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4.2.4 Resolving an SML reference

A model validator MUST assess the validity of an SML reference using the following steps,

1. If it recognizes no scheme used in the reference, then R is unresolved.
2. If it recognizes R as using N > 0 schemes it supports, then it MUST attempt to resolve R using all N schemes, and:
    1. If none of the recognized schemes resolves, then R is unresolved.
    2. If at least one of the recognized schemes resolves to more than one target element, then the model is invalid.
    3. If one recognized scheme resolves to a target that's different from the target resolved by another recognized scheme, then the model is invalid.
    4. If one recognized scheme resolves and another doesn't, then the model is invalid.
    5. If none of the above is true (that is, all recognized schemes resolve to the same one and only one target element, call it T), then R is resolved to T.

Comment [VS1]: Should clarify this in 4.1.3 (see that section for proposal)

Comment [VS2]: 4.2.0

Comment [VS3]: 4.1.3

Comment [VS4]: 4.2.1

Comment [VS5]: 4.2.2

Comment [VS6]: 4.2.2

Comment [VS7]: 4.1.4

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4. SML References

Support for SML references in an SML model includes:

1. The ability to use multiple reference schemes for representing references.
2. An extensibility mechanism allowing new reference schemes to be defined.
3. Constraints on the type of a referenced element.
4. The ability to define key, unique, and key reference constraints across SML references.

References MUST be supported by model validators that conform to this specification.

4.1 Reference Definitions

4.1.1 SML Reference

An element information item in an SML model instance document MUST be treated as a reference element if and only if:

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1. It has an attribute information item whose [local name] is `ref` and whose [namespace name] is `http://www.w3.org/@@@@/@@/sml` and whose [normalized value] , after whitespace normalization using `collapse` following schema rules, is either `"true"` or `"1"`.

This mechanism enables schema-less identification of reference elements, i.e., reference elements can be identified without relying on PSVI.

Although its normative definition allows several syntaxes to be used to identify an SML reference element, for the sake of brevity and consistency, the rest of this specification uses `sml:ref="true"` to denote an SML reference in examples and text.

4.1.2 SML Null Reference

An element information item in an SML model instance document is an SML null reference if and only if:

1. It is an SML reference.
2. It has an attribute information item whose [local name] is `nilref` and whose [namespace name] is `http://www.w3.org/@@@@/@@/sml` and whose [normalized value] after whitespace normalization using `collapse` following schema rules, is either `"true"` or `"1"`.

4.1.3 Unresolved SML Reference

An element information item in an SML model instance document is an unresolved SML reference if and only if:

1. It is a non-null SML reference.
2. None of the recognized reference schemes resolves.
3. No recognized reference schemes are present in the SML reference.

4.1.4 SML Reference Target

The node set a non-null SML reference resolves to is its target. SML null references have no target.

4.2 Reference Semantics

A model validator MUST attempt to resolve an SML reference using all recognized reference schemes ~~of~~ present in the~~which~~ the reference ~~is recognized as an instance~~.

4.2.1 At Most One Target

Every non-null reference MUST target at most one element in a model. When one or multiple recognized schemes in a reference resolve to more than one target then the model is declared invalid.

4.2.2 Identical Targets

An SML model MUST be declared invalid when a recognized scheme resolves to a target that's different from the target resolved to by another recognized scheme or when one recognized scheme resolves and another does not.

To determine if two targets are the same or different, a model validator MUST obey the following rules.

1. A model validator MUST consider both targets to be the same when (a) the scheme(s) used to locate the targets use URIs or IRIs, (b) these URIs or IRIs contain all information required to locate the targets, and (c) the two URIs or IRIs used to locate the targets are identical using a case-sensitive, codepoint-by-codepoint comparison. The **4.3.1 SML URI Scheme** satisfies conditions (a) and (b). Authors of new SML reference schemes MUST specify whether or not the scheme satisfies conditions (a) and (b).
2. A model validator MUST consider both targets to be different when there is something available in the element information items for the targets that tells them apart. For example, if there is an infoset property for which the 2 targets have different values, they are different. This applies recursively for complex-valued properties.
3. For all other cases, it is implementation-defined whether to treat the targets as the same or not.

4.2.3 Multiple References

An element in a document MAY be targeted by multiple reference elements. These reference elements may use different schemes and/or be expressed in different ways.

4.2.4 Null References

A null reference is an explicit declaration of intent by the document author that the reference itself does not exist, and a processing directive (not a hint) to processors not to attempt to recognize any reference schemes in it. If a reference element is recognized as null, then processors MUST NOT attempt to resolve it. The question of whether a null reference is resolved or not is undefined; it is an ill-formed question.