

Agenda

About / Mission / goals / latest activities

Data modeling

API Guidelines

Use Cases and Processes under discussion

Looking forward / Next steps





Working group members

- Tamme Bohlen, Hapag-Lloyd (chair)
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- Paul Wauters, PSA Terminal Antwerp
- Stephan Krause, Eurogate Terminals
- · Hanane Becha, Traxens
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- Sönke Witt, HHLA Hamburg Terminals







Webservice Standardization by SMDG – Mission statement

Requirements on standardization

At the SMDG meeting in March 2017 in Genoa it was decided that in addition to the world of UN/Edifact standards, the SMDG would also start to engage in the standardization of web services.

Current level of standardization

- ✓ <u>Technical standards</u> already exist, such as REST or SOAP.

 The SMDG will use them but will **not** engage in developing them.
- Implementation guides no standards exists.
 Each party implements based on their own individual requirements.
- <u>Business level description</u> of Input Request and Output Response No standard exists. Each party uses their own wording.

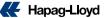






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Missing: A catalog of web services from Business Perspective

✓ All carriers and shippers presumably have similar operational requirements

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- ➤ The SMDG intends to publish a catalog of web services for the maritime industry.

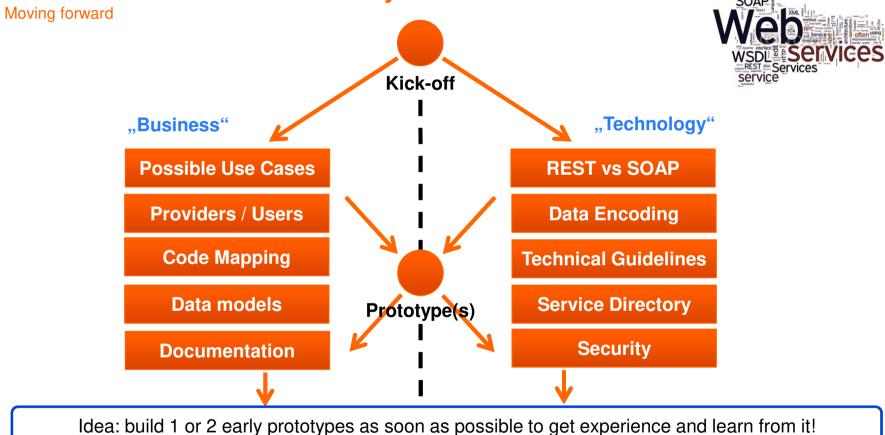
 Users could be Shipper Forwarder Carrier Agent Terminal Customs
- For each web service in the catalog there should be the business description, the implementation guide and the technical source
- SMDG to offer the standardized web services in addition to the Edifact MIGs.

| Name | Get Tare Weight | Send VGM | Obtain schedule connections | Track + Trace |
|--------------------|--|---|---|--|
| Purpose | Shipper needs container tare weight for VGM calculation | Shipper sends VGM to carrier or terminal and needs immediate reply (accept or reject) | Shipper needs schedule connections between two ports e.g. from SGSIN to NLRTM | Shipper needs to know the position of his cargo |
| Input request | Container number | VGM, container ID, booking number etc | two ports e.g. from SGSIN to NLRTM | Booking or B/L or container number |
| Output response | Size type and tare weight | Accept or reject with reason | Vessels and voyages with their ETA / ETD and cut-offs | Tracing status / latest position |













Existing standards for technical layer

REST – Representational state transfer

REST is a simple alternative to WSDL and SOAP. It's a programming framework (a core set of principles, properties, and constraints) that allows a service requestor to access web ressources (a core set of principles, properties, and constraints)

JSON – JavaScript Object Notation

It is the most common, language-independent data format used for browser/server communication. It is partly replacing XML. It's based on JavaScript. It's a simple data format that uses human-readable text to transmit data objects.

W3C = World Wide Web
Consortium

SOAP - Simple Object Access Protocol

SOAP is an XML-based protocol specification for exchanging structured information via web services. SOAP is a W3C standard. In use since version 1.0 in 1999, as successor of RPC.

As an <u>example</u> of what SOAP procedures can do, an application can send a SOAP request to a server that has web services enabled with the parameters for a search. The server then returns a SOAP response (an XML-formatted document with the resulting data). **SOAP is widely in use for Webservices.**

WSDL – Webservice Description Language
WSDL is an XML-based description language
independent of transmission protocol, programming
language or development platform. The filename
extension is .wsdl Current W3C standard is WSDL 2.0
It provides a machine-readable description of how the
service can be called, what parameters it expects, and
what data structures it returns.

XSD – XML Schema Definition

specifies how to describe the elements in an XML document. W3C recommendation.

We finally agreed to focus on:

REST OpenAPI





Examples – Pilot candidates

Real-life use cases for Webservice

required or already existing in the maritime industry

| Webservice Name: | Get Tare Weight | Send VGM | Obtain schedule connections | Schedule to Terminal | Track + Trace Shipper | Automated container tracking |
|---------------------|--|---|--|---|--|--|
| Purpose: | Shipper needs container tare weight for VGM calculation | Shipper sends VGM to carrier or terminal and needs immediate reply (accept or reject) | Shipper needs schedule connections between two ports e.g. from SGSIN to NLRTM | Carrier sends vessel schedule to terminal | Shipper needs to know the position of his cargo | The tracking device provider sends the container position to the carrier |
| Input request | Container number | VGM, container ID, booking number etc | two ports e.g. from SGSIN to NLRTM | Locode and Terminalcode | Booking or B/L or container number | - /- (time triggered) |
| Output response | Size type and tare weight, MGW + other cntr master data | Accept or reject with reason | Vessels and voyages with their ETA / ETD and cut-offs | For each voyage: Vessel name + ID, voyage number, ETA+ETD + cut-offs | Tracing status / latest position | Container number, position Lat+Lon |



Latest working group activities

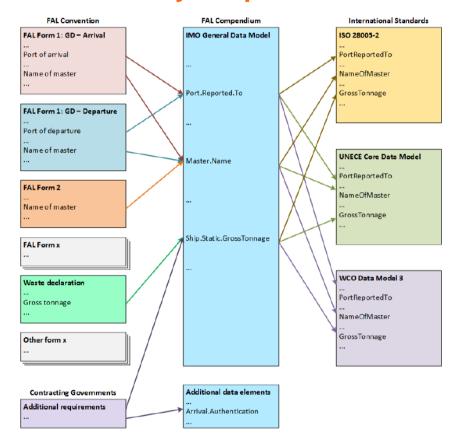
- 26.+27.6.2018 F2F-Meeting @Hapag-Lloyd, Hamburg
 - GEFEG.fx training by GEFEG
 - Introduction into CCL + MMT (Sue)
- 29.08.2018 F2F-Meeting @Hapag-Lloyd, Hamburg
 - Pilot candidates revisited
 - SMDG API Design Guideline
 - Where is the additional benefit of web services?
 - How close we want to couple to MMT/CCL?







IMO FAL data model: Loosely coupled data models







Data Modeling Approach Analysis

Heavy Data Modeling

(--) Heavy Upfront Efforts

- (--) Slow Start
- (--) Close Coupling

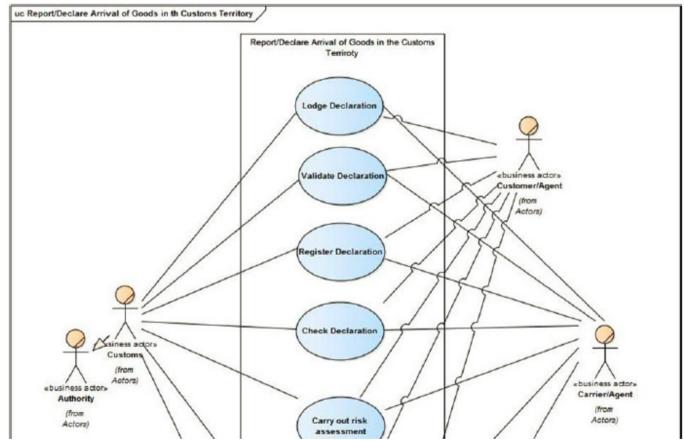


Use Case focus

- (+) Quick Start
- (+) Loose Data Coupling
- (+) Less efforts upfront



WCO example use case: Declare Arrival of Goods







SMDG Web Service API Design Guideline



SMDG Web Service Manifest

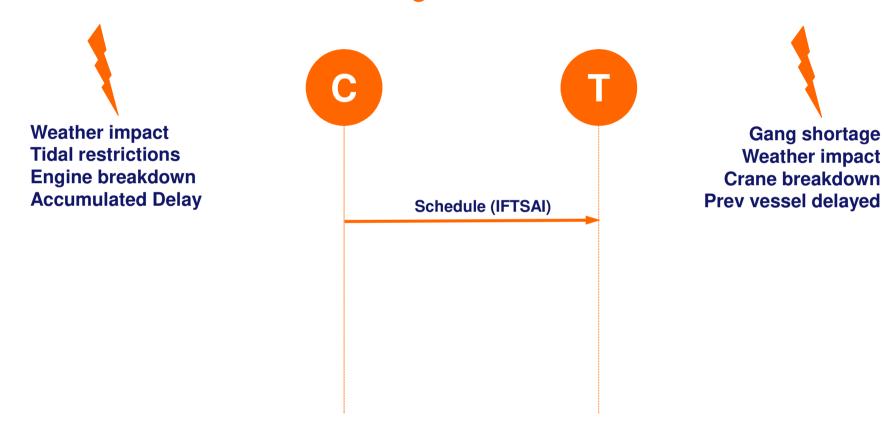
Version: 0.1 Status: Draft (Work in progress)

| SMDG Web Service Manifest | SMDG |
|--|------|
| Table of Content | |
| Scope and M ctivation | 8 |
| Guiding principles | 8 |
| Stateless design and resources (REST) | 3 |
| Security | 3 |
| Tolerant Reader | 3 |
| Relations to ED FACT/CC L/MM T | 3 |
| Tools and techniques | 4 |
| Use of swagger/Open API | 4 |
| BPMN to describe processes | 4 |
| UML | 4 |
| Te ohn loal oon ve ntion s | 4 |
| URL patterns | 4 |
| Naming | 4 |
| MIME types | 4 |
| Handling of list resources | 4 |
| Use of HTTP operations | 4 |
| Use of HTTP response/status codes | 4 |
| Date/Time Information | 4 |
| Error Handling | 4 |
| Link-Headers | 4 |
| Versioning | 4 |
| How to document request and answer content | 4 |
| Que stions and Answers | 6 |
| References | 6 |

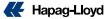




Terminal Visit / Berth Scheduling







Weather impact Tidal restrictions Engine breakdown Accumulated Delay Tidal restrictions Local bank holidays Tidal restrictions Local bank holidays Yard planning Berth planning



Shift/Gang planning

Crane work programs



Terminal Congestion

Connected services

Speed on sea passage

Terminal Visit / Berth Scheduling

Weather impact
Tidal restrictions
Engine breakdown
Accumulated Delay

Tidal restrictions
Local bank holidays
Terminal Congestion
Speed on sea passage
Connected services

Call Announcement Call Update / Cancellation Berth Availability Request Berthing Request Operational Event Notification Berth Availability Berth Confirmation/Refusal Operational Event Notification

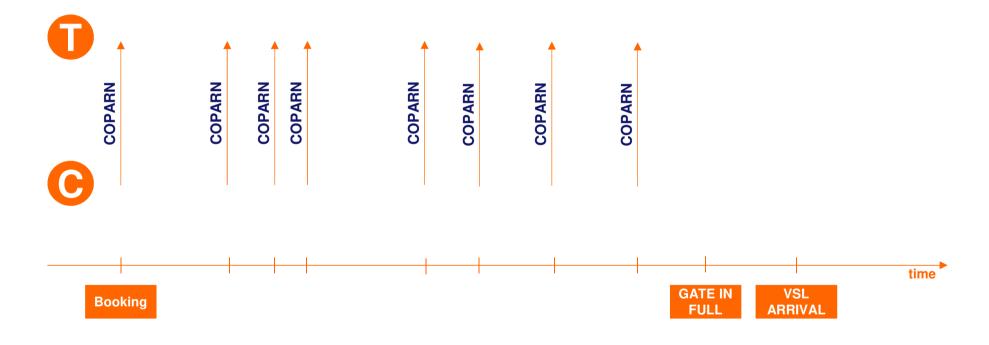
Gang shortage Weather impact Crane breakdown Prev vessel delayed

Yard planning Berth planning Shift/Gang planning Crane work programs



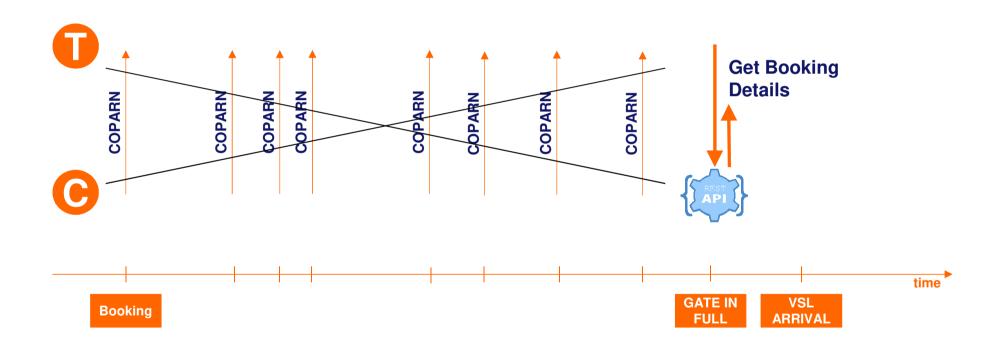


Get Booking Details





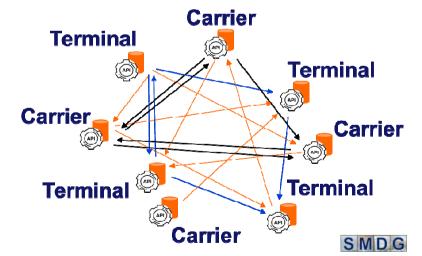
Get Booking Details





Web service governance

- Service Discovery
 - Who provides which services under which URL?
- Service routing
 - Which service provider do I need to call for which business object?
- Authentication / Access control



Next steps

- Further work on SMDG Web Service API Guideline
 - Web Service Governance
 - Security, Testing
- Build a library of Use Cases
 - Allow for process variation
 - Align data models
- Establish a pilot project
 - Select a specific Use Case
 - Use Case design & documentation
 - Recruit Participants





