

ANSI/CEA Standard

Task Model Description (CE TASK 1.0)

ANSI/CEA-2018

March 2008



CEA
Consumer Electronics Association

www.CE.org

NOTICE

Consumer Electronics Association (CEA[®]) Standards, Bulletins and other technical publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards, Bulletins and other technical publications shall not in any respect preclude any member or nonmember of CEA from manufacturing or selling products not conforming to such Standards, Bulletins or other technical publications, nor shall the existence of such Standards, Bulletins and other technical publications preclude their voluntary use by those other than CEA members, whether the standard is to be used either domestically or internationally.

Standards, Bulletins and other technical publications are adopted by CEA in accordance with the American National Standards Institute (ANSI) patent policy. By such action, CEA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard, Bulletin or other technical publication.

This CEA Standard is considered to have International Standardization implication, but the International Electrotechnical Commission activity has not progressed to the point where a valid comparison between the CEA Standard and the IEC document can be made.

This Standard does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

(Formulated under the cognizance of the CEA's **R7 Home Network Committee**.)

Published by

©CONSUMER ELECTRONICS ASSOCIATION 2008
Technology & Standards Department
1919 S. Eads Street
Arlington, Virginia 22202

**PRICE: Please call Information Handling Services, USA and Canada (1-800-854-7179)
International (303-397-7956), or
<http://global.ihs.com>**

All rights reserved
Printed in U.S.A.

PLEASE!

DON'T VIOLATE
THE
LAW!

This document is copyrighted by the Consumer Electronics Association (CEA[®])
and may not be reproduced without permission.

Organizations may obtain permission to reproduce a limited number of copies by
entering into a license agreement. For information contact:

Information Handling Services
15 Inverness Way East
Englewood, Colorado 80112-5704
or call U.S.A. and Canada 1-800-854-7179, International (303) 397-7956
See <http://global.ihs.com> or email global@ihs.com

FOREWORD

This standard was developed under the auspices of the Consumer Electronics Association (CEA) R7 Home Network Committee.

All of the RelaxNG schemas and XML examples in this document have been automatically inserted from files and mechanically checked for syntactic validity.

First time readers are advised to first read the informative introduction in 6.

Contents		Page
1	SCOPE	1
2	CONFORMANCE (Informative)	1
2.1	Task Model Description.....	2
2.2	Task-Based Application	2
2.3	Grounding.....	2
3	REFERENCES	2
3.1	Other Standards Used	2
3.1.1	RelaxNG	2
3.1.2	ECMAScript	2
3.2	Normative References	2
3.3	Informative References	3
3.4	Reference Acquisition	3
4	TERM USAGE	4
4.1	Applications.....	4
4.2	Use of Shall, Should and May	4
4.3	Schemas	4
4.4	Namespaces	5
4.5	Classes and Instances.....	5
4.6	Functions	5
5	DEFINITIONS	5
6	INTRODUCTION (Informative)	6
6.1	Tasks	6
6.2	Task Decomposition	7
6.3	Task Classes and Instances	7
6.4	Task-Based Applications	8
6.5	Task Engines	8
6.6	Task Generation and Recognition.....	9
6.7	Task Modeling	10
7	TASK MODEL DESCRIPTION	10
7.1	MIME Type	10
7.2	Format and Encoding	11
7.3	XML Namespace.....	11
7.4	Root Element	11
8	TASK	12
8.1	Input and Output Slots	13
8.1.1	Datatypes	14
8.1.2	Predefined Slots.....	14
8.2	User Intent Concepts.....	15
8.2.1	Predefined Semantic Roles.....	16
8.3	ECMAScript Task Instances	17
8.4	Precondition	17
8.5	Postcondition	17
8.5.1	The 'sufficient' Attribute	18
8.6	Side Effects.....	18

9	TASK DECOMPOSITION	19
9.1	Step Order	21
9.2	Skipping and Repeating Steps	21
9.3	Applicability Condition	22
9.4	Bindings	22
10	GROUNDING	24
10.1	Scripts.....	24
10.2	Grounding Queries.....	26
10.2.1	The ‘devices’ Task.....	27
10.2.2	The ‘user’ Task	27
10.2.3	The ‘about’ Task	27
10.2.4	The ‘task’ Task.....	28
11	RECOMMENDATIONS FOR APPLICATIONS	28
11.1	Unknown Elements and Attributes.....	28
11.2	Task Model Ordering.....	28
11.3	Order of Step Execution	28
11.4	User Intent Concepts	28
11.5	Preconditions.....	28
11.6	Postconditions.....	28
11.7	Non-primitive Datatypes	29
11.8	Applicability Conditions	29
11.9	Skipping and Repeating Steps.....	29
11.10	Script Execution	29
11.10.1	Predefined ‘\$execute’ Function	29
11.10.2	Predefined ‘\$getModel’ Function.....	30
11.10.3	Predefined ‘\$occurred’ Function	30
11.11	Grounding Queries.....	30
	Annex A (Normative) Complete RelaxNG Schema for Task Model Description	31
	Annex B (Informative) Example Task Model.....	35
	Annex C (Normative) UPnP Devices Exposing a Task Model Description.....	38
	Annex D (Normative) URC Targets Exposing a Task Model Description	39

Figures

Figure 1: Conformance to This Standard.....	1
Figure 2: Task Terminology.....	7
Figure 3: Expected Architecture for Using CEA-2018	8
Figure 4: Possible Refinement of Figure 3 with Generic Task Engine	9
Figure 5: Dataflow Diagram for BC Decomposition.....	24
Figure 6: Decomposition for playMusic Task.....	35

Tables

Table 1: RelaxNG Schema for Task Model	11
Table 2: RelaxNG Schema for Task.....	12
Table 3: RelaxNG Schema for Input and Output.....	13
Table 4: RelaxNG Schema for User Intent Concepts	15
Table 5: RelaxNG Schema for Subtasks.....	19
Table 6: RelaxNG Schema for Step Content	20
Table 7: RelaxNG Schema for Scripts.....	25
Table 8: Predefined Task Model for Grounding Queries	27
Table 9: RelaxNG Schema for About Document.....	27

CEA-2018

Task Model Description

CE TASK 1.0

1 SCOPE

A task model is a formal description of the activities involved in completing a task, including both activities carried out by humans and those performed by machines. This standard defines the semantics and an XML notation for task models relevant to consumer electronics devices. The standard does not depend on any specific home networking technology or infrastructure.

2 CONFORMANCE (Informative)

Figure 1 illustrates the conformance approach of this standard. At the center of the diagram is a *task model description*, which is an XML document. A task model description is used by a *task-based application* to guide its interaction with a user. A task model description specifies task classes, and representations of their intent and how high-level tasks can be decomposed into lower-level tasks. A task model description also contains ECMAScript programs which ground primitive tasks to devices via particular networking platforms. This standard defines an XML language for task model descriptions which is independent of task-based applications. See 6 for a further informative introduction tasks and task modeling.

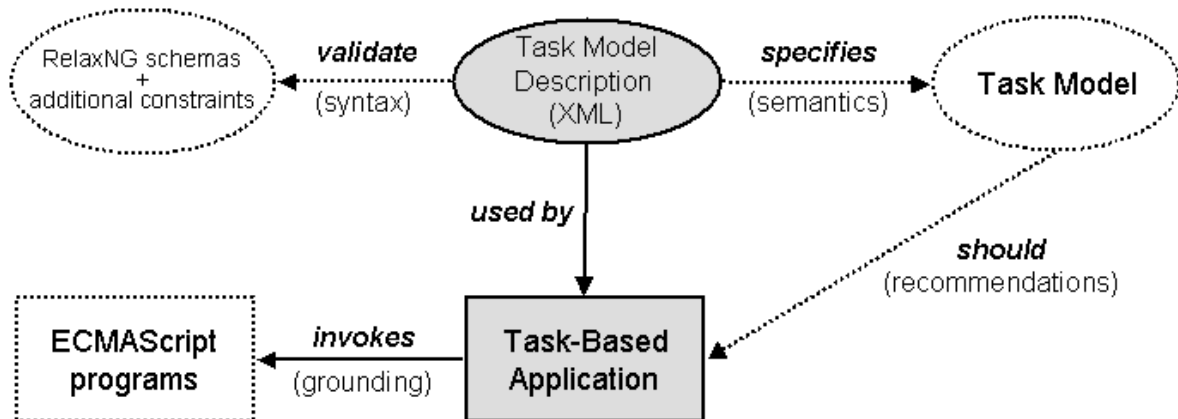


Figure 1: Conformance to This Standard

In general, the process of writing (authoring), distributing and using a task model description involves various stakeholders.

There are many different options for writing and distributing a task model description. First, a device manufacturer may write a task model description for their device, and either build it into the device so that it can be retrieved by a task-based application (see [REF 10.2.4]) or distribute it through their web server. Second, the developer of a task-based application may build task model descriptions into their application, or more likely, provide them through their web server. Finally, a third party may write task model descriptions for any device and make it available publicly through a web server.

Task model descriptions from different sources may mutually reference each other. For example, some task model descriptions may serve as “libraries” for specific domains. Similarly, the author of the ECMAScript program used to ground a particular task class (for a particular platform) may be different from the author of the task class specification.