



S@TML

S@T Markup Language

## 1 History

| Document history      |                     |  |
|-----------------------|---------------------|--|
| Release               | Approved by         | Comment  |
| V1.0.0                | S@T-TDG #15         | First approved release.  |
| V1.0.1                | S@T-TDG #16         | CR 20001 add sat-plug-in in DTD, new version numbering, CR 20003 list of ignored attributes, minor editorial changes.  |
| V1.0.2                | S@T-TDG #17         | CR 20004 lexical entities, CR 20005/20007 sat-value in sat-const required but no sat-do-clr attribute, CR 20006 explain access of temporary variables  |
| V1.0.3<br>(Rel. 2000) | S@T-TDG #18         | CR 20002 make document more self-contained, CR 20010 dcs-t for sat-send-sms, CR 20011 constants for encrypt/decrypt/plug-in, CR 20012/20015/20018 adding clarifications, CR 20013 sat-ussddes attribute, CR 20014 vnd.sat-process type for do, CR 20016 life time of variables, CR 20020 pre-defined URIs, CR 20021 sat-mac attribute for sat-decrypt  |
| V1.0.4                | S@T-TDG #19         | CR 20022 sat-const identifiers, CR 20023 onpick, CR 20024 input, select, sat-inkey alpha identifier clarifications, history comment in DTD   |
| V1.0.5                | S@T-TDG #21-<br>#25 | CR 20025 Clarification of <sat-refresh> tag,<br>CR 20026 Clarification of <sat-gen-stk> tag<br>CR 20028 Inconsistency between spec and dtd<br>CR 20029 Binary SMS / Encrypt / Decrypt<br>CR 20030 Format attribute of input<br>CR 20031 Clarification of the input type<br>CR 20033 Clarification of the sat-uid attribute of the <sat-plug-in> tag.<br>CR 20034 Extension of <sat-gen-stk> tag<br>CR 20037 Clarification of <sat-decrypt> and <satencrypt> tags |
| V.1.0.6               | S@T-TDG #30         | Editorial changes, minor fixes for publication   |

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## 2 TERMINOLOGY

### 2.1 Notation

Lexical and syntactical specifications are given in EBNF (extended Backus Naur Form), with literals enclosed in single quotes 'xyz' or given in a single character set like [0-9] for a digit, and using the operators (...) (precedence), ? (optional), \* (zero or more times), + (one or more times), | (alternative), and "... ::= ... ." for rules. They are written in `typewriter` font, and will be used to explain the structure concisely without mentioning XML attributes.

The format of XML document type definitions (DTDs) is explained in /XML1.0/, they are written in `typewriter` font.

`typewriter` font is used for S@TML language examples.

## 2.2 Abbreviations

|              |  |
|--------------|--|
| <b>DE</b>    | S@TML/SBC Decoder / Encoder              |
| <b>DTD</b>   | Document Type Definition                 |
| <b>GSM</b>   | Global System for Mobile Communication   |
| <b>HTTP</b>  | Hyper Text Transfer Protocol             |
| <b>S@T</b>   | SIM Alliance Toolbox                     |
| <b>SB</b>    | S@T Browser                              |
| <b>SBC</b>   | S@T Byte Code                            |
| <b>SSP</b>   | S@T Session Protocol                     |
| <b>SIM</b>   | Subscriber Identity Module               |
| <b>S@TML</b> | S@T Markup Language                      |
| <b>STK</b>   | SIM Application Toolkit                  |
| <b>TLV</b>   | Tag Length Value encoding                |
| <b>URI</b>   | Unified Resource Identifier              |
| <b>URL</b>   | Unified Resource Locator                 |
| <b>WAP</b>   | Wireless Application Protocol            |
| <b>WTAI</b>  | Wireless Telephony Application Interface |
| <b>XML</b>   | Extensible Markup Language               |

## 3 LIST OF DOCUMENTS

|              |  |
|--------------|--|
| /GSM02.30/   | Digital cellular telecommunications system (Phase 2+); Man-Machine Interface (MMI) of the Mobile Station (MS) (GSM 02.30)  |
| /GSM02.90/   | Digital cellular telecommunications system (Phase 2+); Unstructured Supplementary Service Data (USSD) - Stage 1 (GSM 02.90)  |
| /GSM03.38/   | Digital cellular telecommunications system (Phase 2+); Alphabets and language-specific information (GSM 03.38)   |
| /GSM03.48/   | Digital cellular telecommunications system (Phase 2+); Security mechanisms for the SIM application toolkit; Stage 2 (GSM 03.48)  |
| /GSM03.40/   | Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS) (GSM 03.40)  |
| /GSM04.07/   | Digital cellular telecommunications system (Phase 2+); Mobile radio interface signalling layer 3; General aspects (GSM 04.07)  |
| /GSM04.08/   | Digital cellular telecommunications system (Phase 2+); Mobile radio interface; Layer 3 specification (GSM 04.08)   |
| /GSM11.11/   | Digital cellular telecommunications system (Phase 2+); Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11)  |
| /GSM11.14/   | Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14) |
| /RFC2396/    | Uniform Resource Identifiers (URI): Generic Syntax   |
| /SBC/        | SBC, S@T Byte Code (Technical Specification S@T 01.00)   |
| /WML1.1/     | Wireless Application Protocol - Wireless Markup Language (WML) 1.1   |
| /WML1.2Prop/ | Wireless Application Protocol - Wireless Markup Language Specification - Proposed Version 1.2  |
| /WTAI1.1/    | Wireless Application Protocol - Wireless Telephony Application Interface Specification (WTAI) 1.1  |
| /WTAIGSM1.1/ | Wireless Application Protocol - Wireless Telephony Application Interface Specification - GSM Specific Addendum (WTAI GSM) 1.1  |

/XML1.0/ Extensible Markup Language (XML) 1.0

## 4 OVERVIEW

This is the released version of the S@T Markup Language 1.0 (S@TML) specification. It describes the format of S@TML „content“ stored on a HTTP server. The S@TML/SBC Decoder / Encoder (DE) on the S@T Gateway is a dynamic compiler translating S@TML content into S@T Byte Code (SBC) which can be displayed by the S@T Browser (SB) on SIM cards inside mobile phones supporting GSM Phase 2+ SIM Toolkit operations.

In the S@TML there is a *S@TML Core Language* which is a subset of the Wireless Application Protocol's (WAP's) Wireless Markup Language (WML) (see /WML1.1/). This eases the definition of services that are usable by mobile users with S@T Browser on their SIM card or with a handset with WAP functionality. A subset of the Wireless Telephony Application Interface (WTAI) for GSM (see /WTAI1.1/, /WTAIGSM1.1/) is also part of the S@TML Core Language. The *S@TML STK Extensions* allow for the migration of existing SIM Toolkit (STK) based services to S@TML, as well as for more sophisticated services with special requirements (e.g. additional security). They are tagged using the "sat-" prefix. In the *Future S@TML* section those WML features are described which in the S@TML Document Type Definition, but outside S@TML Core Language and beyond this specification's version (and may still be subject to change). For the relation between the mentioned language subsets see Figure 1.

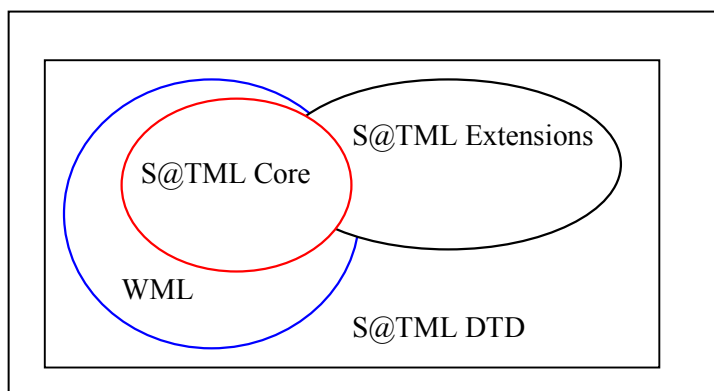


Figure 1

The WML elements and attributes being part of the S@TML Core Language must be translated into SBC byte code by the DE, just as the S@TML STK Extensions. WML elements and attributes which are not supported may either be ignored or an error may be indicated. The expected reaction of the DE is stated in the specification. Those elements or attributes which can yield an error are not recommended to be used in content meant for S@T browsers. It is allowed that a DE implementation translates elements or attributes into SBC which are classified as being ignored. This is, however, out of the scope of the specification, and may not interfere with the translation of supported elements and attributes.

Note, that Chapter 6 specifies the S@TML Core Language elements and attributes, as well as attributes belonging to the S@TML STK Extensions. The extensions are given in **bold font** and tagged with "sat-". Chapter 7 defines the subset of the Wireless Telephony Application Interface features and notations (/WTAI1.1/, /WTAIGSM1.1/) which are also part of the S@TML Core Language. Chapter 8 defines the S@TML STK Extensions, and Chapter 9 deals with Future S@TML which is not supported in this version and still subject to change.

The S@TML lexical and syntactical conventions follow the Extensible Markup Language (XML) 1.0 recommendations /XML1.0/. A complete document type definition (DTD) is given in Chapter 10. This document type definition is a superset of the WML 1.1 DTD. I.e. it includes S@TML Core Language, S@TML STK Extensions, and the not supported part of WML.

## 5 LEXICAL DEFINITIONS

The following lexical entities are used in S@TML (see also /XML1.0/ and /WML1.1/):

### 5.1.1 Named Character Entities

As defined in /XML1.0/ the following named character entities can be used in SATML:

```
<!ENTITY quot "&#34;">      <!-- quotation mark -->
<!ENTITY amp  "&#38;#38;">   <!-- ampersand -->
<!ENTITY apos "&#39;">      <!-- apostrophe -->
<!ENTITY lt   "&#38;#60;">   <!-- less than -->
<!ENTITY gt   "&#62;">      <!-- greater than -->
```

For compatibility with /WML1.1/ also the following named character entities are defined in SATML:

```
<!ENTITY nbsp "&#160;"><!-- non-breaking space -->
<!ENTITY shy  "&#173;"><!-- soft hyphen (discretionary hyphen) -->
```

### 5.1.2 Numeric Character Entities

As defined in /XML1.0/ unicode characters can be specified by giving their numeric value either in decimal (&#*num*;) or in hexadecimal (&#x*hexnum*;) notation.

### 5.1.3 CDATA

CDATA ::= (any text character or numeric or named character entity) \*

### 5.1.4 PCDATA

PCDATA ::= (any text character or numeric or named character entity and element tags) \*

### 5.1.5 NMTOKEN

NMTOKEN ::= (any name character) +

### 5.1.6 Basic Attribute Types

The following entities are used as basic attribute type definitions for SATML:

```
<!ENTITY % bool-t    "(true|false)">
<!ENTITY % num-t     "NMTOKEN"> <!-- number -->
<!ENTITY % hex-t     "NMTOKEN"> <!-- hex str -->
```

Attributes of type %num-t may contain a decimal number (i.e. [0-9]+); those of type %hex-t may contain an even number of hexadecimal digits (i.e. an even-length string matching [A-Fa-f0-9]+) after having all white space characters removed. In the attributes declared with the following entities variables may be used as well as literal values (see Section 6.4 for the notation):

```
<!ENTITY % vdata-t  "CDATA">      <!-- string with variables -->
<!ENTITY % vnum-t   "%vdata-t;">   <!-- number with variables -->
<!ENTITY % vhex-t   "%vdata-t;">   <!-- hex str with variables -->
<!ENTITY % HREF-t   "%vdata-t;">   <!-- URI, URL or URN with variables -->
```

In attributes of type %HREF-t hyperlink references will be given (see Section 8.6.1 for the notation).

## 6 S@TML CORE LANGUAGE

The S@TML Core Language elements and attributes form a subset of the Wireless Application Protocol's Wireless Markup Language WML Version 1.1 (/WML1.1/). This eases the definition of services that are usable by mobile users with S@T Browser on their SIM card as well as those with a handset with WAP functionality. For information on future development only, see also the Proposed Version 1.2 document /WML1.2Prop/. The subset of Wireless Telephony

Application Interface features and notations (/WTAI1.1/, /WTAIGSM1.1/) described in Chapter 7 are also part of the S@TML Core Language.

Note, that attributes etc. given in **bold font** and tagged with "sat-" belong to the S@TML STK Extensions (Chapter 8), and are given in this S@TML Core Language Chapter 6 only in order to eliminate the need of duplicating text. The security rules given in Section 8.1 apply to these attributes equally as to those defined in Chapter 8.

## 6.1 Decks

### 6.1.1 deck

```
deck ::= prolog (satml|wml)
```

A deck defines a set of cards logically belonging to each other and will usually be the smallest unit of data transported to the SIM at one time.

### 6.1.2 %id-attrs

```
<!ENTITY % id-attrs
  "id          ID          #IMPLIED
   class      CDATA      #IMPLIED">
```

| attribute | type   | default | %id-attrs  |
|-----------|--------|---------|--|
| id        | string | null    | Provides a unique identification of an element in a deck. For <card> this defines the relative URI address. For other elements it is ignored by DE. May be used for tasks like server-side transformations and for compatibility with WML. |
| class     | string | null    | Provides a means to organise elements in classes by giving a space-separated list of case sensitive class names. To be ignored by DE.  |

### 6.1.3 prolog

```
prolog ::= xml-decl?
  ( '<!DOCTYPE satml SYSTEM "http://www.simalliance.org/DTD/satml106.dtd">'
  | '<!DOCTYPE wml SYSTEM "http://www.simalliance.org/DTD/satml106.dtd">' )
```

The prolog contains the XML version and DOCTYPE information. The choice of the DOCTYPE declaration for satml or wml must fit to the root element being used. If the document encoding is neither UTF-8, nor UTF-16, an XML encoding declaration must be given at the beginning as specified in /XML1.0/. Some examples are:

```
xml-decl ::= '<?xml version="1.0" encoding="ISO-8859-1" ?>'
           | '<?xml version="1.0" encoding="UTF-8" ?>'
           | '<?xml version="1.0" encoding="EUC-JP" ?>'
```

If the encoding is UTF-16 the document must start with the byte order mark.

### 6.1.4 satml

```
satml ::= '<satml>' head? %decls card+ '</satml>'
```

```
<!ELEMENT satml (head?, %decls;, card+) >
<!ATTLIST satml
  xml:lang      NMTOKEN          #IMPLIED
  sat-storage   (dynamic|static) "static"
  sat-serv-id   %hex-t;          #IMPLIED
  sat-help      %vdata-t;        #IMPLIED
  %id-attrs;
>
```

The `satml` element contains the complete deck of cards, declarations, and deck-level attributes.

| attribute                | type   | default | <satml>   |
|--------------------------|--------|---------|---|
| <code>xml:lang</code>    | string | null    | Specifies the natural language in which the document is written. Ignored by DE.   |
| <code>sat-storage</code> | enum   | static  | Specifies the storage type of this deck. The content is either dynamic (should not be re-read from cache), or static.   |
| <code>sat-serv-id</code> | hex    | null    | Specifies the Toolkit Application Reference for the service to which this deck belongs in 1-8 Bytes given in a hexadecimal string.<br>Note, that this is an optional feature of SBC, and that the values have to be defined by the card issuer. |
| <code>sat-help</code>    | string | null    | Specifies a help text to be displayed by the SB when the help key is pressed.   |

### 6.1.5 wml

```
wml ::= '<wml>' head? template? card+ '</wml>'
```

```
<!ELEMENT wml (head?, template?, card+) >
<!ATTLIST wml
  xml:lang      NMTOKEN          #IMPLIED
  sat-storage   (dynamic|static)  "static"
  sat-serv-id   %hex-t;           #IMPLIED
  sat-help     %vdata-t;        #IMPLIED
  %id-attrs;
>
```

The `wml` element can be used to enclose a complete deck of cards, declarations, and deck-level attributes. Note, that if the additional non-WML attributes or the S@TML STK Extensions are used, and not the S@TML DTD but the original WML DTD, a *validating* parser for WML will normally produce errors (compare /XML1.0/).

| attribute                | type   | default | <wml>   |
|--------------------------|--------|---------|---|
| <code>xml:lang</code>    | string | null    | Specifies the natural language in which the document is written. Ignored by DE.   |
| <code>sat-storage</code> | enum   | static  | Specifies the storage type of this deck. The content is either dynamic (should not be re-read from cache), or static.   |
| <code>sat-serv-id</code> | hex    | null    | Specifies the Toolkit Application Reference for the service to which this deck belongs in 1-8 Bytes given in a hexadecimal string.<br>Note, that this is an optional feature of SBC, and that the values have to be defined by the card issuer. |
| <code>sat-help</code>    | string | null    | Specifies a help text to be displayed by the SB when the user requests help.  |

### 6.1.6 head

```
head ::= '<head>' (access|meta)+ '</head>'
```

```
<!ELEMENT head (access|meta)+ >
<!ATTLIST head
  %id-attrs;
>
```

The `head` element contains deck-level administrative information.

### 6.1.7 access

```
access ::= '<access/>'
```

```
<!ELEMENT access EMPTY>
<!ATTLIST access
```

```

domain      CDATA      #IMPLIED
path        CDATA      #IMPLIED
%id-attrs;
>

```

The `access` element specifies access control information. There may be at most one `access` element. If it is missing access control is disabled and any deck can access this deck. Else it depends on the DE gateway implementation whether an access check will be performed. A check may also be performed on the content server.

| attribute | type   | default | <access>   |
|-----------|--------|---------|--|
| domain    | string | null    | Each suffix sub-domain element of the URI of the accessing deck must exactly match the given <code>domain</code> . |
| path      | string | null    | Each prefix path element of the URI of the accessing deck must exactly match the given <code>path</code> .         |

## 6.1.8 meta data

```
meta ::= '<meta/>'
```

```

<!ELEMENT meta EMPTY>
<!ATTLIST meta
  http-equiv CDATA      #IMPLIED
  name       CDATA      #IMPLIED
  forua      %bool-t;   "false"
  content    CDATA      #IMPLIED
  scheme     CDATA      #IMPLIED
  %id-attrs;
>

```

The `meta` element contains generic meta-information about the S@TML deck given by property names and values.

| attribute  | type   | default | <meta>                                     |
|------------|--------|---------|--|
| http-equiv | string | null    | For compatibility with WML, ignored by DE. |
| name       | string | null    | For compatibility with WML, ignored by DE. |
| forua      | bool   | false   | For compatibility with WML, ignored by DE. |
| content    | string | null    | For compatibility with WML, ignored by DE. |
| scheme     | string | null    | For compatibility with WML, ignored by DE. |

## 6.2 Cards

### 6.2.1 %cardev-attrs

```

<!ENTITY % cardev-attrs
  "onenterforward %HREF-t;      #IMPLIED
  onenterbackward %HREF-t;      #IMPLIED
  ontimer          %HREF-t;      #IMPLIED"
>

```

The card event attributes define navigational tasks to be performed when the current card is entered via a `go` (`onenterforward`) resp. a `prev` (`onenterbackward`), or when a timer has expired (`ontimer`). In WML they can be used as attributes for the elements `<template>` and `<card>`.

| attribute       | type          | default | %cardev-attrs   |
|-----------------|---------------|---------|---|
| onenterforward  | string<br>URI | null    | WML attribute, results in an error or will be ignored if found by DE. |
| onenterbackward | string<br>URI | null    | WML attribute, results in an error or will be ignored if found by DE. |
| ontimer         | string<br>URI | null    | WML attribute, results in an error or will be ignored if found by DE. |



## 6.2.2 card

```
card ::= '<card>' onevent* timer? (do|p|%satstmt)* '</card>'
```

```
<!ELEMENT card (onevent*, timer?, (do|p|%satstmt;)* ) >
<!ATTLIST card
  title           %vdata-t;      #IMPLIED
  newcontext      %bool-t;       "false"
  ordered         %bool-t;       "true"
  xml:lang        NMOKEN         #IMPLIED
  sat-help        %vdata-t;      #IMPLIED
  sat-history     %bool-t;       "true"
  %cardev-attrs;
  %id-attrs;
>
```

The card element contains information to be displayed to the user by the SB.

| attribute   | type   | default | <card>  |
|-------------|--------|---------|---|
| title       | string | null    | For compatibility with WML, to be ignored by DE.  |
| newcontext  | bool   | false   | The browser context is re-set when this card is entered.  |
| ordered     | bool   | true    | For compatibility with WML, to be ignored by DE.  |
| sat-help    | string | null    | Specifies a help text to be displayed by the SB when the user requests help. Overrides the sat-help attribute in an enclosing deck element. |
| sat-history | bool   | true    | Specifies that the card's address will be added to the history.   |
| xml:lang    | string | null    | Specifies the natural language in which the card content is written. Ignored by DE.   |

## 6.3 Declarations

### 6.3.1 %decls

```
%decls ::= (var|const|sps)* template?
```

```
<!ENTITY % decls "(sat-var|sat-const|sat-sps)*, template?">
```

For S@TML with STK Extensions not only a template element but also a list of temporary variable declarations, constant declarations, and service specific permanent variable references can be given for a deck of cards. Variables not declared will be assumed to be temporary variables.

### 6.3.2 template

```
template ::= '<template>' (do|onevent)* '</template>'
```

```
<!ELEMENT template (do|onevent)* >
<!ATTLIST template
  %cardev-attrs;
  %id-attrs;
>
```

The template element contains navigation event specifications which will be inherited to any card inside the current deck (unless overwritten by a card-level navigation event specification).

### 6.3.3 timer

```
timer ::= '<timer/>'
```

```
<!ELEMENT timer EMPTY>
<!ATTLIST timer
  name      NMOKEN      #IMPLIED
  value     %vdata-t;   #REQUIRED
  %id-attrs;
```

&gt;

The `timer` element is used in WML to declare a card timer. Its use results in an error or is ignored by the DE in this version of S@TML.

| attribute | type   | default | <timer>   |
|-----------|--------|---------|---|
| name      | string | null    | Name of the variable to be set to the timer value. WML attribute, results in an error or is ignored if found by DE. |
| value     | int    |         | Default value of the timeout in 1/10 seconds. WML attribute, results in an error or is ignored if found by DE.      |

## 6.4 Variables

### 6.4.1 Overview

In S@TML variables can be used in attribute values identified by `vdata-t` and `PCDATA` content. They can not be used in attributes of other types like `CDATA`, `ID`, or `NMTOKEN`. To substitute a variable into a card or deck the following syntax is used:

```
$identifier
$(identifier)
$(identifier:conversion)
```

Parentheses are required if white space does not indicate the end of a variable. Just as in WML variable syntax has highest priority, i.e., anywhere the variable syntax is legal, an unescaped '\$' character indicates a variable substitution. A sequence of two dollar signs '\$\$' represents a single dollar sign character in all `CDATA` attribute values and in `PCDATA` text (see also /WML1.1/ Section 10.3 "Variables"). In this version of S@TML the conversion part inside the variable syntax will be ignored by DE.

### 6.4.2 Lifetime

The lifetime of temporary variables is managed by the `newcontext` attribute of the `card` element. By default temporary variables are accessible in the current and other decks belonging to the same context.

SAT browsers may provide users means to reference and navigate to resources independent of the current content. For example, SAT browsers may provide bookmarks and a URL input dialog. Whenever a user navigates to a resource that was not the result of an interaction with the content in the current context, the SAT browser must establish another context for that navigation. The SAT browser may terminate the current context before establishing another one for the new navigation attempt.

## 6.5 Fields

### 6.5.1 %fields, %flow, %text, %layout, %emph, %TAlign, %WrapMode

```
%fields ::= %flow | input | select | fieldset | %satfld
%flow   ::= %txt | %layout | img | anchor | a | table
%txt    ::= #PCDATA | %emph
%layout ::= br
%emph   ::= em | strong | b | i | u | big | small

<!ENTITY % emph      "em | strong | b | i | u | big | small">
<!ENTITY % layout    "br">
<!ENTITY % txt       "#PCDATA | %emph;">
<!ENTITY % flow      "%txt; | %layout; | img | anchor | a | table">
<!ENTITY % fields    "%flow; | input | select | fieldset | %satfld; ">

<!ENTITY % TAlign    "(left|right|center)">
<!ENTITY % WrapMode  "(wrap|nowrap)">
```

## 6.5.2 p – paragraph

```
paragraph ::= '<p>' (%fields|do)* '</p>'
```

```
<!ELEMENT p (%fields; | do)*>
<!ATTLIST p
  align          %TAlign;          "left"
  mode           %WrapMode;        #IMPLIED
  xml:lang       NMTOKEN          #IMPLIED
  sat-auto-clr   %bool-t;          "false"
  sat-prio       (normal|high)     "normal"
  %id-attrs;
>
```

The paragraph element `p` encloses text or fields to be displayed by the SB.

| attribute                 | type   | default | <p>  |
|---------------------------|--------|---------|--|
| <code>align</code>        | enum   | left    | For compatibility with WML, to be ignored by DE.   |
| <code>mode</code>         | enum   | wrap    | For compatibility with WML, to be ignored by DE.   |
| <code>xml:lang</code>     | string | null    | For compatibility with WML, to be ignored by DE.   |
| <code>sat-auto-clr</code> | bool   | false   | If set to true text strings in this paragraph will be cleared automatically after a delay. |
| <code>sat-prio</code>     | enum   | normal  | Specifies the priority to be used to display text strings in this paragraph.               |

## 6.5.3 input

```
input ::= '<input/>'
```

```
<!ELEMENT input EMPTY>
<!ATTLIST input
  title          %vdata-t;          #IMPLIED
  name           NMTOKEN            #REQUIRED
  type           (text|password)    "text"
  value          %vdata-t;          #IMPLIED
  format         CDATA              #IMPLIED
  emptyok        %bool-t;          "false"
  size           %num-t;            #IMPLIED
  maxlength      %num-t;            #IMPLIED
  sat-minlength  %num-t;            #IMPLIED
  sat-help       %vdata-t;          #IMPLIED
  tabindex       %num-t;            #IMPLIED
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>
```

The input element specifies an input field to be displayed by the SB.

| attribute           | type   | default | <input>  |
|---------------------|--------|---------|--|
| <code>title</code>  | string | null    | Title to be displayed while the command is executed. If not present DE may use part of the preceding text up to the next tag (except the ignored <code>%emph</code> tags). |
| <code>name</code>   | string |         | Specifies the variable to be assigned. It is an error to use read-only variables here.   |
| <code>type</code>   | enum   | text    | Specifies whether the input is visible while entered or not. If type equals "password", only characters '0'-'9', '*', '#' can be entered.                                  |
| <code>value</code>  | string | null    | Specifies a default value to be displayed when the user is asked for input.  |
| <code>format</code> | string | *M      | Specifies the set of characters accepted as input:<br>*M or nM = any character<br>*N or nN = digit characters ('0'-'9', '+', '*', '#')                                     |

|                            |        |       |   |
|----------------------------|--------|-------|---|
|                            |        |       | If $nM$ or $nN$ is given minimal and maximal length of input will be set to $n$ , and the attributes <code>emptyok</code> , <code>maxlength</code> , <code>sat-minlength</code> are ignored.<br>Other formats that can be defined in WML will be interpreted just like <code>*M</code> . Note, that in WML the digit characters do not include '+', '*', and '#'. |
| <code>emptyok</code>       | bool   | false | If set to <code>true</code> the minimal length of input to be accepted is 0 else 1.   |
| <code>size</code>          | num    |       | For compatibility with WML, to be ignored by DE.  |
| <code>maxlength</code>     | num    |       | Specifies the maximal number of input characters accepted. Default is unlimited resp. user-agent-dependant.   |
| <code>sat-minlength</code> | num    |       | Specifies the minimal length of input to be accepted. If given the attribute <code>emptyok</code> is ignored.   |
| <code>sat-help</code>      | string | null  | Specifies a help string which will be displayed when the user requests help for this input element. Overrides the <code>sat-help</code> attribute in an enclosing <code>deck</code> or <code>card</code> .  |
| <code>tabindex</code>      | num    | 0     | For compatibility with WML, to be ignored by DE.  |
| <code>xml:lang</code>      | string | null  | For compatibility with WML, to be ignored by DE.  |

### 6.5.4 select

`select ::= '<select>' (optgroup|option)+ '</select>'`

```
<!ELEMENT select (optgroup|option)+>
<!ATTLIST select
  title      %vdata-t;      #IMPLIED
  name       NMTOKEN       #IMPLIED
  value      %vdata-t;      #IMPLIED
  iname      NMTOKEN       #IMPLIED
  ivalue     %vdata-t;      #IMPLIED
  multiple   %bool-t;      "false"
  sat-help   %vdata-t;      #IMPLIED
  tabindex   %num-t;       #IMPLIED
  xml:lang   NMTOKEN       #IMPLIED
  %id-attrs;
>
```

The `select` element will be displayed as a field of options by the SB among which the user may choose. In this version of S@TML a `select` may either only contain navigation operations or only operations to set variable values. More complicated `select` elements are only optionally supported. Attributes for indication of defaults are ignored by DE.

| attribute             | type   | default | <select>  |
|-----------------------|--------|---------|---|
| <code>title</code>    | string | null    | Title to be displayed while the command is executed. If not present DE may use part of the preceding text up to the next tag (except the ignored <code>%emph</code> tags).  |
| <code>name</code>     | string | null    | Specifies the variable to be assigned the selected option's value. It is an error to use read-only variables here.  |
| <code>value</code>    | string | null    | Specifies default value to be assigned if nothing is selected. For compatibility with WML, ignored by DE.   |
| <code>iname</code>    | string | null    | Specifies the variable to be assigned the selected option's index (starting with string "1" for the first index). Index numbers will be converted to strings before the assignment, represented in decimal system. Index numbering increases monotonically. It is an error to use read-only variables here. |
| <code>ivalue</code>   | string | null    | Specifies default item number to be chosen if nothing is selected. For compatibility with WML, ignored by DE.   |
| <code>multiple</code> | bool   | false   | WML attribute not supported in this version of S@TML, the <code>select</code> element may be ignored or result in an error if it is found by DE.  |
| <code>sat-help</code> | string | null    | Specifies a help string which will be displayed when the user requests help for this <code>select</code> element. Overrides the   |

|          |        |      |  |
|----------|--------|------|--|
|          |        |      | sat-help attribute in an enclosing deck or card. |
| tabindex | string | null | For compatibility with WML, to be ignored by DE. |
| xml:lang | string | null | For compatibility with WML, to be ignored by DE. |

### 6.5.5 option

option ::= '<option>' (#PCDATA|onevent)\* '</option>'

```
<!ELEMENT option (#PCDATA|onevent)*>
<!ATTLIST option
  title          %vdata-t;          #IMPLIED
  value          %vdata-t;          #IMPLIED
  onpick        %HREF-t;           #IMPLIED
  sat-help      %vdata-t;          #IMPLIED
  xml:lang      NMTOKEN            #IMPLIED
  %id-attrs;
```

The option element contains one option field of a select or optgroup element.

| attribute | type          | default | <option>   |
|-----------|---------------|---------|--|
| title     | string        | null    | For compatibility with WML, to be ignored by DE.   |
| value     | string        | null    | Value to be assigned to the variable given by the name attribute of the enclosing select.  |
| onpick    | string<br>URI | null    | Perform a go operation to this URI address when this option has been selected.   |
| sat-help  | string        | null    | Specifies a help string which will be displayed when the user requests help for this select option. Overrides the sat-help attribute in an enclosing deck, card or select. |
| xml:lang  | string        | null    | For compatibility with WML, to be ignored by DE.   |

### 6.5.6 optgroup

optgroup ::= '<optgroup>' (optgroup|option)+ '</optgroup>'

```
<!ELEMENT optgroup (optgroup|option)+>
<!ATTLIST optgroup
  title          %vdata-t;          #IMPLIED
  xml:lang      NMTOKEN            #IMPLIED
  %id-attrs;
```

The optgroup element can be used to indicate a preferred grouping of selection options to the DE.

| attribute | type   | default | <optgroup>  |
|-----------|--------|---------|---|
| title     | string | null    | Title which may be used in the presentation of this group of options by DE. |
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE.                            |

### 6.5.7 fieldset

fieldset ::= '<fieldset>' (%fields|do)\* '</fieldset>'

```
<!ELEMENT fieldset (%fields;|do)*>
<!ATTLIST fieldset
  title          %vdata-t;          #IMPLIED
  xml:lang      NMTOKEN            #IMPLIED
  sat-auto-clr  %bool-t;           "false"
  sat-prio      (normal|high)      "normal"
  %id-attrs;
```

The fieldset element can be used to indicate a preferred grouping of card fields to the DE.

| attribute    | type   | default | <fieldset>   |
|--------------|--------|---------|--|
| title        | string | null    | For compatibility with WML, to be ignored by DE.   |
| xml:lang     | string | null    | For compatibility with WML, to be ignored by DE.   |
| sat-auto-clr | bool   | false   | If set to true text strings in this field set will be cleared automatically after a delay. This hides an sat-auto-clr attribute set in an enclosing paragraph tag <p>. |
| sat-prio     | enum   | normal  | Specifies the priority to be used to display text strings in this field set. This hides an sat-prio attribute set in an enclosing paragraph tag <p>.                   |

## 6.6 Content

### 6.6.1 br - break line

br ::= '<br/>'

```
<!ELEMENT br EMPTY>
<!ATTLIST br
  %id-attrs;
>
```

The br element indicates a line break to be displayed by the SB.

### 6.6.2 em - emphasis

em ::= '<em>' %flow\* '</em>'

```
<!ELEMENT em (%flow;)*>
<!ATTLIST em
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <em> for emphasis are ignored by DE.

| attribute | type   | default | <em>   |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

### 6.6.3 strong

strong ::= '<strong>' %flow\* '</strong>'

```
<!ELEMENT strong (%flow;)*>
<!ATTLIST strong
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <strong> for strong emphasis are ignored by DE.

| attribute | type   | default | <strong>   |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

### 6.6.4 i - italics

i ::= '<i>' %flow\* '</i>'

```
<!ELEMENT i (%flow;)*>
<!ATTLIST i
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <i> for italics are ignored by DE.

| attribute | type   | default | <i>  |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

### 6.6.5 b - bold

b ::= '<b>' %flow\* '</b>'

```
<!ELEMENT b (%flow;)*>
<!ATTLIST b
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <b> for bold are ignored by DE.

| attribute | type   | default | <b>  |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

### 6.6.6 u - underline

u ::= '<u>' %flow\* '</u>'

```
<!ELEMENT u (%flow;)*>
<!ATTLIST u
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <u> for underline are ignored by DE.

| attribute | type   | default | <u>  |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

### 6.6.7 big

big ::= '<big>' %flow\* '</big>'

```
<!ELEMENT big (%flow;)*>
<!ATTLIST big
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <big> for big font are ignored by DE.

| attribute | type   | default | <big>  |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

### 6.6.8 small

small ::= '<small>' %flow\* '</small>'

```
<!ELEMENT small (%flow;)*>
<!ATTLIST small
  xml:lang    NMTOKEN          #IMPLIED
  %id-attrs;
>
```

Text formatting tags like <small> for small font are ignored by DE.

| attribute | type   | default | <small>  |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

## 6.7 Navigation

### 6.7.1 %task

```
%task ::= go | prev | noop | refresh
```

```
<!ENTITY % task "go | prev | noop | refresh">
```

### 6.7.2 anchor

```
anchor ::= '<anchor>' (#PCDATA|br|img|go|prev|refresh)* '</anchor>'
```

```
<!ELEMENT anchor (#PCDATA|br|img|go|prev|refresh)*>
<!ATTLIST anchor
  title      %vdata-t;      #IMPLIED
  xml:lang   NMTOKEN        #IMPLIED
  %id-attrs;
>
```

The anchor element specifies a hyper-link to be displayed by the SB.

| attribute | type   | default | <anchor>  |
|-----------|--------|---------|---|
| title     | string | null    | Title which may be used in the presentation of this hyper-link by DE. |
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE.                      |

### 6.7.3 a – abbreviated anchor

```
a ::= '<a>' (#PCDATA|br|img)* '</a>'
```

```
<!ELEMENT a (#PCDATA|br|img)*>
<!ATTLIST a
  href      %HREF-t;      #REQUIRED
  title     %vdata-t;     #IMPLIED
  xml:lang  NMTOKEN       #IMPLIED
  %id-attrs;
>
```

The abbreviated anchor element a specifies a hyper-link to be displayed by the SB. E.g. a sequence like “<anchor>link-text<go href=“dest” /></anchor>” can be abbreviated by the following: “<a href=“dest”>link-text</a>”.

| attribute | type          | default | <a>  |
|-----------|---------------|---------|--|
| href      | string<br>URI |         | Specifies the destination URI address of the go operation to be performed when the link has been selected. |
| title     | string        | null    | Title which may be used in the presentation of this hyper-link by DE.                                      |
| xml:lang  | string        | null    | For compatibility with WML, to be ignored by DE.   |

### 6.7.4 do

```
do ::= '<do>' %task '</do>'
```

```
<!ELEMENT do (%task;)>
<!ATTLIST do
  type      CDATA          #REQUIRED
  label     %vdata-t;     #IMPLIED
  name      NMTOKEN       #IMPLIED
  optional  %bool-t;      "false"
  xml:lang  NMTOKEN       #IMPLIED
  %id-attrs;
>
```



Inside a `do` element tasks are specified which can be activated by the user and normally will be shown using the contextual menu implemented by the SB.

| attribute | type   | default | <do>  |
|-----------|--------|---------|---|
| type      | string |         | This may be used by the DE to determine the category for this menu item. The following values are supported: <ul style="list-style-type: none"> <li>• <code>accept</code> - positive acknowledgement</li> <li>• <code>prev</code> - backward history navigation</li> <li>• <code>help</code> - request for help</li> <li>• <code>reset</code> - clear or reset state or stop browser</li> <li>• <code>vnd.sat-process</code> - process the following task without user interaction. It is recommended to use this only for SATML, but not WML services, because a WML user agent may treat this type just as unknown.</li> <li>• <code>unknown</code> - generic, equal to empty string</li> </ul> |
| label     | string | null    | This may be used by the DE as a label for this menu item.   |
| name      | string | null    | Specifies the name of this task. If missing <code>type</code> is used as name. A <code>do</code> in a card will shadow a <code>do</code> in a deck if they have the same name.  |
| optional  | bool   | false   | If set to <code>true</code> this task may be ignored by DE.   |
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE.  |

### 6.7.5 onevent

```
onevent ::= '<onevent>' %task '</onevent>'
```

```
<!ELEMENT onevent (%task;)>
<!ATTLIST onevent
  type          CDATA          #REQUIRED
  %id-attrs;
>
```

The `onevent` element specifies what is to be done for certain types of events. For `type="onpick"` the `onevent` tag can only be present inside an `option` element; if it is found outside of `option` in a card or template tag, an error is generated by the DE.

| attribute | type   | default | <onevent>  |
|-----------|--------|---------|--|
| type      | string |         | Specifies the name of the intrinsic event. Must be set to <code>onpick</code> for this version of S@TML. If <code>type</code> is <code>ontimer</code> , <code>onenterforward</code> or <code>onenterbackward</code> the DE will produce an error or ignore the <code>onevent</code> element. |

### 6.7.6 go

```
go ::= '<go>' (postfield|setvar)* '</go>'
```

```
<!ELEMENT go (postfield|setvar)*>
<!ATTLIST go
  href          %HREF-t;      #REQUIRED
  sendreferer   %bool-t;      "false"
  method        (post|get)    "get"
  accept-charset CDATA        #IMPLIED
  %id-attrs;
>
```

The `go` element specifies to which URI the SB should branch when the enclosing task has been selected.

| attribute | type          | default | <go>  |
|-----------|---------------|---------|---|
| href      | string<br>URI |         | Specifies the destination URI address of the <code>go</code> operation to be performed when the link has been selected. |

|                |        |       |  |
|----------------|--------|-------|--|
| sendreferer    | bool   | false | Specifies if the referring URI address will be sent to the server, e.g. for checking of access rights. |
| method         | enum   | get   | Specifies the method to be used for fetching the contents.   |
| accept-charset | string | null  | For compatibility with WML, to be ignored by DE.   |

### 6.7.7 prev

```
prev ::= '<prev>' setvar* '</prev>'
```

```
<!ELEMENT prev (setvar)*>
<!ATTLIST prev
  %id-attrs;
>
```

The prev element specifies a how a backward navigation should be performed by the SB.

### 6.7.8 refresh

```
refresh ::= '<refresh>' setvar* '</refresh>'
```

```
<!ELEMENT refresh (setvar)*>
<!ATTLIST refresh
  %id-attrs;
>
```

When refresh is executed the current card is re-displayed.

### 6.7.9 noop

```
noop ::= '<noop/>'
```

```
<!ELEMENT noop EMPTY>
<!ATTLIST noop
  %id-attrs;
>
```

The noop element allows to specifies that in this task nothing has to be done.

## 6.8 Statements

### 6.8.1 setvar

```
setvar ::= '<setvar/>'
```

```
<!ELEMENT setvar EMPTY>
<!ATTLIST setvar
  name          NMTOKEN          #REQUIRED
  value         %vdata-t;        #REQUIRED
  %id-attrs;
>
```

When the setvar statement is executed the SB sets a variable to the given value.

| attribute | type   | default | <setvar>   |
|-----------|--------|---------|--|
| name      | string |         | Specifies the name of the variable to be set. It is an error to use a read-only variable here. Note, that indirect references, i.e. giving the name using another variable, are not allowed (they are in WML). |
| value     | string |         | Specifies the value to be assigned to this variable.   |

## 6.8.2 postfield

```
postfield ::= '<postfield/>'

<!ELEMENT postfield EMPTY>
<!ATTLIST postfield
  name          NMTOKEN;          #REQUIRED
  value         %vdata-t;        #REQUIRED
  %id-attrs;
>
```

The `postfield` element specifies values which will be posted to the origin server.

| attribute | type   | default | <postfield>  |
|-----------|--------|---------|--|
| name      | string |         | Specifies the field name to be sent to the server for an HTTP request. Note, that indirect references, i.e. giving the name using a variable, are not allowed (they are in WML). |
| value     | string |         | Specifies the value to be sent to the server in this field.  |

## 7 S@TML TELEPHONY

The use of WTAI is not yet well supported by WAP handset providers and the execution model of WTAI URI notation seems not yet to be fully specified. For the time being it is recommended to use the alternative implementation in the S@TML STK Extensions chapter.

In the S@TML Core Language the following features from the Wireless Telephony Application Interface can be used in the URI notation (see also /WTAI1.1/, /WTAIGSM1.1/). The specially formatted WTAI URIs can be used for in the `href` attributes of the `go` or `option` elements. Eventually parameter values or a result variable name will be added:

```
wtai://<library>/<function> (;<parameter>)* [!<result> ]
```

The WTAI function result will be assigned to the given variable after execution of the function.

### 7.1 Security

The DE will check the URL from which the current deck has been received to decide whether this is a trusted or not-trusted source. While WTAI functions of the public library can be used by any S@TML deck, the WTAI functions from other libraries can only be used when the deck is a trusted one. It is up to the DE implementation to provide further refinements of this security scheme, e.g. configurable levels of trust for the non-public libraries or functions.

### 7.2 Telephony

#### 7.2.1 set-up call (voice control library)

```
setup-call ::= 'wtai://vc/sc' ';' telnumber ';' telmode [ '!' result ]
telnumber  ::= CDATA
telmode    ::= num-t
result     ::= NMTOKEN
```

Set-up a mobile originated voice call to the specified number. The `mode` parameter indicates how the call should be handled if the context in the WTA user-agent terminates. There are two modes, “drop” and “keep”. “Drop” means that the OS will release the call if the context should be restarted. “Keep” makes it possible to maintain the call even after the current context has terminated.

| parameter | type   | default | wtai://vc/sc (set-up call)   |
|-----------|--------|---------|--|
| telnumber | string |         | Destination number to call. All valid telephony number digits may be used ('0'-'9'), as well as '+' for the international number prefix. |
| telmode   | num    |         | 0=drop call when context is removed<br>1=keep call after context is removed  |

|        |        |  |  |
|--------|--------|--|--|
|        |        |  | For compatibility with WML, to be ignored by DE.   |
| result | string |  | Name of variable to which a string is assigned that returns the identity of the created call or a negative WTAI error code in case of failure.<br>For compatibility with WML, to be ignored by DE. |

## 7.2.2 make call (public library)

```
make-call ::= 'wtai://wp/mc' ';' telnumber
telnumber ::= CDATA
```

This function is used to initiate a mobile originated call using the specified number. The user must explicitly acknowledge the operation.

The *Make Call* function can be used from within any application, not only WTA, to present the user with a number that can be dialled.

Note, that the call must be terminated using standard MMI.

| parameter | type   | default | wtai://wp/mc (make call)   |
|-----------|--------|---------|--|
| telnumber | string |         | Destination number to call. All valid telephony number digits may be used ('0'-'9'), as well as '+' for the international number prefix. |

## 7.2.3 send DTMF (voice control library)

```
send-DTMF ::= 'wtai://vc/sd' ';' dtmfstring ['!' result ]
dtmfstring ::= CDATA
result ::= NMTOKEN
```

Send DTMF tone sequence through an active voice connection. If the call succeeds the integer value zero is returned. In case of unsuccessful outcome an error code will be returned.

| parameter  | type   | default | wtai://vc/sd (send DTMF)   |
|------------|--------|---------|--|
| dtmfstring | string |         | Any valid sequence of standard DTMF characters ('*', '#', ',', 'A'-'D', see /GSM 11.11/).  |
| result     | string |         | Name of variable to which a string is assigned that returns a negative WTAI error code in case of failure.<br>For compatibility with WML, to be ignored by DE. |

## 7.2.4 send DTMF (public library)

```
send-DTMF ::= 'wtai://wp/sd' ';' dtmfstring ['!' result ]
dtmfstring ::= CDATA
result ::= NMTOKEN
```

Send DTMF tone sequence through an active voice connection. The user must explicitly or implicitly acknowledge the operation. For instance, an acknowledgement made once for the public Make Call function could also be valid for all calls of the function Send DTMF Tones during that call. Or, acknowledgement can be made for each call of the Send DTMF function. This is implementation dependant.

Note, that like for the Make Call public function, the call must be terminated using standard MMI.

| parameter  | type   | default | wtai://wp/sd (send DTMF)   |
|------------|--------|---------|--|
| dtmfstring | string |         | Any valid sequence of standard DTMF characters ('*', '#', ',', 'A'-'D', see /GSM 11.11/).  |
| result     | string |         | Name of variable to which a string is assigned that returns a negative WTAI error code in case of failure.<br>For compatibility with WML, to be ignored by DE. |

## 7.2.5 send USSD (GSM specific library)

```
send-ussd ::= 'wtai://gsm/su' ';' ussdstring ';' ussddcs ';'
           ussdtype ';' ussdid [ '!' result ]
ussdstring ::= CDATA
ussddcs    ::= CDATA
ussdtype   ::= num-t
ussdid     ::= num-t
result     ::= NMTOKEN
```

This function is used to make the handset send a USSD message. The assumption of the WTA user agent is that the SendUSSD command always succeeds. However, in case of failure an error code according to Section 9.2.2 is returned.

| parameter  | type   | default | wtai://gsm/su (send USSD)  |
|------------|--------|---------|--|
| ussdstring | string |         | Contents of the USSD string to send. This may include any of the USSD characters permitted by /GSM 02.90/.   |
| ussddcs    | string |         | Permitted values specified in /GSM 02.90/.   |
| ussdtype   | string |         | 0=ProcessUnstructuredSS-Request operation<br>1=result to an UnstructuredSS-Request operation<br>2=result to an UnstructuredSS-Request operation to be followed by release of the USSD transaction (i.e. after sending the FACILITY message, the mobile must send a RELEASE COMPLETE message for the transaction id associated with the USSD message)   |
| ussdid     | string |         | In the case where the sent USSD message is in response to a network initiated USSD message, i.e. a type 1 or 2 message, then this parameter takes the value of the transaction id of the corresponding network initiated USSD message. In case the sent USSD message is not in response to a network initiated USSD message, i.e. a type 0 message, then this parameter shall take the value -1. |
| result     | string |         | Name of variable to which a string is assigned that returns the transaction id (see /GSM 04.07/ § 11) of the USSD message sent or a negative WTAI error code in case of failure.<br>For compatibility with WML, to be ignored by DE.   |

## 8 S@TML STK EXTENSIONS

### 8.1 Security

The DE will check the URL from which the current deck has been received to decide whether this is a trusted or not-trusted source. The use of all S@TML STK Extensions is in general restricted to trusted decks. It is up to the DE implementation to provide further refinements of this security scheme, e.g. configurable levels of trust for different attributes and elements defined to be S@TML STK Extensions.

### 8.2 Declarations

#### 8.2.1 sat-var

```
var ::= '<sat-var/>'
```

```
<!ELEMENT sat-var EMPTY>
```

```
<!ATTLIST sat-var
```

```
  sat-name      NMTOKEN          #REQUIRED
  sat-do-clr    %bool-t;        "false"
  %id-attrs;
```

&gt;

The `sat-var` element specifies a temporary variable. There may be up to 127 temporary variables per deck. Names of variables must be unique within one deck. Note, that for compatibility with WML variables need not to be declared. In this case they are assumed to be temporary variables with the properties given by the default values of the attributes of `sat-var`.

| attribute               | type   | default | <sat-var>   |
|-------------------------|--------|---------|---|
| <code>sat-name</code>   | string |         | Specifies the variable's identifier.  |
| <code>sat-do-clr</code> | bool   | false   | If set to true the variable contents will be cleared when the current deck is left. Otherwise the variable contents is accessible in the current and other decks. |

## 8.2.2 sat-const

```
const ::= '<sat-const/>'
```

```
<!ELEMENT sat-const EMPTY>
<!ATTLIST sat-const
  sat-name      NMTOKEN      #REQUIRED
  sat-value     CDATA        #REQUIRED
  %id-attrs;
>
```

The `sat-const` element specifies a constant text string accessible in all cards of a deck. There may be up to 64 constant text strings per deck. Names of constants must be unique within one deck, and all constants referred to inside a deck must have been declared in this deck.

| attribute              | type   | default | <sat-const>                          |
|------------------------|--------|---------|--------------------------------------|
| <code>sat-name</code>  | string |         | Specifies the constant's identifier. |
| <code>sat-value</code> | string |         | Specifies the constant's value.      |

## 8.2.3 sat-sps

```
sps ::= '<sat-sps/>'
```

```
<!ELEMENT sat-sps EMPTY>
<!ATTLIST sps
  sat-name      NMTOKEN      #REQUIRED
  sat-var-id    %hex-t;      #REQUIRED
  sat-do-clr    %bool-t;     "false"
  %id-attrs;
>
```

The `sat-sps` element specifies a reference to a permanent variable hold in the service permanent store. There may be up to 64 entries per service in the SPS. Names of service permanent store references must be unique within one deck. Service permanent store variables are read-only in S@TML.

| attribute               | type   | default | <sat-sps>   |
|-------------------------|--------|---------|---|
| <code>sat-name</code>   | string |         | Specifies the SPS variable's identifier used in S@TML. The "sat-sps:" prefix will be added automatically if missing.  |
| <code>sat-var-id</code> | string |         | Specifies the SPS variable id used by SB and stored in the SIM. It is given in hexadecimal representation and must fit in the range of 80..BF. Note that this is an optional feature of SBC, and that the values have to be defined by the card issuer. |
| <code>sat-do-clr</code> | bool   | false   | If set to true the permanent variable's contents will be cleared when the current deck is left.   |

## 8.3 Variables and Constant References

If not stated otherwise for S@TML variables and constant references the rules given in the S@TML Core Language definition, Section 6.4, apply just as well. Note, that the use of variables in decks with different character encodings (i.e. different data coding schemes) may lead to unexpected results.

### 8.3.1 Environment variables

S@TML environment variables the identifiers have a prefix "**sat-env:**" to indicate the use of an S@TML STK Extension, e.g. "sat-env:BrowserVersion" for the version information of the SB. They can not be changed (e.g. used in a setvar or input element), but are read-only. The existing environment variables and their formats are defined in /SBC/, see also the table provided in Section 12. Note, that this format is often a binary TLV structured sequence of bytes.

### 8.3.2 Service permanent store (SPS) variables

S@TML variables can reside in the service permanent store (SPS) . Their identifiers have a prefix "**sat-sps:**" to indicate the use of an S@TML STK Extension. Note, that this is an optional feature of SBC, and that the variable identifiers have to be defined by the card issuer.

### 8.3.3 Constant references

For text constant references the same notation is used as for variable substitution. Their identifiers have a prefix "**sat-const:**", e.g. "sat-const:x". Text constants are of course read-only. As explained in Section 8.2.2 all constants referred to inside a deck must have been declared in this deck.

## 8.4 Fields

### 8.4.1 %satfld, %tone-t

```
%satfld ::= play-tone | inkey
```

```
<!ENTITY % satfld "sat-play-tone | sat-inkey">
```

```
<!ENTITY % tone-t "(dial|busy|congestion|radio-ack|
                    radio-gone|error|call-wait|ring|
                    beep|ack|nack)">
```

### 8.4.2 sat-play-tone

```
play-tone ::= '<sat-play-tone/>'
```

```
<!ELEMENT sat-play-tone EMPTY>
<!ATTLIST sat-play-tone
  sat-title      %vdata-t;          #IMPLIED
  sat-tone       %tone-t;          "beep"
  sat-duration   %num-t;           #IMPLIED
  %id-attrs;
```

The sat-play-tone element specifies a tone which will be played on the handset.

| attribute    | type   | default | <sat-play-tone>   |
|--------------|--------|---------|---|
| sat-title    | string | null    | Title which may be displayed while the command is executed.   |
| sat-tone     | enum   | beep    | Specifies the tone to be played.  |
| sat-duration | num    |         | Specifies the length of the tone in 1/10 <sup>th</sup> of seconds if applicable. If not given a handset manufacturer default applies. |

### 8.4.3 sat-inkey

```
sat-inkey ::= '<sat-inkey/>'
```

```
<!ELEMENT sat-inkey EMPTY>
<!ATTLIST sat-inkey
  sat-title      %vdata-t;      #IMPLIED
  sat-name       NMTOKEN        #REQUIRED
  sat-format     CDATA          #REQUIRED
  sat-help       %vdata-t;      #IMPLIED
  xml:lang       NMTOKEN        #IMPLIED
  %id-attrs;
>
```

The `sat-inkey` element specifies a key input field to be executed by the SB.

| attribute               | type   | default | <sat-inkey>   |
|-------------------------|--------|---------|---|
| <code>sat-title</code>  | string | null    | Title to be displayed while the command is executed. If not present DE may use part of the preceding text up to the next tag (except the ignored <code>%emph</code> tags).  |
| <code>sat-name</code>   | string |         | Specifies the variable to be assigned.  |
| <code>sat-format</code> | string | M       | Specifies the set of characters accepted as input:<br>M or 1M = any character<br>Y or 1Y = "yes or no" choice<br>N or 1N = digit character ('0'-'9', '+', '*', '#')<br>Note, that in WML the digit characters do not include '+', '*', and '#', and the 'Y' or '1Y' formats do not exist. |
| <code>sat-help</code>   | string | null    | Specifies a help string which will be displayed when the user requests help for this input element. Overrides the <code>sat-help</code> attribute in an enclosing <code>deck</code> or <code>card</code> .  |
| <code>xml:lang</code>   | string | null    | For compatibility with WML, to be ignored by DE.  |

## 8.5 Statements

The elements for statements from the S@TML STK Extensions Statements are executed in the order given by the `p` and `%satstmt` elements inside a card. This means that e.g. a sequence of a first `p` element, a `sat-send-sms` element, and a second `p` element will be executed by displaying the text of the first paragraph, then sending the short message, and then displaying the text of the second paragraph.

### 8.5.1 %satstmt, %check-t, %dcs-t

```
%satstmt ::= send-sms | refresh | gen-stk | exit |
             setup-call | send-ussd | local-info |
             encrypt | decrypt | plug-in

<!ENTITY % satstmt "sat-send-sms | sat-refresh | sat-gen-stk | sat-exit |
                  sat-setup-call | sat-send-ussd | sat-local-info |
                  sat-encrypt | sat-decrypt | sat-plug-in">

<!ENTITY % check-t "(none|mac)">

<!ENTITY % dcs-t "(sms|ucs2|binary)">
```

### 8.5.2 sat-send-sms

```
send-sms ::= '<sat-send-sms>' #PCDATA '</sat-send-sms>''

<!ELEMENT sat-send-sms (#PCDATA)>
<!ATTLIST sat-send-sms
  sat-title      %vdata-t;      #IMPLIED
```



```

sat-dest          CDATA          #REQUIRED
sat-smsc          CDATA          #IMPLIED
sat-period        %num-t;        #IMPLIED
sat-pid           %hex-t;        "00"
sat-dcs           %dcs-t;        "sms"
%id-attrs;
>

```

The `sat-send-sms` element specifies that a short message containing the enclosed text will be sent to the given destination. Note, that the use of variables from decks with different character encodings in the text part (i.e. different data coding schemes) may lead to unexpected results. If `sat-dcs` is binary the enclosed text will denote the short message user data by a sequence of hexadecimal digits just as defined for attributes of type `hex-t` in Section 5.1.6.

| attribute         | type   | default | <sat-send-sms>  |
|-------------------|--------|---------|---|
| <b>sat-title</b>  | string | null    | Title which may be displayed as alpha identifier while the command is executed.   |
| <b>sat-dest</b>   | string |         | Specifies the destination address telephone number. All valid telephony number characters and digits may be used ('0'-'9', '+', '*', '#').  |
| <b>sat-smsc</b>   | string | null    | Specifies the Short Message Service Centre (SMSC) address. All valid telephony number characters and digits may be used ('0'-'9', '+', '*', '#'). If not present the current value of the ME is used.   |
| <b>sat-period</b> | num    | null    | Specifies the validity period for the short message in a number denoting days (D), hours (h), and minutes (m): DDDhhmm with 7 digits, DDhhmm with 6 digits, Dhhmm with 5 digits, hhmm with 4 digits, hmm with 3 digits, mm with 2 digits, or m with 1 digit. It is rounded up by the DE to the next value that can be represented as relative validity period conforming to /GSM 11.14/, /GSM 03.40/. If not present the current value of the ME is used. |
| <b>sat-pid</b>    | hex    | 00      | Specifies the protocol identifier to be used for the short message as specified in /GSM 11.14/, /GSM 03.40/.  |
| <b>sat-dcs</b>    | enum   | sms     | Specifies the data coding scheme to be used for the short message to be SMS default charset, UCS2, or binary (see /GSM 03.38/). The GSM 11.14 command qualifier will be set accordingly by the DE.  |

### 8.5.3 sat-setup-call

```
setup-call ::= '<sat-setup-call/>'
```

```

<!ELEMENT sat-setup-call EMPTY>
<!ATTLIST sat-setup-call
  sat-confirm    %vdata-t;        #IMPLIED
  sat-title      %vdata-t;        #IMPLIED
  sat-dest       CDATA          #REQUIRED
  sat-cmdqual    %hex-t;         "00"
  %id-attrs;
>

```

The `sat-setup-call` element specifies that a call setup will be done to the given telephone number.

| attribute          | type   | default | <sat-setup-call>  |
|--------------------|--------|---------|---|
| <b>sat-confirm</b> | string | null    | A string to be displayed for user confirmation.   |
| <b>sat-title</b>   | string | null    | The string which is displayed in the call set-up phase.   |
| <b>sat-dest</b>    | string |         | Specifies the destination address telephone number. All valid telephony number characters and digits may be used ('0'-'9', '+', '*', '#').<br>A DTMF sequence can be added at the end of the string |

|                    |     |    |   |
|--------------------|-----|----|---|
|                    |     |    | using a “,” separator. Example: “0660773534,1234”.  |
| <b>sat-cmdqual</b> | hex | 00 | Specifies the GSM 11.14 command qualifier to be used in two hex digits (see § 12.6 in /GSM11.14/):<br>00=set up call if not busy on another call<br>01=set up call if not busy on another call, with redial<br>02=set up call putting other calls on hold<br>03=set up call putting other calls on hold, with redial<br>04=set up call disconnecting other calls<br>05=set up call disconnecting other calls, with redial |

## 8.5.4 sat-send-ussd

```
send-ussd ::= '<sat-send-ussd/>'
```

```
<!ELEMENT sat-send-ussd EMPTY>
<!ATTLIST sat-send-ussd
  sat-title      %vdata-t;      #IMPLIED
  sat-ussddcs    %hex-t;        #REQUIRED
  sat-data       %hex-t;        #REQUIRED
  %id-attrs;
>
```

The `sat-send-ussd` element specifies that unstructured supplementary services data will be sent to the given destination.

| attribute          | type   | default | <sat-send-ussd>  |
|--------------------|--------|---------|--|
| <b>sat-title</b>   | string | null    | Title which may be displayed as alpha identifier while the command is executed.                        |
| <b>sat-ussddcs</b> | hex    |         | Specifies the data coding scheme as defined in /GSM 03.38/   |
| <b>sat-data</b>    | string | null    | Specifies the USSD string to be sent as defined in /GSM 02.30/, /GSM 02.90/ encoded in hex characters. |

## 8.5.5 sat-local-info

```
local-info ::= '<sat-local-info/>'
```

```
<!ELEMENT sat-local-info EMPTY>
<!ATTLIST sat-local-info
  sat-name      CDATA;          #REQUIRED
  sat-href      %HREF-t;        #IMPLIED
  sat-method    (post|get)      "get"
  sat-cmdqual   %hex-t;        "00"
  %id-attrs;
>
```

The `sat-local-info` element specifies provides the local information data specified by the command qualifier. The result is stored in the output variable and optionally posted to the URI given.

| attribute          | type          | default | <sat-local-info>   |
|--------------------|---------------|---------|--|
| <b>sat-name</b>    | string        | null    | The output variable containing the result of the local info operation element. It is TLV-formatted as described in the /GSM 11.14/ location information object, and returned in a binary string, (see /SBC/, /GSM 04.08/). |
| <b>sat-href</b>    | string<br>URI |         | Specifies the URI where to post the local information string. The parameter gets the same name as given for the output variable.   |
| <b>sat-method</b>  | enum          | get     | Specifies the method for the operation.  |
| <b>sat-cmdqual</b> | hex           | 00      | Specifies the /GSM 11.14/ command qualifier to be used:<br>00=Location Information (MCC, MNC, LAC and Cell   |

|  |  |  |  |
|--|--|--|--|
|  |  |  | Identity)<br>01=IMEI of the ME<br>02=Network Measurement results<br>03=Date, time and time zone \$(DTTinPLI)\$ |
|--|--|--|--|

| location information | [this table is only informational] GSM 11.14 |
|----------------------|--|
| byte 1               | Location information tag                     |
| byte 2               | Length = '07'                                |
| bytes 3 - 5          | Mobile Country & Network Codes (MCC & MNC)   |
| bytes 6 - 7          | Location Area Code (LAC)                     |
| bytes 8 - 9          | Cell Identity Value (Cell ID)                |

## 8.5.6 sat-refresh

```
refresh ::= '<sat-refresh/>'
```

```
<!ELEMENT sat-refresh EMPTY>
<!ATTLIST sat-refresh
  sat-files      %hex-t;      #IMPLIED
  sat-cmdqual    %hex-t;      "01"
  %id-attrs;
>
```

The `sat-refresh` element specifies that a file change notification will be sent to the ME.

| attribute                | type | default | <sat-refresh>  |
|--------------------------|------|---------|--|
| <code>sat-files</code>   | hex  | null    | Specifies the list of file change notifications as specified in /GSM 11.14/ encoded in hex characters, the number of files and Files.  |
| <code>sat-cmdqual</code> | hex  | 01      | Specifies the /GSM 11.14/ command qualifier to be used:<br>00=SIM Initialisation and Full File Change Notification<br>01=File Change Notification<br>02=SIM Initialisation and File Change Notification<br>03=SIM Initialisation<br>04=SIM Reset |

## 8.5.7 sat-gen-stk

```
gen-stk ::= '<sat-gen-stk/>'
```

```
<!ELEMENT sat-gen-stk EMPTY>
<!ATTLIST sat-gen-stk
  sat-cmdtype    %hex-t;      #REQUIRED
  sat-cmdqual    %hex-t;      #REQUIRED
  sat-destdev    %hex-t;      #REQUIRED
  sat-data       %hex-t;      #REQUIRED
  sat-output     %vdata-t;    #IMPLIED
  sat-encap      %bool-t;     "false"
  %id-attrs;
>
```

The `sat-gen-stk` element allows to specify a generic /GSM 11.14/ SIM Toolkit command to be sent to the ME.

| attribute                | type | default | <sat-gen-stk>  |
|--------------------------|------|---------|--|
| <code>sat-cmdtype</code> | hex  |         | Specifies the type of command value as defined in § 12.6 of /GSM 11.14/ and given in 2 hexadecimal characters. This determines the meaning and range of legal values for the following attributes. |

|                    |        |  |   |
|--------------------|--------|--|---|
| <b>sat-cmdqual</b> | hex    |  | Specifies the command qualifier to be used as defined in § 12.6 of /GSM 11.14/ and given in 2 hexadecimal characters.   |
| <b>sat-destdev</b> | hex    |  | Specifies the destination device identity to be used as defined in § 12.7 of /GSM 11.14/ and given in 2 hexadecimal characters.   |
| <b>sat-data</b>    | hex    |  | Specifies all further TLV objects for the SIM Toolkit command as defined in § 6.6 and Chapter 12 of /GSM 11.14/ and given in hexadecimal characters. Command details, device identities, and alpha identifier objects must not be included. |
| <b>sat-output</b>  | string |  | Specifies the variable where to store the proactive command specific response data object, as described in /SBC/.   |
| <b>sat-encap</b>   | bool   |  | Specifies whether the response data object must be encapsulated as described in /SBC/.  |

### 8.5.8 sat-exit

```
exit ::= '<sat-exit/>'
```

```
<!ELEMENT sat-exit EMPTY>
<!ATTLIST sat-exit
  sat-cleanbuf    %bool-t;      "false"
  sat-outvarlist  CDATA         #IMPLIED
  %id-attrs;
>
```

The `sat-exit` element allows to terminate the execution of the browsing session.

| attribute             | type   | default | <sat-exit>   |
|-----------------------|--------|---------|--|
| <b>sat-outvarlist</b> | string | null    | A comma separated list of variable names.  |
| <b>sat-cleanbuf</b>   | bool   | false   | Specifies if cards stored in the SB's execution buffer should be cleared before exit (see also /SBC/). |

### 8.5.9 sat-encrypt

```
encrypt ::= '<sat-encrypt/>'
```

```
<!ELEMENT sat-encrypt EMPTY>
<!ATTLIST sat-encrypt
  sat-check      %check-t;      "none"
  sat-crypt      %bool-t;      "false"
  sat-kic        %hex-t;       #IMPLIED
  sat-kid        %hex-t;       #IMPLIED
  sat-inlist     CDATA         #REQUIRED
  sat-out        CDATA         #REQUIRED
  %id-attrs;
>
```

The `sat-encrypt` element allows to encrypt data or calculate cryptographic checksums. The `sat-out` variable will contain a secure message built as follows:

- 1) The data from all input parameters (`sat-inlist`) will be concatenated to a data block (series of LVs) before processing.
- 2) A padding with 00 characters will be added if the total length of the data block is not a multiple of 8 bytes.
- 3) If requested, MAC calculation is done on the data block value (i.e. the LV serie) and padding. The MAC is inserted at the beginning of the data block
- 4) If requested the MAC value, data block value and padding will be encrypted by SB.

- 5) The result is stored in the secure message format defined in /SBC/. The SPI, kic/kid and PCntr of this structure are used to find the original data block value (serie of LVs) on the content provider side.

The maximum supported length for the clear data block (serie of LVs described in sat-inlist) is restricted (249 or 240 bytes depending on MAC usage).

At least triple DES CBC and cryptographic checksum must be supported by SB.

| attribute         | type   | default | <sat-encrypt>   |
|-------------------|--------|---------|---|
| <b>sat-check</b>  | enum   | none    | Denotes the checking algorithm to use:<br>none=no checksum<br>mac=cryptographic checksum  |
| <b>sat-crypt</b>  | bool   | false   | Set to true if the input data shall be encrypted.   |
| <b>sat-kic</b>    | hex    | 00      | Gives the key index and algorithm used for encryption as specified in /GSM 03.48/ and written in 2 hex chars.   |
| <b>sat-kid</b>    | hex    | 00      | Gives the key index and algorithm used for the checking as specified in /GSM 03.48/ and written in 2 hex chars.   |
| <b>sat-inlist</b> | string |         | A comma separated list of input values given by variable references or constant strings. Typical usage:<br>sat-inlist = "hello,\$(var1),\$(var2),<br>const text,\$(var3)" |
| <b>sat-out</b>    | string |         | Gives the name of the output variable. It is an error to specify a read-only variable here. Typical usage:<br>sat-out = "my_out_var"                                      |

| KIc or KID | [this table is only informational] GSM 03.48   |
|------------|--|
| XXXXYYZZ   | binary value of KIc or KID with the following fields:  |
| XXXX       | index of key to be used is XXXX  |
| YY         | 00=DES CBC mode<br>01=Triple DES, outer CBC mode, 2 keys<br>10=Triple DES, outer CBC mode, 3 keys<br>11=DES ECB mode (not allowed for KID) |
| ZZ         | 00=algorithm known implicitly<br>01=DES<br>10=reserved<br>11=proprietary   |

### 8.5.10 sat-decrypt

```
decrypt ::= '<sat-decrypt/>'
```

```
<!ELEMENT sat-decrypt EMPTY>
<!ATTLIST sat-decrypt
  sat-check      %check-t;      "none"
  sat-crypt      %bool-t;       "false"
  sat-kic        %hex-t;        #IMPLIED
  sat-kid        %hex-t;        #IMPLIED
  sat-mac        %hex-t;        #IMPLIED
  sat-in         CDATA          #REQUIRED
  sat-outlist    CDATA          #REQUIRED
  %id-attrs;
```

The sat-decrypt element allows to decrypt data or verify cryptographic checksums. When verification of a cryptographic checksum fails the SB processing stops.

The sat-decrypt parameters are initialized as follow :

- 1) the clear values are put in a data block (a serie of LVs)
- 2) if the data block length is not a multiple of 8 bytes, it is padded with zeroes at the end

- 3) If mac is requested, the computed mac (8 bytes ) is inserted at the beginning of the data block. The sat-check will be set to "mac" and sat-kid must be initialized with the correct value
- 4) If encryption is required, the whole data block (possibly containing a mac) is encrypted. Sat-crypt must be set to true and sat-kic must be initialized with the correct value
- 5) The resulting data block is stored as an hexa string in sat-in parameter as defined in /SBC/.

Sat-outlist must contain the same number of variables as the number of clear values (LVs) inside the data block. The maximum supported length for the clear data block (serie of LVs) is restricted (249 or 240 bytes depending on MAC usage).

At least triple DES CBC and cryptographic checksum must be supported by SB.

| attribute          | type   | default | <sat-decrypt>   |
|--------------------|--------|---------|---|
| <b>sat-check</b>   | enum   | none    | Denotes the checking algorithm to use:<br>none=no checksum<br>mac=cryptographic checksum  |
| <b>sat-crypt</b>   | bool   | false   | Set to true if the input data shall be decrypted.   |
| <b>sat-kic</b>     | hex    | 00      | Gives the key index and algorithm used for encryption as specified in /GSM 03.48/ and written in 2 hex chars.   |
| <b>sat-kid</b>     | hex    | 00      | Gives the key index and algorithm used for the checking as specified in /GSM 03.48/ and written in 2 hex chars.   |
| <b>sat-mac</b>     | hex    |         | Gives the MAC value. Required if a cryptographic checksum is to be used.  |
| <b>sat-in</b>      | string |         | The input value given by a variable reference or a constant string. Typical usage:<br>sat-in = "\${sat-const:my_input}"<br>or<br>sat-in = "45 56 AA BB CC DD EE FF" |
| <b>sat-outlist</b> | string |         | A comma separated list of output variable names. It is an error to specify a read-only variable here. Typical usage:<br>sat-outlist = "var1,var2,var3"              |

For coding of sat-kic and sat-kid see 8.5.9.

## 8.6 Navigation

### 8.6.1 Use of URLs

In attributes of type HREF-t the URI of some S@TML (or WML) page is given. The notation of URIs is as defined in /WML1.1/, /WTA1.1/, /WTAIGSM1.1/, and /RFC2396/. To access resident decks stored in the SIM card URIs are used that begin with the prefix string "sim:". All URIs starting with "sim:/s/" are reserved for S@T. The following reserved URIs are pre-defined:

| name               | pre-defined URIs   |
|--------------------|--|
| <b>sim:/s/home</b> | Access the starting deck (home page) of the S@T browser. |

### 8.6.2 Contextual Menu

The S@T browser manages a contextual menu which can be called by the user for navigation. The contents can be modified by use of the do element of S@TML.

## 8.7 Extension plug-ins

### 8.7.1 sat-plug-in

```
plug-in ::= '<sat-plug-in/>'
```

```

<!ELEMENT sat-plug-in EMPTY>
<!ATTLIST sat-plug-in
  sat-uid      %hex-t;      #REQUIRED
  sat-inlist   CDATA        #IMPLIED
  sat-outlist  CDATA        #IMPLIED
  sat-return   %bool-t;     "true"
  %id-attrs;
>

```

The plug-in element can be used to execute additional functions which are beyond the specification of the S@T browser.

| attribute   | type   | default | <sat-plug-in>  |
|-------------|--------|---------|--|
| sat-uid     | hex    | null    | A unique ID that identifies the plug-in. The first byte is the manufacturer or <a href="#">S@T</a> agreed ID and the second one is the execute element reference. See /SBC/ for details. |
| sat-inlist  | string | null    | A comma separated list of input values given by variable references or constant strings. Typical usage:<br>sat-inlist = "hello,\$(var1),\$(var2),<br>const text,\$(var3)"                |
| sat-outlist | string | null    | A comma separated list of output variable names. It is an error to use read-only variables here. Typical usage:<br>sat-outlist = "var1,var2,var3"  |
| sat-return  | bool   | true    | Indicates if the browser will retrieve control again after plug-in execution.  |

## 9 FUTURE S@TML

### 9.1 Content

The following elements for images and tables are taken from WML. They will not be supported by the present S@TML Core Language. They shall be ignored. They may be included in future S@TML versions. Nevertheless it is allowed that a S@TML DE implementation supports translation of these elements into SBC byte code that will be displayed by the SB.

#### 9.1.1 %len, %IAalign

```

<!ENTITY % len    "CDATA" >      <!--[0-9]+ for pixels,
                                   [0-9]+ "%" for percentage length -->

```

```

<!ENTITY % IAalign "(top|middle|bottom)" >

```

#### 9.1.2 img

```
img ::= '<img/>'
```

```

<!ELEMENT img EMPTY>
<!ATTLIST img
  alt      %vdata-t;      #REQUIRED
  src      %HREF-t;      #REQUIRED
  localsrc %vdata-t;      #IMPLIED
  vspace   %len;         "0"
  hspace   %len;         "0"
  align    %IAalign;     "bottom"
  height   %len;         #IMPLIED
  width    %len;         #IMPLIED
  xml:lang NMTOKEN       #IMPLIED
  %id-attrs;
>

```

| attribute | type          | default | <img>   |
|-----------|---------------|---------|---|
| alt       | string        |         | Will be used by DE as text to be displayed for the image by SB. |
| src       | string<br>URI |         | For compatibility with WML, to be ignored by DE.                |
| localsrc  | string        |         | For compatibility with WML, to be ignored by DE.                |
| vspace    | num           | 0       | For compatibility with WML, to be ignored by DE.                |
| hspace    | num           | 0       | For compatibility with WML, to be ignored by DE.                |
| align     | enum          | bottom  | For compatibility with WML, to be ignored by DE.                |
| height    | num           |         | For compatibility with WML, to be ignored by DE.                |
| width     | num           |         | For compatibility with WML, to be ignored by DE.                |
| xml:lang  | string        |         | For compatibility with WML, to be ignored by DE.                |

### 9.1.3 table

table ::= '<table>' tr+ '</table>'

```
<!ELEMENT table (tr)+>
<!ATTLIST table
  title      %vdata-t;      #IMPLIED
  align      CDATA          #IMPLIED
  columns    %num-t;       #REQUIRED
  xml:lang   NMTOKEN       #IMPLIED
  %id-attrs;
>
```

| attribute | type   | default | <table>  |
|-----------|--------|---------|--|
| title     | string | null    | Will be used by DE as title to be displayed for the table by SB. |
| align     | string | null    | For compatibility with WML, to be ignored by DE.                 |
| columns   | num    |         | Number of columns inside this table.                             |
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE.                 |

### 9.1.4 tr – table row

tr ::= '<tr>' td+ '</tr>'

```
<!ELEMENT tr (td)+>
<!ATTLIST tr
  %id-attrs;
>
```

### 9.1.5 td – table data

td ::= '<td>' %flow '<td>'

```
<!ELEMENT td (%flow;)*>
<!ATTLIST td
  %xml:lang   NMTOKEN       #IMPLIED
  %id-attrs;
>
```

As tables may not be nested %flow may not contain other tables in this case.

| attribute | type   | default | <td>   |
|-----------|--------|---------|--|
| xml:lang  | string | null    | For compatibility with WML, to be ignored by DE. |

## 9.2 WTAI

The following command is taken from WTAI. It will not be supported by the S@TML 1.0 WTAI subset, however, may be included in future S@TML versions.



## 9.2.1 provide local information (GSM specific library)

```
provide-local-info ::= 'wtai://gsm/li' [ '!' result ]
result             ::= NMTOKEN
```

This function is used to provide the current location information of the GSM terminal. This information uniquely identifies the GSM cell in which the user is located at invocation time. The user must explicitly acknowledge the operation.

| parameter | type   | default | wtai://gsm/li (provide local information)   |
|-----------|--------|---------|---|
| result    | string |         | <p>The return value is a string including the 8 octets of the GSM location information in hexadecimal representation as follows:</p> <p>Octets 1 – 3 Mobile Country and Network Codes (MCC &amp; MNC)</p> <p>Octets 4 – 5 Location Area Code (LAC)</p> <p>Octets 6 – 7 Cell Identity Value (Cell ID)</p> <p>Octet 8 Timing Advance</p> <p>For this octet a default value is returned (TBD).</p> <p>The mobile country code (MCC), the mobile network code (MNC), the location area code (LAC), the Cell ID and the Timing Advance are coded as in GSM 04.08.</p> <p>In case of failure the return value is a negative number and the WTAI error code.</p> |

## 9.2.2 WTAI Error Codes

The following error code results are used in case of failures for WTAI functions (see /WTAI1.1/, /WTAIGSM1.1/):

| value        | WTAI error code results   |
|--------------|---|
| -1           | Id not found. Function could not be completed.  |
| -2           | Illegal number of parameters, function could not be resolved due to missing parameters. |
| -3           | Service not available or non-existent function.   |
| -4           | Service temporarily unavailable.  |
| -5           | Called party is busy.   |
| -6           | Network is busy.  |
| -7           | No answer, i.e. call set-up timed out.  |
| -8           | Unknown.  |
| -9 ... -63   | Reserved for future use by WTA standard library functions.                              |
| -64          | USSD dialogue in progress   |
| -65          | Illegal characters  |
| -66 ... -127 | Reserved for other network specific error codes.  |

## 10 COMPLETE DTD

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<!--
S@T Markup Language (S@TML) Document Type Definition.
S@TML is an XML language. Typical usage:
  <?xml version="1.0" encoding="ISO-8859-1" ?>
  <!DOCTYPE satml SYSTEM "http://www.simalliance.org/DTD/satml106.dtd">

  <satml>
  ...
  </satml>
```

For compatibility with the Wireless Markup Language 1.1 (WML) also the respective DOCTYPE and <wml> ... </wml> may be used.

Change History (versions equal to S@T 01.10 S@TML specification):

```
satml100.dtd V1.0.0 2000/03 - First approved release.
satml101.dtd V1.0.1 2000/04 - Added missing sat-plug-in in DTD.
satml102.dtd V1.0.2 2000/05 - Lexical entities added / explained,
  new sat-do-clr in sat-const, sat-value in sat-const required.
satml103.dtd V1.0.3 2000/06 - Type dcs-t for sat-dcs, no sat-cmdqual
  in sat-send-sms, sat-ussddcs in sat-send-ussd, sat-in/out(list)
  in sat-encrypt/decrypt and sat-plug-in, sat-mac for sat-decrypt.
satml104.dtd V1.0.4 2000/07 - No changes to DTD, change history added
satml105.dtd V1.0.5 2001/05 - extension of sat-gen-stk
satml106.dtd V1.0.6 2001/06 - minor fix, string replaced by %vdata-t for sat-
output attribute in sat-gen-stk.
-->
```

```
<!-- ..... Entities ..... -->
<!ENTITY quot "&#34;"> <!-- quotation mark -->
<!ENTITY amp "&#38;#38;"> <!-- ampersand -->
<!ENTITY apos "&#39;"> <!-- apostrophe -->
<!ENTITY lt "&#38;#60;"> <!-- less than -->
<!ENTITY gt "&#62;"> <!-- greater than -->

<!ENTITY nbsp "&#160;"> <!-- non-breaking space -->
<!ENTITY shy "&#173;"> <!-- soft hyphen (discretionary hyphen) -->

<!ENTITY % bool-t "(true|false)">
<!ENTITY % num-t "NMTOKEN"> <!-- number -->
<!ENTITY % hex-t "NMTOKEN"> <!-- hex str -->

<!ENTITY % vdata-t "CDATA"> <!-- string with variables -->
<!ENTITY % vnum-t "%vdata-t;"> <!-- number with variables -->
<!ENTITY % vhex-t "%vdata-t;"> <!-- hex str with variables -->
<!ENTITY % href-t "%vdata-t;"> <!-- URI, URL or URN with variables -->

<!ENTITY % id-attrs "id ID #IMPLIED
                  class CDATA #IMPLIED">

<!-- ..... Decks ..... -->
<!ENTITY % decls "(sat-var|sat-const|sat-sps)*, template?">

<!ELEMENT satml (head?, %decls;, card+) >
<!ATTLIST satml
  xml:lang NMTOKEN #IMPLIED
  sat-storage (dynamic|static) "static"
  sat-serv-id %hex-t; #IMPLIED
  sat-help %vdata-t; #IMPLIED
  %id-attrs;
>

<!ELEMENT wml (head?, template?, card+) >
```

```

<!ATTLIST wml
  xml:lang      NMTOKEN      #IMPLIED
  sat-storage   (dynamic|static)  "static"
  sat-serv-id   %hex-t;      #IMPLIED
  sat-help      %vdata-t;    #IMPLIED
  %id-attrs;
>

<!ELEMENT head (access|meta)+ >
<!ATTLIST head
  %id-attrs;
>

<!ELEMENT access EMPTY>
<!ATTLIST access
  domain        CDATA        #IMPLIED
  path          CDATA        #IMPLIED
  %id-attrs;
>

<!ELEMENT meta EMPTY>
<!ATTLIST meta
  http-equiv    CDATA        #IMPLIED
  name          CDATA        #IMPLIED
  forua         %bool-t;     "false"
  content       CDATA        #IMPLIED
  scheme        CDATA        #IMPLIED
  %id-attrs;
>

<!-- ..... Cards ..... -->
<!ENTITY % cardev-attrs
"onenterforward %HREF-t; #IMPLIED
 onenterbackward %HREF-t; #IMPLIED
 ontimer %HREF-t; #IMPLIED"
>

<!ENTITY % satstmt "sat-send-sms | sat-refresh | sat-gen-stk | sat-exit |
 sat-setup-call | sat-send-ussd | sat-local-info |
 sat-encrypt | sat-decrypt | sat-plug-in">

<!ELEMENT card (onevent*, timer?, (do|p|%satstmt;)* ) >
<!ATTLIST card
  title          %vdata-t;    #IMPLIED
  newcontext     %bool-t;     "false"
  ordered        %bool-t;     "true"
  xml:lang       NMTOKEN      #IMPLIED
  sat-help       %vdata-t;    #IMPLIED
  sat-history    %bool-t;     "true"
  %cardev-attrs;
  %id-attrs;
>

<!ELEMENT template (do|onevent)* >
<!ATTLIST template
  %cardev-attrs;
  %id-attrs;
>

<!ELEMENT timer EMPTY>
<!ATTLIST timer
  name          NMTOKEN      #IMPLIED
  value         %vdata-t;    #REQUIRED
  %id-attrs;
>

<!-- ..... Fields ..... -->

```

```

<!ENTITY % emph      "em | strong | b | i | u | big | small">
<!ENTITY % layout    "br">
<!ENTITY % txt       "#PCDATA | %emph;">
<!ENTITY % flow      "%txt; | %layout; | img | anchor | a | table">

<!ENTITY % satfld    "sat-play-tone | sat-inkey">

<!ENTITY % fields    "%flow; | input | select | fieldset | %satfld; ">

<!ENTITY % TAlign    "(left|right|center)">
<!ENTITY % WrapMode  "(wrap|nowrap)">

<!ELEMENT p (%fields; | do)*>
<!ATTLIST p
  align      %TAlign;          "left"
  mode       %WrapMode;        #IMPLIED
  xml:lang   NMTOKEN           #IMPLIED
  sat-auto-clr %bool-t;        "false"
  sat-prio    (normal|high)    "normal"
  %id-attrs;
>

<!ELEMENT input EMPTY>
<!ATTLIST input
  title      %vdata-t;         #IMPLIED
  name       NMTOKEN           #REQUIRED
  type       (text|password)   "text"
  value      %vdata-t;         #IMPLIED
  format     CDATA              #IMPLIED
  emptyok    %bool-t;         "false"
  size       %num-t;           #IMPLIED
  maxlength  %num-t;           #IMPLIED
  sat-minlength %num-t;        #IMPLIED
  sat-help     %vdata-t;        #IMPLIED
  tabindex   %num-t;           #IMPLIED
  xml:lang   NMTOKEN           #IMPLIED
  %id-attrs;
>

<!ELEMENT select (optgroup|option)+>
<!ATTLIST select
  title      %vdata-t;         #IMPLIED
  name       NMTOKEN           #IMPLIED
  value      %vdata-t;         #IMPLIED
  iname      NMTOKEN           #IMPLIED
  ivalue     %vdata-t;         #IMPLIED
  multiple   %bool-t;         "false"
  sat-help     %vdata-t;        #IMPLIED
  tabindex   %num-t;           #IMPLIED
  xml:lang   NMTOKEN           #IMPLIED
  %id-attrs;
>

<!ELEMENT option (#PCDATA|onevent)*>
<!ATTLIST option
  title      %vdata-t;         #IMPLIED
  value      %vdata-t;         #IMPLIED
  onpick     %HREF-t;         #IMPLIED
  sat-help     %vdata-t;        #IMPLIED
  xml:lang   NMTOKEN           #IMPLIED
  %id-attrs;
>

<!ELEMENT optgroup (optgroup|option)+>
<!ATTLIST optgroup
  title      %vdata-t;         #IMPLIED
  xml:lang   NMTOKEN           #IMPLIED

```

```

%id-attrs;
>

<!ELEMENT fieldset (%fields;|do)*>
<!ATTLIST fieldset
  title          %vdata-t;          #IMPLIED
  xml:lang       NMTOKEN            #IMPLIED
  sat-auto-clr   %bool-t;           "false"
  sat-prio       (normal|high)      "normal"
  %id-attrs;
>

<!-- ..... Content ..... -->
<!ELEMENT br EMPTY>
<!ATTLIST br
  %id-attrs;
>

<!ELEMENT em (%flow;)*>
<!ATTLIST em
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!ELEMENT strong (%flow;)*>
<!ATTLIST strong
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!ELEMENT i (%flow;)*>
<!ATTLIST i
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!ELEMENT b (%flow;)*>
<!ATTLIST b
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!ELEMENT u (%flow;)*>
<!ATTLIST u
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!ELEMENT big (%flow;)*>
<!ATTLIST big
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!ELEMENT small (%flow;)*>
<!ATTLIST small
  xml:lang       NMTOKEN            #IMPLIED
  %id-attrs;
>

<!-- ..... Navigation ..... -->
<!ENTITY % task "go | prev | noop | refresh">

<!ELEMENT anchor (#PCDATA|br|img|go|prev|refresh)*>
<!ATTLIST anchor
  title          %vdata-t;          #IMPLIED
  xml:lang       NMTOKEN            #IMPLIED

```

```

%id-attrs;
>

<!ELEMENT a (#PCDATA|br|img)*>
<!ATTLIST a
  href      %HREF-t;      #REQUIRED
  title     %vdata-t;     #IMPLIED
  xml:lang  NMTOKEN      #IMPLIED
  %id-attrs;
>

<!ELEMENT do (%task;)>
<!ATTLIST do
  type      CDATA          #REQUIRED
  label     %vdata-t;     #IMPLIED
  name      NMTOKEN      #IMPLIED
  optional  %bool-t;     "false"
  xml:lang  NMTOKEN      #IMPLIED
  %id-attrs;
>

<!ELEMENT onevent (%task;)>
<!ATTLIST onevent
  type      CDATA          #REQUIRED
  %id-attrs;
>

<!ELEMENT go (postfield|setvar)*>
<!ATTLIST go
  href      %HREF-t;      #REQUIRED
  sendreferer %bool-t;   "false"
  method    (post|get)   "get"
  accept-charset CDATA   #IMPLIED
  %id-attrs;
>

<!ELEMENT prev (setvar)*>
<!ATTLIST prev
  %id-attrs;
>

<!ELEMENT refresh (setvar)*>
<!ATTLIST refresh
  %id-attrs;
>

<!ELEMENT noop EMPTY>
<!ATTLIST noop
  %id-attrs;
>

<!-- ..... Statements ..... -->
<!ELEMENT setvar EMPTY>
<!ATTLIST setvar
  name      %vdata-t;     #REQUIRED
  value     %vdata-t;     #REQUIRED
  %id-attrs;
>

<!ELEMENT postfield EMPTY>
<!ATTLIST postfield
  name      %vdata-t;     #REQUIRED
  value     %vdata-t;     #REQUIRED
  %id-attrs;
>

<!-- ..... S@TML STK Extensions ..... -->

```

```

<!-- ..... Declarations ..... -->
<!ELEMENT sat-var EMPTY>
<!ATTLIST sat-var
  sat-name      NMTOKEN      #REQUIRED
  sat-do-clr    %bool-t;     "false"
  %id-attrs;
>

<!ELEMENT sat-const EMPTY>
<!ATTLIST sat-const
  sat-name      NMTOKEN      #REQUIRED
  sat-value     CDATA        #REQUIRED
  %id-attrs;
>

<!ELEMENT sat-sps EMPTY>
<!ATTLIST sat-sps
  sat-name      NMTOKEN      #REQUIRED
  sat-var-id    %hex-t;      #REQUIRED
  sat-do-clr    %bool-t;     "false"
  %id-attrs;
>

<!-- ..... Fields ..... -->
<!ENTITY % tone-t "(dial|busy|congestion|radio-ack|
  radio-gone|error|call-wait|ring|
  beep|ack|nack)">

<!ELEMENT sat-play-tone EMPTY>
<!ATTLIST sat-play-tone
  sat-title     %vdata-t;    #IMPLIED
  sat-tone      %tone-t;     "beep"
  sat-duration  %num-t;      #IMPLIED
  %id-attrs;
>

<!ELEMENT sat-inkey EMPTY>
<!ATTLIST sat-inkey
  sat-title     %vdata-t;    #IMPLIED
  sat-name      NMTOKEN      #REQUIRED
  sat-format    CDATA        #REQUIRED
  sat-help      %vdata-t;    #IMPLIED
  xml:lang      NMTOKEN      #IMPLIED
  %id-attrs;
>

<!-- ..... Statements ..... -->
<!ENTITY % check-t "(none|mac)">
<!ENTITY % dcs-t "(sms|ucs2|binary)">

<!ELEMENT sat-send-sms (#PCDATA)>
<!ATTLIST sat-send-sms
  sat-title     %vdata-t;    #IMPLIED
  sat-dest      CDATA        #REQUIRED
  sat-smsc      CDATA        #IMPLIED
  sat-period    %num-t;      #IMPLIED
  sat-pid       %hex-t;      "00"
  sat-dcs       %dcs-t;      "sms"
  %id-attrs;
>

<!ELEMENT sat-setup-call EMPTY>
<!ATTLIST sat-setup-call
  sat-confirm   %vdata-t;    #IMPLIED
  sat-title     %vdata-t;    #IMPLIED

```

```

sat-dest          CDATA          #REQUIRED
sat-cmdqual       %hex-t;        "00"
%id-attrs;

```

&gt;

```

<!ELEMENT sat-send-ussd EMPTY>
<!ATTLIST sat-send-ussd
  sat-title        %vdata-t;      #IMPLIED
  sat-ussddcs      %hex-t;        #REQUIRED
  sat-data         %hex-t;        #REQUIRED
  %id-attrs;

```

&gt;

```

<!ELEMENT sat-local-info EMPTY>
<!ATTLIST sat-local-info
  sat-name         CDATA          #REQUIRED
  sat-href         %HREF-t;       #IMPLIED
  sat-method       (post|get)    "get"
  sat-cmdqual      %hex-t;        "00"
  %id-attrs;

```

&gt;

```

<!ELEMENT sat-refresh EMPTY>
<!ATTLIST sat-refresh
  sat-files        %hex-t;        #IMPLIED
  sat-cmdqual      %hex-t;        "01"
  %id-attrs;

```

&gt;

```

<!ELEMENT sat-gen-stk EMPTY>
<!ATTLIST sat-gen-stk
  sat-cmdtype      %hex-t;        #REQUIRED
  sat-cmdqual      %hex-t;        #REQUIRED
  sat-destdev      %hex-t;        #REQUIRED
  sat-data         %hex-t;        #REQUIRED
  sat-output       %vdata-t;      #IMPLIED
  sat-encap        %bool;         "false"
  %id-attrs;

```

&gt;

```

<!ELEMENT sat-exit EMPTY>
<!ATTLIST sat-exit
  sat-cleanbuf     %bool-t;       "false"
  sat-outvarlist   CDATA          #IMPLIED
  %id-attrs;

```

&gt;

```

<!ELEMENT sat-encrypt EMPTY>
<!ATTLIST sat-encrypt
  sat-check        %check-t;      "none"
  sat-crypt        %bool-t;       "false"
  sat-kic          %hex-t;        #IMPLIED
  sat-kid          %hex-t;        #IMPLIED
  sat-inlist       CDATA          #REQUIRED
  sat-out          CDATA          #REQUIRED
  %id-attrs;

```

&gt;

```

<!ELEMENT sat-decrypt EMPTY>
<!ATTLIST sat-decrypt
  sat-check        %check-t;      "none"
  sat-crypt        %bool-t;       "false"
  sat-kic          %hex-t;        #IMPLIED
  sat-kid          %hex-t;        #IMPLIED

```



```

    sat-mac          %hex-t;          #IMPLIED
    sat-in           CDATA            #REQUIRED
    sat-outlist     CDATA            #REQUIRED
    %id-attrs;
>

<!ELEMENT sat-plug-in EMPTY>
<!ATTLIST sat-plug-in
    sat-uid          %hex-t;          #REQUIRED
    sat-inlist      CDATA            #IMPLIED
    sat-outlist     CDATA            #IMPLIED
    sat-return      %bool-t;         "true"
    %id-attrs;
>

<!-- ..... Future S@TML ..... -->
<!-- ..... Content ..... -->
<!ENTITY % len     "CDATA" > <!-- [0-9]+ for pixels,
                                [0-9]+%" for percentage length -->

<!ENTITY % IAlign "(top|middle|bottom)" >

<!ELEMENT img EMPTY>
<!ATTLIST img
    alt          %vdata-t;          #REQUIRED
    src          %HREF-t;           #REQUIRED
    localsrc     %vdata-t;          #IMPLIED
    vspace       %len;              "0"
    hspace       %len;              "0"
    align        %IAlign;           "bottom"
    height       %len;              #IMPLIED
    width        %len;              #IMPLIED
    xml:lang     NMTOKEN            #IMPLIED
    %id-attrs;
>

<!ELEMENT table (tr)+>
<!ATTLIST table
    title        %vdata-t;          #IMPLIED
    align        CDATA              #IMPLIED
    columns      %num-t;            #REQUIRED
    xml:lang     NMTOKEN            #IMPLIED
    %id-attrs;
>

<!ELEMENT tr (td)+>
<!ATTLIST tr
    %id-attrs;
>

<!ELEMENT td (%flow;)*>
<!ATTLIST td
    xml:lang     NMTOKEN            #IMPLIED
    %id-attrs;
>

<!-- ..... The End ..... -->

```

## 11 Annex: WML 1.1 FEATURES NOT SUPPORTED [informative]

This Chapter contains an informative list of ignored and unsupported WML 1.1 features.

### 11.1 Ignored Element Tags and Attributes

The WML 1.1 element tags and attributes given here will be ignored by the DE.

- `<... class="...">`
- `<... xml:lang="...">`
- `<meta>`
- `<card title="...">`
- `<card ordered=...>`
- `<p align=...>`
- `<p mode=...>`
- `<input size=...>`
- `<input tabindex=...>`
- `<select value="...">`
- `<select ivalue="...">`
- `<fieldset title="...">`
- `<em>`
- `<strong>`
- `<i>`
- `<b>`
- `<u>`
- `<big>`
- `<small>`
- `<do type="options">`
- `<do type="delete">`
- `<do type="x-*">`
- `<do type="vnd-*">`
- `<go accept-charset="...">`
- `<img>`
- `<table>`
- `<tr>`
- `<td>`

### 11.2 Unsupported Element Tags and Attributes

The WML 1.1 element tags and attributes given here may result in an *error* or will be ignored if found by the DE:

- `<card onenterforward="...">`
- `<card onenterbackward="...">`
- `<card ontimer="...">`
- `<template onenterforward="...">`
- `<template onenterbackward="...">`
- `<template ontimer="...">`
- `<timer>`
- `<timer name="...">`
- `<timer value="...">`
- `<select multiple="...">`
- `<onevent type="ontimer">`
- `<onevent type="onenterforward">`
- `<onevent type="onenterbackward">`
- `<setvar name="$ (x) ">`
- `<postfield name="$ (x) ">`

## 12 Annex: ENVIRONMENT VARIABLES IN SBC

All SB environment variables are defined in /SBC/ - this chapter gives their names and a short description of the format. Note, that currently all environment variables are read-only, and most of them have a binary TLV-structure. Some environment variables are optional for the SB implementation (marked with "O" instead of "M" for mandatory).

| name                               | M/O | type   | environment variables  |
|------------------------------------|-----|--------|--|
| <b>sat-env:ICCID</b>               | M   | binary | ICCID of the SIM<br>Coding as in /GSM11.11/ for EF ICCID.  |
| <b>sat-env:SIMBrowserSupplier</b>  | M   | binary | Identifier of the SIM browser supplier.<br>Coding as in /SBC/.   |
| <b>sat-env:BrowserVersion</b>      | M   | binary | Version of the SIM browser<br>Coding: 1 Byte with S@T version number in higher nibble, and the manufacturer release number in lower nibble |
| <b>sat-env:BrowserProfile</b>      | M   | binary | List of supported facilities of the browser<br>Coding as in /SBC/ .  |
| <b>sat-env:OperatorName</b>        | O   | string | Name of the network operator (SIM card issuer)<br>Coding as in /GSM03.38/.   |
| <b>sat-env:TerminalProfile</b>     | M   | binary | Terminal Profile of the currently used ME<br>Coding as in /GSM11.14/.  |
| <b>sat-env:StatusWord</b>          | M   | binary | Result of the previous macro<br>Coding in 2 Bytes: 6Fxx=error (see /SBC/),<br>0000=no error  |
| <b>sat-env:LocationInformation</b> | O   | binary | Location information (see /GSM11.14/, /GSM04.08/)<br>Coding in 7 Bytes without tag and length (see /SBC/ or table in Section 8.5.5).       |
| <b>sat-env:UserType</b>            | O   | binary | Mode of the user interface<br>Coding: 00=Beginner, 01=Advanced, 02=Expert  |

## 13 Annex: LIST OF CHANGE REQUESTS [informative]

| CR Number | CR Identifier                     | Subject  | Document Reference | Status / Meeting No. |
|-----------|-----------------------------------|--|--------------------|----------------------|
| 20001     | Orga-SML-1-04-APR-2000            | sat-plugin missing in DTD                          | S@T 1.10 V1.0.1    | Accepted #16         |
| 20002     | Orga-SML-2-04-APR-2000            | Make SATML document more self-contained            | S@T 1.10 V1.0.3    | Accepted #18         |
| 20003     | Orga-WG2-April-2000#3             | Correct list of ignored WML attributes             | S@T 1.10 V1.0.1    | Accepted #17         |
| 20004     | Orga-WG2-April-2000#4             | Add lexical definition for special characters      | S@T 1.10 V1.0.2    | Accepted #17         |
| 20005     | Schlumberger-Workgroup2-04-2000#1 | Value of a constant should be mandatory            | S@T 1.10 V1.0.2    | Accepted #17         |
| 20006     | Schlumberger-Workgroup2-04-2000#2 | Scope of a temporary variable                      | S@T 1.10 V1.0.2    | Accepted #17         |
| 20007     | Schlumberger-Workgroup2-04-2000#3 | Scope of a constant                                | S@T 1.10 V1.0.2    | Accepted #17         |
| 20010     | Giesecke&Devrient-WG2-May-2000#1  | Remove sat-dcs and sat-cmdqual from <sat-send-sms> | S@T 1.10 V1.0.3    | Accepted #18         |
| 20011     | Giesecke&Devrient-WG2-May-2000#2  | Allow constants for crypto elements and Plug-in    | S@T 1.10 V1.0.3    | Accepted #18         |

|       |                                   |  |                 |              |
|-------|-----------------------------------|--|-----------------|--------------|
| 20012 | Giesecke&Devrient-WG2-May-2000#3  | Default value of sat-minlength                                   | S@T 1.10 V1.0.3 | Accepted #18 |
| 20013 | Giesecke&Devrient-WG2-May-2000#4  | Missing DCS attribute in sat-send-ussd                           | S@T 1.10 V1.0.3 | Accepted #18 |
| 20014 | Giesecke&Devrient-WG2-May-2000#5  | Automatic navigation   | S@T 1.10 V1.0.3 | Accepted #18 |
| 20015 | Giesecke&Devrient-WG2-May-2000#6  | Clarification for iname attribute of select                      | S@T 1.10 V1.0.3 | Accepted #18 |
| 20016 | Giesecke&Devrient-WG2-May-2000#7  | Context restrictions   | S@T 1.10 V1.0.3 | Accepted #18 |
| 20018 | Giesecke&Devrient-WG2-May-2000#8  | Clarification for sat-period attribute                           | S@T 1.10 V1.0.3 | Accepted #18 |
| 20020 | Schlumberger-Workgroup2-31-2000#1 | Reservation of predefined names for URLs                         | S@T 1.10 V1.0.3 | Accepted #18 |
| 20021 | Giesecke&Devrient-WG2-June-2000#1 | sat-mac attribute for sat-decrypt                                | S@T 1.10 V1.0.3 | Accepted #18 |
| 20022 | Schlumberger-Workgroup2-06-2000#1 | Declaration of SATML constants                                   | S@T 1.10 V1.0.4 | Accepted #19 |
| 20023 | Schlumberger-Workgroup2-06-2000#2 | Place of “onpick” attribute                                      | S@T 1.10 V1.0.4 | Accepted #19 |
| 20024 | Schlumberger-Workgroup2-06-2000#3 | Use of alpha-identifiers for “input”, “select” and “sat-inkey”   | S@T 1.10 V1.0.4 | Accepted #19 |
| 20025 | Schlumberger-WG2-September-2000#1 | Clarification of <sat-refresh> tag                               | S@T 1.10 V1.0.5 | Accepted #21 |
| 20026 | Schlumberger-WG2-September-2000#2 | Clarification of <sat-gen-stk> tag                               | S@T 1.10 V1.0.5 | Accepted #21 |
| 20028 | Schlumberger-WG2-September-2000#4 | Inconsistency between spec and dtd                               | S@T 1.10 V1.0.5 | Accepted #21 |
| 20029 | Orga-WG2-September-2000#1         | Binary SMS / Encrypt / Decrypt                                   | S@T 1.10 V1.0.5 | Accepted #22 |
| 20030 | Schlumberger-WG2-October-2000#1   | Format attribute of input  | S@T 1.10 V1.0.5 | Accepted #22 |
| 20031 | Gemplus-WG2-October-2000#1        | Clarification of the input type                                  | S@T 1.10 V1.0.5 | Accepted #25 |
| 20033 | Gemplus-WG2-January-2001#2        | Clarification of the sat-uid attribute of the <sat-plug-in> tag. | S@T 1.10 V1.0.5 | Accepted #25 |
| 20034 | Schlumberger-WG2-January-2001#1   | Extension of <sat-gen-stk> tag.                                  | S@T 1.10 V1.0.5 | Accepted #25 |
| 20037 | Gemplus-WG2-May-2001#1            | Clarification of <sat-decrypt> and <satencrypt> tags             | S@T 1.10 V1.0.5 | Accepted #29 |
|       |                                   |  |                 |              |

**- END OF DOCUMENT -**