From Data Elements to APIs
Example of Smart Containers Project

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AGENDA

1. Composite Services
2. APIs are the GLUE
3. Semantics and Syntax
4. Data Exchange Standards
5. UN/CEFACT Smart Container Methodology
6. Point of view
DATA IS THE NEW OIL ... Sensing As A SERVICE...... COMPOSITE SERVICES......
BUILD YOUR Application…

Agility & Cost-effectiveness
Composite Service

Service interface API... WS or REST...

Service Registry

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Serve the whole Ecosystem
Services Market Place

- Shipper
- Road
- Port of Loading
- Maritime Transport
- Port of Unloading / Loading
- Inland Navigation
- Road
- Destination

Data Sharing Architecture

- ERP TMS
- e-CMR
- PCS
- e-Bol
- PCS
- RIS-COMEX VOAGE PLAN
- e-CMR
- ERP

APIs:
- API

Government Control Agencies
- API

Find Contract
- Track & Trace, ETA
- Synchronize
- Devices

Smart Container
- third party applications
DATA THAT MATTERS
SERVICES THAT MATTER

INTERFACES THAT MATTER
APIs are the GLUE

Interfaces could be Vendor lock-in
Standards Data Exchange

Service Provider 1

Service Provider 2

Standard format

Service Provider 3

Service Provider 4

Service Provider 5

Service Provider 6
Orchestration: Your application becomes a composition of multiple third-party services (service consumer and a service provider)

Black boxes: third-party Services provide specific functionalities when they are invoked

Explicit Boundaries: Interfaces are key to exchange data (input/output)

Standards Interfaces enable services plug and play avoiding vendor lock –in!
Data Modeling is KEY for APIs Definition

1. **Value Proposition**: Define the scope of your service

2. Define the **transmitted data elements** (Outputs & inputs)

3. **Semantic**: Define your **catalogue** (definitions & data structures)

4. **Capitalize**: Pick, reuse and enrich existing data catalogue (if any)

5. **Syntax**: Make APIs based on standardized data elements
UN/CEFACT T&L Domain
Smart Container Project

Step by Step:
from Data Elements to APIs
Steps

1. Share a common understanding of the Smart Container Business use cases & stakeholders: **SCOPE**

2. Define structured data elements generated by smart container and their qualifiers: **TERMINOLOGY /SEMANTIC**

3. Select the data elements for a given use case

4. Choose the **SYNTAX** (language) to be used to communicate

Deliverables

- Smart Container **White Paper**
- Business Requirements Specifications (BRS) & **Entities Relationship Diagrams**
- **Generic message structure** (Technology Neutral)
- **APIs**

Resources

- Project Working Group from different backgrounds
- UN/CEFACT CODES Lists & Multi Modal Transport Reference Data Model (MMT)
- Contextualized Notification Messages Structures
- Multi Syntax World
UN/CEFACT Smart Container

SEMANTIC MODEL
MultiModal Transport (MMT)
(subset of BSP)

MultiModal (MMT)
Master message structure

Smart Container
message model

APIs
Syntax
Smart Container Data Schema

Buy/Ship/Pay (BSP)
Semantic model
Subset of CCL

BUY SHIP PAY
Master message structure

MMT subset
Exchange Syntax neutral
data exchange structure
My view

1. Deal with data exchange in-depth, complete the process and show how the CCL is essential for data exchange, we need to deliver APIs description.

2. Being able to share the data in a standard format and expose it as an API will catalyze innovation and enhance collaboration in all terms.
   1. Defining new value-added services - Data science, Artificial Intelligence etc.
   2. Using different data sources to create new services and value.
   3. Enabling new use cases that requires trust and transparency – blockchain (e.g., Fast lane, Finance and insurance institutions).
Thank you

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