

Webservice Standardization by SMDG

Proposal to the SMDG: Enter into the standardization and publishing of Webservices for the Maritime Industry in addition to the established Edifact message guidelines.

UN/Edifact

is the backbone of electronic communication in the maritime industry and it will surely continue to be.

But it has limitations when quick changes are required, and for smaller companies the initial implementation can be complex.

Webservice

is a modern means of connecting IT systems, widely accepted, with rapidly growing penetration. It is flexible to changes and can be implemented quickly. It is based on internet technology.

But the flexibility has its price. Each provider of a Webservice determines his own standard.



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In this presentation

- Edifact versus Webservice
- Different connectivity
- Existing technical standards
- Real life examples
- Requirements on a standardization / possible role of the SMDG
- Next steps: Proposal to establish a Webservice Workgroup within the SMDG



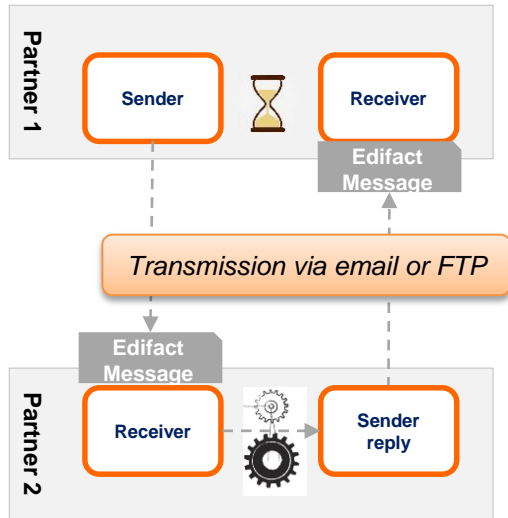
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Edifact versus Webservice

Different connectivity

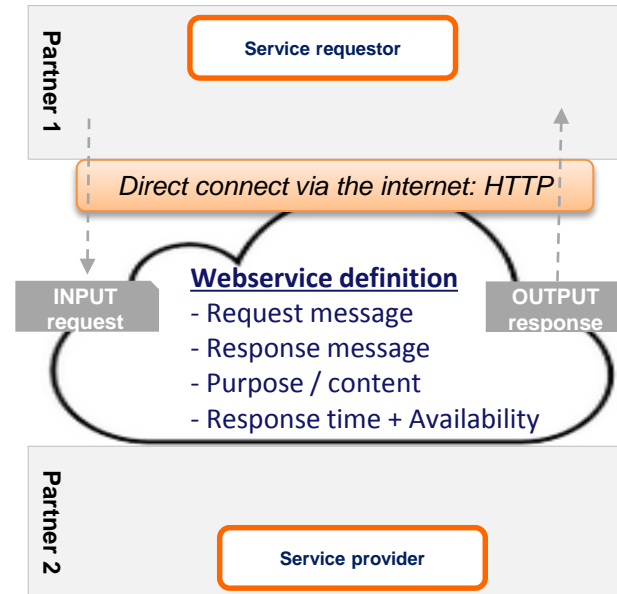
Edifact

asynchronous processing



Webservice

synchronous processing



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Standards for documentation

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.

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 resources (a core set of principles, properties, and constraints)

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 **example** 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.

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

XSD – XML Schema Definition

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

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Standards for documentation - examples

Existing standards focus on technical specification.
What's missing is a Webservice description from **business perspective**, that is understood by operations departments.

```
ContainerTrackTraceByContainerNumberService.wsdl x
1 <?xml version="1.0" encoding="UTF-8"?><wsdl:definitions targetNamespace="http:
2 <wsdl:documentation>
3 <wsdl:appinfo source="WMQI_APPINFO">
4 <MRWSDLAppInfo imported="true">
5 <generatedXSD location="ContainerTrackTraceByContainerNumberService.xsd"
6 <binding hasEncoding="false" imported="true" name="ContainerTrackTraceBy
7 </MRWSDLAppInfo>
8 </wsdl:appinfo>
9 </wsdl:documentation>
10 <wsdl:types>
11 <xs:schema attributeFormDefault="qualified" elementFormDefault="qualified"
12 <xs:include schemaLocation="ContainerTrackTraceByContainerNumberService.xsd"
13 </xs:schema>
14 </wsdl:types>
15 <wsdl:message name="TraceByContainerNumberRequest">
16 <wsdl:part element="hlag_em_ContainerTrackTraceByContainerNumberService:Tr
17 </wsdl:message>
18 <wsdl:message name="TraceByContainerNumberResponse">
19 <wsdl:part element="hlag_em_ContainerTrackTraceByContainerNumberService:Tr
```

WSDL example



```
ContainerTrackTraceByContainerNumberService.xsd x
1 <?xml version="1.0" encoding="UTF-8"?>
2 <xs:schema attributeFormDefault="qualified"
3 elementFormDefault="qualified" targetNamespace="http://esb.hlag.com/services/fis/online/em/Cont
4 xmlns:hlag_em_ContainerTrackTraceByContainerNumberService="http://esb.hlag.com/services/fis/onl
5 xmlns:ibmSchExt="http://www.ibm.com/schema/extensions" xmlns:soap="http://schemas.xmlsoap.org/
6 xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" xmlns:wsdl="http://schemas.xmlsoap.org/w
7 xmlns:xs="http://www.w3.org/2001/XMLSchema">
8 <xs:element name="TraceByContainerNumberRequest">
9 <xs:complexType>
10 <xs:sequence>
11 <xs:element name="userId" type="xs:string" />
12 <xs:element name="userPassword" type="xs:string" />
13 <xs:element name="iContainer">
14 <xs:complexType>
15 <xs:sequence>
16 <xs:element name="containerNumber" type="xs:string">
17 <xs:annotation>
18 <xs:documentation>
19 <![CDATA[I: Redesign TO-Plan in TUP completed
20 D: actual container number
21 R: If a container number was planned, it will be overwritten by the Handling-Status-System
22 R: CONTAINER_NUMBER must be checked against the CONTAINER-catalogue when:
23 1) HL CONTROLLED = 'Y'
```

XSD example

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Examples

Real-life use cases for Webservice
required or already existing in the maritime industry

Webservice 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

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Requirements on a standardization - Possible role of the SMDG

How should a Webservice be documented

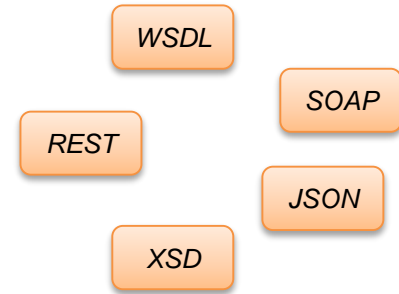
- ✓ Technical standards already exist, they are established, but the evolution is more dynamic than in the Edifact world.
- But what is the equivalent documentation for an implementation guide to build the bridge from business requirements to the technical solution?

Missing: A catalog of Webservices from Business Perspective

- ✓ All carriers and shippers presumably have similar operational requirements.
- Currently each party is developing their own Webservice in different manners because there is no standardization

Role of the SMDG

- The SMDG could publish a catalog of Webservices for the maritime industry. Users could be Shipper – Forwarder – Carrier – Agent – Terminal – Customs
- For each Webservice in the catalog there should be the business description, the implementation guide and the technical source



SMDG

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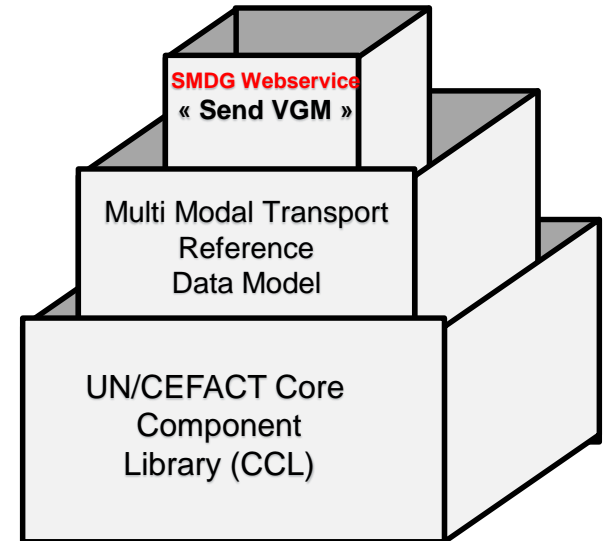
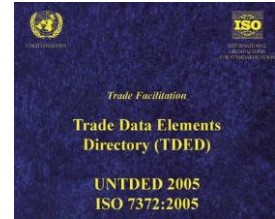
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Possible modelling techniques

How can the business layer of a Webservice be described?

→ We do not have to re-invent the wheel. There are well established techniques and data element repositories available that can be used. We might ask UN/CEFACT for some initial support.

- Option: UN TDED Trade Data Element Directory
A Directory comprising a set of data elements that are mainly used in EDIFACT Messages.
- Better option: MMT Multimodal Transport Data Reference Model by UN/CEFACT
 - ✓ The Multi Modal Transport (MMT) reference data model is a limited structured subset of the UN/CEFACT ebXML Core Components Library.
 - ✓ The Core Components Library, a neutral and syntax independent business data library with clear reference to the UN/EDIFACT transport messages.



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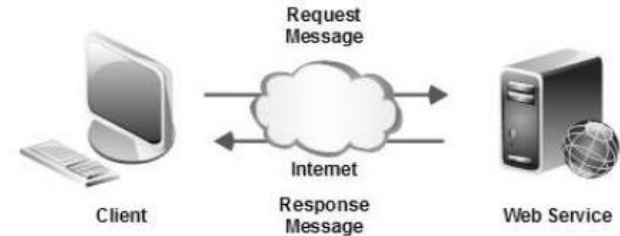
Next Steps

Opinion of the SMDG members

- Should the SMDG step into standardization and publication of Webservices?
PROs and CONs ?
- Who would participate in the new work group?

How to document a Webservice?

- Which technical standard to use? SOAP/XML? Or REST? Or another?
- How to publish the business description and the implementation guide?
Do you know of existing standards? Are there examples in your organization?
- Develop new SMDG standard for documentation?



What are your ideas?