aseXML Schema Change Request

Document ID	30
Title	High Speed Monitoring (HSM) additions
Change Type	New transactions and supporting types
Date	7 May 2007
Prepared By	Paul Spain

Document Control

Version	Date	Author	Summary of Change
1.00	09/03/2007	Paul Spain	First draft
1.01	16/04/2007	Paul Spain	Second draft
1.02	18/04/2007	Paul Spain	Added single phase quantities to HSMQuantity type
1.03	24/04/2007	Paul Spain, Darren Field	Attribute CapabilityDate (xsd:dateTime) added to HSMMonitorCapability type HSMMonitorData.LastCapabilityUpdate is now HSMMonitorData.CapabilityDate HSMComtradeText.Configuration and HSMComtradeText.Data are now non-nillable xsd:sstring types with whitespace preserved and minLength=1. Issues Register updated
1.04	07/05/2007	Paul Spain	Made the following elements nillable: HSMTriggeredDataNotification.ResponseData HSMMonitorDataRequestData.RequestData HSMMonitorData.ComtradeCompressed HSMMonitorData.ComtradeText HSMComtradeText.Configuration HSMComtradeText.Data

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Abbreviation	Description
HSM	High Speed Monitoring

1. Change Proposal

This Change Proposal introduces a new group of transactions to support the High Speed Monitoring system.

1.1. Description of the proposed change

The proposed changes are listed in the following table.

Item#	Change Description	Change Type[1]
1	Add new transactions to Transaction type for HSM: HSMMonitorsRequest, HSMMonitorsResponse, HSMMonitorDataRequest, HSMMonitorDataResponse, HSMTriggeredDataNotification	New

Table 1-1, Proposed Changes

1.1.1 First change description

Add new transactions for High Speed Monitoring (HSM) system:
HSMMonitorsRequest, HSMMonitorsResponse, HSMMonitorDataRequest, HSMMonitorDataResponse, HSMTriggeredDataNotification.

There are two kinds of informational transactions in HSM:

- A status check for a specified list of monitors, or for all known monitors. The request is of type HSMMonitorsRequest with a requestName attribute of “RollCall”. The response is of type HSMMonitorsResponse
- A capability report for a specified list of monitors, or for all known monitors. The request is of type HSMMonitorsRequest with a requestName attribute of “Capability”. The response is of type HSMMonitorsResponse

Two sorts of monitor data will be collected by HSM:

- Continuous monitor data is handled by a transaction. The request to a specific monitor is of type HSMMonitorDataRequest, and the response is of one or more HSMMonitorDataResponse messages. There may be multiple responses because the HSM specification allows requests over a range of sample lengths, but requires data to be returned in fixed length segments.
- Triggered monitor data is generated asynchronously at the monitors and is reported to the HSM system via a HSMTriggeredDataNotification

1.2. Reason for Change

This change is required to support the High Speed Monitoring system which is using the NEM B2B Hub as its data transport mechanism between NEM participants.

1.3. Supplied Documents

1.3.1 Business process document

Please refer to the additional documents provided for this submission:

[1] Change Type can be one of
- New
- Enhancement, or
- Bug Fix

- the overall system specification for the HSM system, "**HSM Specification.doc**"
- the specification for the interface between NEMMCO and TNSP partners within the HSM system, "**HSM Request Processor Interface Specification.doc**".

The second document describes the aseXML transactions.

1.3.2 Other

1.4. Baseline Schema

The schema used as a basis for this proposal is **aseXML_r20.xsd**.

2. Approval Proposal

2.1. Proposed Change #1[2]

2.1.1 Draft schema

Please refer to the schema files included with this proposal. The base schema is aseXML r20 and four files have been modified and one new file added as detailed in the next section.

2.1.2 Change log

The following changes have been implemented in this draft:

Chg #	Item #	Description of change	Filename
1	1	Add new text in documentation element and added new enumeration element with value “HSMD” inside TransactionGroup simple type.	Header
2	1	Add new elements to Transaction type: HSMMonitorsRequest, HSMMonitorsResponse, HSMMonitorDataRequest, HSMMonitorDataResponse, HSMTriggeredDataNotification.	Transactions
3	1	New file containing transaction type definitions and abstract transaction payload types.	HighSpeedMonitoring
4	1	New file containing concrete transaction payload types for Electricity market and supporting types.	ElectricityHighSpeedMonitoring
5	1	Add new include elements for HighSpeedMonitoring and ElectricityHighSpeedMonitoring to schema element	aseXML
6	1	Add new type ‘r21’ for new schema version	Events

Table 2-1 Change Log

2.1.3 Schema change description

Adding support for HSM transactions

2.1.3.1 Header_r21.xsd

- Add new value (HSMD) to TransactionGroup simple type. Added text is bolded.

```
<xsd:simpleType name=”TransactionGroup”>
               <xsd:annotation>
                        <xsd:documentation>
Purpose – Provide the transaction group to which all the contained transactions or
transaction acknowledgments belong
Detail – The target application is at liberty to reject any transactions within the message
that do not belong to the stated TransactionGroup. Where only message acknowledgements are
carried, a transaction group of “MSGS” should be used.
The following groups are B2B process related:
FLTS – Faults and Outages
SORD – Service order, planned works
NETB – Network billing
MTRD – Meter data
CUST – Customer related
NOTF – Notifications (broadcast)
MKTW – Wholesale market operations
HSMD – High Speed Monitoring system

       </xsd:documentation>
              </xsd:annotation>
              <xsd:restriction base=”xsd:string”>
```

[2] This section may be repeated if more than one option is considered

```
                        <xsd:enumeration value="CATS"/>
                        <xsd:enumeration value="MDMT"/>
                        <xsd:enumeration value="MSGS"/>
                        <xsd:enumeration value="NMID"/>
                        <xsd:enumeration value="FLTS"/>
                        <xsd:enumeration value="SORD"/>
                        <xsd:enumeration value="NETB"/>
                        <xsd:enumeration value="MTRD"/>
                        <xsd:enumeration value="CUST"/>
                        <xsd:enumeration value="NOTF"/>
                        <xsd:enumeration value="SITE"/>
                        <xsd:enumeration value="FLDW"/>
                        <xsd:enumeration value="OUTG"/>
                        <xsd:enumeration value="BAR"/>
                        <xsd:enumeration value="NMIF"/>
                        <xsd:enumeration value="MKTW"/>
                        <xsd:enumeration value="HSMD"/>
                </xsd:restriction>
        </xsd:simpleType>
```

2.1.3.2 Transactions_r21.xsd

Add new choice elements to Transaction complex type:
HSMMonitorsRequest, HSMMonitorsResponse, HSMMonitorDataRequest, HSMMonitorDataResponse, HSMTriggeredDataNotification.

Added text is bolded.

```
<xsd:complexType name="Transaction">
        <xsd:annotation>
                <xsd:documentation>

… unmodified text removed for brevity …

</xsd:documentation>
        </xsd:annotation>
        <xsd:choice>
                <xsd:element name="ReplicationRequest" type="ReplicationRequest"/>

… unmodified text removed for brevity …

                <xsd:element name="WholesaleInformationResponse"
type="WholesaleInformationResponse"/>
                <xsd:element name="HSMMonitorsRequest" type="HSMMonitorsRequest"/>
                <xsd:element name="HSMMonitorsResponse" type="HSMMonitorsResponse"/>
                <xsd:element name="HSMMonitorDataRequest" type="HSMMonitorDataRequest"/>
                <xsd:element name="HSMMonitorDataResponse" type="HSMMonitorDataResponse"/>
                <xsd:element name="HSMTriggeredDataNotification"
type="HSMTriggeredDataNotification"/>
        </xsd:choice>
        <xsd:attribute name="transactionID" type="TransactionIdentifier" use="required"/>
        <xsd:attribute name="transactionDate" type="xsd:dateTime" use="required"/>
        <xsd:attribute name="initiatingTransactionID" type="TransactionIdentifier"
use="optional"/>
</xsd:complexType>
```

2.1.3.3 HighSpeedMonitoring_r21.xsd

New file containing type definitions for HSM

2.1.3.3.1 Complex types:

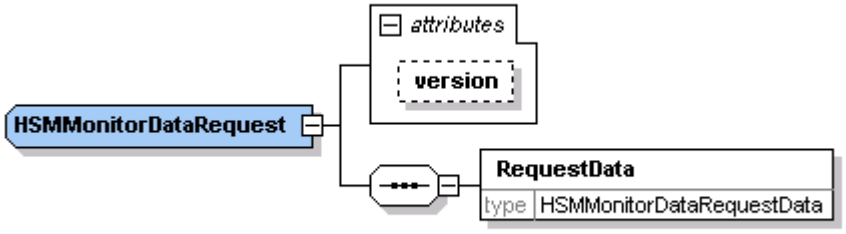


Figure 2-1:HSMMonitorDataRequest

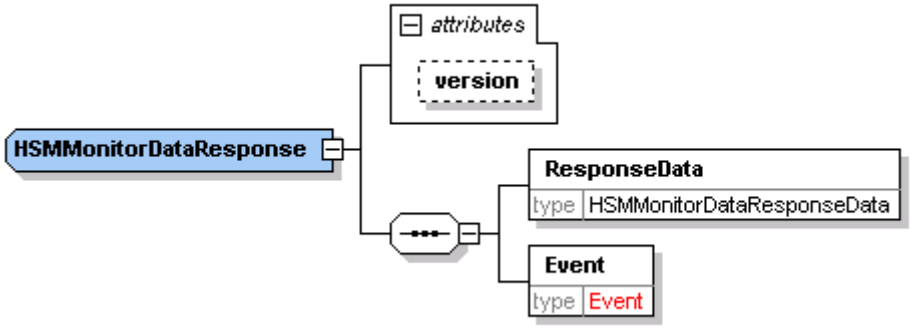


Figure 2-2:HSMMonitorDataResponse

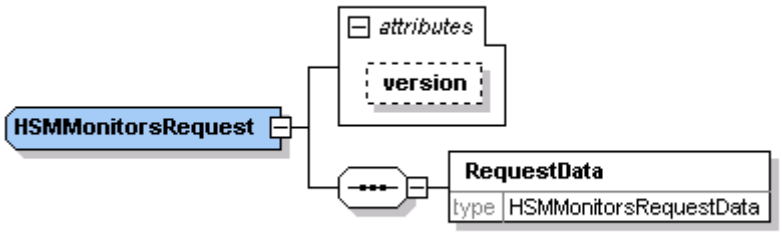


Figure 2-3:HSMMonitorsRequest

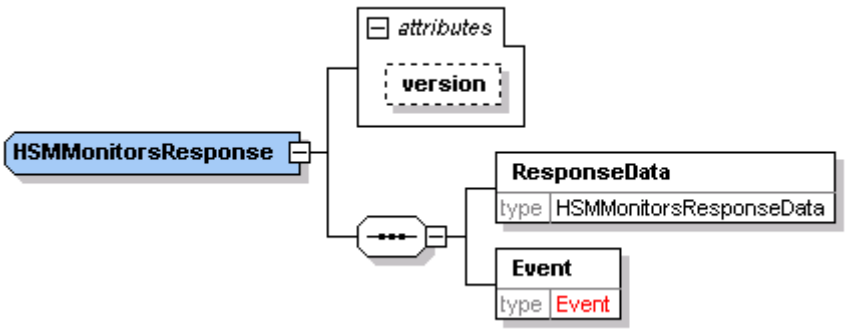


Figure 2-4:HSMMonitorsResponse

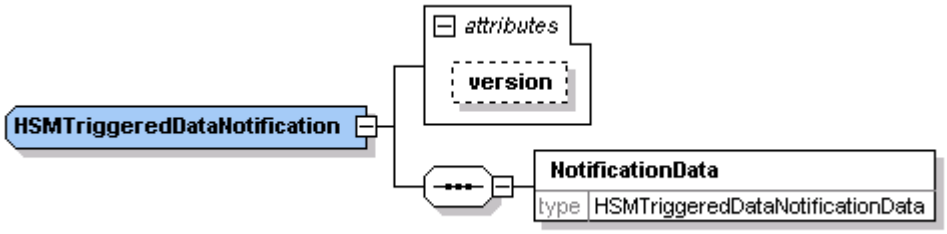


Figure 2-5:HSMTriggeredDataNotification

2.1.3.3.2 Abstract transaction payload types:

HSMMonitorDataRequestData

```
<xsd:complexType name="HSMMonitorDataRequestData" abstract="true"/>
```

HSMMonitorDataResponseData

```
<xsd:complexType name="HSMMonitorDataResponseData" abstract="true"/>
```

HSMMonitorsRequestData

```
<xsd:complexType name="HSMMonitorsRequestData" abstract="true"/>
```

HSMMonitorsResponseData

```
<xsd:complexType name="HSMMonitorsResponseData" abstract="true"/>
```

HSMTriggeredDataNotificationData

```
<xsd:complexType name="HSMTriggeredDataNotificationData" abstract="true"/>
```

2.1.3.4 ElectricityHighSpeedMonitoring_r21.xsd

New file containing type definitions for Electricity market specialisations of HSM

2.1.3.4.1 Simple types:

HSMEID

```
<xsd:simpleType name="HSMEID">
	<xsd:restriction base="xsd:positiveInteger">
		<xsd:totalDigits value="15"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMID

```
<xsd:simpleType name="HSMID">
	<xsd:restriction base="NonZeroLengthString">
		<xsd:maxLength value="40"/>
		<xsd:pattern value="[A-Z0-9_]*"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMPlant

```
<xsd:simpleType name="HSMPlant">
	<xsd:restriction base="xsd:string">
		<xsd:enumeration value="Bus"/>
		<xsd:enumeration value="Generator"/>
		<xsd:enumeration value="Load"/>
		<xsd:enumeration value="Node"/>
		<xsd:enumeration value="Region"/>
		<xsd:enumeration value="Shunt"/>
		<xsd:enumeration value="Station"/>
		<xsd:enumeration value="Static VAR Compensator"/>
		<xsd:enumeration value="Switch"/>
		<xsd:enumeration value="Transformer"/>
		<xsd:enumeration value="Transmission Line"/>
		<xsd:enumeration value="Zero Impedance Branch"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMQuantity

```
<xsd:simpleType name="HSMQuantity">
	<xsd:restriction base="xsd:string">
		<xsd:enumeration value="Angle Blue"/>
		<xsd:enumeration value="Angle Positive Sequence"/>
		<xsd:enumeration value="Angle Red"/>
		<xsd:enumeration value="Angle White"/>
		<xsd:enumeration value="Frequency"/>
		<xsd:enumeration value="Power Blue"/>
		<xsd:enumeration value="Power Red"/>
		<xsd:enumeration value="Power Three Phase"/>
		<xsd:enumeration value="Power White"/>
		<xsd:enumeration value="Reactive Power Blue"/>
		<xsd:enumeration value="Reactive Power Red"/>
		<xsd:enumeration value="Reactive Power Three Phase"/>
		<xsd:enumeration value="Reactive Power White"/>
		<xsd:enumeration value="Voltage Blue"/>
		<xsd:enumeration value="Voltage Positive Sequence"/>
		<xsd:enumeration value="Voltage Red"/>
		<xsd:enumeration value="Voltage White"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMStatus

```
<xsd:simpleType name="HSMStatus">
	<xsd:restriction base="xsd:string">
		<xsd:enumeration value="Offline"/>
		<xsd:enumeration value="Synchronised"/>
		<xsd:enumeration value="Unsynchronised"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMSource

```
<xsd:simpleType name="HSMSource">
	<xsd:restriction base="xsd:string">
		<xsd:enumeration value="Continuous"/>
		<xsd:enumeration value="Triggered"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMCompression

```
<xsd:simpleType name="HSMCompression">
	<xsd:restriction base="xsd:string">
		<xsd:enumeration value="7Zip"/>
		<xsd:enumeration value="Bzip2"/>
		<xsd:enumeration value="Rar"/>
		<xsd:enumeration value="Zip"/>
	</xsd:restriction>
</xsd:simpleType>
```

HSMFormat

```
<xsd:simpleType name="HSMFormat">
	<xsd:restriction base="xsd:string">
```

```
                    <xsd:enumeration value="COMTRADE Configuration"/>
                    <xsd:enumeration value="COMTRADE Data"/>
                </xsd:restriction>
            </xsd:simpleType>
```

2.1.3.4.2 Complex types:

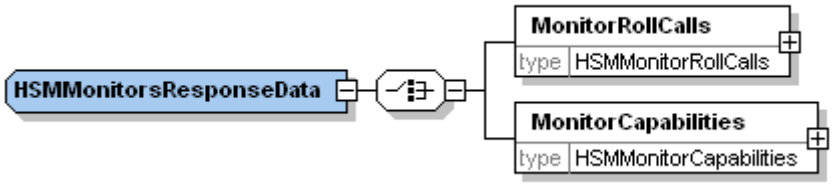


Figure 2-6:HSMMonitorsResponseData

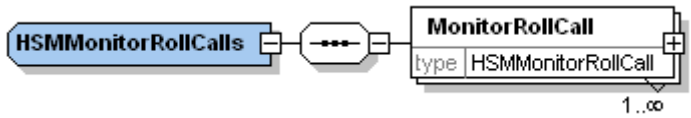


Figure 2-7 HSMMonitorRollCalls

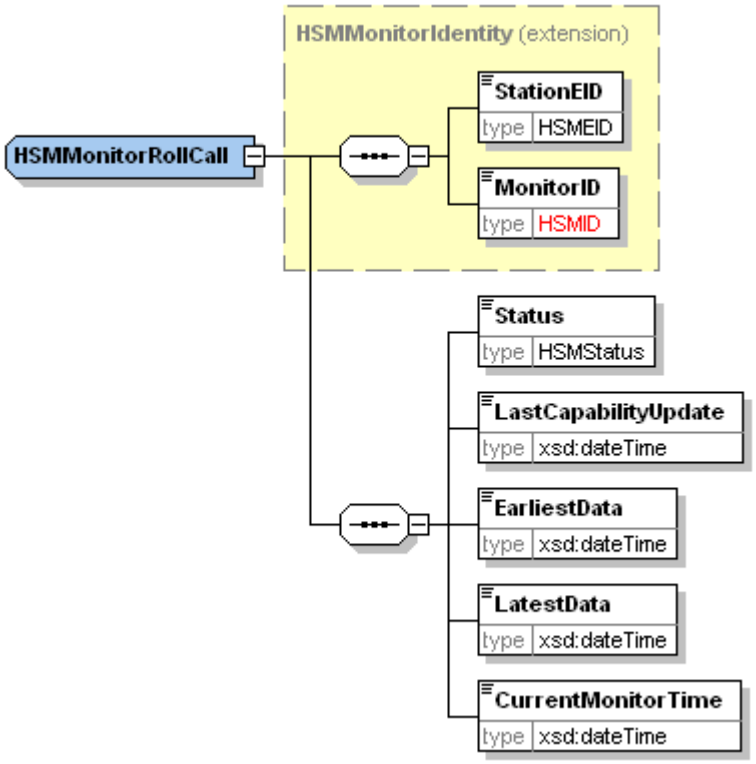


Figure 2-8 HSMMonitorRollCall

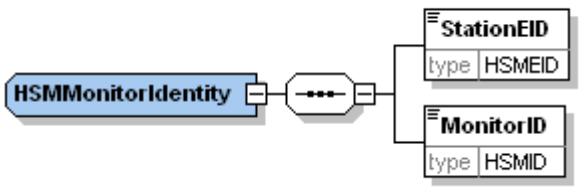


Figure 2-9 HSMMonitorIdentity

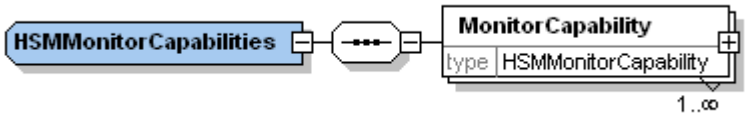
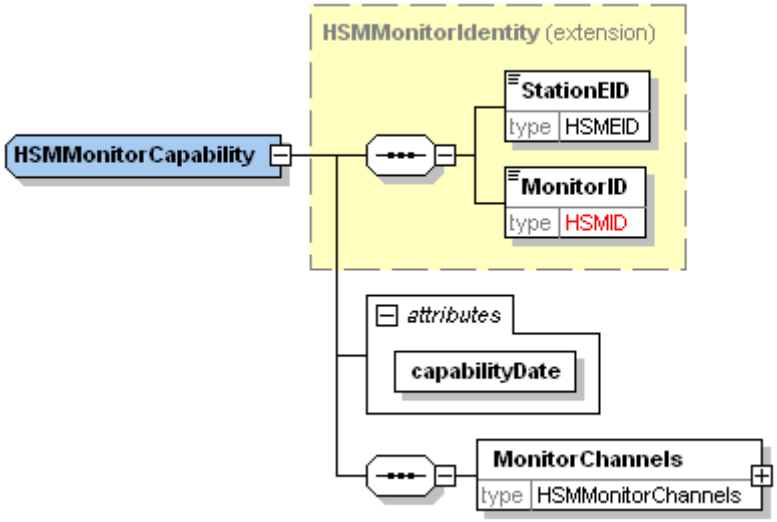


Figure 2-10 HSMMonitorCapabilities



The required attribute **capabilityDate** is of type xsd:dateTime.

Figure 2-11 HSMMonitorCapability

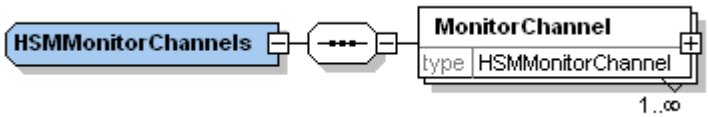


Figure 2-12 HSMMonitorChannels

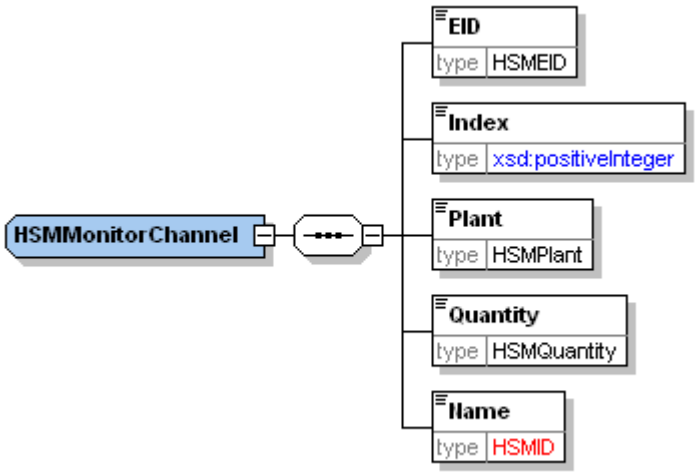
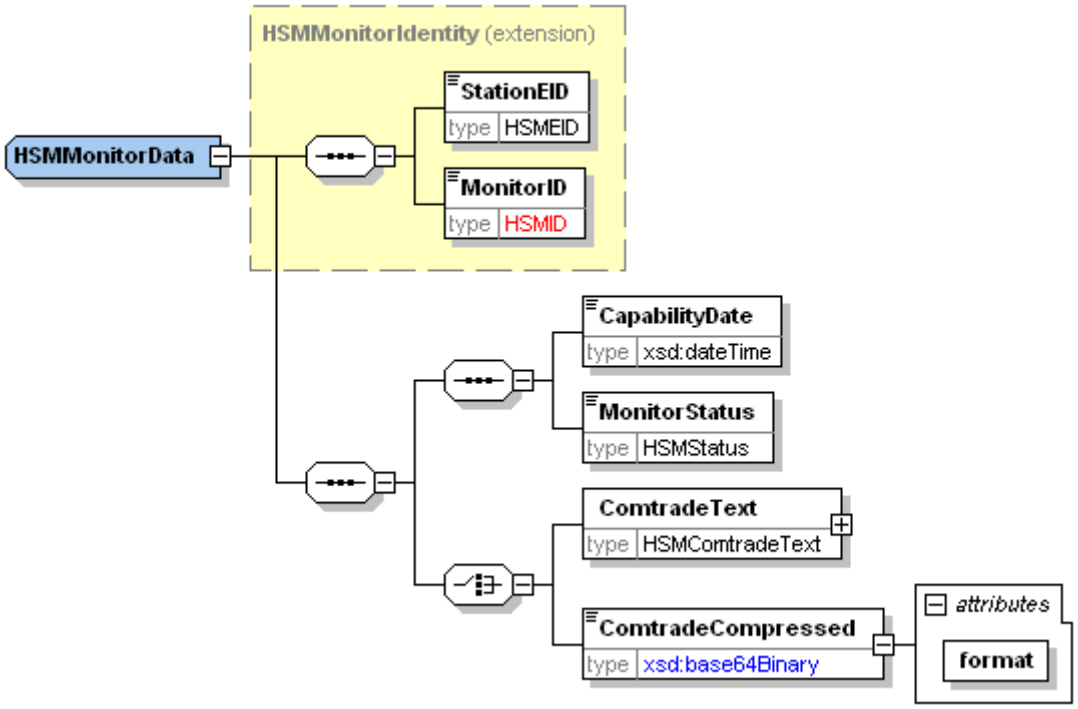


Figure 2-13 HSMMonitorChannel



The attribute **format** is of HSMCompression simple type.

Figure 2-14 HSMMonitorData

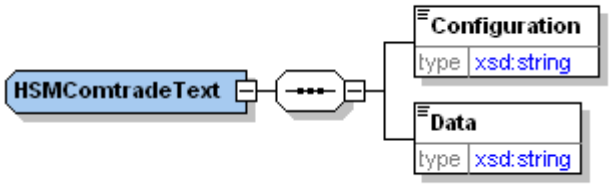


Figure 2-15 HSMComtradeText

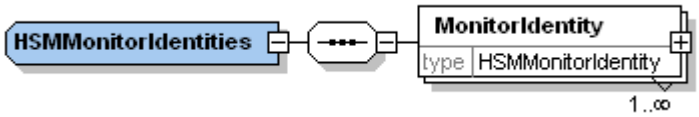
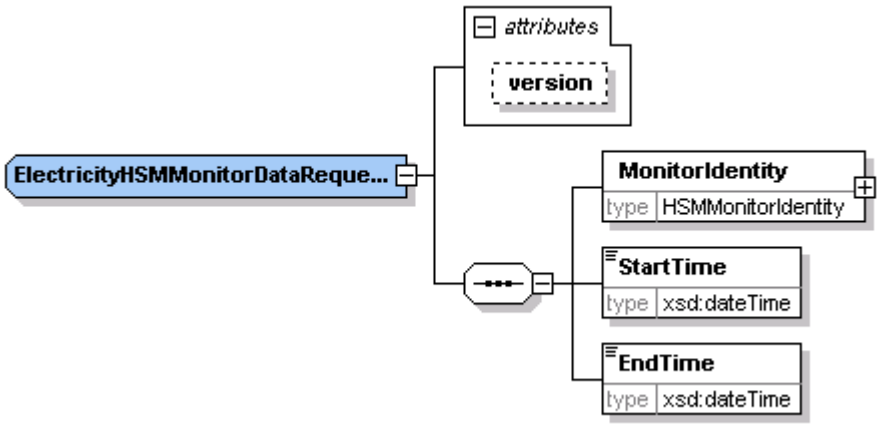


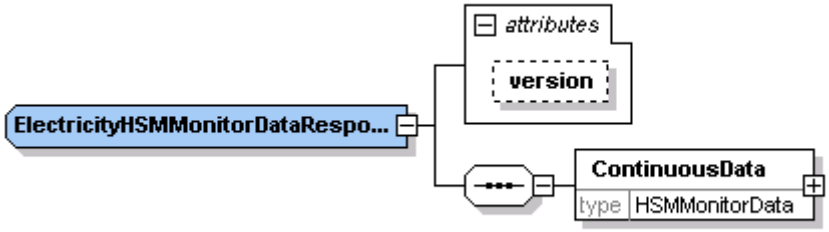
Figure 2-16 HSM MonitorIdentities

2.1.3.4.3 Concrete transaction payload types:



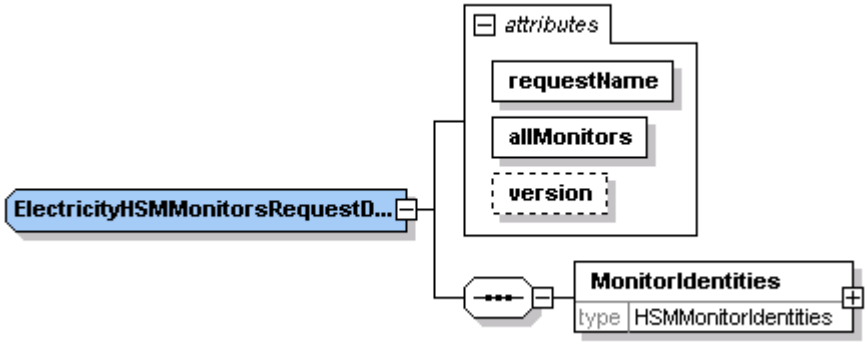
This type is an extension of the abstract payload type **HSMMonitorDataRequestData**
The attribute **version** is of r21simple type

Figure 2-17 ElectricityHSMMonitorDataRequestData



This type is an extension of the abstract payload type **HSMMonitorDataResponseData**
The attribute **version** is of r21simple type

Figure 2-18 ElectricityHSMMonitorDataResponseData



This type is an extension of the abstract payload type **HSMMonitorsRequestData**
The attribute **requestName:**

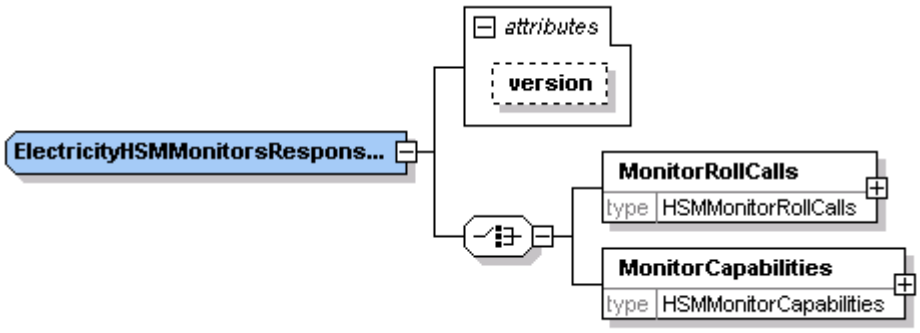
```
<xs:attribute name=”requestName” use=”required”>
	<xs:simpleType>
		<xs:restriction base=”xs:string”>
			<xs:enumeration value=”RollCall”/>
			<xs:enumeration value=”Capability”/>
		</xs:restriction>
	</xs:simpleType>
</xs:attribute>
```

The attribute **allMonitors**:

```
<xs:attribute name="allMonitors" type="xs:boolean" use="required"/>
```

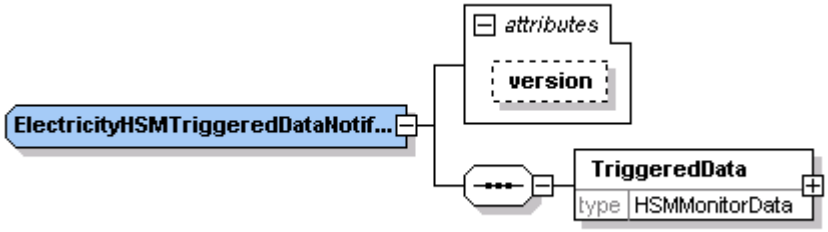
The attribute **version** is of r21simple type

Figure 2-19 ElectricityHSMMonitorsRequestData



This type is an extension of the abstract payload type **HSMMonitorsResponseData**
The attribute **version** is of r21simple type

Figure 2-20 ElectricityHSMMonitorsResponseData



This type is an extension of the abstract payload type **HSMTriggeredDataNotificationData**
The attribute **version** is of r21simple type

Figure 2-21 ElectricityHSMTriggeredDataNotificationData

2.1.3.5 aseXML_r21.xsd

Add new include elements for **HighSpeedMonitoring_r21.xsd** and **ElectricityHighSpeedMonitoring_r21.xsd** to schema element. Added text is bolded. Deleted text is bolded with strikethrough.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns="urn:aseXML:r21" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:aseXML:r21">
        <xsd:annotation>
                <xsd:documentation>
Purpose – Top level aseXML schema

… unmodified text removed for brevity …

</xsd:documentation>
        </xsd:annotation>
        <xsd:include schemaLocation="Events_r20.xsd">
        <xsd:include schemaLocation="Events_r21.xsd">
                <xsd:annotation>
                        <xsd:documentation>
Purpose – Include data types for status reporting
        </xsd:documentation>
```

```
                </xsd:annotation>
        </xsd:include>

… unmodified text removed for brevity …

        </xsd:include>
        <xsd:include schemaLocation="Header_r20.xsd">
        <xsd:include schemaLocation="Header_r21.xsd">
                <xsd:annotation>
                        <xsd:documentation>
Purpose – Include data types for aseXML message headers
        </xsd:documentation>
                </xsd:annotation>
        </xsd:include>

… unmodified text removed for brevity …

        </xsd:include>
        <xsd:include schemaLocation="HighSpeedMonitoring_r21.xsd">
                <xsd:annotation>
                        <xsd:documentation>
Purpose – Include data types for HSM transactions
        </xsd:documentation>
                </xsd:annotation>
        </xsd:include>
        <xsd:include schemaLocation="ElectricityHighSpeedMonitoring_r21.xsd">
                <xsd:annotation>
                        <xsd:documentation>
Purpose – Include Electricity market data types for HSM transactions
        </xsd:documentation>
                </xsd:annotation>
        </xsd:include>
        <xsd:include schemaLocation="Transactions_r20.xsd">
        <xsd:include schemaLocation="Transactions_r21.xsd">
                <xsd:annotation>
                        <xsd:documentation>
Purpose – Include data types for carrying transactions within aseXML
        </xsd:documentation>
                </xsd:annotation>
        </xsd:include>

… unmodified text removed for brevity …

</xsd:schema>
```

2.1.3.6 Events_r21.xsd

Added new simple type r21

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">

… unmodified text removed for brevity …

        <xsd:simpleType name="r20">
                <xsd:annotation>
                        <xsd:documentation>Purpose – Release r20
identifier</xsd:documentation>
                </xsd:annotation>
                <xsd:restriction base="ReleaseIdentifier">
                        <xsd:enumeration value="r20"/>
                </xsd:restriction>
        </xsd:simpleType>
        <xsd:simpleType name="r21">
                <xsd:annotation>
                        <xsd:documentation>Purpose – Release r21
identifier</xsd:documentation>
                </xsd:annotation>
                <xsd:restriction base="ReleaseIdentifier">
                        <xsd:enumeration value="r21"/>
                </xsd:restriction>
        </xsd:simpleType>
        <!–Support Types →
```

```
… unmodified text removed for brevity …

</xsd:schema>
```

2.1.4 Impact Summary

The HSM transactions are all new types and as such shall have no impact on existing data types.

This table identifies the files, transactions and versioned types that are potentially impacted as the result of these changes, where:

- Modified types - is a full list of types changed by this Change Request
- Derived types – is a list of any types that are derived from a modified type, and are therefore also modified by default
- Versioned types affected – is a list of all versioned types that will need to have the version attribute updated as a result of this Change Request
- Transactions potentially affected – is a list of all transactions that contain a modified type, either directly or via a type sustitution
- Schema files affected – is a list of schema files that will be changed in some way as a result of this Change Request.

Modified types	Derived types	Versioned types affected	Transactions potentially affected	Schema files affected

Table 2-2, Impact Summary

2.1.5 Developer Test

2.1.5.1 Test Platforms

The new schema has been tested using the following platforms as advised by ASWG:

- XMLSpy 2007
- MSXML4 SP1
- Xerces 1.4.4 and 2.2.1

2.1.5.2 Test Cases

The following sample files have been included:

HSMMonitorDataCompressed_Response.xml

HSMMonitorData_Request.xml

HSMMonitorData_Response.xml

HSMMonitorsCapabilities_Request.xml

HSMMonitorsCapabilities_Response.xml

HSMMonitorsStatusAll_Request.xml

HSMMonitorsStatus_Request.xml

HSMMonitorsStatus_Response.xml

HSMTriggeredDataCompressed_Notification.xml

HSMTriggeredData_Notification.xml

3. Proposal Assessment

3.1. Test

The ASWG ensures that all recommended parsers on relevant platforms can successfully validate the proposed schema.

3.1.1 Test Platforms

Supplied samples have been tested using the following parsers:

- MSXML 4.0 SP1
- Xerces 1.4.1
- Xerces 2.2.1
- XMLSpy 2004

3.1.2 Test Cases

as per section 2.1.5.2

3.1.3 Test Results

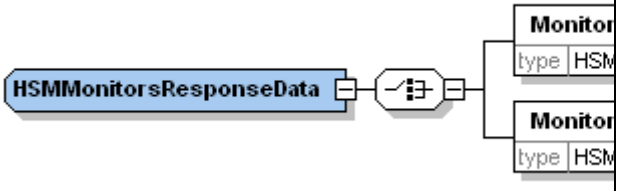
All sample file validate OK.

Some documentation updates within the schema & CR are required to make consistent

Electricity_High_speed_monitoring_r21.xsd file:

3.2. Conformance Report

The ASWG completes the conformance report validating each proposed new schema file against the published aseXML guidelines.

Schema Filename	Impacted by Item #	Conformance Details
aseXML_r21.xsd	1	OK
Header_r21.xsd	1	Header file: **HSMD — High Speed Monitoring system** is missing in the schema but noted in CR.
Electricity_High_speed_monitoring_r21.xsd	1	HSMMonitorsResponseData is noted but doesn't exist in the schema.  The CR should indicate where defaults are utilised on transactions. i.e.

		HSMMonitorDataResponseData
Event_r21.xsd	1	conforms
HighSpeedMonitoring_r21	1	conforms
Transactions_r21		conforms

Table 3-1, Change Proposal Conformance Details

4. Issue Register

This section describes any issues that have arisen and any modifications that are made to the original proposal during the Change Process

4.1. Status of Issues

Issue#	Item#	Description and Discussion	Status[3]	Resolution
1	1	Should there be abstract types created to allow for potential fuel specific types. i.e. this will allow gas to use these transactions in the future.	Closed	New abstract types defined. Electricity specific file created containing Electricity concrete types
2	1	Does the acronym HSM result in duplication when used in terms such as HSMMonitoring.	Closed	All definitions reviewed. Some changed to remove the duplication, but not all. HSM determined to stand for High Speed Monitoring (the process), so it is appropriate, for instance, to refer to HSMMonitor as a specific definition of a physical item.
3	1	Types based on strings should be based on the newly agreed NonZeroLengthString type where appropriate	Closed	All types reviewed and some changed. aseXML CR 31 raised to introduce the new type definition into the schema.

Table 4-1, Issues list

[3] Either 'Open' or 'Closed'

5. Resolution

The ASWG votes for endorsement of the options identified in section 2, and the voting results are forwarded to NEMMCO for approval. When 75% of those ASWG members who voted endorse a specific option, this represents an ASWG Recommendation for that option. NEMMCO will not reject an ASWG Recommendation without first consulting with the ASWG.

5.1. ASWG Endorsement

The results of the ASWG vote are as follows:

Date of Vote: ??/??/????

Option	# Votes	% Vote
Option 1 (section 2.1)		
Option 2 (section 2.2)		
Option # (section 2.#)		
Abstained		
Total Members Present		

Table 5-1, ASWG Vote Results