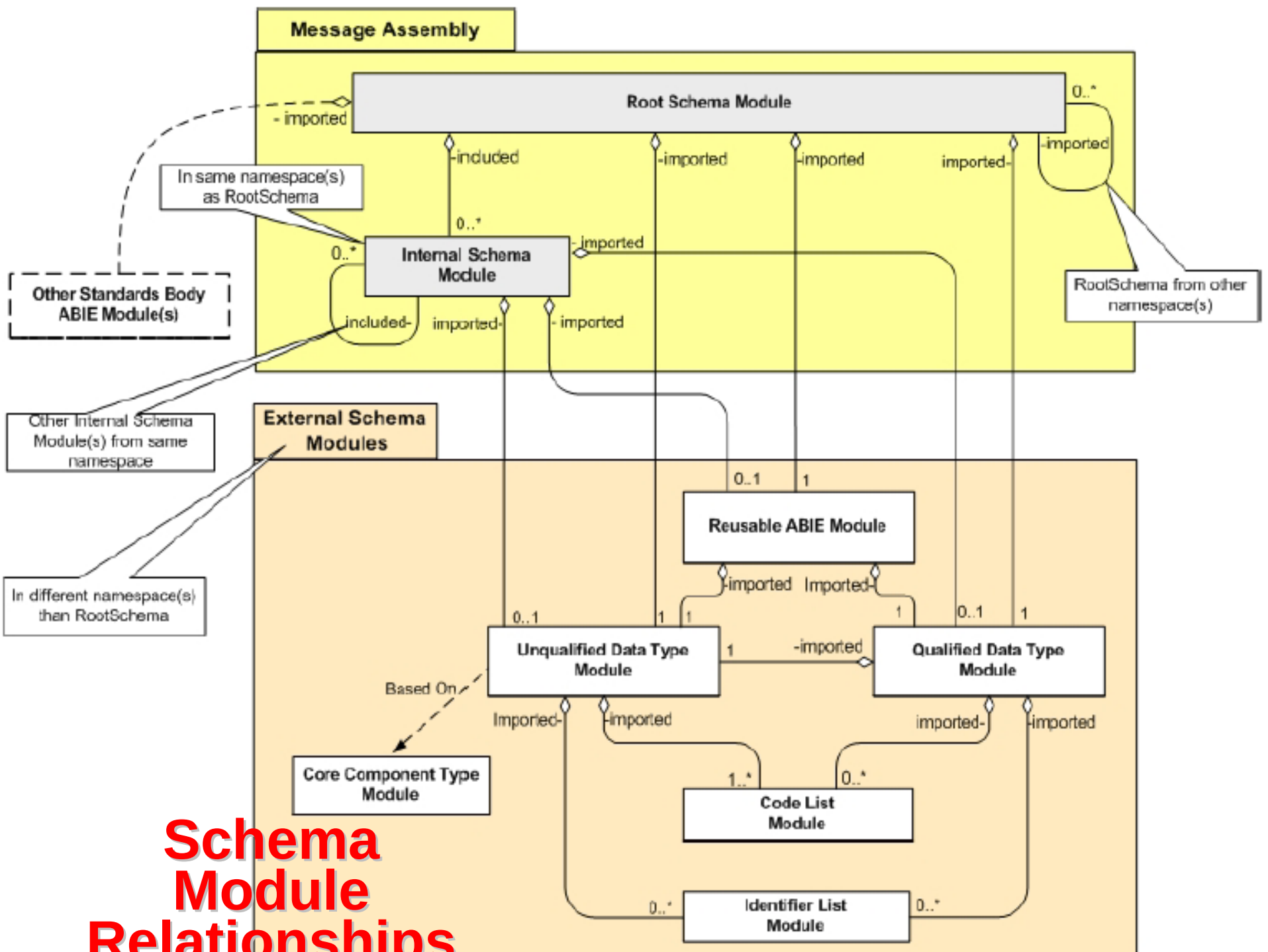


Creating XSD Constructs



Schema Modules





Schema Module Relationships

Naming Conventions

- General Naming Constraints
  - XML element, attribute and type names MUST be consistently derived from CCTS conformant dictionary entry names
  - XML element, attribute and type names constructed from `ccts:DictionaryEntryNames` MUST NOT include periods, spaces, other separators, or characters not allowed by W3C XML 1.0 for XML names
- Acronyms and Abbreviations
  - Element and simple and complex Type names *must* not use acronyms, abbreviations, or other word truncations, except those included in the UN/CEFACT controlled vocabulary

Naming Conventions

- Type Naming Conventions
  - A complex type name based on an aggregate business information entity (ABIE) *must* be the CCTS:DictionaryEntryName with the separators removed and with the "Details" suffix replaced with "Type"

Naming Conventions

- Element Naming Conventions
  - Each element name declaration will be based on the property term and qualifiers and the representation term of basic business information entity (BBIE) or be based on the property term and object class of the association business information entity (ASBIE). If there are duplicate words in the property term and representation terms of the source dictionary entry name, then the duplicate words will be removed.

A Sample

```
<xsd:element name="Name"
  type="exp:PartyNameType"
  minOccurs="0"
  maxOccurs="unbounded">
   <xsd:annotation>
          ... see annotation ...
     </xsd:annotation>
</xsd:element>
```

Type Definitions

- For each object class model, there is a complex type definition.

ABIE Type

```
<xsd:complexType name="PartyType">
    <xsd:annotation>
    ... see annotation ...
    </xsd:annotation>
    <xsd:sequence>
    <xsd:element name="Name" type="exp:PartyNameType"
                 minOccurs="0" maxOccurs="unbounded">
          <xsd:annotation>
           ... see annotation ...
          </xsd:annotation>
    </xsd:element>
    ...other element declarations ...
  </xsd:sequence>
</xsd:complexType>
```

Rules for Creation of Core Components

1.) Determination of type

- Aggregation (ABIE)
- Basic (BBIE)
- Data Type

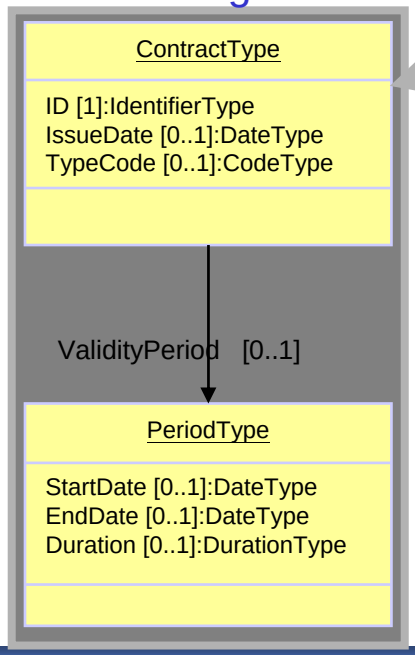
2.) Writing of the semantic description in one or two senctences.
These description should include the terms of ISO 11179,
which are comporable to the parts (subject, predicate, object) of a sentence:

- Object Class Term
- Property Term
- Representation Term

3.) Generation of the Dictionary Entry Names according CCTS rules

4.) Automatic generation of

UML Diagrams



XML

```
<Contract>
    <ID schemeAgencyID="34">ABC-34335-XY</ID>
    <IssueDate>2003-06-06</IssueDate>
    <TypeCode listID="20" listAgencyID="9" >
        XYA
    </TypeCode>
    <ValidityPeriod>
        <StartDate>2003-06-06</StartDate>
    <Duration>P1Y2M3DT10H30M</Duration>
    </ValidityPeriod>
</Contract>
```

JAVA Code

```
public void WriteOutToPS
  (PrintWriter ps, boolean fullDoc) {
  String s, sa;
  if (ps == null) return;
  if (fullDoc == true) {
    /* Output XML node */
    ps.print("<ValidityPeriod>\r\n");
  }   s = tf_StartDate.getText();
  if (s.equals("") == false) {
    ps.print("<StartDate");
    ps.print(">" + s + "</StartDate>\r\n");
  }
  s = tf_EndDate.getText();
  if (s.equals("") == false) {
    ps.print("<EndDate");
    ps.print(">" + s + "</EndDate>\r\n");
  }
  s = tf_Duration.getText();
  if (s.equals("") == false)
    ...
  }
  ...
}
```

Rules for Creation of a Dictionary Entry Name

1.) Define context by context categories

2.) Determination of type

- Aggregation (ACC/ABIE)
- Basic (BCC/BBIE)
- Data Type

3.) Writing of the semantic description in one or two sentences.
These description must include:

- Object Class Term
- Property Term
- Representation Term

And could include context based and qualified information:

- Object Class Qualifier
- Property Qualifier
- Representation Qualifier

4.) Generation of the Dictionary Entry Names according CCTS rules

5.) Revision of Dictionary Entry Names and description

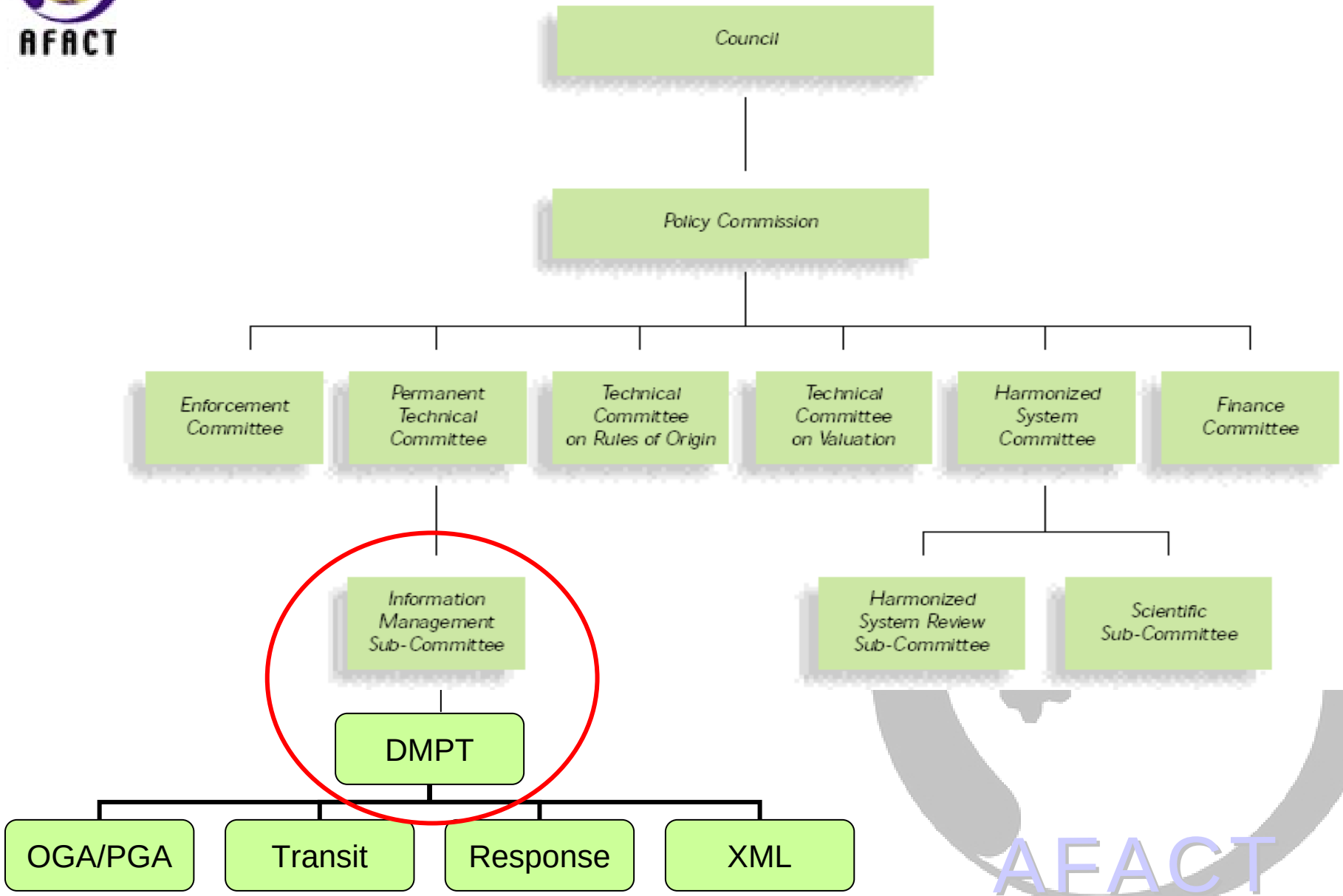
6.) Generation of tag names from Dictionary Entry Name according XML NDR

7.) XML Schema Representation

UNeDocs Data Model

- Based on the UN/CEFACT Core Component Technical Specification
  - Core Components
  - Business Information Entity
  - Dictionary Entry Name
  - Object Class Term
  - Property Term
  - Representation Term

WCO Structure



UNeDocs and WCO CDM

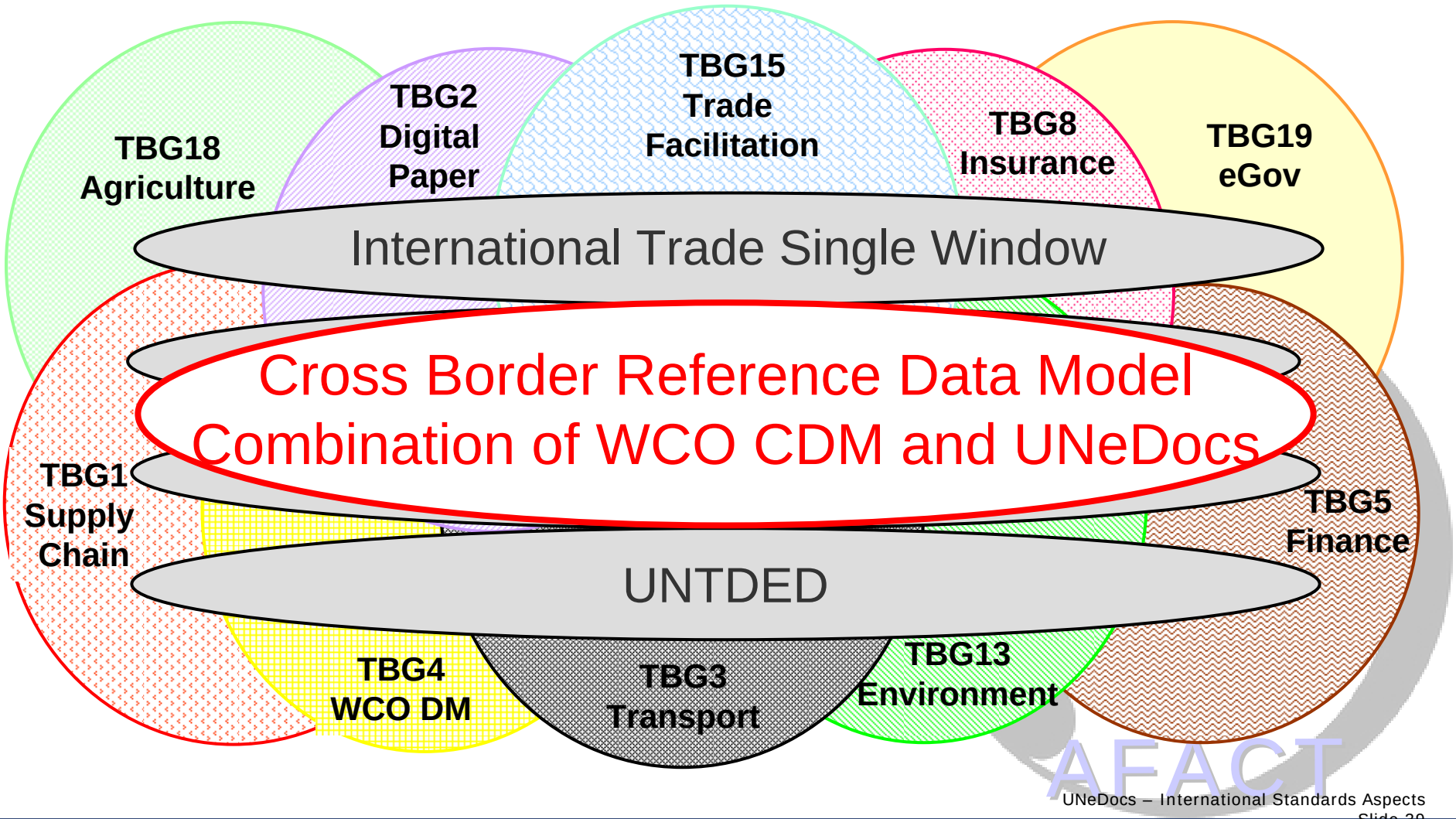
Cross Border Reference Data Model

World Customs Data Model

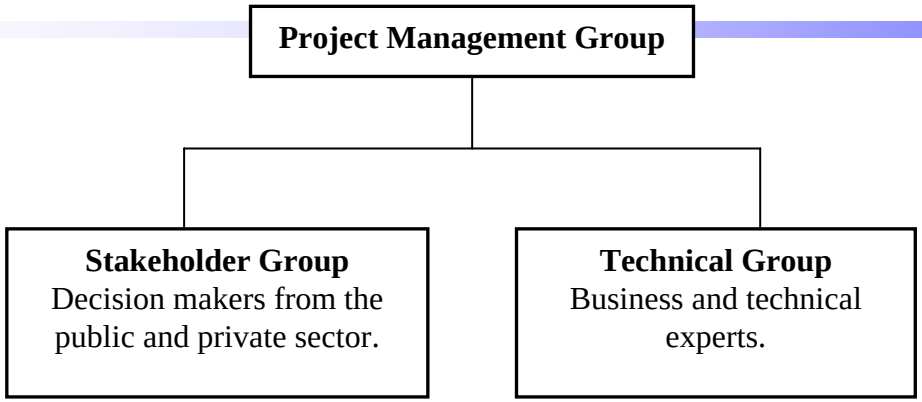
CEFACT UNeDocs Data Model

(From the conclusions of the UN/CEFACT SYMPOSIUM ON SINGLE WINDOW STANDARDS AND INTEROPERABILITY; **Geneva, May 3-5 2006)**

Cross Border Reference Data Model



Cross Border Reference Data Model



- Project Deliverables：High level BRS (Business Requirement Specification)、RSP (Requirements Specifications Mapping) and Core Components
- Project Leader: **Mr. Mats Wicktor** (Swedish Customs)
- Co-Project Leader: **Mr. Robbie Howard (**DHL)
- Secretary: **Mr. Markus Pikart** (United Nations, ECE)

  Mr. Hans Jeppsson (Swedish Customs)
- Editors: **Mr. Michael Dill** (CEFACT TBG2 Chair, GEFEG)

  Mr. Gareth Lewis (World Customs Organization)

UN/CEFACT CCL

UN000 00666	Delivery Terms. Details	**ACC**	The conditions agreed upon between the parties with regard to the delivery of goods and or services.
UN000 00668	Delivery Terms. Delivery Type. Code	**BCC**	A code specifying a type of delivery for these delivery terms such as the INCOTERMS Terms of Delivery.
UN000 00669	Delivery Terms. Description. Text	**BCC**	A textual description of the delivery terms.
UN000 00805	Delivery Terms. Risk Responsibility. Code	**BCC**	A code specifying the risk responsibility for these delivery terms.
UN000 00670	Delivery Terms. Relevant. Location	**ASCC**	The location relevant for these delivery terms.

WCO-UN/CEFACT CBRDM

A	B	AC	AD	AE	AF	AG	AH
WCO ID	Name	Synonyms	WCO DM Dictionary Entry Name	Object Class Term	Property Term	Representation Term	Named Complex Type
001	Declaration name, coded		Declaration. Type. Code	Declaration	Type	Code	DeclarationTypeCodeType
002	Declaration reference number		Declaration. Reference. Identifier	Declaration	Reference	Identifier	DeclarationReferenceIDType
003	Additional document reference number		Additional Document. Reference. Identifier	Additional Document	Reference	Identifier	AdditionalDocumentReferenceIDType
004	Reservation No. of shipment	Booking reference number	Consignment. Carrier Assigned. Identifier	Consignment	Carrier Assigned	Identifier	ConsignmentCarrierAssignedIDType
005	Type of Invoice, coded		Invoice. Type. Code	Invoice	Type	Code	InvoiceTypeCodeType

Conceptual Design of the Single Window Message

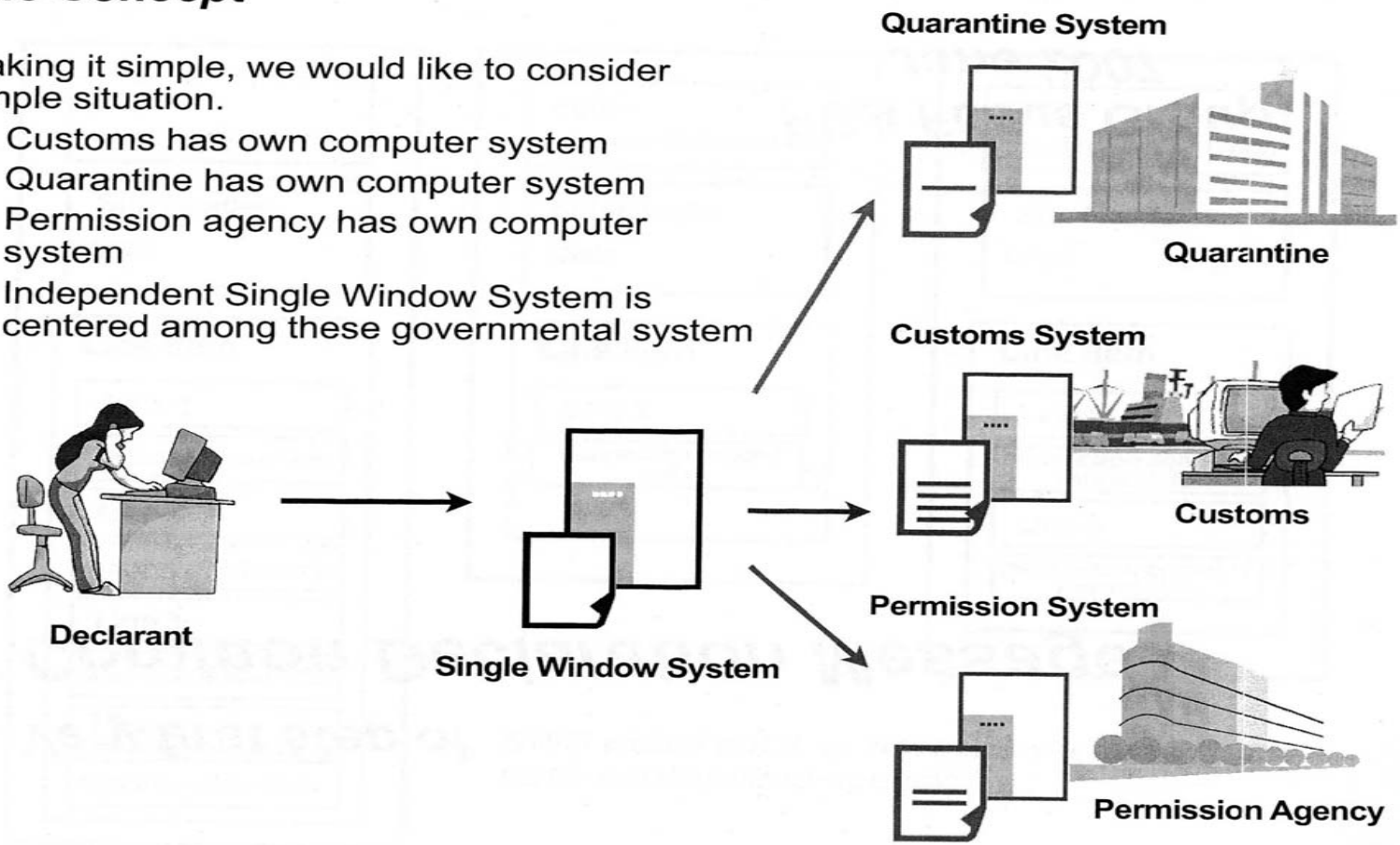
(CUSDEC will be replaced with GOVDEC scheduled in 2011)

Basic Concept

Basic Concept

Making it simple, we would like to consider simple situation.

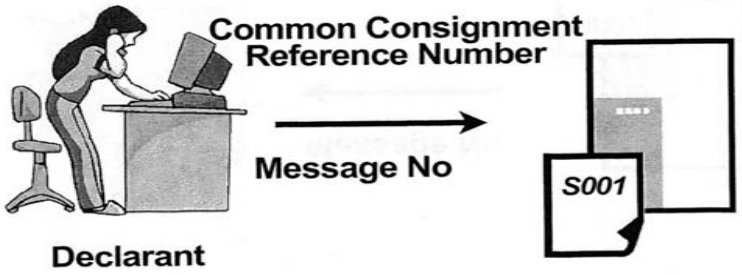
- Customs has own computer system
- Quarantine has own computer system
- Permission agency has own computer system
- Independent Single Window System is centered among these governmental system

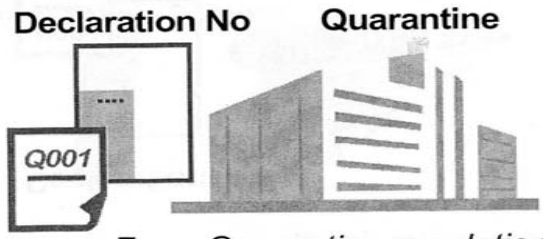


Operation (1)

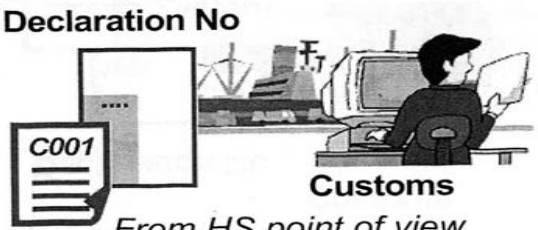
Operation (1)

- Declarant computer generates message number in order to manage their business, then send one message to SWS with three receiving office names and authorities names.
- SWS receive the message then generates common consignment reference number in order to identify the message.
- SWS generates 3 derivative messages for Quarantine, Customs, and Permission Agency.



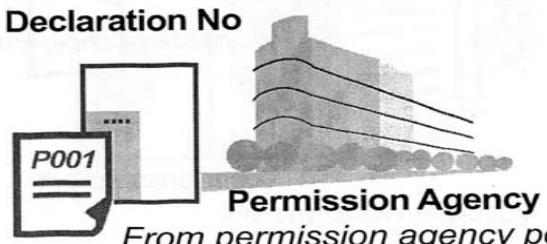


From Quarantine regulation point of view, declaration has one line item.



From HS point of view, declaration has four line items.

- Quarantine system receives message from SWS then generates own declaration number to manage its own process.
- Customs system receives message from SWS then generates own declaration number to manage its own process.
- Permission agency system receives message from SWS then generates own declaration number to manage its own process.

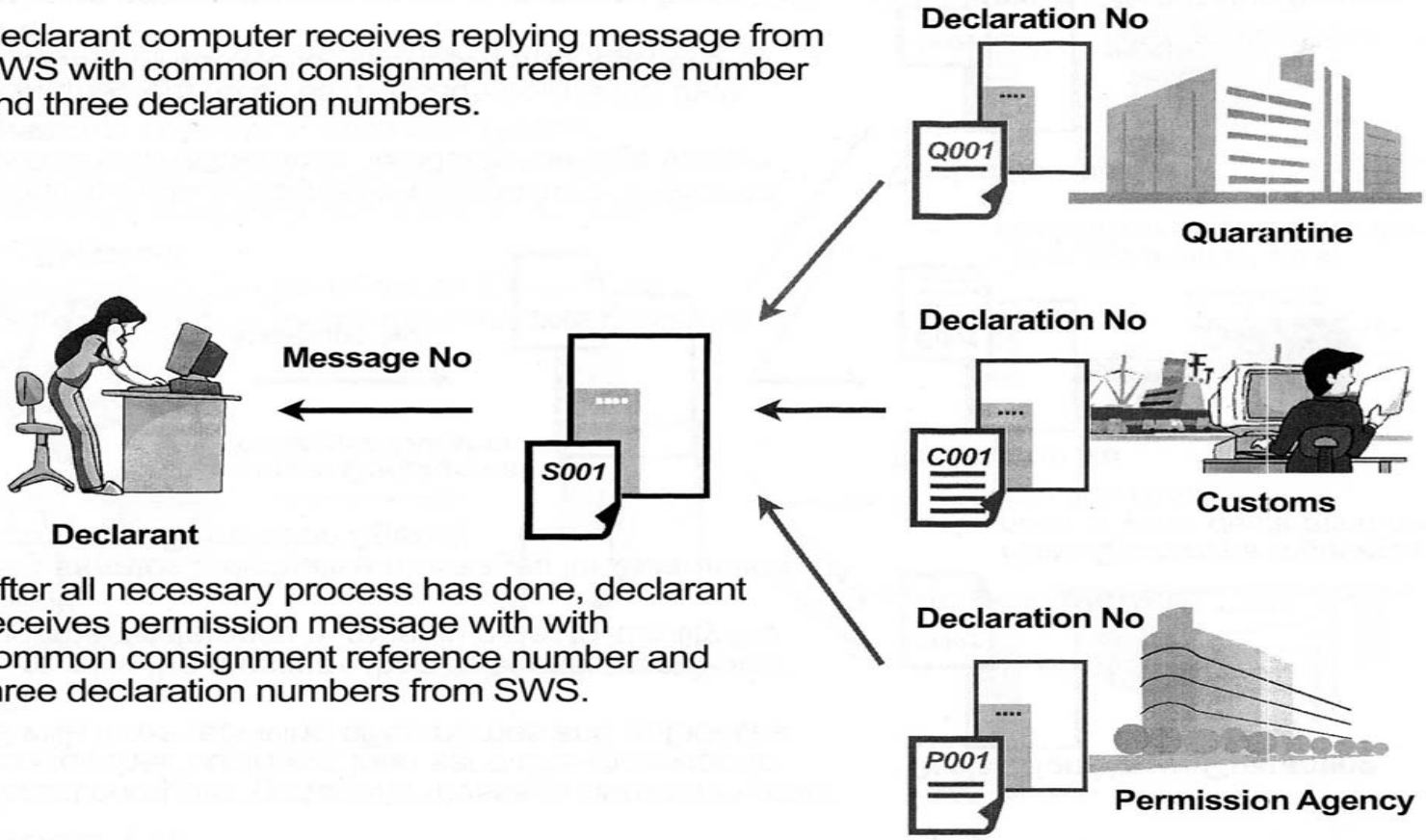


From permission agency point of view, declaration has two line items.

Operation (2)

Operation (2)

- Declarant computer receives replying message from SWS with common consignment reference number and three declaration numbers.

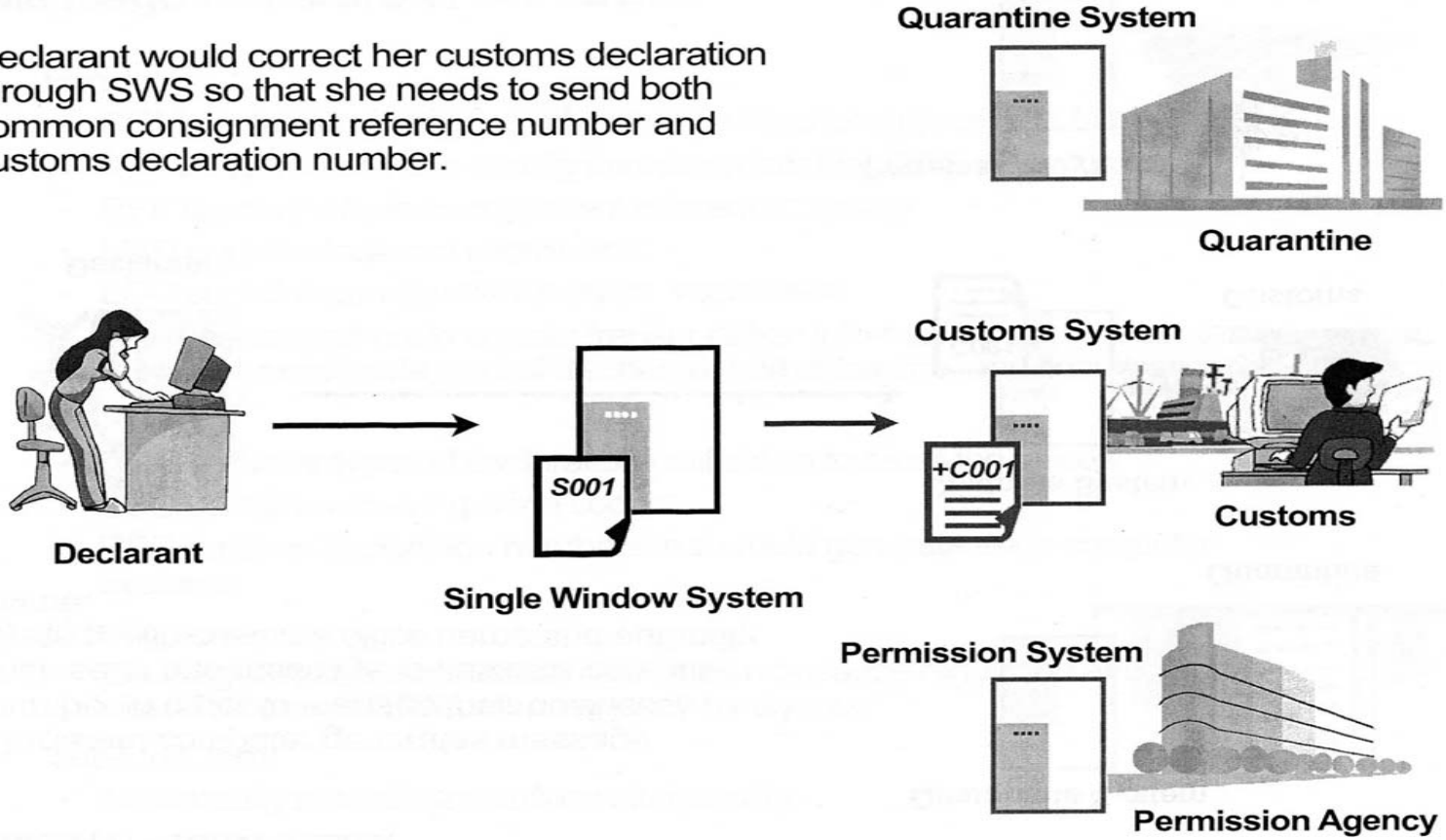


- After all necessary process has done, declarant receives permission message with with common consignment reference number and three declaration numbers from SWS.

Operation (3)

Operation (3)

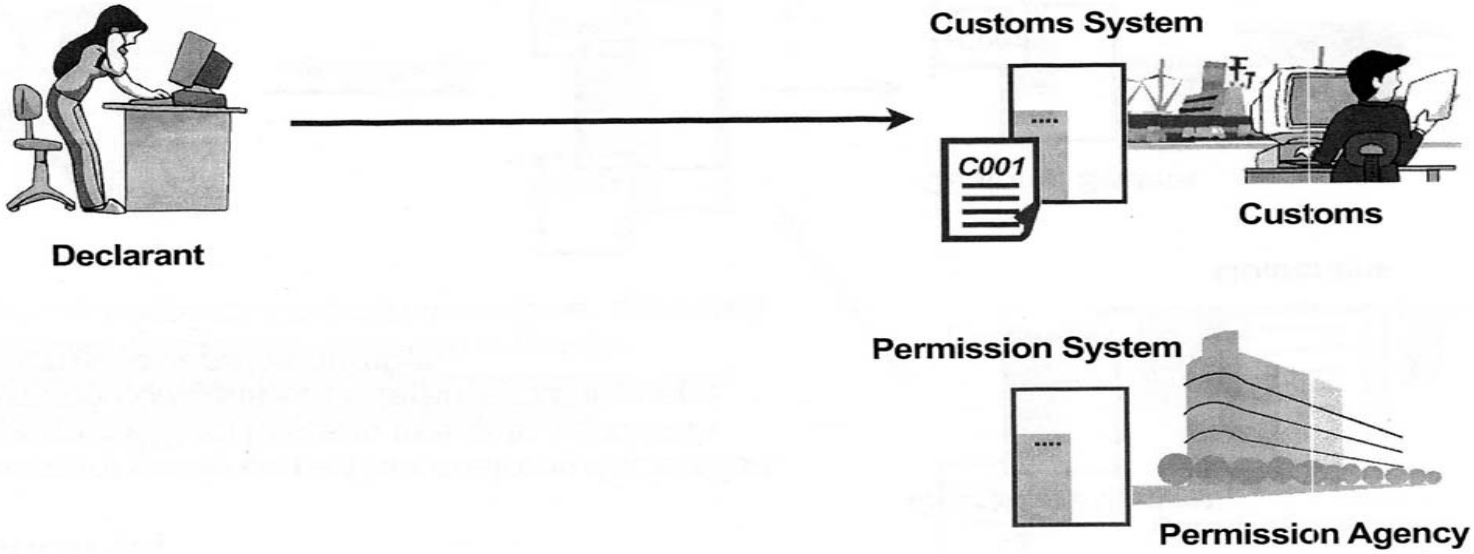
- Declarant would correct her customs declaration through SWS so that she needs to send both common consignment reference number and customs declaration number.



Operation (4)

Operation (4) - conventional

- Declarant computer generates message number in order to manage their business, then send one message to customs computer system with customs office name and authority name.



Message Structure of GOVDEC

Message Structure of GOVDEC

Header

- BGM contains message number that declarant computer would generate.
+ RFF contains common consignment number that SWS would generate.
- RFF contain unique consignment reference number.
- NAD contain declarant information.
- LOC contains consignment location information.
- Also header part could contain transportation information, such as container number, vessel code, port of discharge, port of loading, and final destination.

Sub-Header

- DOC contains types of declaration/notification to receiving offices.
- LOC contains receiving office codes.
+ RFF contains declaration numbers that would generate each computer systems.

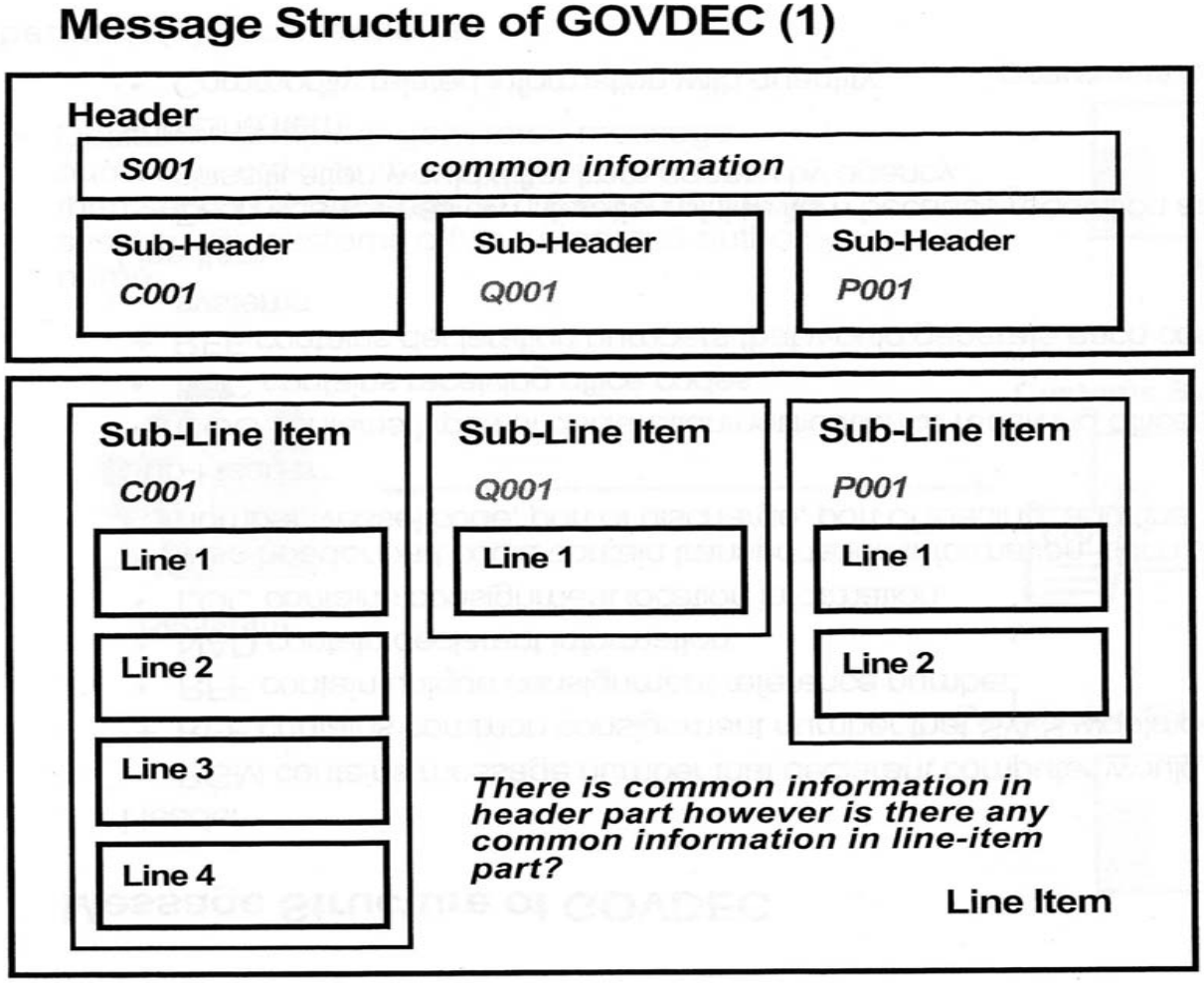
Line Item

- Each agency has own iteration of line item because regulation and classification would differ from agency by agency.

Sub-Line Item

- Commodity related information with quantity.

Message Structure of GOVDEC (1)



Even all government agency uses same commodity code and format, number of item lines could be different because of difference of regulations.

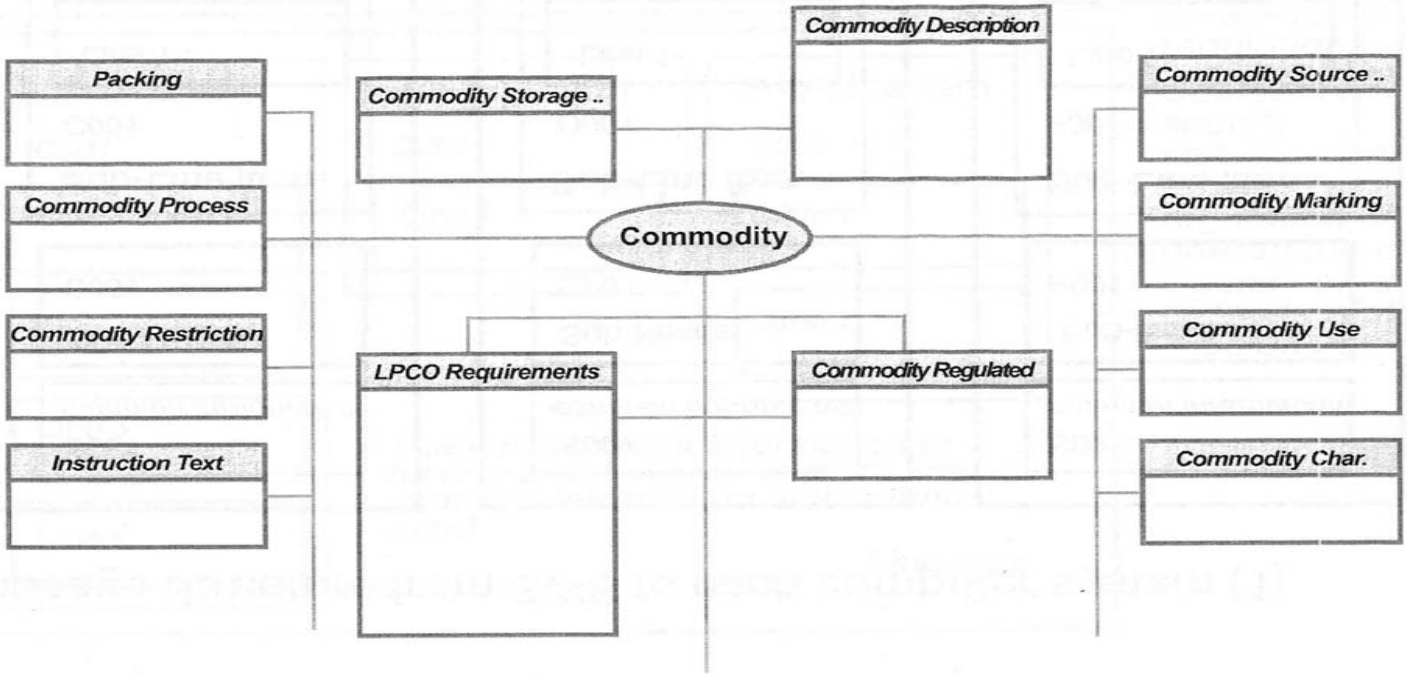
Customs has to specify consignment on the base of tax regulation and quarantine has to classify on the base of food safety regulations.

Message Structure of GOVDEC

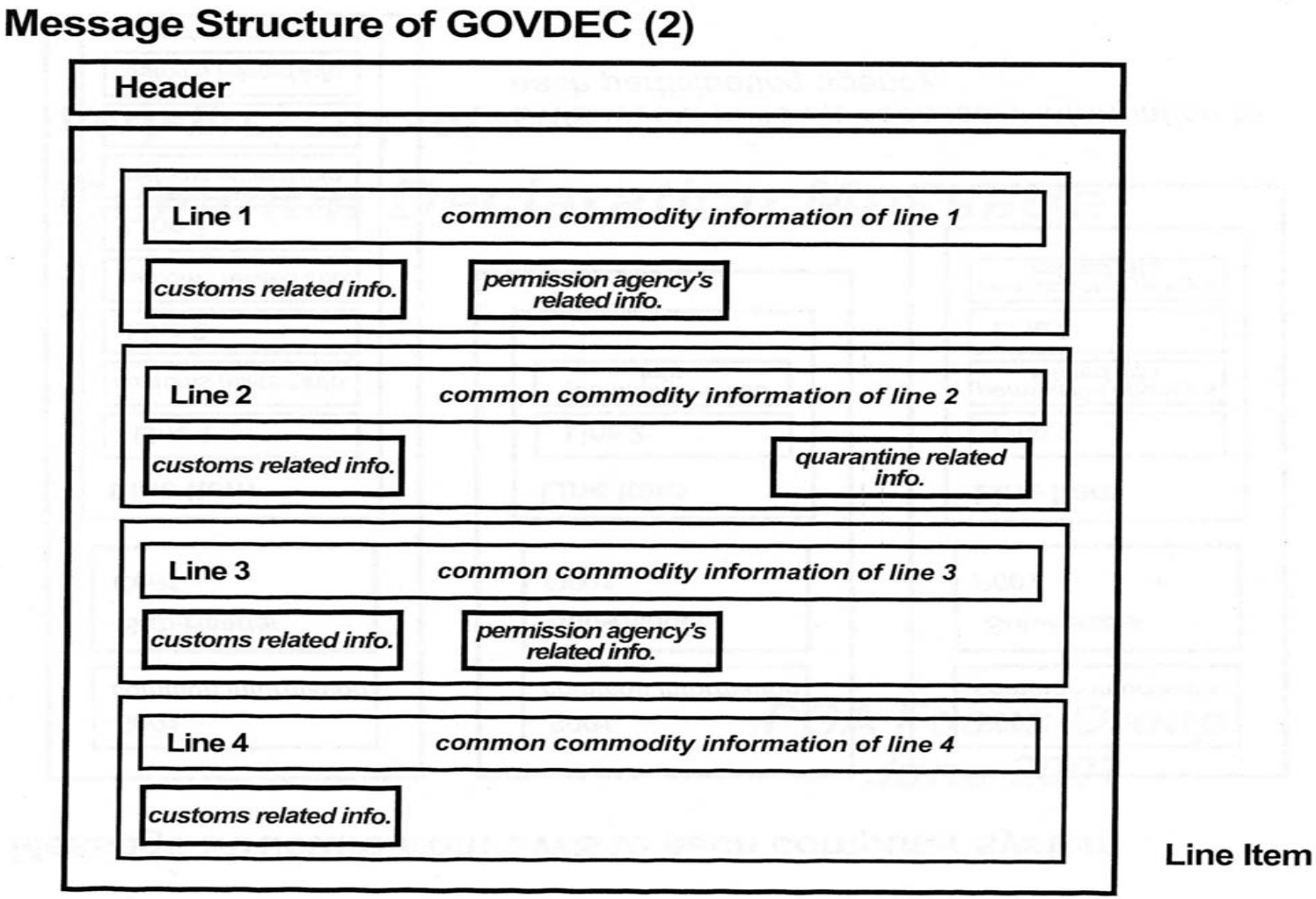
Message Structure of GOVDEC

If we could fully harmonize commodity information between all participating government agency, Line Item part of GOVDEC should be more simple.

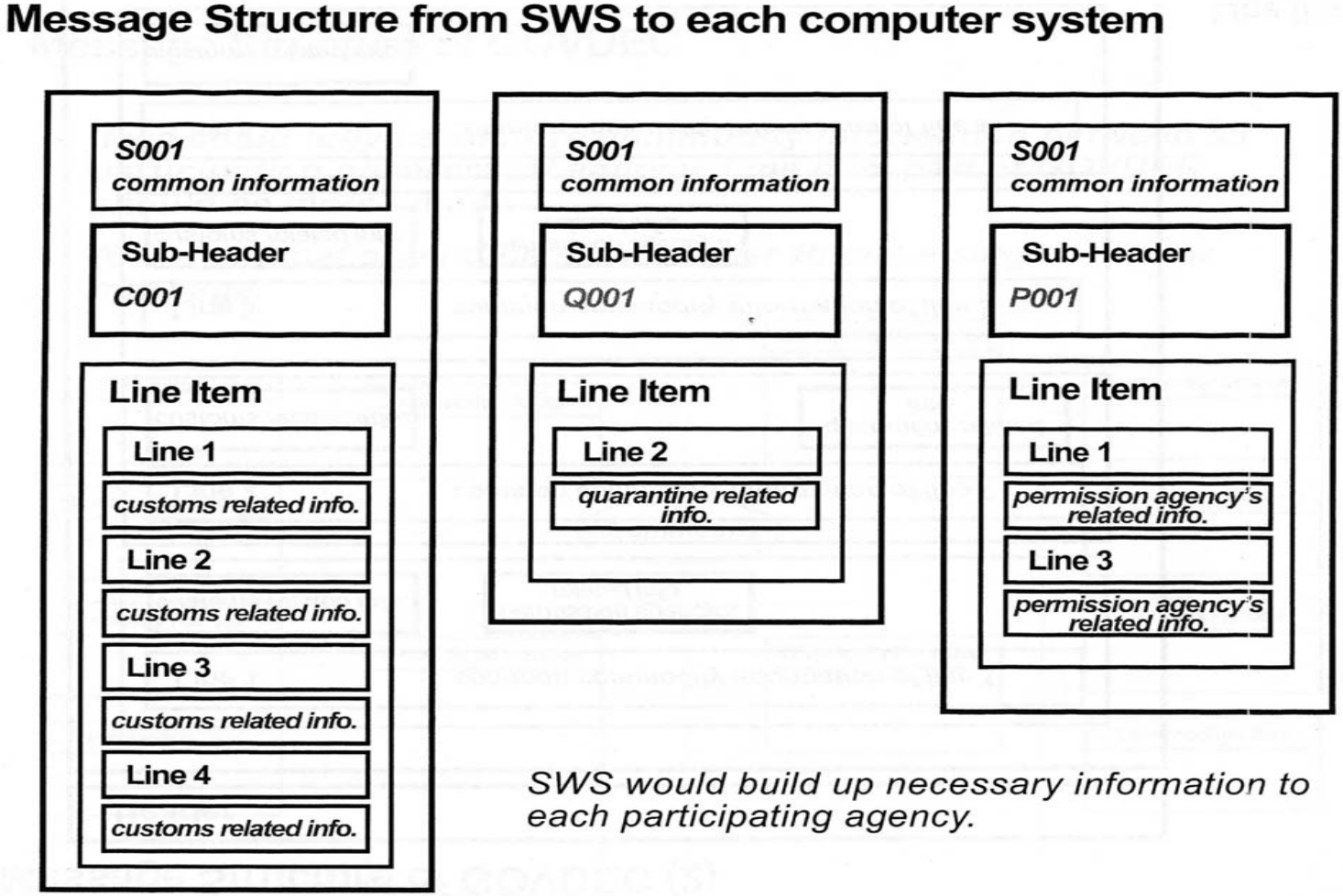
And declarnat should be much easier to make single window message.



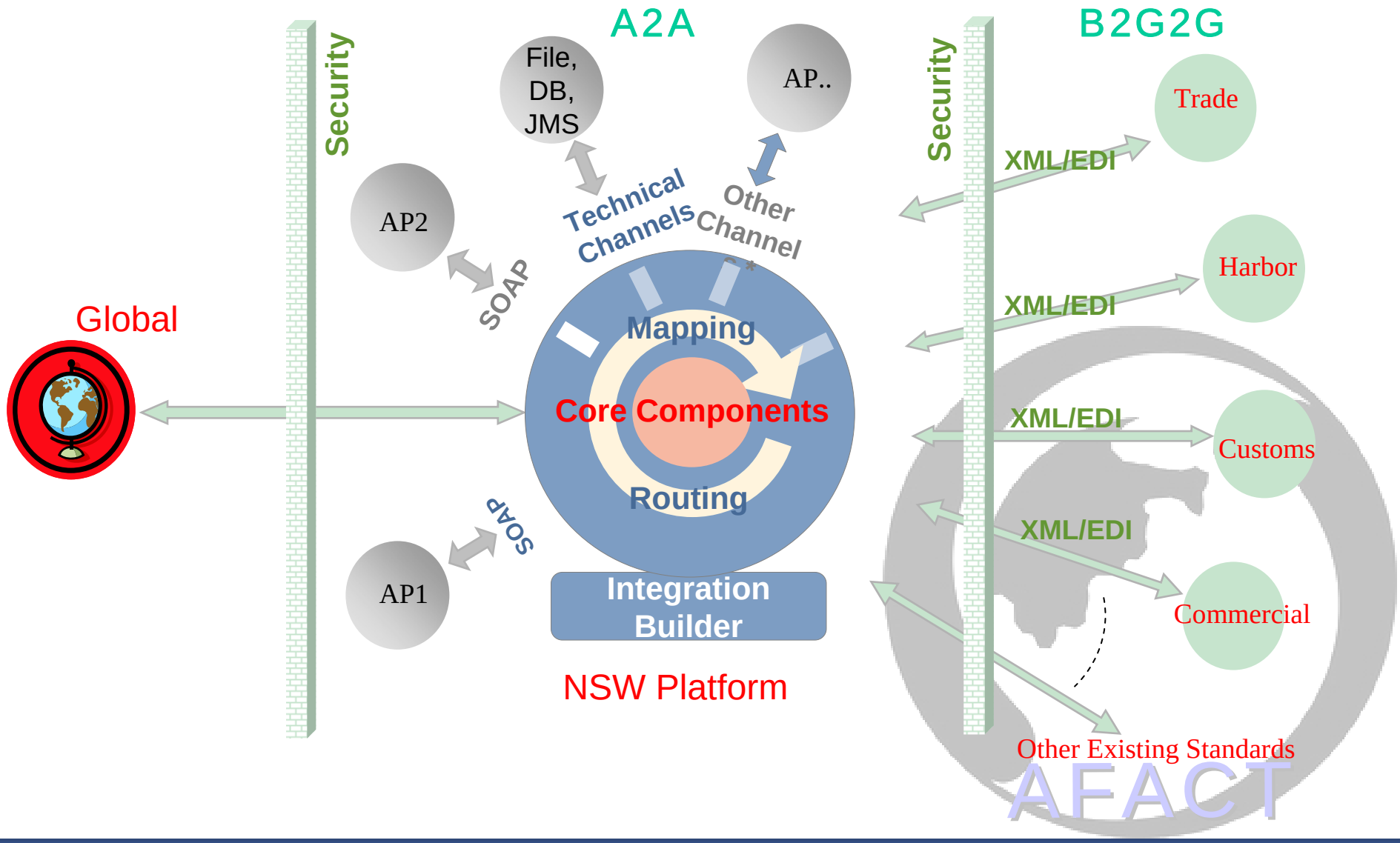
Message Structure of GOVDEC (2)



Message Structure from SWS to each Computer System



CC in NSW of Chinese Taipei




Thanks
for Attention!