



# The XLink Reference Scheme for SML

**Comment [LKC1]:** [style] Re name of ref scheme: Should it be called the SML XLink Reference Scheme. IOW, should all SML ref schemes be named with an initial "SML"? Whatever the choice, use it consistently throughout the doc.

## W3C Working Group Note 3 January 2009

### This Version:

<http://www.w3.org/TR/2008/NOTE-sml-xlink-ref-scheme-20090103>

### Latest Version:

<http://www.w3.org/TR/sml-xlink-ref-scheme>

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## Abstract

The Service Modeling Language [[SML](#)] specification extends ~~XML~~ [[XML](#)] and ~~XML Schema~~ [[XML Schema](#)] with a mechanism for incorporating into XML documents references to other documents or document fragments. This technical note addresses the construction of an SML reference scheme based on the XML Linking Language [[XLink](#)].

**Comment [LKC2]:** [style] add ref

**Comment [LKC3]:** [style] add ref

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other documents at any time. It is inappropriate to cite this document as other than work in progress.

This document is intended to illustrate the design of an SML reference scheme based on [XLink](#) links. Currently, this document is consistent with the [SML](#) and [SML-IF](#) specifications, but it may be obsoleted by future versions of these specifications.

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## 1. Introduction [\[Back to Contents\]](#)

The Service Modeling Language [SML](#) specification extends XML Schema with a mechanism for incorporating into XML documents references to other documents or document fragments. A reference to another document or document fragment is encoded by means of markup compliant with one or more ~~reference schemes~~ [reference schemes](#). The SML specification defines one reference scheme, the SML URI Reference Scheme, which enables XML documents to use URIs to identify documents or document fragments. The SML URI Reference Scheme has the significant advantage of guaranteeing referential conformance of models that are exchanged between vendors (see [Section 5.1](#) of [SML-IF](#)).

Comment [LKC4]: [style] add ref

The SML specification does not mandate the use of any specific reference scheme, and provides an extensibility mechanism for defining new reference schemes. This note illustrates how the extensibility mechanism can be used to define an SML reference scheme based on XLink links.

### Note:

**Note:** The `xlink` prefix is used [on XML attributes](#) throughout this document to stand for the declaration of the XLink namespace on elements in whose scope the so-marked attribute appears (on the same element that bears the attribute or on

Comment [LKC5]: [style] Merge "Note:" prefix with paragraph.

Comment [LKC6]: [content] added text

some ancestor element), whether or not an XLink namespace declaration is present in the example.

## 2. XLink Reference Scheme Definition

Comment [LKC7]: [style] Self-evident

The XLink Reference Scheme is defined as follows:

Comment [LKC8]: [style] Consider replacing each top-level numbered item with a sub-section (e.g., "2.1 Structural Requirements") and using the existing text as an introductory paragraph for that sub-section. I have not made these edits yet because doing so would introduce so much change as to render the doc unreadable for review.

1. An SML reference is identified as an instance of the XLink Reference Scheme if and only if all of the following conditions are true:
  - a. It has two attribute information items whose [local name] are `type` and `href`, and whose [namespace name] is `http://www.w3.org/1999/xlink`.
  - b. The content of `xlink:type` is the string `simple`.
2. An instance of the XLink Reference Scheme is valid if it meets all of the following requirements:
  - a. The content of `xlink:href` is of type `xs:anyURI` [XSD-Types].
  - b. The fragment component (if present) follows matches the syntax of one of the following:
    - i. The `smlxpath1()` XPointer scheme as defined in [SML]
    - ii. An XPointer [shorthand pointer] as defined in [XPointer]
3. An SML reference that is an instance of the XLink Reference Scheme is resolved using the following steps:
  - a. Let **U** be the URI reference that is the content of `xlink:href`. Let **S** be the specification that defines the schema of **U**, as well as rules for determining same-document references [RFC-3986] for said schema.
  - b. An XML document **D** is obtained. Obtain an XML document **D** as follows:
    - i. If **U** is a same-document reference, then **D** is the document containing the SML reference.
    - ii. Otherwise, **D** is determined as follows:
      1. If **U** is a relative reference, then let **U'** be the result of resolving the reference transforming **U** to form an (absolute) URI using the [base URI] property of the SML reference element as the base URI. Otherwise, let **U'** be **U** (i.e., the URI reference itself). The computation of the [base URI] property is implementation-defined.
      2. Dereference **U'** as defined in **S**. If the document targeted by **U'** is in the current SML model, then **D** is that document. Otherwise, if since the document is not in the current SML model, then the SML URI XLink Reference Scheme instance is unresolved (and **D** has no value).

Comment [LKC9]: [style] Add link to defn in spec. Do this for all [foo] throughout

Comment [LKC10]: [style] Wording

Comment [LKC11]: [style] Added brackets

Comment [LKC12]: [style] Redundant

Comment [LKC13]: [content] Meaning the syntax of the URI?

Comment [LKC14]: [style] Active voice

Comment [LKC15]: [content] Wording similar to SML-IF sec 5.3.4 item

Comment [LKC16]: [content] Necessary to mention?

Comment [LKC17]: [style] Rewording

Comment [LKC18]: [content] Fix

Comment [LKC19]: [content] Irrelevant

**Note:** As a result of the above definition, if the retrieved object is not of XML media type or if it is not well-formed XML then, by definition, that object is not a document as

Comment [LKC20]: [content] What definition?

Comment [LKC21]: [content] Should be more precise here.

Comment [LKC22]: [content] Should be 'and'?

defined by this specification. In this case, the SML reference scheme instance is unresolved.

Comment [LKC23]: [content] Defined where?

c. If no fragment component is present in **U**, the SML **URI-XLink** Reference Scheme instance resolves to the root element of **D**.

Comment [LKC24]: [content] Fix

d. If a fragment component is present in **U**, then the appropriate case among the following applies:

Comment [LKC25]: [content] What if the fragment is neither smlxpath1 nor shorthand pointer? It needs to be spelled out.

i. If the fragment component ~~complies with~~ matches the smlxpath1() XPointer scheme syntax, then the reference target is obtained by applying the fragment component to **D**, as defined in Section 4.3.1.1 of [SML].

Comment [LKC26]: [style] Wording

ii. If the fragment component complies with the [shorthand pointer] syntax, then the appropriate case among the following applies:

Comment [LKC27]: [style] Link to section in SML spec

1. If a target **T** can be identified in **D** based on the [XML-Schema-determined ID], then the reference target is **T**.
2. If a target in **D** cannot be identified based on the [XML-Schema-determined ID], then it is implementation-defined whether the reference target in **D** is identified based on other criteria allowed for [shorthand pointers].

Comment [LKC28]: [style] Added brackets here and to 4 following refs

4. Instances of the XLink Reference Scheme are transformed to [target-complete identifiers] through standard URI processing, as described in the applicable URI RFC.

Comment [LKC29]: [content] Would this be S as defined above in 3.a?

### 3. Examples

The following example illustrates an instance of the XLink Reference Scheme where the URI in xlink:href has no fragment component:

Comment [LKC30]: [content] Added

```
<Student>
  <ID>123</ID>
  <Name>Jane Doe</Name>
  <EnrolledCourses>
    <EnrolledCourse
      xmlns:sml=""
      xmlns:xlink="http://www.w3.org/1999/xlink"
      sml:ref="true"
      sml:targetType="CourseType"
      xlink:type="simple"

      xlink:href="http://www.university.example.org/phy101.xml"
    </EnrolledCourse>
  </EnrolledCourses>
```

Comment [LKC31]: [content] Add actual URI

Comment [LKC32]: [content] Added ns URI

```
</Student>
```

Here, the `EnrolledCourse` element is an instance of the XLink Reference Scheme since the content of `xlink:type` is the string `simple` and the content of `xlink:href` is of type `xs:anyURI`. The target of the reference is the root element of the XML document obtained by dereferencing `http://www.university.example.org/phy101.xml`.

Comment [LKC33]: [content] added

Comment [LKC34]: [content] added

Comment [LKC35]: [content] added

The following next example illustrates an instance of XLink Reference Scheme where the content of `URI` in `xlink:href` has a fragment component that follows matches the syntax of the `smlxpath1()` XPointer scheme:

Comment [LKC36]: [style] Wording

Comment [LKC37]: [content] Replaced

Comment [LKC38]: [style] Wording

```
<Student>
  <ID>123</ID>
  <Name>Jane Doe</Name>
  <EnrolledCourses>
    <EnrolledCourse
      xmlns:sml=""
      xmlns:xlink=""
      xmlns:u="http://www.university.example.org/ns"
      sml:ref="true"
      sml:targetType="CourseType"
      xlink:type="simple"
      xlink:href="http://www.university.example.org/physics.
xml
#smlxpath1(u:Courses/u:Course[u:Name='PHY101'])"
    </EnrolledCourse>
  </EnrolledCourses>
</Student>
```

Comment [LKC39]: [style] Inserted line break and spaces so long line is not truncated when printed.

In the above example, the target of the reference is the element identified by the path `/u:Courses/u:Course[u:Name='PHY101']` in the XML document obtained by dereferencing `http://www.university.example.org/physics.xml`.

Comment [LKC40]: [style]

## 4. References

Comment [LKC41]: [content] TBD, but I don't want to do it in Word only to have to redo the work in HTML.

### SML

*Service Modeling Language, Version 1.1*, Bhalchandra Pandit, Valentina Popescu, Virginia Smith, Editors. World Wide Web Consortium, @ @ @ @ @ @

@@@. This version of the Service Modeling Language specification is available at <http://www.w3.org/TR/@@@/WD-sml-@@@@@/>. The [latest version of Service Modeling Language, Version 1.1](http://www.w3.org/TR/sml) is available at <http://www.w3.org/TR/sml>.

**SML-IF**

TBD

**XLink**

TBD

**XPointer**

TBD

**XML-Info**

TBD

**XSD-Types**

TBD

**RFC-3689**

TBD