W3C Speech Recognition Grammar Specification (SRGS) Summary

XML Form

Version 1.0

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Introduction

This is a short summary of the Candidate Recommendation XML SRGS grammar format for quick reference. This is meant to be a compact reference to W3C SRGS capabilities and doesn't replace the actual specification. Note that the information in this summary may become obsolete as the specification proceeds toward Recommendation, and applies only to the Candidate Recommendation version of the specification. It also does not include all of the capabilities defined in the Candidate Recommendation. For complete, detailed and up to date information, please see the specification itself (http://www.w3.org/TR/speech-grammar).

Notational conventions:

1. In the examples: "…" in an example indicates that there may be, or in some cases must be, additional attributes in an actual grammar document which are left out in the example for clarity.
2. Medium blue cells contain information about XML elements and top level XML information, and their "function" cell is bold. Light blue cells contain information about attributes.

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Grammar Document

This section includes information that applies to an entire grammar document. This information is placed in a header at the beginning of the document.

Component	Purpose	Representation	Status	Example	Spec Section
XML prolog		XML declaration	Required. The first line of the document.	<?xml version="1.0"?>	4.3
Character encoding	Specify the character encoding used by the grammar	"encoding" attribute of the XML declaration	Optional but strongly encouraged. If absent, behavior defined as in XML.	<?xml version="1.0" encoding="ISO-8859-1"?>	4.1
DOCTYPE (DTD)	Reference the DTD (document type definition)	XML DOCTYPE	Optional but recommended. If present, must reference the standard DOCTYPE and identifier.	<!DOCTYPE grammar PUBLIC "-//W3C//DTD GRAMMAR 1.0//EN" "http://www.w3.org/TR/speech-grammar/grammar.dtd">	4.3
A grammar	The root element of the grammar	<grammar> tag	Required	<grammar …>	4.3
Version	Specify the version of the grammar format used	"version" attribute of <grammar>	Required. Must be version 1.0	<grammar version="1.0"…>	4.3
Mode (voice or dtmf)	Specify whether the grammar is for voice or dtmf	"mode" attribute of <grammar>	Optional. Default is "voice"	<grammar mode="voice" …> <grammar mode="dtmf"…>	4.6
Root rule declaration	Specify the root or starting rule of the grammar	"root" attribute of <grammar>	Recommended	<grammar root="rulename" ...>	4.7
XML namespace	Designate the grammar namespace	"xmlns" attribute of <grammar>	Required	<grammar xmlns="http://www.w3.org/2001/06/grammar"…>	4.3
Schema namespace	Designate the namespace for schemas.	'xmlns:xsi" attribute of <grammar>	Recommended	<grammar xmlns:xsi= "http://www.w3.org/2001/XMLSchema-instance" …>	4.3
Schema attributes	Designate the location of the grammar schema	xsi:schemaLocation attribute of <grammar>	Recommended (requires schema namespace declaration above)	<grammar xsi:schemaLocation="http://www.w3.org/2001/06/grammar http://www.w3.org/TR/speech-grammar/grammar.xsd" …>	4.3
Base	Specify base URI from which relative URI's are calculated	"xml:base" attribute of <grammar>	Optional	<grammar xml:base=http://www.example.com/base-file-path…>	4.9
Tag format	Specify format of semantic tags	"tag-format" attribute of <grammar> (Note that the format of semantic tags is not currently standardized)	Optional	<grammar tag-format="semantics/1.0" ...> (Note that "semantics/1.0" is not a normative identifier.)	4.8

language	Declare the language of the grammar	“xml:lang” attribute of <grammar>	Required unless mode is explicitly declared to be “dtmf”; ignored if mode is “dtmf”	<grammar xml:lang="en-US" …>	4.5
Pronunciation lexicon	Specify a pronunciation lexicon	<lexicon> element.	Optional. Multiple lexicons are allowed. Must occur before all <rule> elements in the grammar, but no ordering is defined among <metadata>, <meta>, and <lexicon>.	<lexicon uri="http://www.example.com/lexicon.file"/>	4.10
Location of pronunciation lexicon	Locate a pronunciation lexicon	“uri” attribute of <lexicon>	Required	<lexicon uri="http://www.example.com/lexicon.file"/>	4.10
XML Metadata	Container in which information about the document can be placed using a metadata schema. <metadata> provides a more general and powerful treatment of metadata information than meta.	<metadata> element	Optional. Must occur before all <rule> elements in the grammar, but no ordering is defined among <metadata>, <meta>, and <lexicon>. Although any metadata schema can be used, RDF is recommended.	<metadata> <rdf:RDF xmlns:rdf = "http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs = "http://www.w3.org/TR/1999/PR-rdf-schema-19990303#" xmlns:dc = "http://purl.org/metadata/dublin_core#"> <rdf:Description about="http://www.example.com/meta.grxml" dc:Title="Digit Grammar" dc:Description="Digit Grammar in W3C XML Form" </rdf:Description> </rdf:RDF> </metadata>	4.11.2
meta	Declare a metadata property. Associates a string to a declared meta property or declares "http-equiv" content.	<meta> element	Optional. Must occur before all <rule> elements in the grammar, but no ordering is defined among <metadata>, <meta>, and <lexicon>.	<meta name="Creator" content="Stephanie Williams"/>	4.11.1
http-equiv	HTTP header information	“http-equiv” attribute of <meta>	<meta> must have exactly one of “http-equiv” or “name” attribute.	<meta http-equiv="Expires" content="0"/>	4.11.1
name	Specify type of metadata	“name” attribute of <meta>	<meta> must have exactly one of “http-equiv” or “name” attribute.	<meta name="Creator" content="Stephanie Williams"/>	4.11.1
Content of metadata	Specify metadata	“content” attribute of <meta>	Required	<meta name="Creator" content="Stephanie Williams"/>	
Comments	Place a comment anywhere in a grammar	XML comment	Optional	<!-- comment -->	4.5

Rule Definitions

A grammar consists of a set of rules which define the inputs the speech recognizer can recognize. Rules are defined by rule definitions.

Component	Purpose	Representation	Status	Example	Spec Section
rule	Define a rule	<rule> element	Optional, but a grammar without rules is not very useful.	<rule id="city">	3.1
id	Identify a rule	"id" attribute of <rule>; must be unique within the grammar	Required	<rule id="city">	3.1
Scope of a rule	Indicate whether the rule can be referenced by an external grammar (public) or not (private)	"scope" attribute of <rule>	Optional. Default is "private". The root rule, however, can be referenced externally, even if it is a private rule.	<rule id="command" scope="public"> <ruleref uri="#action"/> <ruleref uri="#object"/> </rule>	3.2
example	Provide an example.	<example> element as the initial content within a <rule> element.	Optional. Multiple examples are allowed. Must occur before any rule expansion element.	<example> open the window </example>	3.3

Rule Expansions

A rule consists of one or more rule expansions. The rule expansion elements are <ruleref>, <item>, <one-of>, <token> and <tag>.

Component	Purpose	Representation	Status	Example	Spec Section
Tokens	Define a token, or unit of speech recognition	<token> element; alternatively, a token can be indicated by text delimited by double quotes	The <token> tag or quotes are necessary around multi-word tokens in order for the recognizer to treat them as a unit.	<token>San Francisco</token> "San Francisco"	2.1
Language of a token	Declare the language of a token	"xml:lang" attribute of <token>	Optional	<token xml:lang="en-US"> San Francisco</token>	2.1
Sequence	A sequence of rule expansions corresponding to the temporal order of the parts of an utterance.	Successive rule expansion elements, i.e., any combination of <ruleref>, <item>, <one-of>, <token>,<tag>, or CDATA	Optional	<!--sequence of rule references--> <ruleref uri="#action"/> <ruleref uri="#object"/> <!--sequence of tokens and rule references--> the <ruleref uri="#object"/> is <ruleref uri="#color"/> <!-- sequence container --> <item>fly to <ruleref uri="#city"/> </item>	2.3
Items	Group items, e.g. the	<item> element	Depends on context	<item>Boston</item>	2.3

	choices in a set of alternatives. An item element can also surround any expansion to permit a repeat attribute or language identifier			<item xml:lang="fr-CA">oui</item>	
Weights	Specify relative weight that the recognizer is to place on an alternative	"weight" attribute of <item>	Optional. If no weight is provided this is equivalent to a weight of 1.0.	<one-of> <item weight="10">small</item> <item weight="2">medium</item> <item>large</item> </one-of>	2.4.1
Repeated and optional items	Specify number of repetitions for an item; if 0 is the minimum number of repetitions, then the item is optional	"repeat" attribute of <item>	Optional	<item repeat="0-1"> <item repeat="0-1"> very </item> big </item>	2.5
Repeat probabilities	The probability of successive repetition of the repeated expansion.	"repeat-prob" attribute of <item>; must be in the floating pointing range of "0.0" to "1.0"	Optional. Ignored if the "repeat" attribute is not specified.	<item repeat="2-4" repeat-prob=".8"> <ruleref uri="#digit"/> </item>	2.5.1
Alternatives	Specify mutually exclusive alternative utterances.	<one-of> tag around set of alternatives. Each alternative is a rule expansion. <one-of> is a child element of <rule>	Optional	<one-of> <item>Michael</item> <item>Yuriko</item> <item>Duke</item> </one-of>	2.4
Tags	Describe the value to be returned from a rule (normally used for semantics). The tag format is not currently standardized.	<tag> element containing arbitrary text. It can be the direct child of an <item> or <rule> tag	Optional	<one-of> <item> open <tag>TAG-CONTENT-1</tag> </item> <item> <ruleref uri="#close"/> <tag>TAG-CONTENT-2</tag> </item> </one-of>	2.6

Rule References

These are the ways of referring to rules in a rule expansion. They are all child elements of <rule>.

Function	Description	Representation	Status	Example	Spec Section
Rule reference	Within a grammar rule, refer to another rule.	<ruleref> element.	Optional	<ruleref uri="#rulename"/>	2.2
External rule reference to root rule of another grammar	Refer to a rule outside of the current grammar. The referring grammar and the referred grammar must have the same mode. May include a "type" attribute for the media type.	"uri" attribute of <ruleref>.	Optional	<ruleref uri="grammarURI"/>	2.2.2
External rule reference to non-root rule within another grammar	Refer to a rule outside of the current grammar. The referring grammar and the referred grammar must have the same mode. May include a "type" attribute for the media type.	"uri" attribute of <ruleref>. Use uri # to refer to a specific rule within the external grammar.	Optional	<ruleref uri="http://grammar.example.com/world-cities.xml#canada" type="application/srgs+xml"/>	2.2.2
Internal rule references	Refer to a rule inside the current grammar	"uri" attribute of <ruleref>	Optional	<ruleref uri="#rulename"/>	2.2.1
Language attachment for a rule	Change the language for a rule	"xml:lang" attribute of <ruleref>	Optional	<ruleref uri="http://grammar.example.com/cities.gram#argentina" xml:lang="es"/>	2.2.5
Special rule: VOID	A rule that cannot be matched	"special" attribute of <ruleref>	Optional	<ruleref special="VOID"/>	2.3.3
Special rule: NULL	A rule that is matched without the user speaking any word	"special" attribute of <ruleref>	Optional	<ruleref special="NULL"/>	2.2.3
Special Rule: GARBAGE	A rule that matches anything	"special" attribute of <ruleref>	Optional	<ruleref special="GARBAGE"/>	2.2.3