SunGuide^{SM}:

Highway Advisory Radio Interface Control Document

SunGuide-HAR-ICD-6.2

Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations
Office 605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600

March 15, 2016

Document Control Panel			
File Name:	SunGuide-VW-ICD-6.2.doc		
File Location:	SunGuide CM Repository		
CDRL:	2-7.1		
	Name	**Initial**	**Date**
Created By:	Lynne Randolph, SwRI	LAR	11/11/04
Reviewed By:	Steve Dellenback, SwRI	SWD	11/12/04
	Steve Novosad, SwRI	SEN	11/12/04
	Steve Dellenback, SwRI	SWD	2/10/05
	Steve Novosad, SwRI	SEN	2/10/05
Modified By:	Lynne Randolph, SwRI	LAR	2/9/05
	Adam Hoffman, SwRI	AGH	3/15/16
Completed By:			

Table of Contents

List of Figures

List of Acronyms

ATMS	Advanced Traffic Management System
DOT	Department of Transportation
FDOT	Florida Department of Transportation
HAR	Highway Advisory Radio
IM	Incident Management
ITS	Intelligent Transportation Systems
ITN	Invitation to Negotiate
SwRI	Southwest Research Institute
TMC	Traffic Management Center
VS	Video Switching
VW	Video Wall
XML	Extensible Markup Language

REVISION HISTORY

Revision	Date	Changes
1.0.0	November 11, 2004	Initial Release
1.0.1	February 9, 2005	Updated for schema changes
6.2	March 15, 2016	Updated for Release 6.2

1. Scope

1.1 Document Identification

This Interface Control Document (ICD) describes the interface between individual SunGuide clients and the Highway Advisory Radio (HAR) subsystem and between the HAR subsystem and the associated drivers. The general base architecture of the XML communications including connection information, byte order and base transaction classes is delineated in the general ICD. This ICD defines Extensible Markup Language (XML) schemas upon which XML requests shall be based in communicating amongst the various processes. Refer to the SunGuide-General-ICD-6.2 document for details regarding data transfer.

1.2 Project Overview

The Florida Department of Transportation (FDOT) is conducting a program that is developing SunGuide software. The SunGuide software is a set of Intelligent Transportation System (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies. The goal of the SunGuide software is to have a common software base that can be deployed throughout the state of Florida. The SunGuide software development effort is based on ITS software available from the state of Texas; significant customization of the software is being performed as well as the development of new software modules. The following figure provides a graphical view of the software to be developed:
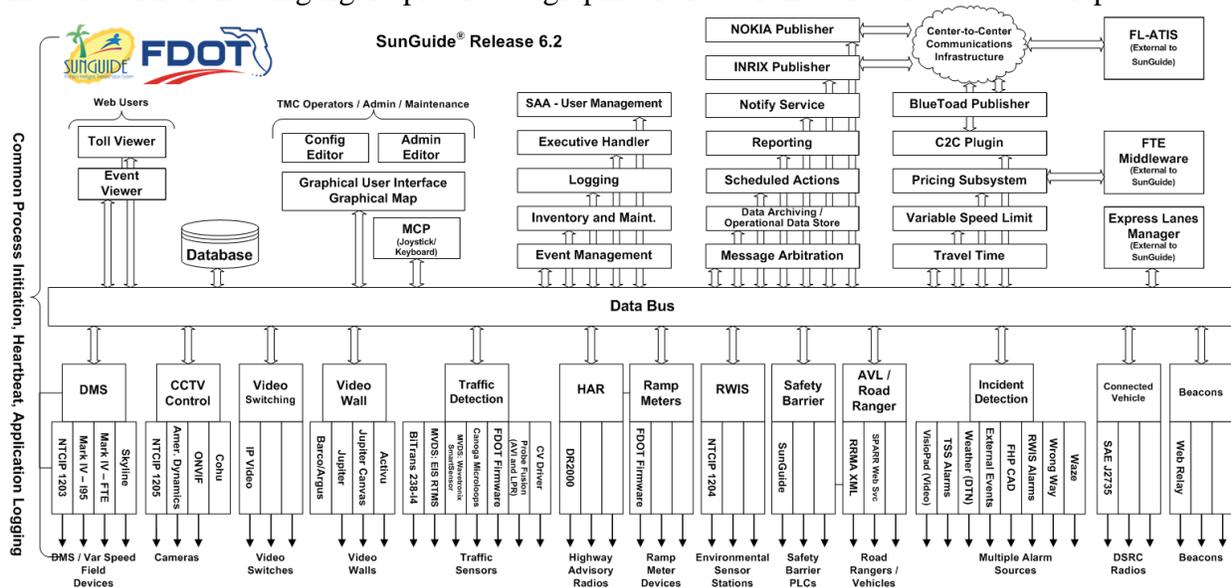

Figure 1.1 - High-Level Architectural Concept

The SunGuide[SM] development effort spans approximately two years. After the development, the software will be deployed to a number of Districts and Expressway Authorities throughout Florida and support activities will be performed.

1.3 Related Documents

The following documents were used to develop this document:

- FDOT Scope of Services: *BDQ69, Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services.* July 1, 2010.

- Notice to Proceed: Letter to Southwest Research Institute® (SwRI®) for BDQ69, July 1, 2010.

- SunGuide Project website: http://sunguidesoftware.com.

1.4 Contacts

The following are contact persons for the SunGuide software project:
- Fred Heery, ITS Section, Traffic Engineering and Operations Office Central Office, fred.heery@dot.state.fl.us, 850-410-5606
- Derek Vollmer, ITS Section, Traffic Engineering and Operations Office Central Office, Derek.Vollmer@dot.state.fl.us, 850-410-5615
- Clay Packard, Atkins Project Manager, clay.packard@dot.state.fl.us, 850-410-5623
- David Chang, Atkins Project Advisor, david.chang@dot.state.fl.us, 850-410-5622
- Tucker Brown, SwRI Project Manager, tbrown@swri.com, 210-522-3035
- Roger Strain, SwRI Software Project Manager, rstrain@swri.org, 210-522-6295

2. Data

The following sections detail the XML transactions that can be exchanged between client and server applications.

2.1 Schema

The schemas for these transactions may be located in the Schemas1.0 directory. The objects directory contains common data schemas that are used by the various request/messages/responses. Schemas are organized in the following tree structure:

har
- messages
    - addHarMsg.xsd
    - deleteHarMsg.xsd
    - harUpdateMsg.xsd
    - modifyHarMsg.xsd
    - onlineStatusMsg.xsd
    - setOnlineStatusMsg.xsd
- objects
    - har.xsd
    - harComm.xsd
    - harConfig.xsd
    - harData.xsd
    - harStatus.xsd
    - message.xsd
    - user.xsd
- requests
    - addHarReq.xsd
    - deleteHarReq.xsd
    - modifyHarReq.xsd
    - retrieveDataReq.xsd
    - sendMsgReq.xsd
    - setBeaconStateReq.xsd
    - setOpStatusReq.xsd
    - statusReq.xsd
    - subscribeReq.xsd
    - terminateMsgReq.xsd
- responses
    - addHarResp.xsd
    - deleteHarResp.xsd
    - modifyHarResp.xsd
    - retrieveDataResp.xsd
    - sendMsgResp.xsd
    - setBeaconStateResp.xsd
    - setOpStatusResp.xsd
    - statusResp.xsd
    - subscribeResp.xsd
    - terminateMsgResp.xsd

Requests may be sent from a client to a subsystem or from a subsystem to a driver. Responses may be sent from a driver to a subsystem or a subsystem to a client. A message can be sent from any process to another process.

2.1.1   Subsystem communication

Initial communication to a subsystem is described in the general ICD. For HAR, the list of HARS are retrieved from the database on startup. Once a client has initiated the connection to HAR, the following requests may be made:

- additional HARs may be added and mapped,
- existing HARs may be modified or deleted,
- messages may be sent to HAR(s)
- current status may be requested, or
- the online status may be modified.

The following table shows the various subscriptions a client may request. The last column shows the XML updates that will be received if a client has subscribed to this data.

Subscription	Description	Updates Received
deviceStatus	Receive updates to HAR status information.	sendMsgResp, setBeaconStateResp, setOpStatusResp, terminateMsgResp
deviceData	Receive updates to the sources displayed on the video wall viewers.	addHarReq, deleteHarReq, modifyHarReq
userData	Receive notification that user permissions have been modified.	updateSystemDataMsg

2.1.2   Driver communication

Initial communication from a subsystem to a driver is described in the general ICD. For HAR, an addHarReq is sent to each driver for each HAR which belongs to that driver.

As in Section 2.1.1, additional detectors may be added, existing HARs may be modified, deleted, or modify the online status.

2.2 Examples

For example, if a client wishes to add a HAR to the system, the client sends an addHarReq to the subsystem. Once the subsystem has verified this is a new HAR, the request is then forwarded to the appropriate driver.   The driver adds the HAR and sends an addHarResp to the subsystem.

The subsystem then sends this response back to the appropriate client and to clients who have subscribed to device data.
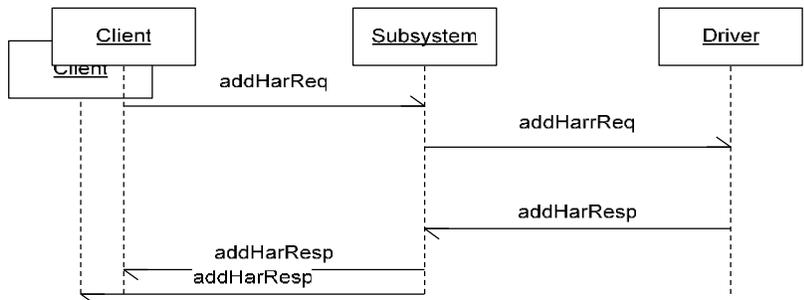
Figure 2.1 - Sample Transaction

The tables below show which requests can be sent from client to subsystem and subsystem to driver. The responses sent from driver to subsystem and subsystem to client are also specified. Messages are sent instead of requests when a response is not required.

2.3 Subsystem Schemas

FC (From client),TC (To client), TD (To driver), FD (From driver)

Usage Description	Requests	FC	TD	Responses	FD	TC	Messages	TD	FD	TC
Used to add a new device to the system.	addHarReq	X	X	addHarResp	X	X	addHarMsg	X		
Used to delete a device from the system.	deleteHarReq	X	X	deleteHarResp	X	X	deleteHarMsg	X		
Used to disseminate the updated HAR information.							harUpdateMsg			X
Used to modify an existing device.	modifyHarReq	X	X	modifyHarResp	X	X	modifyHarMsg	X		
Used to retrieve the system's data.	retrieveDataReq	X		retrieveDataResp		X				
Used to send an update of a HAR's op status.	onlineStatusMsg					X				
Used to send a message to a HAR.	sendMsgReq	X	X	sendMsgResp	X	X				
Used to set the beacon state of a HAR to on or off.	setBeaconStateReq	X	X	setBeaconStateResp	X	X				
Used to set the operational status of a HAR.	setOpStatusReq	X	<u>X</u>	setOpStatusResp	X	X	setOpStatusMsg	X		
Used to request the current status of a HAR.	statusReq	X	X	statusResp	X	X				

Usage Description	Requests	FC	TD	Responses	FD	TC	Messages	TD	FD	TC
Used to subscribe to updates from the system. Data includes device status, device configuration data, and users.	subscribeReq	X		subscribeResp		X				
Used to terminate the message on a HAR. This will result in the HAR's default message being broadcast.	terminateMsgReq	X	X	terminateMsgResp	X	X				

2.4 Driver Schemas

TD (To driver), FD (From driver)

Usage Description	Requests	TD	Responses	FD	Messages	TD	FD
Used to add a new device to the system.	addHarReq	X	addHarResp	X	addHarMsg	X	
Used to delete a device from the system.	deleteHarReq	X	deleteHarResp	X	deleteHarMsg	X	
Used to modify an existing device.	modifyHarReq	X	modifyHarResp	X	modifyHarMsg	X	
Used to send a message to a HAR.	sendMsgReq	X	sendMsgResp	X			

Usage Description	Requests	TD	Responses	FD	Messages	TD	FD
Used to set the beacon state of a HAR to on or off.	setBeaconStateReq	X	setBeaconStateResp	X			
Used to set the operational status of a HAR.	setOpStatusReq	X	setOpStatusResp	X	setOpStatusMsg	X	
Used to request the current status of a HAR.	statusReq	X	statusResp	X			
Used to terminate the message on a HAR. This will result in the HAR's default message being broadcast.	terminateMsgReq	X	terminateMsgResp	X			

3. Notes

Information about XML and schemas can be found at the World Wide Web Consortium (W3) website at http://www.w3.org.

Attachment 1

VW XML Schema

A.1 har.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="harComm.xsd"/>
    <xs:include schemaLocation="harConfig.xsd"/>
    <xs:include schemaLocation="harStatus.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="har">
        <xs:annotation>
            <xs:documentation>The HAR contains the data needed for communication with
the device.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:sequence>
                <xs:element ref="id">
                    <xs:annotation>
                        <xs:documentation>The identifier for this device.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element ref="harComm"/>
                <xs:element ref="harConfig"/>
                <xs:element ref="harStatus" minOccurs="0"/>
            </xs:sequence>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.2   harComm.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="harStatus.xsd"/>
    <xs:complexType name="ProtocolDataType" abstract="true">
        <xs:annotation>
            <xs:documentation>Data type used to define protocol specific
data.</xs:documentation>
        </xs:annotation>
        <xs:simpleContent>
            <xs:extension base="xs:string">
                <xs:attribute name="dataName" type="xs:string" use="required"/>
            </xs:extension>
        </xs:simpleContent>
    </xs:complexType>
    <xs:element name="harComm">
        <xs:annotation>
            <xs:documentation>This are the communication parameters for communicating
with a device</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="equipmentStatus">
                    <xs:sequence>
                        <xs:element name="protocol">
                            <xs:annotation>
                                <xs:documentation>Protocol used by the device, can contain any
optional protocolDataTypes.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType>
                                <xs:sequence>
                                    <xs:element name="protocolData" minOccurs="0"
maxOccurs="unbounded">
                                        <xs:complexType>
                                            <xs:simpleContent>
                                                <xs:extension base="ProtocolDataType"/>
                                            </xs:simpleContent>
                                        </xs:complexType>
                                    </xs:element>
                                </xs:sequence>
                                <xs:attribute name="name" type="xs:string" use="required"/>
                            </xs:complexType>
                        </xs:element>
                        <xs:element name="driverName" type="xs:string">
                            <xs:annotation>
```

```xml
                              <xs:documentation>Name of the driver which is communicating with
this har.</xs:documentation>
                         </xs:annotation>
                    </xs:element>
                    <xs:element ref="address"/>
               </xs:sequence>
          </xs:extension>
        </xs:complexContent>
     </xs:complexType>
  </xs:element>
  <xs:element name="address">
     <xs:annotation>
        <xs:documentation>Addressing information for the device.</xs:documentation>
     </xs:annotation>
     <xs:complexType>
        <xs:sequence>
          <xs:element name="accessCode">
             <xs:annotation>
                <xs:documentation>The code that must be sent to control this
device.</xs:documentation>
             </xs:annotation>
          </xs:element>
          <xs:element name="controlNumber" type="xs:string" minOccurs="0">
             <xs:annotation>
                <xs:documentation>The telephone number to call to access the
device.</xs:documentation>
             </xs:annotation>
          </xs:element>
        </xs:sequence>
     </xs:complexType>
  </xs:element>
</xs:schema>
```

A.3   harConfig.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/equipmentLocation.xsd"/>
    <xs:element name="harConfig">
        <xs:annotation>
            <xs:documentation>The configuration data for a HAR</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:sequence>
                <xs:element name="harMfr" type="xs:string">
                    <xs:annotation>
                        <xs:documentation>Manufacturer of the HAR</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="hasBeacons">
                    <xs:annotation>
                        <xs:documentation>Beacons associated with this
HAR.</xs:documentation>
                    </xs:annotation>
                    <xs:complexType>
                        <xs:simpleContent>
                            <xs:extension base="xs:boolean"/>
                        </xs:simpleContent>
                    </xs:complexType>
                </xs:element>
                <xs:element ref="equipmentLocation"/>
            </xs:sequence>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.4 harData.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:complexType name="harData">
        <xs:annotation>
            <xs:documentation>Data for a add or modify har response.</xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element ref="har"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
</xs:schema>
```

A.5   harStatus.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="message.xsd"/>
    <xs:include schemaLocation="../../common/objects/equipmentStatus.xsd"/>
    <xs:element name="harStatus">
        <xs:annotation>
            <xs:documentation>The current status of a HAR</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="equipmentStatus">
                    <xs:sequence>
                        <xs:element ref="harMsg"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.6   message.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:element name="harMsg" abstract="false">
        <xs:annotation>
            <xs:documentation>This is a message that can be sent to a
HAR.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:sequence>
                <xs:element name="textMsg">
                    <xs:annotation>
                        <xs:documentation>The actual text of the message</xs:documentation>
                    </xs:annotation>
                    <xs:simpleType>
                        <xs:restriction base="xs:string">
                            <xs:maxLength value="1024000"/>
                        </xs:restriction>
                    </xs:simpleType>
                </xs:element>
                <xs:element name="owner" type="xs:string">
                    <xs:annotation>
                        <xs:documentation>The message owner</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="duration" type="xs:int">
                    <xs:annotation>
                        <xs:documentation>The duration (in seconds) for the message to be
displayed, -1 is until cancelled.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element ref="beaconState">
                    <xs:annotation>
                        <xs:documentation>Indicates whether beacons should be enabled with
the message</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element ref="priority"/>
            </xs:sequence>
        </xs:complexType>
    </xs:element>
    <xs:element name="beaconState">
        <xs:annotation>
```

```
            <xs:documentation>Whether the beacons are active on this
device.</xs:documentation>
        </xs:annotation>
        <xs:simpleType>
            <xs:restriction base="xs:string">
                <xs:enumeration value="on"/>
                <xs:enumeration value="off"/>
            </xs:restriction>
        </xs:simpleType>
    </xs:element>
    <xs:element name="priority">
        <xs:annotation>
            <xs:documentation>Priority of the message. 255 is the highest
priority.</xs:documentation>
        </xs:annotation>
        <xs:simpleType>
            <xs:restriction base="xs:int">
                <xs:minInclusive value="1"/>
                <xs:maxInclusive value="255"/>
            </xs:restriction>
        </xs:simpleType>
    </xs:element>
</xs:schema>
```

A.7   user.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:element name="privileges">
        <xs:annotation>
            <xs:documentation>Contains attributes for the delineated system
privileges</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:attribute name="deviceStatus" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation>Retrieve DMSs from the system</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute name="deviceData" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation>Retrieve messages and libraries from the
system.</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute name="userData" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation>Retrieve users and privileges from the
system.</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute name="sendMsg" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation>Retrieve current, saved dms status from the
system.</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute name="configHar" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation>Modify the messages and libraries in the
system.</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute name="setStatus" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation>Query a DMS for its status
information.</xs:documentation>
                </xs:annotation>
            </xs:attribute>
```

```
            <xs:attribute name="systemAccess" type="xs:boolean" use="required"/>
        </xs:complexType>
    </xs:element>
    <xs:element name="user">
        <xs:annotation>
            <xs:documentation>A user within the system and their associated
privileges</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:sequence>
                <xs:element ref="privileges"/>
            </xs:sequence>
            <xs:attribute name="name" type="identifier" use="required"/>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.8   addHarMsg.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="addHarMsg">
        <xs:annotation>
            <xs:documentation>This message is sent to a driver if a delete har failed at the
database level.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="MessageType">
                    <xs:sequence>
                        <xs:element ref="har"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.9   deleteHarMsg.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="deleteHarMsg">
        <xs:annotation>
            <xs:documentation>This message is sent to a driver if an add har failed at the
database level.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="MessageType">
                    <xs:sequence>
                        <xs:element ref="id"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.10 modifyHarMsg.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="modifyHarMsg">
        <xs:annotation>
            <xs:documentation>This message is sent to a driver if a modify har failed at the
database level.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="MessageType">
                    <xs:sequence>
                        <xs:element ref="har"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.11 onlineStatusMsg.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/harStatus.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="onlineStatusMsg">
        <xs:annotation>
            <xs:documentation>A message indicating the online status information of the
specified har</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="MessageType">
                    <xs:sequence>
                        <xs:element name="har">
                            <xs:annotation>
                                <xs:documentation>Information about a particular
har.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType>
                                <xs:sequence>
                                    <xs:element ref="id"/>
                                    <xs:element ref="strOpStatus"/>
                                </xs:sequence>
                            </xs:complexType>
                        </xs:element>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.12   setOnlineStatusMsg.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/harStatus.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="setOnlineStatusMsg">
        <xs:annotation>
            <xs:documentation>A message sent when the op status of a detector has
changed.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="MessageType">
                    <xs:sequence>
                        <xs:element name="har" maxOccurs="unbounded">
                            <xs:complexType>
                                <xs:sequence>
                                    <xs:element ref="id"/>
                                    <xs:element ref="strOpStatus"/>
                                </xs:sequence>
                            </xs:complexType>
                        </xs:element>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.13   addHarReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="addHarReq">
        <xs:annotation>
            <xs:documentation>The request is sent to add a new HAR to the
system.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="RequestType">
                    <xs:sequence>
                        <xs:element ref="har">
                            <xs:annotation>
                                <xs:documentation>The device</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.14   deleteHarReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:include schemaLocation="../objects/har.xsd"/>
   <xs:include schemaLocation="../../common/objects/common.xsd"/>
   <xs:element name="deleteHarReq">
      <xs:annotation>
         <xs:documentation>A request to delete a HAR from the
system.</xs:documentation>
      </xs:annotation>
      <xs:complexType>
         <xs:annotation>
            <xs:documentation>Modify dms request</xs:documentation>
         </xs:annotation>
         <xs:complexContent>
            <xs:extension base="RequestType">
               <xs:sequence>
                  <xs:element ref="id">
                     <xs:annotation>
                        <xs:documentation>The identifier of the device to be
deleted.</xs:documentation>
                     </xs:annotation>
                  </xs:element>
               </xs:sequence>
            </xs:extension>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
</xs:schema>
```

A.15   modifyHarReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="modifyHarReq">
        <xs:annotation>
            <xs:documentation>A request to modify a HAR's information.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:annotation>
                <xs:documentation>Modify dms request</xs:documentation>
            </xs:annotation>
            <xs:complexContent>
                <xs:extension base="RequestType">
                    <xs:sequence>
                        <xs:element ref="har">
                            <xs:annotation>
                                <xs:documentation>The device</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.16   retrieveDataReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:include schemaLocation="../objects/user.xsd"/>
   <xs:element name="retrieveDataReq">
     <xs:annotation>
        <xs:documentation>A request sent by client to retrieve data from the
system</xs:documentation>
     </xs:annotation>
     <xs:complexType>
        <xs:complexContent>
           <xs:extension base="RequestType">
              <xs:sequence>
                 <xs:element name="harData" type="xs:boolean" minOccurs="0">
                    <xs:annotation>
                       <xs:documentation>Retrieve a list of HARs in the
system</xs:documentation>
                    </xs:annotation>
                 </xs:element>
                 <xs:element name="userData" type="xs:boolean" minOccurs="0">
                    <xs:annotation>
                       <xs:documentation>List of users in the system. If requestor does
not have permission for retrieving users, the user's own data will be
returned.</xs:documentation>
                    </xs:annotation>
                 </xs:element>
                 <xs:element name="statusList" type="xs:boolean" minOccurs="0">
                    <xs:annotation>
                       <xs:documentation>Retrieve status data for the system consisting
of an id and a status object.</xs:documentation>
                    </xs:annotation>
                 </xs:element>
              </xs:sequence>
           </xs:extension>
        </xs:complexContent>
     </xs:complexType>
   </xs:element>
</xs:schema>
```

A.17   sendMsgReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/message.xsd"/>
    <xs:include schemaLocation="../../common/objects/equipmentGroup.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="sendMsgReq">
        <xs:annotation>
            <xs:documentation>This is a request used to send a message to one or more
HARs. The message will use the default header and footer for the har, if
exists.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="RequestType">
                    <xs:sequence>
                        <xs:element ref="id" maxOccurs="unbounded">
                            <xs:annotation>
                                <xs:documentation>The identifier of the
device.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element ref="harMsg"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.18 setBeaconStateReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:element name="setBeaconStateReq">
        <xs:annotation>
            <xs:documentation>This is a request that is used to change the state of the
beacons on a HAR.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="RequestType">
                    <xs:sequence>
                        <xs:element name="id" type="identifier">
                            <xs:annotation>
                                <xs:documentation>The identifier of the HAR for which to turn the
beacons on or off.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="beaconState">
                            <xs:annotation>
                                <xs:documentation>Whether the beacons should be on or
off.</xs:documentation>
                            </xs:annotation>
                            <xs:simpleType>
                                <xs:restriction base="xs:string">
                                    <xs:enumeration value="on"/>
                                    <xs:enumeration value="off"/>
                                </xs:restriction>
                            </xs:simpleType>
                        </xs:element>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.19 setOpStatusReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/harStatus.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="setOpStatusReq">
        <xs:annotation>
            <xs:documentation>This is a request used to change the operational status of a
device</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="RequestType">
                    <xs:sequence>
                        <xs:element ref="id">
                            <xs:annotation>
                                <xs:documentation>The identifier of the device for which to set the
operational status</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element ref="strOpStatus"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.20   statusReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:include schemaLocation="../../common/objects/common.xsd"/>
   <xs:include schemaLocation="../../common/objects/id.xsd"/>
   <xs:element name="statusReq">
      <xs:annotation>
         <xs:documentation>This a request used to find out the status of a
device.</xs:documentation>
      </xs:annotation>
      <xs:complexType>
         <xs:complexContent>
            <xs:extension base="RequestType">
               <xs:sequence>
                  <xs:element ref="id" maxOccurs="unbounded">
                     <xs:annotation>
                        <xs:documentation>The identifier of the device for which to retrieve
the status</xs:documentation>
                     </xs:annotation>
                  </xs:element>
               </xs:sequence>
            </xs:extension>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
</xs:schema>
```

A.21   subscribeReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:element name="subscribeReq">
      <xs:annotation>
         <xs:documentation>A request sent by client to subscribe to data updates from the
system</xs:documentation>
      </xs:annotation>
      <xs:complexType>
         <xs:complexContent>
            <xs:extension base="RequestType">
               <xs:sequence>
                  <xs:element name="deviceStatus" type="xs:boolean" default="false"
minOccurs="0">
                     <xs:annotation>
                        <xs:documentation>Request updates to device status
information.</xs:documentation>
                     </xs:annotation>
                  </xs:element>
                  <xs:element name="deviceData" type="xs:boolean" default="false"
minOccurs="0">
                     <xs:annotation>
                        <xs:documentation>Request updates to device configuration
information.</xs:documentation>
                     </xs:annotation>
                  </xs:element>
                  <xs:element name="userData" type="xs:boolean" default="false"
minOccurs="0">
                     <xs:annotation>
                        <xs:documentation>Request updates to user
information.</xs:documentation>
                     </xs:annotation>
                  </xs:element>
               </xs:sequence>
            </xs:extension>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
</xs:schema>
```

A.22 terminateMsgReq.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:element name="terminateMsgReq">
        <xs:annotation>
            <xs:documentation>This is a request used to terminate the currently broadcasting
message on one or more devices. The device's default message will be
broadcast.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="RequestType">
                    <xs:sequence>
                        <xs:element ref="id"/>
                    </xs:sequence>
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

A.23   addHarResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:include schemaLocation="../objects/har.xsd"/>
   <xs:element name="addHarResp">
      <xs:annotation>
         <xs:documentation>The response returned when a client adds a HAR to the
system.</xs:documentation>
      </xs:annotation>
      <xs:complexType>
         <xs:complexContent>
            <xs:extension base="ResponseType"/>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
   <xs:complexType name="harData">
      <xs:annotation>
         <xs:documentation>Data for a add or modify har response.</xs:documentation>
      </xs:annotation>
      <xs:complexContent>
         <xs:extension base="responseData">
            <xs:sequence>
               <xs:element ref="har"/>
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
</xs:schema>
```

A.24   deleteHarResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:include schemaLocation="../../common/objects/id.xsd"/>
   <xs:element name="deleteHarResp">
      <xs:annotation>
         <xs:documentation>The response received when a device is
deleted.</xs:documentation>
      </xs:annotation>
      <xs:complexType>
         <xs:complexContent>
            <xs:extension base="ResponseType"/>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
   <xs:complexType name="deleteHarData">
      <xs:annotation>
         <xs:documentation>The data received when a device is
deleted.</xs:documentation>
      </xs:annotation>
      <xs:complexContent>
         <xs:extension base="responseData">
            <xs:sequence>
               <xs:element ref="id">
                  <xs:annotation>
                     <xs:documentation>The identifier of the device that was
deleted.</xs:documentation>
                  </xs:annotation>
               </xs:element>
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
</xs:schema>
```

A.25 modifyHarResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="modifyHarResp">
        <xs:annotation>
            <xs:documentation>The response returned when a client modifies a
HAR.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="harData">
        <xs:annotation>
            <xs:documentation>Data for a add or modify har response.</xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element ref="har"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
</xs:schema>
```

A.26   retrieveDataResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:include schemaLocation="../objects/user.xsd"/>
    <xs:element name="retrieveDataResp">
        <xs:annotation>
            <xs:documentation>Response received for a retrieve data
request</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="retrieveData" abstract="0">
        <xs:annotation>
            <xs:documentation>The response data for a retrieve data
request</xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element name="harList" minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>A list containing one or more
HARs.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType>
                            <xs:sequence>
                                <xs:element ref="har" minOccurs="0" maxOccurs="unbounded"/>
                            </xs:sequence>
                        </xs:complexType>
                    </xs:element>
                    <xs:element name="userList" minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>List of users in the system. If requestor does not
have permission for retrieving users, the user's own data will be
returned.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType>
                            <xs:sequence>
```

```
                              <xs:element ref="user" minOccurs="0" maxOccurs="unbounded"/>
                         </xs:sequence>
                      </xs:complexType>
                 </xs:element>
                 <xs:element name="statusList" minOccurs="0">
                     <xs:complexType>
                         <xs:sequence>
                             <xs:element name="har" maxOccurs="unbounded">
                                 <xs:complexType>
                                     <xs:sequence>
                                         <xs:element ref="id"/>
                                         <xs:element name="status">
                                             <xs:complexType>
                                                 <xs:complexContent>
                                                     <xs:extension base="equipmentStatus">
                                                         <xs:sequence>
                                                             <xs:element ref="harMsg"/>
                                                             <xs:element ref="beaconState"/>
                                                         </xs:sequence>
                                                     </xs:extension>
                                                 </xs:complexContent>
                                             </xs:complexType>
                                         </xs:element>
                                     </xs:sequence>
                                 </xs:complexType>
                             </xs:element>
                         </xs:sequence>
                     </xs:complexType>
                 </xs:element>
             </xs:sequence>
         </xs:extension>
     </xs:complexContent>
   </xs:complexType>
</xs:schema>
```

A.27   sendMsgResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:include schemaLocation="../objects/message.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="sendMsgResp">
        <xs:annotation>
            <xs:documentation>Response containing the message sent to a
DMS</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="sendMsgData">
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element ref="id">
                        <xs:annotation>
                            <xs:documentation>The identifier of the HAR or group to which the
message was sent</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element ref="harMsg"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
</xs:schema>
```

A.28   setBeaconStateResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:element name="setBeaconStateResp">
        <xs:annotation>
            <xs:documentation>Response containing the beacon state for the
HAR</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="setBeaconStateData">
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element ref="id">
                        <xs:annotation>
                            <xs:documentation>The identifier of the DMS</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="beaconState">
                        <xs:annotation>
                            <xs:documentation>Whether the beacon is on or
off.</xs:documentation>
                        </xs:annotation>
                        <xs:simpleType>
                            <xs:restriction base="xs:string">
                                <xs:enumeration value="on"/>
                                <xs:enumeration value="off"/>
                            </xs:restriction>
                        </xs:simpleType>
                    </xs:element>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
</xs:schema>
```

A.29   setOpStatusResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/id.xsd"/>
    <xs:include schemaLocation="../../common/objects/equipmentStatus.xsd"/>
    <xs:element name="setOpStatusResp">
        <xs:annotation>
            <xs:documentation>Response containing the operational status that a HAR has
been set to</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="opStatusData">
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element ref="id">
                        <xs:annotation>
                            <xs:documentation>The identifier of the HAR</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element ref="strOpStatus"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
</xs:schema>
```

A.30   statusResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../objects/har.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:element name="statusResp">
        <xs:annotation>
            <xs:documentation>Response containing the current status information for a
HAR</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="statusData">
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:sequence>
                    <xs:element ref="id">
                        <xs:annotation>
                            <xs:documentation>The identifier of the HAR</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element ref="harStatus"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
</xs:schema>
```

A.31 subscribeResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
    <xs:include schemaLocation="../../common/objects/common.xsd"/>
    <xs:element name="subscribeResp">
        <xs:annotation>
            <xs:documentation>Response received for a subscribe
request</xs:documentation>
        </xs:annotation>
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="ResponseType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:complexType name="subscribeData">
        <xs:annotation>
            <xs:documentation>The response data for a subscribe
request</xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:extension base="responseData">
                <xs:all>
                    <xs:element name="deviceStatus" type="xs:boolean" default="false"
minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>Request updates to device status
information.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="deviceData" type="xs:boolean" default="false"
minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>Request updates to device configuration
information.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="userData" type="xs:boolean" default="false"
minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>Request updates to user
information.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
```

```
          </xs:all>
        </xs:extension>
      </xs:complexContent>
   </xs:complexType>
</xs:schema>
```

A.32   terminateMsgResp.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified" attributeFormDefault="unqualified">
   <xs:include schemaLocation="../../common/objects/transaction.xsd"/>
   <xs:include schemaLocation="../objects/message.xsd"/>
   <xs:include schemaLocation="../../common/objects/common.xsd"/>
   <xs:include schemaLocation="../objects/har.xsd"/>
   <xs:element name="terminateMsgResp">
      <xs:annotation>
         <xs:documentation>Response to terminating the message on a
device.</xs:documentation>
      </xs:annotation>
      <xs:complexType>
         <xs:complexContent>
            <xs:extension base="ResponseType"/>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
   <xs:complexType name="terminateMsgData">
      <xs:complexContent>
         <xs:extension base="responseData">
            <xs:sequence>
               <xs:element ref="id">
                  <xs:annotation>
                     <xs:documentation>The identifier of the HAR or group to which the
message was sent</xs:documentation>
                  </xs:annotation>
               </xs:element>
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
</xs:schema>
```