**DTDs:**

Inherited from SGML, the XML DTD is the most widely deployed means of defining an XML schema. Defined in the XML 1.0 Recommendation, DTD does not support namespaces, which were specified later. This, together with the fact that its datatype system is weak and only applies to attributes, is one of the main motivations for the W3C to develop a new schema language.

**XML Schema:**

W3C XML Schema was published by the W3C to provide an alternative to XML DTD that supported namespaces, facilitates the design of open and extensible vocabularies, and meets the requirement of data-oriented applications for a richer data typing system. It does so by borrowing many features from OOP languages, and hence the fit with the tree structure of XML documents is sometimes difficult to make. It is generally considered complex, partly because of the number of features, and partly because of the style of the recommendation which describes the validation process more than the modeling features. W3C XML Schema is a strongly typed schema language that eliminates any non-deterministic design from the described markup to ensure that there is no ambiguity in the determination of the datatypes and that the validation can be made by a finite state machine.

**Relax NG:**

Its editors (James Clark and Murata Makoto) define RELAX NG as "the next generation schema language for XML: clean, simple and powerful". RELAX NG appears to be closer to a description of the instance documents in ordinary English and simpler than W3C XML Schema, to which it might become a serious alternative. Many constraints, especially those which are on the fringe of non-deterministic models, can be expressed by RELAX NG and not by W3C XML Schema. Some combinations in document structures forbidden by W3C XML Schema can be described by RELAX NG. Even though RELAX NG seems to be technically superior to W3C XML Schema, support by software vendors and XML developers is uncertain now that W3C XML Schema is a Recommendation.

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| --- | --- | --- | --- |
|  | **DTDs** | **XML Schema** | **Relax NG** |
| **Author** | W3C | W3C | OASIS and possibly ISO |
| **PSVI** | Yes | Yes | No |
| **Structures** | Yes | Yes | Yes |
| **Datatypes** | Yes (weak) | Yes | No, but a modular mechanism has been defined to plug in datatype systems |
| **Integrity** | Yes (internal through ID/IDREF/IDREFS attributes) | Yes (internal through ID/IDREF/IDREFS and xs:unique/xs:key/xs:keyref) | No (except through ID/IDREF/IDREFS features of a datatype system) |
| **Rules** | No | No | No |
| **Vendor support** | Excellent | Potentially excellent but currently still immature. | To be seen. |
| **Miscellaneous** | Non-XML syntax; no support for namespaces. schema definition is only one of the features of DTDs. | Borrows many ideas from OOP design; considered complex; paranoid about determinism; part of the foundation of XML in the vision of the W3C. | Result of the merge between RELAX and TREX, might become an ISO TR. Strong mathematical grounding. Alternate non-XML syntax proposed by James Clark. |