



SEVENTH FRAMEWORK PROGRAMME THEME 7 Transport including Aeronautics



Neutral Layer Security Data Message Format

Project acronym: **SMART-CM**
Project full title: **SMART Container Chain Management**

Deliverable No. (use the number indicated on technical annex)		D2.4.1	
Workpackage No.	WP2	Workpackage Title	Neutral layer development and deployment of existing technologies
Task No.	T2.2	Task Title	Provision and interoperability
Date of preparation of this version:		15/10/09	
Authors:		Porthus	
Status (F: final; D: draft; RD: revised draft):		F	
File Name:		SMARTCM-D2.4.1 - v1 0 1 – Security Data Message Format.doc	
Version:		1	
Task start date and duration		M1-M15	

Revision History

Version No.	Date	Details
1.0.0	07/10/09	Initial document
1.0.1	15/10/09	Executive summary received

Table of Contents

EXECUTIVE SUMMARY	5
INTRODUCTION.....	6
XML SYNTAX.....	6
1 XML Schema.....	6
SDMF STRUCTURE DESCRIPTION.....	6
1 Column descriptions.....	7
1.1 Message levels	7
1.2 ID	7
1.3 M/O/C	7
1.4 Type.....	7
1.5 Length.....	7
1.6 Max Occurrence	8
1.7 Fix Value(s)	8
1.8 Provider.....	8
1.9 Source	8
1.10 Info	8
2 Additional information	8
REFERENCES.....	8
ANNEXE/CES.....	8

List of abbreviations

SDMF : Security Data Message Format (standard message format used on Security Services platform)
CSD: Container Security Data
XML: Extensible Mark-up Language
XSD: Schema Definition Language

List of Figures

No table of figures entries found.

List of Tables

No table of figures entries found.

Executive Summary

This document describes the standard message format used on the Neutral Layer to process the CSD data and forward this data to related actors. This document also refers to the Excel document "SDMF_X.X Definition.xlsx".

The SDMF format is a standard for XML message(s) that are used to communicate a load unit status. The SDMF format is created based on the requirements that are provided by the industrial actors, customs and CSD providers. It is a standard for the communication of wide set of container security related data and a limited set of fields that are related to logistics information for an individual load unit. Other types of information is to be retrieved from other sources.

This has three dimensions:

1. It is used by the neutral layer to provide information to public and private actors. The data included here should be minimal and agreed with the CSD providers, in order to create acceptance and allow the CSD providers to safeguard their own added value.
2. Other systems can use the same message to provide load unit status information. E.g. Terminal operating systems (TOS), Warehouse management systems (WMS), Port Management information systems (Port MIS), or Fleet cargo monitoring systems.
3. Certain optional elements in this message can be used to make available information from CSD providers that is not part of the neutral layer, but which a sufficiently large number of providers can and wants to support to enable value-added services. These data are sent directly from the CSD providers to the value added services (not through the neutral layer).

This deliverable document is part of task T2.4 Provisioning and Interoperability.

Introduction

The “security data message format” has been designed to hold all possible data sent by various data providers, mainly CSD providers. The current layout and fields are based example messages from a certain number of CSD providers.

The advantage of transforming all inbound data to this one unique structure is double:

- It simplifies the analyzing process and the data flow through the system
- It can be used as standard interface to upstream actors (services)

The message will be built in the XML syntax (<http://www.w3.org/XML/>).

XML Syntax

Extensible Markup Language (XML) is a simple, very flexible text format and plays an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.

The use of XML as syntax for the standard message format has multiple advantages. It offers a lot of possibilities structure wise, it can be described in a separate schema and is rather easily queryable. It is very useable as interface format to upstream providers and parties who would like to integrate with the VeLP Platform as most modern software providers support XML which makes it rather easy to implement the message in there system.

Finally, it is also very “human readable” which can be interesting in certain situations.

Using the XML syntax, a certain structure can be created in which the data will be stored.

1 XML Schema

One of the advantages of XML is that its structure can be described in a separate XML schema, using the XSD standard (<http://www.w3.org/XML/Schema>). Such an XSD schema describes which fields are used in the XML file and which of these fields are mandatory or optional. It also describes the field format types, lengths, etc...

This XSD schema also has multiple advantages:

- It can be used to exchange the message structure information to possible parties who would like to integrate and implement the message in there own system.
- The party who constructs the XML message can use the schema to validate the message before sending it. This way, it is assured that the receiving party who has implemented the message based on the same schema will successfully translate and process the message.
- The party who receives the XML message can use the schema to validate the message before processing it. This way, it is assured that the data will successfully processed towards the application
- The schema can also be used during the implementation development process as documentation or to automatically extract an example XML (test) message.

SDMF Structure Description

As discussed in 7.1, an XML Schema can be created to describe the XML message structure.

During the analysis and design phase, an excel document “SDMF_X.X Definition.xlsx” was created to give an overview of all XML fields, field formats, descriptions and other additional information.

This excel has following functionalities:

- It can be used as input to reviewers and other parties involved in the analysis and design process
- Once final, the XSD schema can be created based on the Excel document
- During the mapping analyzing phase, the excel document can also be used to create a “paper mapping” where the fields of the external format can be matched with the fields of the SDMF message. This paper mapping can be used as documentation for the developer who will build the actual mapping.

Basically, the XML documents lists all used data fields that need to be covered in the SDMF message. Next, extra information is added in order to create a full view on how the SDMF message will be structured and what the fields are used for.

1 Column descriptions

1.1 Message levels

The data fields are listed in 5 hierarchical message levels. The first 5 columns show the level on which the data field or group is placed. These message levels refer to the relation between certain groups and/or fields. It shows which fields are part of which groups. (If an element holds other elements, it is called a group.)

The top level refers to the SDMF root element. This element holds 2 other elements, “SDMFHeader” and “SDMFBody”. These 2 elements are placed on level 2 and have the SDMF root element as “parent”. On level three, the first data elements are listed which have “SDMFHeader” as parent element etc... Level 5 is de lowest message level.

1.2 ID

For documentation purposes, a unique ID is assigned to each listed data field or group. It is only used during analyzing and design phase to easily identify the various elements. It is not meant to use technically in the system itself.

1.3 M/O/C

This column indicates whether the element is mandatory, optional or conditional.

- Mandatory: This element always needs to be specified as it contains mandatory data or other mandatory elements that are needed technically or operationally.
- Optional: This element does not have to be specified if not applicable. It contains data which is not needed technically for successful processing of the message nor operationally.
- Conditional: In certain situations, the element is mandatory. Example, if it concerns a container, the BIC id is mandatory.

1.4 Type

This column specifies the data type. Most commonly used in the message are:

- “AN”:-Alpha- Numeric
- “N”: Numeric

1.5 Length

This column specifies the length of the field:

- Fixed length: Example “8” means the field always has to have a length of 8 chars
- Maximum length: Example “.8” means that the field can have 1 to maximum 8 chars
- Decimals: Example: “18.2” means 18 numbers of which 2 decimals

1.6 Max Occurrence

This column indicates how many times the element (data field or group) can be repeated.

1.7 Fix Value(s)

If applicable, the fixed value(s) for the field is specified. This will be mapped hardcoded in the message. A good example is de message version.

1.8 Provider

Here, the data provider is indicated. With data provider, we mean the party who actually sends the data to the Security Services. Mostly this is the CSD Provider.

1.9 Source

In this column, the data source is specified. Mostly this is the CSD message. Possible values are:

- CSD: Means the data is extracted from inbound CSD messages
- CSD+: This is only applicable on group elements and means that the group contains data from both CSD messages and other sources.
- SYSTEM: Data is extracted from the system, example system date or time, sequence numbers, etc...

1.10 Info

This column holds extra information on the related element, mostly it explains what the element is used for.

2 Additional information

For some fields it's there are still some open questions or some information is not clear yet. Those fields are high lighted in yellow.

References

XSD Schemas: <http://www.w3.org/XML/Schema>

XML syntax : <http://www.w3.org/XML/>

SDMF Description: SDMF_X.X Definition.xlsx

Annexe/ces