UN/CEFACT Evolution/Revolution

Reference Data Models (Semantic Models)

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Agenda

• **Principle of Reference Data Models**
  • Mr. Gerhard Heemskerk, lead editor SCRDM

• **Multi-Modal Transport RDM**
  • Ms. Sue Probert, Chair UN/CEFACT, lead editor MMT

• **Link between Supply Chain and Transport**
  • Mr. Rolf Wessel, project lead SCRDM
Principle of UN/CEFACT Reference Data Models

Mr. Gerhard Heemskerk, lead editor SCRDM
A new way to facilitate eBusiness communication

• A semantic model that suits more the data exchange requirements of the future such as for data pipelines as well as for traditional document based data exchanges.

• Reducing dependency on traditional documents by focussing more on process driven data and workflows.
A new way to facilitate the future

traditional infrastructure & super highways

traditional documents & process driven data
What is a UN/CEFACT Reference Data Model?

• An exchange syntax neutral semantic model, a rich collection of business artefacts (subset of library), contextualized for a specific domain

• Based on:
  • UN/CEFACT Core Component Library (CCL)
  • UN/CEFACT BRSs (Business Requirement Specifications)
  • UN/CEFACT principles of UN Layout Key
  • UN Trade Data Element Directory
  • UN/EDIFACT
  • UN/CEFACT principles (harmonization, standardization simplification)
Benefits of UN/CEFACT Reference Data Models

• **Efficient**
  - to implement (restriction of artefacts used, not used principle)
  - to maintain (restriction of same artefact instead of doc specific ones)
  - to find, appropriate artifacts in one subset of the CCL (no redundancy)
  - light weight message xsd’s (only needed re-usable BIEs, qDT’s, uDT’s)

• **Trusted semantic model**
  - international standardized & harmonized
  - links to rich legacy of UN Key Layouts and UN/EDIFACT

• **Enhances interoperability**
  - sharing data e.g. Supply Chain (SCRDM) & Transport (MMT RDM)
  - integrated international code lists (UNECE, UN/EDIFACT, ISO etc.)

• **Future proof**
  - a syntax neutral semantic model
  - support information sharing, such as enabled by data pipelines
What is the evolution?

• Moving from document centric to process driven artefacts

• Still supporting document centric & process driven workflows and data exchange structures

• Introducing a standardized master message structure, syntax-neutral data from which complete documents and/or snippets can be created
Reference Data Model: subset of the library

UN/CEFACT Core Component Library (CCL)

Subset of UN/CEFACT Core Component Library

Master Message Structure

Business Data Exchange Structure(s)

Process Driven Artefacts (only Reference BIEs used)

Example: SCRDM Subset of CCL

Example: SCRDM CII (Invoice)
No more dependency on traditional documents

Document Centric

Above artifacts can only be used for specific documents

Process Driven

Process driven artefact (Reference BIE)

Same artifact can be used within different processes and message structures

Data contextualized for a process and/or a message structure

Master message structure Contextualized for complete documents or snippets
Simplification: Supply Chain 40% less needed, than using document centric approach

CCL Progress

Key:
- ABIE - Aggregate Business Information Entities
- ACC - Aggregate Core Component
- qDT - Qualified Data Type
- Messages

Supply Chain Management & Procurement
Transport & Logistics
Accounting and Audit
Agricultural
Environmental Management
Finance and Payment
Travel and Tourism
Insurance

123 Messages
169 Code lists
1218 Business artefacts
579 Core components
Multi Modal Transport Reference Data Model

Ms. Sue Probert, lead editor MMT RDM
(Multi Modal Transport Reference Data Model)
The model behind the UN/CEFACT MMT RDM

The international Supply Chain Reference Model

BUY

SHIP

PAY

Prepare for Export

Export

Transport

Prepare for Import

Import

INvolves

Commercial Procedures
- Establish Contract
- Order Goods
- Advise On Delivery
- Request Payment
- Packing
- Inspection
- Certification
- Accreditation
- Warehousing

Transport Procedures
- Establish Transport Contract
- Collect, Transport and Deliver Goods
- Provide Waybills, Goods Receipts Status reports etc.

Regulatory Procedures
- Obtain Import/Export Licences etc
- Provide Customs Declarations
- Provide Cargo Declaration
- Apply Trade Security Procedures
- Clear Goods for Export/Import

Financial Procedures
- Provide Credit Rating
- Provide Insurance
- Provide Finance
- Execute Payment
- Issue Statements

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The Relationship between International Sales and Transport Service Contracts

- **Sales Contract**
  - International Purchase and Supply
  - Actors/Roles
    - Customer
    - Supplier
    - Authority
    - Intermediary
  - Order, Ship, Pay (Sales)
  - Transport Service Contract
    - Establish Agreement (Sales)
    - Order Transport Services
    - Payment (Transport)
  - Border Clearances
    - Import/Export Declarations
    - Cargo and Transit Reports
    - Origin and Other Certificates

- **Transport Services Buyer**
  - Actor/Roles
    - Buyer
    - Final Consignee
    - Importer
    - Chamber of Commerce

- **Supplier**
  - Actor/Roles
    - Seller
    - Original Consignor
    - Exporter
    - Customs Agent
    - Insurer

- **Customer**
  - Actor/Roles
    - Authority
    - Customs
    - OGAs
    - Certification Authority

- **Sales Quotation**
- **Sales Order**
- **Sales Invoice**

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Relationship Commercial and Logistical data

Commercial Processes

Logistical Processes

Buy/Ship/Pay – Cross Border Trade, Transport & Customs – Business Entity Overview
Using a common library and deriving messages

UN/CEFACT Core Component Library (CCL)

Supply Chain (BUY PAY) Semantic model
- e.g. Invoice
- e.g. Order
- e.g. Quotation

BUY PAY Master (Master message structure)

BUY SHIP PAY Semantic model
- e.g. Bill of Lading
- e.g. Booking
- e.g. BayPlan

SHIP Master (1) (Master message structure)
SHIP Master (2) (Master message structure)

Multi Modal Transport (SHIP) Semantic model

Based on

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* No of ABIEs
BUY SHIP PAY master message structure

The ‘Common Master’ message structure

- BSP D17B Master
- Core Component Types
- BSP D17B Context CCL
- CCL17B uDT2-3; edit
- Main
  - Masters
    - C Buy Ship Pay Master
      - C Exchanged Document Context
      - C Exchanged Document
      - C Exchanged Declaration
      - C Logistics Transport Movement
      - C Supply Chain Consignment
      - C Logistics Transport Equipment
      - C Transport Service
      - C Trade Settlement Payment
      - C Supply Chain Trade Transaction
      - C Valuation Breakdown Statement

Library CCL

BUY SHIP PAY (BSP) semantic model

BUY SHIP PAY MASTER (master message structure)

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BUY SHIP PAY Reference Data Model

Based on

COMPLETE LIBRARY
UN/CEFACT CCL

BUY SHIP PAY
Semantic model
Library subset/restrictions

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BUY SHIP PAY RDM – Contextualized

Based on UN/CEFACT Forum, Hangzhou 15-19 October 2018
SCRDM & MMT (Trade Price contextualized)

Based on

**SCRDM**
Semantic model
Trade Price subset/restriction

- Net Price Indicator
- Type Code
- Charge Amount
- Basis Quantity
- Minimum Charge Amount
- Maximum Charge Amount
- Minimum Quantity
- Maximum Quantity
- Unit Amount
- Change Reason Text
- Order Unit Conversion Factor
- Repackaging Charge Amount
- Repair Charge Amount
- Deprecated Validity Period
- Applied Allowance/Charge
- Validity Period
- Included Tax
- Referenced Document
- Delivery Location
- Comparison Price
- Trade Comparison Price
- Associated Document

**MMT**
Semantic model
Trade Price subset/restriction

- Net Price Indicator
- Type Code
- Charge Amount
- Basis Quantity
- Minimum Charge Amount
- Maximum Charge Amount
- Minimum Quantity
- Maximum Quantity
- Unit Amount
- Change Reason Text
- Order Unit Conversion Factor
- Repackaging Charge Amount
- Repair Charge Amount
- Deprecated Validity Period
- Applied Allowance/Charge
- Validity Period
- Included Tax
- Referenced Document
- Delivery Location
- Comparison Price
- Trade Comparison Price
- Associated Document
Contextualized SCRDM messages structure

Supply Chain – BUY PAY - subsetting
SCRDM master message structure
Contextualized MMT RDM messages structure

Multi Modal Transport – SHIP - subsetting
MMT RDM master message structure

Bill of Lading / IFTMCS

Operational Manifest / IFCSUM

Container BayPlan / BAPLIE

Pipeline Data Exchange Structure (CORE/SELIS)

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The MMT based E-CMR & IMO FAL message

**eCMR**

- eCMR D18A MMT
- MMT D18A Context SHIP Master
- Core Component Types
- eCMR D18A Context CCL
- CCL18A uDT2-3; edit
- Main
  - Masters
    - C e-CMR Master Message
      - C Document Context
        - A Transaction ID
        - C Business Process
        - C Guideline
      - C eCMR Header Details
        - A eCMR ID
        - A Type Code
        - A eCMR Issue Date Time
        - A Contractual Remarks
        - C Additional Particulars Note
        - C Issue Location
        - C Message Issuer
        - C Message Recipient
      - C Road Consignment
        - A Gross Weight
        - A Gross Volume
        - A Associated Invoice Amount
        - A COD Amount

**IMO FAL**

- MMT IMO FAL Guide
  - Main
    - Masters
      - C IMO FAL Guide
        - C Logistics Transport Movement
          - A ID
          - A Stay ID
          - A Passenger Quantity
          - A Crew Quantity
          - C Arrival Event
          - C Departure Event
          - C Used Transport Means
          - C Itinerary Route
          - C Call Event
          - C Carrier Agent
          - C Specified Event
        - C Master Consignment
          - C Included Consignment Item
            - A ID
            - A Sequence Number
            - A Goods Type Code
            - A Gross Weight
            - A Gross Volume
            - A Package Quantity
            - A Package Type Text
            - C Cargo Nature Identification
            - C Transport Dangerous Goods
            - C Used Transport Equipment
TDED and code lists links

<table>
<thead>
<tr>
<th>Occurrence</th>
<th>Element/Attribute</th>
<th>Short name</th>
<th>TDED</th>
<th>QDT</th>
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<td>operational category for this</td>
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<td>transported cargo, such as</td>
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<td>obnoxious or military.</td>
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<td>this transported cargo.</td>
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Link between Supply Chain and Transport

Mr. Rolf Wessel, project lead editor SCRDM
(Supply Chain Reference Data Model)
Supply Chain & Transport related projects

**BSP**
Publication Buy Ship Pay Reference Data Model Project
Proposed: Cross Industry Track & Trace

**SCRDM**
- Extension of Cross Industry Invoice technical artefacts
- Extension of Cross Industry Cataloguing, Quotation, Ordering, Delivering and Remittance Advice technical artefacts
- Extension of Cross Industry Cross Industry Scheduling
- Cross Industry Invoice-BRS Repository
- Proposed: Revised BRS Despatch & Receive process

**MMT RDM**
- e-CMR
- IMO FAL
- Data Pipeline Carrier
- Smart Containers

**General**
- Procedures for RDM & associated artefacts publication
- Code Management Project
- Proposed: CCBDA profiles Schema Project
Supply Chain & Transport sharing same docs

White Paper
• Concept outline of a Reference Data Model

BRS & CCBDA message structures (Supply Chain & Multi Model Transport)
BRS (Business Requirements Specification)
• Processes in the Supply Chain domain
• Relations to Transport, Finance, Government domains
• The actors and scenarios
CCBDA message structures
• Mapping business requirements to business information entities (Ref BIE)

Guideline
• Executive summary
• Philosophy behind the concept
• Working process and methodology
• Steps for using, updating and creating
Supply Chain & Transport simularity

- **Processes**

<table>
<thead>
<tr>
<th>Supply Chain</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quoting products &amp; services</td>
<td>Booking Transport</td>
</tr>
<tr>
<td>Ordering products &amp; services</td>
<td>Ordering Transport</td>
</tr>
<tr>
<td>Confirming Order</td>
<td>Confirmation Transport Order</td>
</tr>
<tr>
<td>Instructing Delivery/Handling</td>
<td>Instructing Shipping</td>
</tr>
<tr>
<td>Despatching/Receiving products</td>
<td>Picking up/Unloading goods</td>
</tr>
<tr>
<td>Invoicing goods &amp; services</td>
<td>Invoicing freight</td>
</tr>
<tr>
<td>Synchronizing &amp; status on deliveries</td>
<td>Synchronizing &amp; status on transport</td>
</tr>
</tbody>
</table>

- **Party Roles**

<table>
<thead>
<tr>
<th>Supply Chain</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buyer/Customer</td>
<td>Final Consignee</td>
</tr>
<tr>
<td>Seller/Supplier</td>
<td>Original Consignor</td>
</tr>
<tr>
<td>Buyer/Customer</td>
<td>Transport Service Buyer</td>
</tr>
<tr>
<td>Invoice issuer</td>
<td>Invoice Issuer</td>
</tr>
<tr>
<td>Invoicee</td>
<td>Invoicee</td>
</tr>
<tr>
<td>Sales Agent</td>
<td>Freight Forwarder</td>
</tr>
</tbody>
</table>
Supply Chain & Transport common language

Buy/Ship/Pay RDM

Shared Business Artefacts
- Trade Delivery Terms (inco)
- Trade Party
- Trade Contact
- Trade Address
- Referenced Documents
- Supply Chain Consignment
- Logistics Label
- Delivery Instructions
- Handling Instructions
- Geographical Coordinate
- Logistics Location
- Logistics Package
- Logistics Transport Equipment
- Logistics Transport Means
- Logistics Transport Movement
- Logistics Service Charge
- Logistics Shipping Marks
- Transport Dangerous Goods

Supply Chain RDM

Multi Modal Transport RDM

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Thank you for your attention!

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