



## NextGRID SLA Schema

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Date	Author	Comments	Version	Status
May 10, 2007	David Snelling	Initial Version	V0.1	Draft
July 7, 2007	David Snelling	Added XML Signature and SLA service EPR	V0.2	Draft



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## 1 Introduction

### 1.1 Profile Overview

### 1.2 Relationships to Other Profiles

### 1.3 Notational Conventions

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC2119 [1].

Normative statements of requirements in this Profile are presented in the manner detailed in the Conformance Requirements section of WS-I Basic Profile 1.1 [2].

Both requirement statements and extensibility statements can be considered namespace-qualified.

This specification uses a number of namespace prefixes throughout; their associated URIs are listed below. Note that the choice of any namespace prefix is arbitrary and not semantically significant.

**Table 1 Namespaces used by NextGRID SLA Schema**

Prefix	Namespace
targetNamespace	<a href="http://www.nextgrid.org/sla/2006/08">http://www.nextgrid.org/sla/2006/08</a>
ubl	<a href="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-1.0">urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-1.0</a>
wsa	<a href="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing</a>
ng	<a href="http://www.nextgrid.org/sla/2006/08">http://www.nextgrid.org/sla/2006/08</a>
xs	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>
muws-p2-xs	<a href="http://docs.oasis-open.org/wsdm/2004/12/muws/wsdm-muws-part2.xsd">http://docs.oasis-open.org/wsdm/2004/12/muws/wsdm-muws-part2.xsd</a>
ds	<a href="http://www.w3.org/TR/xmlsig-core/">http://www.w3.org/TR/xmlsig-core/</a>

### 1.4 Profile Identification and Versioning

Profile identification and versioning uses the style described in the Profile Identification and Versioning section of WS-I Basic Profile 1.1 [2] and abides by the normative descriptions contained therein. The name of this Profile is "NextGRID SLA Schema" and version number is "1.0."

## 2 Profile Conformance

Conformance to the Profile is defined normatively in the Profile Conformance section of WS-I Basic Profile 1.1 [2]. This Profile abides by those definitions.

### 2.1 Conformance Targets

This profile does not define any conformance targets.

### 2.2 Claiming Conformance

Claims of conformance to the Profile and the attachments mechanisms are the same as normatively described in the Claiming Conformance section of WS-I Basic Profile 1.1 [2].

The conformance claim URI for this Profile is “<http://www.nextgrid.org/slaschema/v1>”.

## 3 SLA Schema

### 3.1 SLA Schema Elements

#### 3.1.1 The SLA Element

##### 3.1.1.1 Definition

This is the outermost element, which encapsulates the entire SLA. A SLA contains a *name* element, a *context* element and a *terms* element, the latter containing a collection of SLA terms.

##### 3.1.1.2 Multiplicity

The multiplicity of this element is one.

##### 3.1.1.3 Type

This element has a complex type. It must support the following elements:

- Name
- Context
- Terms
- Signature

##### 3.1.1.4 Attributes

This element has no defined attributes.

## 3.1.2 The Name Element of the SLA

### 3.1.2.1.1 Definition

The name element is used to give an agreement a unique name. This should provide a unique way of identifying the SLA. The name should be a valid URI.

### 3.1.2.1.2 Multiplicity

The multiplicity of this element is one.

### 3.1.2.1.3 Type

The type of this element is `xs:anyURI`.

### 3.1.2.1.4 Attributes

See the definition of `xs:anyURI`.

## 3.1.3 The SLAServiceEPR Element of the SLA

### 3.1.3.1.1 Definition

This optional `wsa:EndpointReference` points to the SLA Service associated with this SLA. In particular this service will hold a copy of this SLA and provide other monitoring and information services about the SLA and it's current status.

### 3.1.3.1.2 Multiplicity

The multiplicity of this element is zero or one.

### 3.1.3.1.3 Type

The type of this element is `wsa:EndpointReference`.

### 3.1.3.1.4 Attributes

Attributes of this element are defined in <http://www.w3.org/2005/08/addressing..>

## 3.1.4 The Context Element

### 3.1.4.1.1 Definition

This element is used to define the context of the agreement. It specifies the parties involved and how the validity of the agreement is expressed.

### 3.1.4.1.2 Multiplicity

The multiplicity of this element is one.

#### ***3.1.4.1.3 Type***

This element has a complex type. It must support the following elements:

- Variant
- Parties
- Validity
- Payment

#### ***3.1.4.1.4 Attributes***

This element has one attribute, ID. The ID **MUST** be present in order to generate the Signatures necessary to validate the SLA, see Section 3.1.6 The default value of this attribute is “SLA\_Context”.

### **3.1.5 The Terms Element**

#### ***3.1.5.1.1 Definition***

This is the element that encapsulates the entire set of agreement terms.

#### ***3.1.5.1.2 Multiplicity***

The multiplicity of this element is one.

#### ***3.1.5.1.3 Type***

This element has a complex type. It must support the following elements:

- License
- Security
- Term
- Notes

#### ***3.1.5.1.4 Attributes***

This element has one attribute, ID. The ID **MUST** be present in order to generate the Signatures necessary to validate the SLA, see Section 3.1.6 The default value of this attribute is “SLA\_Terms”.

### **3.1.6 The Signature Element**

#### ***3.1.6.1.1 Definition***

Each instance of this element contains the XML Signature [<http://www.w3.org/TR/xmlsig-core/>] of one of the parties associated with this SLA. It

is expected that the two parties participating in this SLA will each sign the SLA. The element multiplicity is unbounded to allow for third parties to sign the SLA as well, although NextGRID does not consider this necessary.

The XML Signature pattern is “enveloped”. This requires that each `ds:Signature` element **MUST** include two `ds:Reference` elements, one identifying the `ds:Context` element of the SLA and the other identifying the `Terms` element of the SLA. For example the reference element for the `Context` would look like this:

```
<ds:Reference URI="#SLA_Context">
  <ds:DigestMethod .../>
  <ds:DigestValue .../>
</ds:Reference>
```

Although all digest and signature mechanisms described by XML Signature are permitted by this profile, NextGRID implementations **SHOULD** use SHA1 [URI=<http://www.w3.org/2000/09/xmlsig#sha1>] for the digest and `ds:X509Data` for the signature.

#### ***3.1.6.1.2 Multiplicity***

The multiplicity of this element is zero to unbounded.

#### ***3.1.6.1.3 Type***

This element has a complex type and is described in the reference specification <http://www.w3.org/TR/xmlsig-core>.

#### ***3.1.6.1.4 Attributes***

The attributes of this element are described in the reference specification <http://www.w3.org/TR/xmlsig-core>.

### **3.1.7 The Name Element of a Term**

#### ***3.1.7.1.1 Definition***

This name element is used to uniquely identify an agreement term within the scope of the agreement.

#### ***3.1.7.1.2 Multiplicity***

The multiplicity of this element is one.

#### ***3.1.7.1.3 Type***

The type of this element is `xs:string`.

#### ***3.1.7.1.4 Attributes***

See the definition of `xs:string`.

### **3.1.8 The Description Element**

#### ***3.1.8.1.1 Definition***

This element captures a textual description of an agreement term.

#### ***3.1.8.1.2 Multiplicity***

The multiplicity of this element is one.

#### ***3.1.8.1.3 Type***

The type of this element is `xs:string`.

#### ***3.1.8.1.4 Attributes***

See the definition of `xs:string`.

### **3.1.9 The SuccessCriterion Element**

#### ***3.1.9.1.1 Definition***

For each agreement term, this element details the cases that indicate whether the term has been successfully fulfilled.

The element contains the *values* or *range of values* that are within the acceptable range and the *unit* that the values are represented in. The unit may be simple time units such as seconds, or more complicated values such as transactions per second. In either case, the definition of the unit is provided at the URI given as the content of the Unit element.

#### ***3.1.9.1.2 Multiplicity***

The multiplicity of this element is one.

#### ***3.1.9.1.3 Type***

This element has a complex type. It must support the following elements:

- Value
- Unit

#### ***3.1.9.1.4 Attributes***

This element has no defined attributes.

### **3.1.10 The Metric Element**

#### **3.1.10.1.1 Definition**

To produce success criterion values, the provisioned service must be instrumented to collect a number of metrics. Each of the metrics to be collected can be included in the SLA by including a Metric element. An agreement term, therefore, may contain a number of Metric elements to define how the service is instrumented to measure the success criterion.

It is likely that the contents of this element will change as the SLA is mapped through variants of the SLA by either party, with more specific details such as the location of measurement services being added as the service becomes closer to being active.

#### **3.1.10.1.2 Multiplicity**

The multiplicity of this element is zero or more.

#### **3.1.10.1.3 Type**

This element has a complex type. It must support the following elements:

- MeasurementService
- SmoothingService
- StartTime
- ValidTimeRange

#### **3.1.10.1.4 Attributes**

The following attributes are defined:

- `distribution` – is expressed as a `xs:string` type and can be one of:
  - Discrete
  - Statistic

### **3.1.11 The ServiceManagement Element**

#### **3.1.11.1.1 Definition**

A service management element specifies a service that can manage the lifecycle of a provisioned service.

#### **3.1.11.1.2 Multiplicity**

The multiplicity of this element is zero or more.

#### **3.1.11.1.3 Type**

This element has a complex type. It must support the following elements:

- ProvisionService
- ManagementService
- EscalationService

#### **3.1.11.1.4** *Attributes*

This element has no defined attributes.

### **3.1.12** **The Compensation Element**

#### **3.1.12.1.1** *Definition*

This element captures details of any actions and compensation payments to be undertaken in case the success criteria are not met.

#### **3.1.12.1.2** *Multiplicity*

The multiplicity of this element is zero or more.

#### **3.1.12.1.3** *Type*

This element has a complex type. It must support the following elements:

- Description
- Action
- Payment

#### **3.1.12.1.4** *Attributes*

The following attributes are defined:

- behaviour – is expressed as a `xs:string` type and can be one of:
  - Terminating
  - Non-Terminating

### **3.1.13** **The ServiceProvider Element**

#### **3.1.13.1.1** *Definition*

This element identifies the Service Provider.

#### **3.1.13.1.2** *Multiplicity*

The multiplicity of this element is one.

#### **3.1.13.1.3** *Type*

This element has a complex type. It must support the following elements:

- Contact
- PaymentMethod

#### **3.1.13.1.4** *Attributes*

The following attributes are defined:

- name – is expressed as a `xs:string` type.

### **3.1.14** **The ServiceCustomer Element**

#### **3.1.14.1.1** *Definition*

This element identifies the Service Customer.

#### **3.1.14.1.2** *Multiplicity*

The multiplicity of this element is one.

#### **3.1.14.1.3** *Type*

This element has a complex type. It must support the following elements:

- Contact
- PaymentMethod

#### **3.1.14.1.4** *Attributes*

The following attributes are defined:

- name – is expressed as a `xs:string` type.

### **3.1.15** **The SupportingParty Element**

#### **3.1.15.1.1** *Definition*

The supporting party element is for defining other parties such as payment providers or trusted third parties who provide monitoring services.

#### **3.1.15.1.2** *Multiplicity*

The multiplicity of this element is zero or more.

#### **3.1.15.1.3** *Type*

This element has a complex type. It must support the following elements:

- Contact
- PaymentMethod

#### **3.1.15.1.4** *Attributes*

The following attributes are defined:

- `name` – is expressed as a `xs:string` type.

### **3.1.16** **The Unit Element**

#### **3.1.16.1.1** *Definition*

For each success criterion, this element indicates the units in which that criterion's value or range of values are represented.

The unit may be simple time units such as seconds, or more complicated values such as transactions per second. In either case, the definition of the unit is provided at the URI given as the content of the Unit element.

#### **3.1.16.1.2** *Multiplicity*

The multiplicity of this element is one.

#### **3.1.16.1.3** *Type*

The type of this element is `xs:anyURI`.

#### **3.1.16.1.4** *Attributes*

See the definition of `xs:anyURI`.

### **3.1.17** **The Value Element**

#### **3.1.17.1.1** *Definition*

This element contains the values or range of values that are within the acceptable range in order for the success criterion of an agreement term to be met.

#### **3.1.17.1.2** *Multiplicity*

The multiplicity of this element is one.

#### **3.1.17.1.3** *Type*

The type of this element is `xs:string`.

#### **3.1.17.1.4** *Attributes*

See the definition of `xs:string`.

### **3.1.18 The Contact Element**

#### **3.1.18.1.1 Definition**

This element specifies the contact details of a contactable party who is either a service provider, a service customer, or a third party supporting entity as defined in the SLA.

#### **3.1.18.1.2 Multiplicity**

The multiplicity of this element is one.

#### **3.1.18.1.3 Type**

The type of this element is `ubl:PartyType`.

#### **3.1.18.1.4 Attributes**

See the definition of `ubl:PartyType`.

### **3.1.19 The PaymentMethod Element**

#### **3.1.19.1.1 Definition**

This element captures the method of making payments.

#### **3.1.19.1.2 Multiplicity**

The multiplicity of this element is zero or more.

#### **3.1.19.1.3 Type**

The type of this element is `ubl:PaymentTermsType`.

#### **3.1.19.1.4 Attributes**

See the definition of `ubl:PaymentTermsType`.

### **3.1.20 The StartTime Element**

#### **3.1.20.1.1 Definition**

Relating to metric elements, the `StartTime` and `ValidTimeRange` elements are used to ensure that resources are not wasted collecting metrics at inappropriate times, such as when the service is not yet operational or measurement makes no sense.

### **3.1.20.1.2**    *Multiplicity*

The multiplicity of this element is one.

### **3.1.20.1.3**    *Type*

The type of this element is `xs:dateTime`.

### **3.1.20.1.4**    *Attributes*

See the definition of `xs:dateTime`.

## **3.1.21**        **The EndTime Element**

### **3.1.21.1.1**    *Definition*

This element captures the end time of a SLA's validity period.

### **3.1.21.1.2**    *Multiplicity*

The multiplicity of this element is one.

### **3.1.21.1.3**    *Type*

The type of this element is `xs:dateTime`.

### **3.1.21.1.4**    *Attributes*

See the definition of `xs:dateTime`.

## **3.1.22**        **The MeasurementService Element**

### **3.1.22.1.1**    *Definition*

To ensure that an agreement term is enforced, a measurement service is used. The term's value is monitored and collected using the measurement service referenced in the Metric element of the agreement. In order to allow for exceptional cases, the count is smoothed over time using a statistical function provided by a smoothing service. The address of the smoothing service is also referenced with the Metric element.

### **3.1.22.1.2**    *Multiplicity*

The multiplicity of this element is zero or more.

### **3.1.22.1.3**    *Type*

The type of this element is `wsa:EndpointReferenceType`.

#### **3.1.22.1.4** *Attributes*

See the definition of `wsa:EndpointReferenceType`.

### **3.1.23** **The SmoothingService Element**

#### **3.1.23.1.1** *Definition*

A term's value is collected using the measurement service referenced in the Metric element of the agreement. In order to allow for exceptional cases, the count is smoothed over time using a statistical function provided by the smoothing service. The address of the smoothing service is also referenced with the Metric element.

#### **3.1.23.1.2** *Multiplicity*

The multiplicity of this element is zero or more.

#### **3.1.23.1.3** *Type*

The type of this element is `wsa:EndpointReferenceType`.

#### **3.1.23.1.4** *Attributes*

See the definition of `wsa:EndpointReferenceType`.

### **3.1.24** **The ValidTimeRange Element**

#### **3.1.24.1.1** *Definition*

Relating to metric elements, the `StartTime` and `ValidTimeRange` elements are used to ensure that resources are not wasted collecting metrics at inappropriate times, such as when the service is not yet operational or measurement makes no sense.

#### **3.1.24.1.2** *Multiplicity*

The multiplicity of this element is one.

#### **3.1.24.1.3** *Type*

The type of this element is `xs:duration`.

#### **3.1.24.1.4** *Attributes*

See the definition of `xs:duration`.

### **3.1.25 The License Element**

#### **3.1.25.1.1 Definition**

The Licence element is an independent Term element, albeit one with the same type as an ordinary term.

#### **3.1.25.1.2 Multiplicity**

The multiplicity of this element is zero or more.

#### **3.1.25.1.3 Type**

This element has a complex type. It must support the following elements:

- Name
- Description
- SuccessCriterion
- Metric
- ServiceManagement
- Compensation

#### **3.1.25.1.4 Attributes**

The following attributes are defined:

- `obligation` – is expressed as a `xs:string` type and can be one of:
  - "on Provider"
  - "on Customer"

### **3.1.26 The Security Element**

#### **3.1.26.1.1 Definition**

The Security element is an independent Term element, albeit one with the same type as an ordinary term.

#### **3.1.26.1.2 Multiplicity**

The multiplicity of this element is zero or more.

#### **3.1.26.1.3 Type**

This element has a complex type. It must support the following elements:

- Name

- Description
- SuccessCriterion
- Metric
- ServiceManagement
- Compensation

#### **3.1.26.1.4** *Attributes*

The following attributes are defined:

- obligation – is expressed as a `xs:string` type and can be one of:
  - "on Provider"
  - "on Customer"

### **3.1.27** **The Term Element**

#### **3.1.27.1.1** *Definition*

A Term element specifies an agreement term. It can be provided by either a customer or provider and this is denoted by the type attributed on each term.

The contents of a term may be a number of elements, some of which will typically not be present in the top level variant of the SLA that is offered to a customer. It is for the service provider, who will provide the offers, to determine the level of technical detail that they wish to include in any SLA offer to their potential customers.

#### **3.1.27.1.2** *Multiplicity*

The multiplicity of this element is zero or more.

#### **3.1.27.1.3** *Type*

This element has a complex type. It must support the following elements:

- Name
- Description
- SuccessCriterion
- Metric
- ServiceManagement
- Compensation

#### **3.1.27.1.4** *Attributes*

The following attributes are defined:

- obligation – is expressed as a `xs:string` type and can be one of:
  - "on Provider"
  - "on Customer"

### **3.1.28 The Notes Element**

#### **3.1.28.1.1 Definition**

The final element of the Terms element is the Notes element. This is an open type and allows for any information or detail that has not been captured by the structure of a Term element to be included in the SLA.

#### **3.1.28.1.2 Multiplicity**

The multiplicity of this element is zero or more.

#### **3.1.28.1.3 Type**

The type of this element is `xs:anyType`.

#### **3.1.28.1.4 Attributes**

See the definition of `xs:anyType`.

### **3.1.29 The Variant Element**

#### **3.1.29.1.1 Definition**

The variant is a string that is provided as a label to allow the service provider to identify the stage that a SLA is in as it evolves. This evolution takes the SLA from the version offered to the customer, through the stages of the provider's internal process in making the SLA concrete, which means that the SLA has more of the service provisioning details applied to it, e.g. details of resources and policies. This variant label is service provider specific.

#### **3.1.29.1.2 Multiplicity**

The multiplicity of this element is one.

#### **3.1.29.1.3 Type**

The type of this element is `xs:string`.

#### **3.1.29.1.4 Attributes**

See the definition of `xs:string`.

### **3.1.30 The Parties Element**

#### **3.1.30.1.1 Definition**

This element encapsulates the organisations that are party to the agreement.

#### **3.1.30.1.2 Multiplicity**

The multiplicity of this element is one.

#### **3.1.30.1.3 Type**

This element has a complex type. It must support the following elements:

- ServiceProvider
- ServiceCustomer
- SupportingParty

#### **3.1.30.1.4 Attributes**

This element has no defined attributes.

### **3.1.31 The Validity Element**

#### **3.1.31.1.1 Definition**

This element defines the validity period of the agreement.

#### **3.1.31.1.2 Multiplicity**

The multiplicity of this element is one.

#### **3.1.31.1.3 Type**

This element has a complex type. It must support the following elements:

- StartTime
- EndTime

#### **3.1.31.1.4 Attributes**

The following attributes are defined:

- dialect – is expressed as a `xs:anyURI` type.

### **3.1.32 The Payment Element**

#### **3.1.32.1.1 Definition**

This element contains details of payments that must be made. It allows the specification of the flow of payment in either direction, i.e. from service provider to customer or from customer to provider. The direction is indicated by the direction attribute in the element.

### **3.1.32.1.2**    *Multiplicity*

The multiplicity of this element is zero or more.

### **3.1.32.1.3**    *Type*

This element has a complex type. It must support the following elements:

- `Details`

### **3.1.32.1.4**    *Attributes*

The following attributes are defined:

- `direction` – is expressed as a `xs:string` type and can be one of:
  - `"to Provider"`
  - `"to Customer"`

## **3.1.33**        **The Details Element**

### **3.1.33.1.1**    *Definition*

This element defines the details of the payment compensation.

### **3.1.33.1.2**    *Multiplicity*

The multiplicity of this element is one.

### **3.1.33.1.3**    *Type*

The type of this element is `xs:anyType`.

### **3.1.33.1.4**    *Attributes*

See the definition of `xs:anyType`.

## **3.1.34**        **The SuccessMeasure Element**

### **3.1.34.1.1**    *Definition*

This element contains the expression that defines and identifies if the value of a metric is being successfully met. This value will use the specified dialect in order to define success.

### **3.1.34.1.2**    *Multiplicity*

The multiplicity of this element is one.

### **3.1.34.1.3**    *Type*

The type of this element is `xs:string`.

### **3.1.34.1.4**    *Attributes*

The following attributes are defined:

- `dialect` – is expressed as a `xs:anyURI` type.

## **3.1.35**        **The Action Element**

### **3.1.35.1.1**    *Definition*

This element specifies the compensation action to take in case an agreement term is breached.

### **3.1.35.1.2**    *Multiplicity*

The multiplicity of this element is one.

### **3.1.35.1.3**    *Type*

The type of this element is `wsa:EndpointReferenceType`.

### **3.1.35.1.4**    *Attributes*

See the definition of `wsa:EndpointReferenceType`.

## **3.1.36**        **The ProvisionService Element**

### **3.1.36.1.1**    *Definition*

The provision service is most likely to be used if a term relates to a resource to be provided by the customer. It is used to define the location that the service provider can retrieve that resource. The resource could be a security token for access to a third party system or a licence for running a piece of software. A WS-Address is used to define the location of the service.

### **3.1.36.1.2**    *Multiplicity*

The multiplicity of this element is zero or more.

### **3.1.36.1.3** *Type*

The type of this element is `wsa:EndpointReferenceType`.

### **3.1.36.1.4** *Attributes*

See the definition of `wsa:EndpointReferenceType`.

## **3.1.37** **The ManagementService Element**

### **3.1.37.1.1** *Definition*

The management service is defined using the MUWS specification, part of the group of specifications that make up the Web Service Distributed Management (WSDM) specification. This type allows us to provide some extra information, such as the role the service can play, as well as the standard WS-Address endpoint reference.

### **3.1.37.1.2** *Multiplicity*

The multiplicity of this element is zero or more.

### **3.1.37.1.3** *Type*

The type of this element is `muws-p2-xs:RelationshipParticipantType`.

### **3.1.37.1.4** *Attributes*

See the definition of `muws-p2-xs:RelationshipParticipantType`.

## **3.1.38** **The EscalationService Element**

### **3.1.38.1.1** *Definition*

This element provides details of a service to contact if the customer has an issue with the provision of this term. This service could take a number of actions, from a completely autonomic response to sending a simple SMS message.

If the escalation service is unable to resolve the issue to a satisfactory level then the contents of the Compensation element may then be used. A number of elements can be included to reflect a number of different situations that may require actions to be taken.

### **3.1.38.1.2** *Multiplicity*

The multiplicity of this element is zero or more.

### **3.1.38.1.3**    *Type*

The type of this element is `wsa:EndpointReferenceType`.

### **3.1.38.1.4**    *Attributes*

See the definition of `wsa:EndpointReferenceType`.

## 3.2 Schema

```

<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSPY v2004 rel. 3 U (http://www.xmlspy.com) by Kolja
Elsäßer (T-Systems International GmbH) -->
<!-- edited with XMLSpy v2005 rel. 3 U (http://www.altova.com) by Bryce
Mitchell (BT) -->
<!-- edited with Eclipse WTP (http://www.eclipse.org) by Michael Fehse
(T-Systems) -->
<!-- http://schemas.xmlsoap.org/ws/2004/08/addressing/ -->
<!-- http://docs.oasis-open.org/ubl/cd-UBL-1.0/xsd/common/UBL-
CommonAggregateComponents-1.0.xsd -->
<!-- http://docs.oasis-open.org/wsdm/2004/12/muws/wsdm-muws-part2.xsd --
>
<xs:schema targetNamespace="http://www.nextgrid.org/sla/2006/08"
xmlns:ubl="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateC
omponents-1.0"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:ng="http://www.nextgrid.org/sla/2006/08"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:muws-p2-
xs="http://docs.oasis-open.org/wsdm/2004/12/muws/wsdm-muws-part2.xsd"
elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:import
namespace="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateC
omponents-1.0" schemaLocation="cd-UBL-1.0/xsd/common/UBL-
CommonAggregateComponents-1.0.xsd"/>
  <xs:import namespace="http://docs.oasis-
open.org/wsdm/2004/12/muws/wsdm-muws-part1.xsd" schemaLocation="wsdm-
1.0/muws/wsdm-muws-part1.xsd"/>
  <xs:import namespace="http://docs.oasis-
open.org/wsdm/2004/12/muws/wsdm-muws-part2.xsd" schemaLocation="wsdm-
1.0/muws/wsdm-muws-part2.xsd"/>
  <!-- <xs:import
namespace="http://schemas.xmlsoap.org/ws/2004/08/addressing"
schemaLocation="ws/addressing.xsd"/> -->
  <xs:element name="SLA" type="ng:SLAType"/>
  <xs:complexType name="SLAType">
    <xs:sequence>
      <xs:element name="Name" type="xs:anyURI"/>
      <xs:element ref="ng:Context"/>
      <xs:element ref="ng:Terms"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="SupportingPartyType">
    <xs:complexContent>
      <xs:extension base="ng:PartyType"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="SignatoryPartyType">
    <xs:complexContent>
      <xs:extension base="ng:PartyType"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="TermType">
    <xs:sequence>

```

```

    <xs:element name="Name" type="xs:string"/>
    <xs:element name="Description" type="xs:string"/>
    <xs:element name="SuccessCriterion"
type="ng:SuccessCriterion"/>
    <xs:element name="Metric" type="ng:MetricType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:element name="ServiceManagement"
type="ng:ServiceManagementType" minOccurs="0"/>
    <xs:element name="Compensation" type="ng:CompensationType"
minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute name="obligation">
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="on Provider"/>
        <xs:enumeration value="on Customer"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
</xs:complexType>
<xs:complexType name="PartiesType">
  <xs:sequence>
    <xs:element name="ServiceProvider"
type="ng:SignatoryPartyType"/>
    <xs:element name="ServiceCustomer"
type="ng:SignatoryPartyType"/>
    <xs:element name="SupportingParty"
type="ng:SupportingPartyType" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="SuccessCriterion">
  <xs:sequence>
    <xs:element name="Unit" type="xs:anyURI"/>
    <xs:element name="Value"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="PartyType" abstract="true">
  <xs:sequence>
    <xs:element name="Contact" type="ubl:PartyType"/>
    <xs:element name="PaymentMethod" type="ubl:PaymentTermsType"
minOccurs="0"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
</xs:complexType>
<xs:complexType name="ValidityType">
  <xs:sequence>
    <xs:element name="StartTime" type="xs:dateTime"/>
    <xs:element name="EndTime" type="xs:dateTime"/>
  </xs:sequence>
  <xs:attribute name="Dialect" type="xs:anyURI"/>
</xs:complexType>
<xs:complexType name="MetricType">
  <xs:sequence>
    <xs:element name="MeasurementService"
type="wsa:EndpointReferenceType"/>
    <xs:element name="SmoothingService"
type="wsa:EndpointReferenceType" minOccurs="0"/>
  </xs:sequence>

```

```

    <xs:element name="StartTime" type="xs:dateTime"
minOccurs="0"/>
    <xs:element name="ValidTimerange" type="xs:duration"
minOccurs="0"/>
    </xs:sequence>
    <xs:attribute name="distribution">
    <xs:simpleType>
        <xs:restriction base="xs:string">
            <xs:enumeration value="discret"/>
            <xs:enumeration value="statistic"/>
        </xs:restriction>
    </xs:simpleType>
    </xs:attribute>
</xs:complexType>
<xs:complexType name="TermsType">
    <xs:sequence>
        <xs:element name="License" type="ng:TermType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Security" type="ng:TermType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element ref="ng:Term" maxOccurs="unbounded"/>
        <xs:element name="Notes" type="xs:anyType"
minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="ContextType">
    <xs:sequence>
        <xs:element name="Variant" type="xs:string"/>
        <xs:element name="Parties" type="ng:PartiesType"/>
        <xs:element name="Validity" type="ng:ValidityType"/>
        <xs:element name="Payment"
type="ng:PaymentCompensationType" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="PaymentCompensationType">
    <xs:sequence>
        <xs:element name="Details" type="xs:anyType"/>
    </xs:sequence>
    <xs:attribute name="direction">
    <xs:simpleType>
        <xs:restriction base="xs:string">
            <xs:enumeration value="to Provider"/>
            <xs:enumeration value="to Customer"/>
        </xs:restriction>
    </xs:simpleType>
    </xs:attribute>
</xs:complexType>
<xs:complexType name="SuccessMeasureType">
    <xs:sequence>
        <xs:element name="SuccessMeasure"/>
    </xs:sequence>
    <xs:attribute name="dialect" type="xs:anyURI"/>
</xs:complexType>
<xs:complexType name="CompensationType">
    <xs:sequence>
        <xs:element name="Description" type="xs:string"/>

```

```

        <xs:element name="Action"
type="wsa:EndpointReferenceType"/>
        <xs:element name="Payment"
type="ng:PaymentCompensationType"/>
    </xs:sequence>
    <xs:attribute name="behaviour">
        <xs:simpleType>
            <xs:restriction base="xs:string">
                <xs:enumeration value="Terminating"/>
                <xs:enumeration value="Non-Terminating"/>
            </xs:restriction>
        </xs:simpleType>
    </xs:attribute>
</xs:complexType>
<xs:complexType name="ServiceManagementType">
    <xs:sequence>
        <xs:element name="ProvisionService"
type="wsa:EndpointReferenceType" minOccurs="0"/>
        <xs:element name="ManagementService" type="muws-p2-
xs:RelationshipParticipantType" minOccurs="0"/>
        <xs:element name="EscalationService"
type="wsa:EndpointReferenceType"/>
    </xs:sequence>
</xs:complexType>
<xs:element name="Context" type="ng:ContextType"/>
<xs:element name="Terms" type="ng:TermsType"/>
<xs:element name="Term" type="ng:TermType"/>
<xs:element name="License" type="ng:TermType"/>
</xs:schema>

```

## 4 References

- [1] S. Bradner (ed.): Key words for use in RFCs to Indicate Requirement Levels, The Internet Engineering Task Force Best Current Practice, March 1997. <http://www.ietf.org/rfc/rfc2119>
- [2] K. Ballinger, D. Ehnebuske, C. Ferris, M. Gudgin, C.K. Liu, M. Nottingham, and P. Yendluri (ed.): Basic Profile Version 1.1, Web Services Interoperability Organization Final Material, 24 August 2004. <http://www.ws-i.org/Profiles/BasicProfile-1.1.html>