DRAFT INTERNATIONAL STANDARD ISO/IEC 25437

Attributed to ISO/IEC JTC 1 by the Central Secretariat (see page iii)

Voting begins on	Voting terminates on
2008-10-14	**2009-03-14**

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FAST-TRACK PROCEDURE

Information technology — Telecommunications and information exchange between systems — WS-Session — Web services for application session services

[Revision of first edition (ISO/IEC 25437:2006)]

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Session WS — Services web pour services de session d'application

ICS 35.100.60

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NOTE FROM ITTF

This draft International Standard is submitted for JTC 1 national body vote under the Fast-Track Procedure.

In accordance with Resolution 30 of the JTC 1 Berlin Plenary 1993, the proposer of this document recommends assignment of ISO/IEC 25437 to JTC 1/SC 6.

"FAST-TRACK" PROCEDURE

1 Any P-member and any Category A liaison organization of ISO/IEC JTC 1 may propose that an existing standard from any source be submitted directly for vote as a DIS. The criteria for proposing an existing standard for the fast-track procedure are a matter for each proposer to decide.

2 The proposal shall be received by the ITTF which will take the following actions.

2.1 To settle the copyright and/or trade mark situation with the proposer, so that the proposed text can be freely copied and distributed within JTC 1 without restriction.

2.2 To assess in consultation with the JTC 1 secretariat which SC is competent for the subject covered by the proposed standard and to ascertain that there is no evident contradiction with other International Standards.

2.3 To distribute the text of the proposed standard as a DIS. In case of particularly bulky documents the ITTF may demand the necessary number of copies from the proposer.

3 The period for combined DIS voting shall be five months. In order to be accepted the DIS must be supported by 75 % of the votes cast (abstention is not counted as a vote) and by two-thirds of the P-members voting of JTC 1.

4 At the end of the voting period, the comments received, whether editorial only or technical, will be dealt with by a working group appointed by the secretariat of the relevant SC.

5 If, after the deliberations of this WG, the requirements of 3 above are met, the amended text shall be sent to the ITTF by the secretariat of the relevant SC for publication as an International Standard.

If it is impossible to agree to a text meeting the above requirements, the proposal has failed and the procedure is terminated.

In either case the WG shall prepare a full report which will be circulated by the ITTF.

6 If the proposed standard is accepted and published, its maintenance will be handled by JTC 1.

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 25437 was prepared by Ecma International (as ECMA-366) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

This second edition cancels and replaces the first edition (ISO/IEC 25437:2006), which has been technically revised.

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Introduction

ISO/IEC 22534, Application Session Services, specifies XML protocols that can be used to create and manage application sessions that are independent of the transport layer protocols. This International Standard (WS-Session) specifies Web services for ISO/IEC 22534.

The ApplicationSessionTerminated operation of this International Standard is an outbound asynchronous event notification. For Service Requester to receive the event notification from the Service Provider and from web services (e.g. ECMA-348) that use this International Standard for session management, it standardized WS-Eventing and WS-BaseNotification as two Options.

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Information technology — Telecommunications and information exchange between systems — WS-Session — Web services for application session services

1 Scope

This International Standard specifies Web Services (in WSDL) and a SOAP binding for the Application Session Services defined in ISO/IEC 22534. The Application Session Services allow Applications to create and maintain a relationship with Servers termed Application Session. The Web services specified herein, allow Service Requesters (Applications in ISO/IEC 22534) and Service Providers (Servers in ISO/IEC 22534) to create and maintain such Application Sessions.

This International Standard builds upon and imports the XML schema definitions from ISO/IEC 22534. The method of making the WSDL description of the specified services available to Service Provider and Requester is out of the scope of this International Standard.

The ApplicationSessionTerminated operation of this International Standard is an outbound asynchronous event notification that Service Requesters receive from the Service Provider. Service Requester may also receive the event notification from web services, e.g. ECMA-348, that use this International Standard for session management.

This International Standard specifies the event subscription and notification behaviors supported by the two Options defined in Annex A and B.

Annex A specifies the event subscription mechanism using WS-Eventing.

Annex B specifies the event subscription mechanism using WS-BaseNotification.

Annex C specifies the asynchronous subscription response Option for the two event subscription mechanisms.

Annex D shows an example WS-Session WSDL binding with SOAP/HTTP.

Annex E lists SOAP XML Templates for ISO/IEC 22534 messages.

Annex F lists some SOAP XML Templates for WS-Eventing messages.

Annex G lists some SOAP XML Templates for WS-BaseNotification messages.

Annex H provides a summary of changes.

2 Conformance

The Service Requester and Service Provider conform to the Application and Server conformance specified in ISO/IEC 22534, using the WSDL definitions, SOAP bindings, and event subscription and notification specified in Clause 5, 6 and 7 respectively.

The Service Provider implements at least one of the WS-Eventing and WS-BaseNotification event subscription Options as specified in Annex A and B.

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Service Provider's WSDL for this International Standard shall include the implemented operations from Annex A, Annex B and the WSDL specified in Clause 5.

The Service Requester shall itself initiate or delegate event subscription as specified in Annex A and B.

The Service Provider supports synchronous responses to Event Subscriptions and may implement the asynchronous response Option specified in Annex C.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 22534:2005 (ECMA-354), *Information technology — Telecommunications and information exchange between systems — Application Session Services*

SOAP 1.1, Simple Object Access Protocol 1.1, W3C Note 08 May 2000

WSDL 1.1, Web Service Description Language 1.1, W3C Note 15 March 2001

XML Schema 1.0: XML Schema Language Part 1: Structure, W3C Recommendation 28 October 2004

XML Schema Language Part 2: Data Types, W3C Recommendation 28 October 2004

WS-Addressing 1.0 Web Services Addressing 1.0 – Core W3C Recommendation 9 May 2006

Web Services Addressing 1.0 - SOAP Binding W3C Recommendation 9 May 2006

Web Services Addressing 1.0 – Metadata, W3C Recommendation 4 September 2007

WS-Eventing Web Services Eventing (WS-Eventing) W3C Member Submission 15 March 2006

WS-BaseNotification 1.3 Web Services Base Notification 1.3 (WS-BaseNotification) OASIS Standard, 1 October 2006

4 Terms, definitions and namespaces

4.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 22534 and the following apply.

4.1.1
Service Requester
Web Service equivalent of Application in ISO/IEC 22534

4.1.2
Service Provider
Web Service equivalent of Server in ISO/IEC 22534

4.2 Namespaces

This International Standard uses these Ecma prefixes and namespaces:

1. aps (http://www.ecma-international.org/standards/ecma-354/appl_session): This International Standard imports all XML messages defined in ISO/IEC 22534 from the aps namespace.

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2. wss (http://www.ecma-international.org/standards/ecma-366/ws-session/ed2): The WSDL target namespace for this International Standard.

3. gsk (http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink): The target namespace of the wrapped sink WSDL.

This International Standard refers to these other prefixes and namespaces:

1. wsdl (http://schemas.xmlsoap.org/wsdl): This contains the W3C WSDL 1.1 schema.

2. xs (http://www.w3.org/2001/XMLSchema): This contains the W3C XML Schema definition.

3. S (http://schemas.xmlsoap.org/wsdl/soap): This contains the W3C SOAP bindings for WSDL 1.1.

4. wsa (http://www.w3.org/2005/08/addressing): The namespace for WS-Addressing 1.0

5. wse (http://schemas.xmlsoap.org/ws/2004/08/eventing): The target namespace for WS-Eventing Web Service

6. wsnt (http://docs.oasis-open.org/wsn/b-2): The target namespace for WS-BaseNotfication 1.3.

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5 Service Provider WSDL Abstract Definitions

This Clause specifies the abstract WSDL definitions to support the services specified in ISO/IEC 22534.

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:wss="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2">
    <types>
        <xs:schema>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/start-application-session.xsd"/>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/stop-application-session.xsd"/>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/reset-application-session-timer.xsd"/>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/application-session-terminated.xsd"/>
        </xs:schema>
    </types>
    <message name="startApplicationSession">
        <part name="parameter" element="aps:StartApplicationSession"/>
    </message>
    <message name="startApplicationSessionPosResponse">
        <part name="parameter" element="aps:StartApplicationSessionPosResponse"/>
    </message>
    <message name="startApplicationSessionNegResponse">
        <part name="parameter" element="aps:StartApplicationSessionNegResponse"/>
    </message>
    <message name="stopApplicationSession">
        <part name="parameter" element="aps:StopApplicationSession"/>
    </message>
    <message name="stopApplicationSessionPosResponse">
        <part name="parameter" element="aps:StopApplicationSessionPosResponse"/>
    </message>
    <message name="stopApplicationSessionNegResponse">
        <part name="parameter" element="aps:StopApplicationSessionNegResponse"/>
    </message>
    <message name="resetApplicationSessionTimer">
        <part name="parameter" element="aps:ResetApplicationSessionTimer"/>
    </message>
    <message name="resetApplicationSessionTimerPosResponse">
        <part name="parameter" element="aps:ResetApplicationSessionTimerPosResponse"/>
    </message>
    <message name="resetApplicationSessionTimerNegResponse">
        <part name="parameter" element="aps:ResetApplicationSessionTimerNegResponse"/>
    </message>
    <message name="applicationSessionTerminated">
        <part name="parameter" element="aps:ApplicationSessionTerminated"/>
    </message>
```

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```
    <portType name="ApplicationSessionServicesPortType">
        <operation name="StartApplicationSessionOp">
            <input message="wss:startApplicationSession"/>
            <output message="wss:startApplicationSessionPosResponse"/>
            <fault name="StartFault" message="wss:startApplicationSessionNegResponse"/>
        </operation>
        <operation name="StopApplicationSessionOp">
            <input message="wss:stopApplicationSession"/>
            <output message="wss:stopApplicationSessionPosResponse"/>
            <fault name="StopFault" message="wss:stopApplicationSessionNegResponse"/>
        </operation>
        <operation name="ResetApplicationSessionTimerOp">
            <input message="wss:resetApplicationSessionTimer"/>
            <output message="wss:resetApplicationSessionTimerPosResponse"/>
            <fault name="ResetFault" message="wss:resetApplicationSessionTimerNegResponse"/>
        </operation>
        <operation name="ApplicationSessionTerminatedOp">
            <output message="wss:applicationSessionTerminated"/>
        </operation>
    </portType>
</definitions>
```

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6 Service Provider WSDL SOAP Binding

This Clause specifies the binding template of the abstract WSDL definitions in Clause 5 with SOAP Messages without a specific transport protocol. Any SOAP binding to transport shall contain elements and attributes in this binding template.

```
<definitions
      xmlns="http://schemas.xmlsoap.org/wsdl/"
      xmlns:xs="http://www.w3.org/2001/XMLSchema"
      xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
      xmlns:wss="http://www.ecma-international.org/standards/ecma-354/ws-session/ed2"
      targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2">
      <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
            location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/ws-session-wsdl-
abstract-definitions.wsdl" />
      <binding name="xs:nmtoken" type="wss:ApplicationSessionServicesPortType">
            <soap:binding style="document" transport="xs:anyURI"/>
            <operation name="StartApplicationSessionOp">
                  <input>
                        <soap:body use="literal"/>
                  </input>
                  <output>
                        <soap:body use="literal"/>
                  </output>
                  <fault name="StartFault">
                        <soap:fault name="StartFault" use="literal"/>
                              </fault>
            </operation>
            <operation name="StopApplicationSessionOp">
                  <input>
                        <soap:body use="literal"/>
                  </input>
                  <output>
                        <soap:body use="literal"/>
                  </output>
                  <fault name="StopFault">
                        <soap:fault name="StopFault " use="literal"/>
                              </fault>
            </operation>
            <operation name="ResetApplicationSessionTimerOp">
                  <input>
                        <soap:body use="literal"/>
                  </input>
                  <output>
                        <soap:body use="literal"/>
                  </output>
                  <fault name="ResetFault">
                        <soap:fault name="ResetFault " use="literal"/>
                              </fault>
            </operation>
            <operation name="ApplicationSessionTerminatedOp">
                  <output>
                        <soap:body use="literal"/>
                  </output>
            </operation>
      </binding>
</definitions>
```

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ISO/IEC 22534 requires Applications to include the aps:sessionID in the service requests that address the established session. To standardize this requirement in Web services that exchange SOAP messages, the placement of aps:sessionID shall follow these rules.

1. The SOAP subscription message for WS-Eventing and WS-BaseNotification subscriptions shall include the aps:sessionID as a SOAP header block annoated with attribute: wsa:IsReferenceParameter="true".
2. Other SOAP messages within a session shall include the aps:sessionID as a header block.

The negative responses from Service Providers shall be bound to the SOAP 1.1 fault properties: faultcode, faultstring and detail, using the following template.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>
        <S:Fault>
            <faultcode>[faultcode]</faultcode>
            <faultstring>[faultstring]</faultstring>
            <detail>[detail]</detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

The contents of fault properties are defined by the following table for each type of negative response.

Table 1 — Fault names and properties for WS-Session services

Fault Name	**StartFault**
faultcode	ISO/IEC 22534 defined standard error names: invalidApplicationInfo, requestedProtocolVersionNotSupported, serverResourcesBusy, maxNumberSessions, or application error name.
faultstring	For ISO/IEC 22534 standard errors, it is the Description of corresponding error in Table 4-3 of ISO/IEC 22534. Additonal text can be provided to elaborate the error message, for example, the maximal session number allowed by the service provider. For application errors, a proper English description shall be provided.
detail	Element aps:StartApplicationSessionNegResponse.
Fault Name	**StopFault**
faultcode	ISO/IEC 22534 defined standard error names: invalidSessionID, or application error name.
faultstring	For ISO/IEC 22534 standard errors, it is the Description of corresponding error in Table 4-6 of ISO/IEC 22534. Additonal text can be provided to elaborate the error message, for example, the valid session ID format allowed by the service provider. For application errors, a proper English description shall be provided.
detail	Element aps:StopApplicationSessionNegResponse.
Fault Name	**ResetFault**
faultcode	ISO/IEC 22534 defined standard error names: invalidSessionID, serverCannotResetSessionDuration, or application error name.
faultstring	For ISO/IEC 22534 standard errors, it is the Description of corresponding error in Table 4-9 of ISO/IEC 22534. Additonal text can be provided to elaborate the error message, for example, the duration allowed by the service provider. For application errors, a proper English description shall be provided.
detail	Element aps:ResetApplicationSessionTimerNegResponse.

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7 Event Subscription and Notification

The ApplicationSessionTerminated operation is an outbound asynchronous event notification.

The Service Requester shall subscribe to receive the event notification from the Service Provider according to the event subscription mechanism of the Service Provider. It shall provide the event sink URI as defined in Annex A and B, and shall make the said event sink WSDL available to the Service Provider.

The Service Requester shall subscribe to receive the ApplicationSessionTerminated event immediately after the successful completion of the StartApplicationSession operation.

The Service Provider and Requester shall implement WS-Addressing defined by [WS-Addressing 1.0].

The subscription message shall include the unique aps:sessionID obtained from the StartApplicationSession operation. The aps:sessionID element shall be the first level child element of the subscription endpoint reference parameters **[**WS-Addressing 1.0], and the element is bound to the SOAP message as a header block as defined in Clause 6.

The Service Requester and Provider shall support the push mode of WS-Eventing or push-style of WS-BaseNotification to deliver the event notification. The Service Provider shall send event notifications to each of the valid event sink endpoints declared in the event subscription message.

The event notification message from the Service Provider shall include the sink endpoint reference parameters, if any, so that the Service Requester can correlate the event notification obtained from the Service Provider using those parameters.

If the application session terminates abnormally, before the ApplicationSessionTerminated event can be subscribed to, the subsequent subscription of ApplicationSessionTerminated event by the Service Requester shall result in a SOAP fault message as defined by the subscription protocol specified in Annex A and B.

When a session terminates, any subscription associated with the session is deemed invalid.

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Annex A
(normative)

Event Subscription Using WS-Eventing Option

The Service Provider shall implement the wse:SubscribeOp operation defined in the EventSource portType of WS-Eventing WSDL and may implement other operations, such as wse:UnsubscribeOp, defined in the SubscriptionManager portType.

The Service Requester shall use wse:SubscribeOp operation to subscribe to the events. The subscription message from the Service Requester shall conform to the requirements of WS-Eventing.

To request wrapped event delivery mode, the Service Requester shall use the following URI in its event subscription request according to WS-Eventing:

http://schemas.xmlsoap.org/ws/2004/08/eventing/DeliveryModes/Wrap

To request unwrapped event delivery mode, the Service Requester shall use the following URI in its event subscription request according to WS-Eventing:

http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink

If the Service Provider does not support the requested event delivery mode, it shall return the fault message wse:DeliveryModeRequestedUnavailable as specified by WS-Eventing.

If the aps:sessionID [sessionID] in the request is invalid, the Service Provider shall return a SOAP 1.1 fault message with these properties:

- [faultcode]=”wse:EventSourceUnableToProcess”
- [faultstring]=”The session [sessionID] is invalid”
- [detail]=invalidSessionID:[sessionID]

Service Requesters shall implement the event sink WSDL to receive events from the Service Provider. For wrapped event delivery mode, the event sink WSDL for Service Requester is specified in A.1. For unwrapped event delivery mode, the event sink WSDL for Service Requester is specified in A.2.

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A.1 Wrapped Delivery Mode Event Sink WSDL for Service Requester and Its SOAP Binding

Service Requesters shall implement the following event sink interface to support wrapped event delivery mode.

```
<definitions
xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:gsk="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink"
targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink">
        <types>
            <xs:schema targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-
session/ed2/generic_sink">
                <xs:complexType name="EventType" mixed="true">
                    <xs:sequence>
                        <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
                    </xs:sequence>
                    <xs:element name="Notify" type="gsk:EventType" />
                </xs:complexType>
            </xs:schema>
    </types>
    <message name="notifyEvent">
        <part name="parameter" element="gsk:Notify"/>
    </message>
    <portType name="GenericSinkPortType">
        <operation name="NotifyEvent">
            <input message="gsk:notifyEvent"/>
        </operation>
```

Any binding of wrapped event sink interface to SOAP shall contain elements and attributes in the following binding template.

```
<definitions
xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:gsk="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink"
targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink">
<import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink"
location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink/generic-sink-
abstract.wsdl" />
    <binding name="xs:nmtoken" type="gsk:GenericSinkPortType">
        <soap:binding style="document" transport="xs:anyURI" />
        <operation name="NotifyEvent">
            <input>
                <soap:body use="literal"/>
            </input>
        </operation>
    </binding>
</definitions>
```

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A.2 Unwrapped Delivery Mode Event Sink WSDL Specification and Its SOAP Binding

Service Requesters shall implement the following event sink interface to support unwrapped event delivery mode.

The unwrapped event sink interface contains an operation derived from the Service Provider's WSDL which is a "reversal" of the outbound operation of ApplicationSessionTerminated event operation of the Service Provider. The WSDL for the unwrapped event sink interface is specified as follows.

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
        xmlns:tns="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink">
    <types>
            <xs:schema>
        <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
            schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/application-session-
terminated.xsd"/>
            </xs:schema>
    </types>
    <message name="applicationSessionTerminated">
        <part name="parameter" element="aps:ApplicationSessionTerminated"/>
    </message>
    <portType name="ApplicationSessionTerminatedSinkPortType">
        <operation name="ApplicationSessionTerminatedOp">
            <input message="tns:applicationSessionTerminated"/>
        </operation>
    </portType>
</definitions>
```

Any binding of unwrapped event sink interface to SOAP shall contain elements and attributes in the following binding template.

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:tns="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink"
    location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink/typed-sink-
abstract.wsdl" />
    <binding name="xs:nmtoken" type="tns:ApplicationSessionTerminatedSinkPortType">
        <soap:binding style="document" transport="xs:anyURI"/>
        <soap:operation name="ApplicationSessionTerminatedOp">
            <input>
                <soap:body use="literal"/>
            </input>
        </soap:operation>
    </binding>
</definitions>
```

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Annex B
(normative)

Subscription Using WS-BaseNotification Option

The Service Provider shall implement the wsnt:Subscribe operation defined in the NotificationProducer portType of WS-BaseNotification WSDL and may implement other operations, such as wsnt:Unsubscribe, defined in the SubscriptionManager portType [WS-BaseNotification 1.3].

The Service Requester shall use wsnt:Subscribe operation to subscribe to the events of Service Provider. The subscription request for wrapped or unwrapped (a.k.a. raw in WS-BaseNotification) event delivery mode shall follow WS-BaseNotification specification.

If the Service Provider does not support the requested event delivery mode, it shall return the fault message wsnt:UnsupportedPolicyRequestFault as specified by WS-BaseNotification.

If the aps:sessionID [sessionID] in the request is invalid, the Service Provider shall return a SOAP 1.1 fault message with these properties:

- [faultcode]=”wsrf-rw:ResourceUnknownFault”
- [faultstring]=”The session [sessionID] is invalid”
- [detail]=invalidSessionID:[sessionID]

B.1 Wrapped Delivery Mode Event Sink WSDL for Service Requester and Its SOAP Binding

Service Requesters shall implement WS-BaseNotification wrapped Notification Consumer WSDL and its SOAP binding to specify its wrapped event sink interface.

B.2 Unwrapped Delivery Mode Event Sink WSDL for Service Requester and Its SOAP Binding

Service Requesters shall implement unwrapped event sink WSDL and its SOAP binding specified in Annex A. 2 to specify its unwrapped event sink interface.

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Annex C
(normative)

Asynchronous Response to Subscription Request Option

The Service Provider and Requester shall follow WS-Addressing [WS-Addressing 1.0] to annotate and correlate event subscription messages for asynchronous message exchange. The request SOAP message from Service Requester intended for an asynchronous response shall include at least the following WS-Addressing headers: wsa:To, wsa:Action, wsa:MessageID, and wsa:ReplyTo (wsa:FaultTo) whose value is defined by the Service Requester. In particular, the Service Requester shall provide a valid non-anonymous URI in wsa:ReplyTo field in its service request messages.

The asynchronous response or fault SOAP message shall include at least the following WS-Addressing headers: wsa:To, wsa:Action, and wsa:RelatesTo, whose values shall be formulated according to WS-Addressing specificiation [WS-Addressing 1.0 Core]. If the Service Provider only supports synchronous response, it shall return a SOAP fault message with faultcode set to wsa:OnlyAnonymousAddressSupported [WS-Addressing 1.0 SOAP Binding].

An asynchronous event subscription SOAP message template, applicable to both WS-Eventing and WS-BaseNotification, is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Header>
            <wsa:To>xs:anyURI</wsa:To>
            <aps:sessionID wsa:IsReferenceParameter='true'>xs:string</aps:sessionID>
            <wsa:MessageID>[message_id]</wsa:MessageID>
            <wsa:ReplyTo>[reply_address]</wsa:ReplyTo>
                  <wsa:Action>xs:anyURI</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>…</S:Body>
</S:Envelope>
```

The template for the reply message (response or fault) is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Header>
            <wsa:To>[reply_address]</wsa:To>
            <wsa:RelatesTo>[message_id]</wsa:RelatesTo>
                  <wsa:Action>xs:anyURI</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>…</S:Body>
</S:Envelope>
```

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Annex D
(informative)

Service Provider WSDL with SOAP/HTTP Binding

This Annex provides a more specific and complete binding of the SOAP binding specified in Clause 6 by adding the HTTP transport and Service Element.

```
<definitions xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:wss="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/ws-session-wsdl-
abstract-definitions.wsdl" />
    <binding name="SOAP_HTTP" type="wss:ApplicationSessionServicesPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="StartApplicationSessionOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="StartFault">
                <soap:fault name="StartFault" use="literal"/>
                    </fault>
        </operation>
        <operation name="StopApplicationSessionOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="StopFault">
                <soap:fault name="StopFault" use="literal"/>
                    </fault>
        </operation>
        <operation name="ResetApplicationSessionTimerOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="ResetFault">
                <soap:fault name="ResetFault" use="literal"/>
                    </fault>
        </operation>
        <operation name="ApplicationSessionTerminatedOp">
            <output>
                <soap:body use="literal"/>
            </output>
        </operation>
    </binding>
    <service name="ApplicationSessionServices">
        <port name="ApplicationSessionServicesSoapHttpPort" binding="wss:SOAP_HTTP">
```

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Annex E
(informative)

SOAP XML Templates for ISO/IEC 22534 Messages

E.1 StartApplicationSession request message template

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>aps:StartApplicationSession</S:Body>
</S:Envelope>
```

E.1.1 StartApplicationSession Positive response message template

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>aps:StartApplicationSessionPosResponse</S:Body>
</S:Envelope>
```

E.1.2 StartApplicationSession negative response message template

An example of negative response due to maximum session limit.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>
            <S:Fault>
                  <faultcode>maxNumberSessions</faultcode>
                  <faultstring>
                        the server cannot create an application session because
                        it has reached the maximum number of allowed application sessions
                  </faultstring>
                  <detail>
                              <aps:StartApplicationSessionNegResponse>
                                    <aps:errorCode>
                                          <aps:definedError>maxNumberSessions</aps:definedError>
                        </aps:errorCode>
                              </aps:StartApplicationSessionNegResponse>
                  </detail>
            </S:Fault>
      </S:Body>
</S:Envelope>
```

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E.2 StopApplicationSession request message template

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>aps:StopApplicationSession</S:Body>
</S:Envelope>
```

E.2.1 StopApplicationSession positive response message template

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>aps:StopApplicationSessionPosResponse</S:Body>
</S:Envelope>
```

E.2.2 StopApplicationSession negative response message template

An example negative response due to invalid session reference.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>
            <S:Fault>
                  <faultcode>invalidSessionID</faultcode>
                  <faultstring>the sessionID is not valid or known by the server</faultstring>
                  <detail>
                              <aps:StopApplicationSessionNegResponse>
                                    <aps:errorCode>
                                          <aps:definedError>invalidSessionID</aps:definedError>
                        </aps:errorCode>
                              </aps:StopApplicationSessionNegResponse>
                  </detail>
            </S:Fault>
      </S:Body>
</S:Envelope>
```

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E.3 ResetApplicationSessionTimer request message template

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>aps:ResetApplicationSessionTimer</S:Body>
</S:Envelope>
```

E.3.1 ResetApplicationSessionTimer positive response message template

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>aps:ResetApplicationSessionTimerPosResponse</S:Body>
</S:Envelope>
```

E.3.2 Reset Application Session Timer negative response message template

An example negative response due to invalid session reference.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Body>
            <S:Fault>
                  <faultcode>invalidSessionID</faultcode>
                  <faultstring>the sessionID is not valid or known by the server</faultstring>
                  <detail>
                                    <aps:ResetApplicationSessionTimerNegResponse>
                                          <aps:errorCode>
                                                <aps:definedError>invalidSessionID</aps:definedError>
                              </aps:errorCode>
                                    </aps:ResetApplicationSessionTimerNegResponse>
                  </detail>
            </S:Fault>
      </S:Body>
</S:Envelope>
```

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E.4 ApplicationSessionTerminated

E.4.1 Template of ApplicationSessionTerminated event notification for unwrapped event sink which applies to both WS-Eventing and WS-BaseNotification options

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Header>
            <wsa:Action>http://www.ecma-international.org/standards/ecma-366/ws-
session/ed2/typed_sink/ApplicationSessionSinkPortType/ApplicationSessionTerminated</wsa:Action>
                  xs:any*
      </S:Header>
      <S:Body>aps:ApplicationSessionTerminated</S:Body>
</S:Envelope>
```

E.4.2 Template of ApplicationSessionTerminated event notification to wrapped event sink of WS-Eventing

```
<S:Envelope
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:wsa="http://www.w3.org/2005/08/addressing"
xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
xmlns:gsk="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink">
      <S:Header>
            <wsa:Action>http://www.ecma-international.org/standards/ecma-366/ws-
session/ed2/generic_sink/GenericSinkPortType/NotifyEvent</wsa:Action>
                  xs:any*
      </S:Header>
      <S:Body>
            <gsk:Notify>
                  aps:ApplicationSessionTerminated
            </gsk:Notify>
          </S:Body>
</S:Envelope>
```

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E.4.3 Template of ApplicationSessionTerminated event notification to wrapped event sink of WS-BaseNotification

```
<S:Envelope
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:wsa="http://www.w3.org/2005/08/addressing"
xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2"
xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-2/NotificationConsumer/Notify</wsa:Action>
                  xs:any*
      </S:Header>
      <S:Body>
            <wsnt:Notify>
                  <wsnt:NotificationMessage>
                        <wsnt:Message>
                           aps:ApplicationSessionTerminated
                        </wsnt:Message>
                  </wsnt:NotificationMessage>
            </wsnt:Notify>
         </S:Body>
</S:Envelope>
```

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Annex F
(informative)

WS-Eventing SOAP XML Message Templates

F.1 ApplicationSessionTerminated Event Subscription SOAP message template

The subscription to the ApplicationSessionTerminated event is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session" >
      <S:Header>
            <wsa:To>xs:anyURI</wsa:To>
            <aps:sessionID wsa:IsReferenceParameter='true'>xs:string</aps:sessionID>
            <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/Subscribe</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>
            <wse:Subscribe>
                  <wse:Delivery Mode="xs:anyURI" >
                        <wse:NotifyTo>
                              <wsa:Address>xs:anyURI</wsa:Address>
                              <wsa:EndpointReferenceParameters>…
                              </wsa:EndpointReferenceParameters>
                        </wse:NotifyTo>
                  </wse:Delivery>
            </wse:Subscribe>
      </S:Body>
</S:Envelope>
```

F.2 Template of positive response to the event subscription

The positive response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
      <S:Header>
            <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/SubscribeResponse</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>
            <wse:SubscribeResponse>
                  <wse:SubscriptionManager>
                        wsa:EndpointReferenceType
                  </wse:SubscriptionManager>
            </wse:SubscribeResponse>
      </S:Body>
</S:Envelope>
```

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F.3 Template of negative response (fault) to event subscription

The negative response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
      <S:Header>
            <wsa:Action>http://www.w3.org/2005/08/addressing/fault</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body >
            <S:Fault>
                  <faultcode>wse:EventSouceUnableToProcess</faultcode>
                  <faultstring>The session [sessionID] is invalid</faultstring>
                  <detail>invalidSessionID:[sessionID]</detail>
            </S:Fault>
      </S:Body>
</S:Envelope>
```

F.4 Template of Unsubscribe message

The request to unsubscribe an existing subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
      <S:Header>
            <wsa:To>xs:anyURI</wsa:To>
            <wse:Identifier>xs:anyURI</wse:Identifier>
                  <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/Unsubscribe</wsa:Action>
                  xs:any*
      </S:Header>
      <S:Body>
            <wse:Unsubscribe />
      </S:Body>
</S:Envelope>
```

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F.5 Template of positive response to Unsubscribe message

The positive response to unsubscribing an existing subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing"     >
      <S:Header>
            <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/UnsubscribeResponse</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body></S:Body>
</S:Envelope>
```

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Annex G
(informative)

WS-BaseNotification SOAP XML Message Templates

G.1 ApplicationSessionTerminated Event Subscription SOAP message template

The subscription to the ApplicationSessionTerminated event is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2"
      xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session" >
      <S:Header>
            <wsa:To>xs:anyURI</wsa:To>
            <aps:sessionID wsa:IsReferenceParameter='true'>xs:string</aps:sessionID>
                  <wsa:Action>http://docs.oasis-open.org/wsn/bw-
      2/NotificationProducer/SubscribeRequest</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>
            <wsnt:Subscribe>
                        <wsnt:ConsumerReference>
                        <wsa:Address>xs:anyURI</wsa:Address>
                        <wsa:EndpointReferenceParameters>...
                        </wsa:EndpointReferenceParameters>
                        </wsnt:ConsumerReference>
                  <wsnt:SubscriptionPolicy>     <wsnt:UseRaw />    </wsnt:SubscriptionPolicy> ?
            </wsnt:Subscribe>
      </S:Body>
</S:Envelope>
```

G.2 Template of positive response to the event subscription

The positive response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2" >
      <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-
      2/NotificationProducer/SubscribeResponse</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>
            <wsnt:SubscribeResponse>
                        <wsnt:SubscriptionReference>
                        wsa:EndpointReferenceType
                        </wsnt:SubscriptionReference>
            </wsnt:SubscribeResponse>
      </S:Body>
</S:Envelope>
```

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G.3 Template of negative response to the event subscription

The negative response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2"
      xmlns:wsrf-rw="http://docs.oasis-open.org/wsrf/rw-2">
      <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/fault</wsa:Action>
         xs:any*
      </S:Header>
      <S:Body>
         <S:Fault>
            <faultcode>wsrf-rw:ResourceUnknownFault</faultcode>
            <faultstring>The session [sessionID] is invalid</faultstring>
            <detail>invalidSessionID:[sessionID]</detail>
         </S:Fault>
      </S:Body>
</S:Envelope>
```

G.4 Template of Unsubscribe message

The request to unsubscribe an existing subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
      <S:Header>
         <wsa:To>xs:anyURI</wsa:To>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-
      2/SubscriptionManager/UnsubscribeRequest</wsa:Action>
         xs:any*
      </S:Header>
      <S:Body>
         <wsnt:Unsubscribe />
      </S:Body>
</S:Envelope>
```

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G.5 Template of positive response to Unsubscribe message

The positive response to unsubscribing an existing subscription is shown below.

```
<S:Envelope
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:wsa="http://www.w3.org/2005/08/addressing"
      xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
      <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-
      2/SubscriptionManager/UnsubscribeResponse</wsa:Action>
            xs:any*
      </S:Header>
      <S:Body>
            <wsnt:UnsubscribeResponse />
      </S:Body>
</S:Envelope>
```

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Annex H
(informative)

Summary of Changes

1. Standardized WS-Eventing and WS-BaseNotification as two Options for subscribing to the ApplicationSessionTerminated event.

    - Added an Option for asychronous response to subscription request.
    - Removed original option “typed+generic”. The term “wrapped” and “unwrapped” are used in place of “generic” and “typed”.
    - Added the XML templates for event subscription request, response and notification using WS-BaseNotification Option.
    - Updated the XML templates for event subscription request, response and notification using WS-Eventing Option.

2. Changed WS-Session WSDL operations from tns:xxx to xxxOp.
3. Added SOAP fault definitions for WS-Session fault messages.
4. Modified WS-Session target namespace to include edition number (ed2).
5. Rename namespace prefix for WS-Session to wss.
6. Added namespaces for sink interface and wrapped sink services.
7. Clarified aps:sessionID usage for Service Requester and Provider.

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