North American Hub CCTV

Data Exchange Interface

Interface Control Document (ICD)

Prepared for:
North American Hub Receiving Centers

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1. Concept of Operations

This document specifies the ASN.1 and XML message definitions for making CCTV inventory information available to third parties via the North American Hub using messages and data elements from TMDD (Traffic Traffic Management Data Dictionary (TMDD). The messages specified in this document have been translated into XML using SAE's standard (J2630) for ASN.1 to XML conversion. The CCTV message implementation is referenced here as Version 2.2, as it includes some significant content accidentally omitted from CCTV Version 2.1 by the FHWA standards contractor.

2. Relationships to other documents

The requirements in this ICD should be read in conjunction with the appropriate version of the following other documents, which also specify information necessary for successfully interfacing with the North American Hub:

2.1 CCTV.xsd

This file contains the XML Schema for CCTV data. All CCTV XML data exported from the Hub will follow this schema.

The CCTV.xsd schema contains more detail about the format of valid CCTV XML than does this document. It specifies valid ranges for most numeric data, and the valid set of values for many enumerated types.

Successful validation against the CCTV.xsd schema is a necessary, but not sufficient, condition for receiving CCTV information from the North American Hub. Additional requirements are documented in the data frame definitions in the CCTV Message Definition section below.

3. Message Definition (CCTV Version 2.2)

This section specifies the CCTV data elements and data structures currently supported by the North American Hub.

Although the CCTV.xsd document specifies that enumerated values may be sent in XML as either textual names or as integers, the North American Hub uses only the textual form.

3.1 MSG_CCTVInventory

The inventory message provides a means of sharing a list of cameras available from a particular organization or traffic management center. It can be read by external systems upon that external system's initialization and as required from time to time thereafter, to validate the camera attributes.

The Hub will publish a separate CCTV Inventory page for each agency that has camera information available through the Hub.

The top-level data frame defines the overall structure of CCTV Inventory, as follows:

3.1.1 CCTV Inventory

```
CctvInventory::= SEQUENCE
{
        owner                   OrganizationInformation,
        network-id              Network-identifier OPTIONAL,              --3411
        inventory               SEQUENCE OF CctvDetails
}
```

This frame may contain the following data structures:

owner   Information about the agency that owns the CCTVs

inventory   A collection of details about the CCTVs

3.1.2 Organization Information

This data frame includes more information about the agency that owns the CCTVs in the inventory.

```
OrganizationInformation ::= SEQUENCE
{
        organization-id         Organization-identifier,                     3343
        organization-name       Organization-name OPTIONAL,                 --3344
        organization-location   Organization-location OPTIONAL,             --3104
        organization-function   Organization-function OPTIONAL,             --3354
```

```
        center-id           Organization-center-identifier OPTIONAL,        --3217
        center-name         Organization-center-name OPTIONAL,              --3355
        last-update-time    DateTimeZone OPTIONAL,
        contact-details     ContactDetails OPTIONAL
}
```

This frame may contain the following data structures:

organization-id	Identifies the organization that owns the CCTVs—e.g., Iowa DOT.
center-name	Identifies the center that operates the cameras—e.g., Des Moines TMC.

3.1.3 Date Time Zone

The ASN.1 definition for this frame is as follows:

```
DateTimeZone ::= SEQUENCE
{
        local-date          Time-local-date,                    --3398
        local-time          Time-local-time,                    --3397
        utc-offset          Time-utc-offset OPTIONAL            --3376
}
```

This frame contains the following data structures:

date	The local date, in the format "YYYYMMDD".
time	The local time, in the format "HHMMSS".
utc-offset	Defines the local time zone, in the format "+HHMM" or "-HHMM".

3.1.4 CCTV Details

The inventory is a collection of CCTV Details.

```
CctvDetails::= SEQUENCE
{
        device-id           Device-identifier,                  --3701
        device-updated      DateTimeZone,
        device-name         Device-name OPTIONAL,               --3709
        cctv-image          Cctv-image-supported OPTIONAL,      --3765
        video-url           Cctv-url OPTIONAL,                  --3767
        still-image-url     Cctv-url OPTIONAL,                  --3767
        location            CctvLocation OPTIONAL,
        views               SEQUENCE OF RoadwayView OPTIONAL,
```

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```
       range              CctvRange,
       timeouts           CctvTimeouts OPTIONAL,
       presets            SEQUENCE OF CctvPreset OPTIONAL,
       panoramas          SEQUENCE OF CctvPanorama OPTIONAL
}
```

This frame may contain the following data structures:

device-id	A unique alphanumeric device identifier for the camera.
device-updated	The date/time at which information about the camera was last updated. This data element is not available for all agencies.
device-name	A descriptive name for the camera.
video-url	URL for where the current display of the CCTV can be found. This data element is not available for all agencies.
still-image-url	URL for where a still image display for the CCTV can be found.

4. XML Example

Following is an example CCTV Inventory page. This XML example shows 3 cameras in the inventory, from a traffic management center in Des Moines.

```xml
<?xml version="1.0" ?>
- <cctvInventory xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns="http://www.North-American-Hub.org">
  - <owner xmlns="">
      <organization-id>IVCServer_3</organization-id>
      <center-name>Des Moines</center-name>
    </owner>
-   <inventory xmlns="">
    - <inventory-item>
          <device-id>1</device-id>
          <device-updated>
            <local-date>20080825</local-date>
            <local-time>085033</local-time>
            <utc-offset>-0600</utc-offset>
          </device-updated>
          <device-name>NE_MIXMASTER</device-name>
          <video-url>http://172.16.33.6:80/video/1/0</video-url>
          <still-image-url>http://172.16.33.6:80/video/1/1</still-image-url>
      </inventory-item>
    - <inventory-item>
          <device-id>2</device-id>
        - <device-updated>
            <local-date>20080825</local-date>
            <local-time>085327</local-time>
            <utc-offset>-0600</utc-offset>
          </device-updated>
          <device-name>I-80_AT_HWY_65</device-name>
          <video-url>http://172.16.33.7:80/video/2/0</video-url>
          <still-image-url>http://172.16.33.7:80/video/2/1</still-image-url>
      </inventory-item>
        - <inventory-item>
          <device-id>3</device-id>
          <device-updated>
            <local-date>20080825</local-date>
            <local-time>085033</local-time>
            <utc-offset>-0600</utc-offset>
          </device-updated>
          <device-name>I-235_AT_GUTHRIE</device-name>
          <video-url>http://172.16.33.6:80/video/3/0</video-url>
          <still-image-url>http://172.16.33.6:80/video/3/1</still-image-url>
      </inventory-item>
    </inventory>
  </cctvInventory>
```