
Appendix C: VTML Tagset

<vtml_break>

Description

Sets the Break Indices between words.

Syntax

```
<vtml_break level="0" | "1" | "2"/>
```

Attributes

Attribute	Description
Level	It sets Break Indices. <i>Required</i> (0= read continuously, 1= read with minor break, 2= read with major break)

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

N/A

Example

```
The arrest warrant issued in Florida<vtml_break level="0"/> links the attorney  
to a government probe of the Medhyin drug cartel headed up by kingpin Carlos  
Later<vtml_break level="2"/> who now serving a life sentence in federal  
prison.
```

<vtml_partofsp>

Description

Designates a word class of the word surrounded with tags.

Syntax

```
<vtml_partofsp part="unknown" | "noun" | "verb" | "modifier" | "function" |  
"interjection"> text  
</vtml_partofsp>
```

Attributes

Attribute	Description
part	Part of speech. <i>Required</i>

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

N/A

IMPORTANT LIMITATION

This is applicable only in VoiceText English synthesizer.

The max length of the text is 512bytes including the NULL character. Anything longer will be truncated.

Example

```
Did you <vtml_partofsp part="verb">record</vtml_partofsp> that  
<vtml_partofsp part="noun">record</vtml_partofsp>?
```

<vtml_pause>

Description

Sets a pause to be inserted in the synthesized voice.

Syntax

```
<vtml_pause time="msec"/>
```

Attributes

Attribute	Description
time	Pause length. <i>Required</i> The unit is millisecond and it has the value between 0 to 65535. (Anything beyond this value will be set as minimum or maximum value. +, - symbols not usable)

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

N/A

IMPORTANT LIMITATION

The tag set at the end of a synthesized voice will be skipped.

Example

```
The arrest warrant issued in Florida<vtml_pause time="1000"/> links the
attorney to a government probe of the Medhyin drug cartel headed
up<vtml_pause time="100"/> by kingpin
Carlos Later who now serving a life sentence in federal prison.
```

<vtml_phoneme>

Description

Sets the phonetic symbols of the texts surrounded with the tags.

Syntax

```
<vtml_phoneme  
  ph="string"  
  alphabet="ipa" | "x-cmu" | "x-pentax" | "x-sapi" | "x-sampa"  
           | "x-worldbet">  
  text  
</vtml_phoneme>
```

Attributes

Attribute	Description
ph	It represents the pronunciation strings. <i>Required</i>
alphabet	It sets the SPR(Symbolic Phonetic Representation) to represent pronunciation strings. <i>Optional</i> (if omitted, it will set as "ipa") For more detailed information, please refer to Appendix D.)

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

N/A

IMPORTANT LIMITATION

VoiceText English synthesizer only supports ipa, x-worldbet, x-sampa, x-sapi, x-cmu and Japanese synthesizer only supports x-pentax.

The max length of the text is 512bytes including the NULL character. Anything longer will be truncated. The max length of ph is 512bytes including the NULL character. Anything longer will be regarded as tag error.

Example

```
<vtml_phoneme alphabet="ipa" ph="116;601;712;109;101;105;116;  
111;650;">tomato</vtml_phoneme>
```

```
<vtml_phoneme alphabet="x-pentax" ph="マルチメディアウェア[その他の固有  
名詞]">MMW</vtml_phoneme>
```

<vtml_pitch>

Description

Among the prosody information, it sets the pitch of the text surrounded by this tags.

Syntax

```
<vtml_pitch value="pitch">  
  child elements  
</vtml_pitch>
```

Attributes

Attribute	Description
value	The level of pitch ranging between 50~200%. <i>Required</i> (Anything beyond this range will be set as minimum or maximum value. +, - symbols not usable)

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

<vtml_break>, <vtml_partofsp>, <vtml_pause>, <vtml_phoneme>, <vtml_pitch>,
<vtml_speed>, <vtml_volume>, <vtml_sayas>, <vtml_sub>

Example

```
<vtml_pitch value="150">The arrest warrant issued in Florida links the attorney  
to a government probe of the Medhyin drug cartel headed up by kingpin Carlos  
Later who now serving a life sentence in federal prison.</vtml_pitch>
```

<vtml_sayas>

Description

Sets the format of the text.

Syntax

```
<vtml_sayas
  interpret-as="construct_type"
  format="string"
  detail="string">
  text
</vtml_sayas>
```

Attributes

Attribute	Description
interpret-as	Text type. <i>Required</i>
format	The format in accordance with the type of text. <i>Optional</i>
detail	Additional information on reading in accordance with the format of the text <i>Optional</i>

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

N/A

IMPORTANT LIMITATION

VoiceText Engine supports <vtml_sayas> element as stated below

The length of texts is max 512bytes including the NULL character and anything longer will be truncated.

ssml:date

Syntax :

```
<vtml_sayas interpret-as="ssml:date" format="format">Text</vtml_sayas>
```

Format : mdy, dmy, ymd, md, dm, ym, my, d, m, y

Text : numeric, date separators (' / ', ' . ', ' - ')

When format is specified, it checks the possible range of each numbers.

Otherwise it regards it in the order of Month, Day, Year.

Example :

```
<vtml_sayas interpret-as="ssml:date" format="mdy">01/02/2006
</vtml_sayas>
```

ssml:time

Syntax :

```
<vtml_sayas interpret-as="ssml:time" format="format">Text</vtml_sayas>
```

Format : hms24, hms12

Text :

Numeric time separator (' : ', ' . ', empty string), modifier separator (space, empty string), and modifiers ("AM", "A.M.", "am", "a.m.", "A", "a", "PM", "P.M.", "pm", "p.m.", "P", "p") are allowed.

It checks the possible range of each number. When format is not specified, it regards them as hms12. Real numbers are allowed in second.

Example:

```
<vtml_sayas interpret-as="ssml:time" format="hms24">19:21:30.1
</vtml_sayas>
```

ssml:telephone

Syntax :

```
<vtml_sayas interpret-as="ssml:telephone" format="format">Text
</vtml_sayas>
```

Format: country code

Text :

country code symbol(' + '), number, phone number separator(' (', ') ', ' - ', ' . ', ' / ', space, empty string), symbol ('*', '#'), English characters(except Q and Z)

Example:

```
<vtml_sayas interpret-as="ssml:telephone" format="39">
+39(011)777-7777</vtml_sayas>
<vtml_sayas interpret-as="ssml:telephone" format="39">
+1-800-EXAMPLE </vtml_sayas>
```


ssml:characters

Syntax :

```
<vtml_sayas interpret-as="ssml:characters" format="format"
detail="detail">Text</vtml_sayas>
```

Format : characters

Detail : number of distinguishable group texts (In order to distinguish groups, space characters must be used.)

Text :

Only English characters, numbers, and 31 1-Byte symbols are allowed.

The symbols allowed are as follows:

```
('!', '#', '$', '%', '&', '(', ')', '*', '+', ',', '-', '.', '/', ':',
';', '<', '=', '>', '?', '@', '[', '\\', ']', '^', '_', '`', '{', '|', '}',
'~')
```

Example:

```
<vtml_sayas interpret-as="ssml:characters" format="characters"
detail="3 1 2">1a3BZ7</vtml_sayas>
```

ssml:cardinal

Syntax :

```
<vtml_sayas interpret-as="ssml:cardinal" format="format"
detail="detail">Text</vtml_sayas>
```

Format : separators (characters which distinguish integers and decimal numbers)

Detail : characters that distinguish the integers.

Text : symbols ('+', '-'), integer, decimal number

Example:

```
<vtml_sayas interpret-as="ssml:cardinal" format=".">123.456</vtml_sayas>
<vtml_sayas interpret-as="ssml:cardinal" detail=".">123.456</vtml_sayas>
```

ssml:ordinal

Syntax : <vtml_sayas interpret-as="ssml:ordinal">Text</vtml_sayas>

Text : integers

Example: <vtml_sayas interpret-as="ssml:ordinal">123</vtml_sayas>

vxml:boolean

Syntax : <vtml_sayas interpret-as="vxml:boolean">Text</vtml_sayas>

Text : true or false value

Example:

```
<vtml_sayas interpret-as="vxml:boolean">true</vtml_sayas>
<vtml_sayas interpret-as="vxml:boolean">false</vtml_sayas>
```

vxml:date

Syntax : <vtml_sayas interpret-as="vxml:date">Text</vtml_sayas>

Text : yyyymmdd patterned number, '?'(fills non-specified dates)

Restriction :

yyyy is four digit number representing the year, mm is two digit number representing the month and dd is two digit number representing day.

Example:

```
<vtml_sayas interpret-as="vxml:date">19991221</vtml_sayas>
<vtml_sayas interpret-as="vxml:date">????1221</vtml_sayas>
```

vxml:digits

Syntax : <vtml_sayas interpret-as="vxml:digits">Text</vtml_sayas>

Text : number

Example: <vtml_sayas interpret-as="vxml:digits">123</vtml_sayas>

vxml:currency

Syntax : <vtml_sayas interpret-as="vxml:currency">Text</vtml_sayas>

Text : currency expressed 3 digit characters(UUU), integer, decimal(mm.nn)

Example: <vtml_sayas interpret-as="vxml:currency">USD30.101</vtml_sayas>

vxml:number

Syntax : <vtml_sayas interpret-as="vxml:number">Text</vtml_sayas>

Text : symbols(' + ', ' - '), integer

Example: <vtml_sayas interpret-as="vxml:number">123</vtml_sayas>

vxml:phone

Syntax : <vtml_sayas interpret-as="vxml:phone">Text</vtml_sayas>

Text : number, 'x'(extension's abbreviation)

Example:

```
<vtml_sayas interpret-as="vxml:phone">8005551234x789</vtml_sayas>
```

vxml:time

Syntax : <vtml_sayas interpret-as="vxml:time">Text</vtml_sayas>

Text :

HHMM patterned number, 'a'(AM), 'p'(PM), 'h'(24 hour), '?'(ambiguous time of AM/PM)

Restriction :

HH is two digit hour expression and MM is two digit minute expression

Example: <vtml_sayas interpret-as="vxml:time">0600a</vtml_sayas>

sapi:date

Syntax :

<vtml_sayas interpret-as="sapi:date" format="format">Text</vtml_sayas>

Format : mdy, dmy, ymd, md, dm, ym, my, y

Text : number, date separators (' / ', ' . ', ' - ')

If format is specified, it checks the possible range of numbers.

Otherwise it regards it in the order of month, day, year.

number, date separators (' / ', ' . ', ' - ')

Example:

<vtml_sayas interpret-as="sapi:date" format="mdy">12/21/99
</vtml_sayas>

sapi:time

Syntax : <vtml_sayas interpret-as="sapi:time">Text</vtml_sayas>

Text : number, time separators (' : ', ' ' ', ' " ')

It checks the possible range of numbers.

Example: <vtml_sayas interpret-as="sapi:time">12:30</vtml_sayas>

sapi:number

Syntax :

<vtml_sayas interpret-as="sapi:number" format="format">Text
</vtml_sayas>

Format : cardinal, digit, fraction, decimal

Text : Integer, decimal, fraction symbols(' / ')

Example:

<vtml_sayas interpret-as="sapi:number" format="cardinal">3432
</vtml_sayas>

<vtml_sayas interpret-as="sapi:number" format="fraction">3/15
</vtml_sayas>

sapi:phone

Syntax : <vtml_sayas interpret-as="sapi:phone">Text</vtml_sayas>

Text : country code symbol (' + '), number, phone number separator (' - ')

Example:

<vtml_sayas interpret-as="sapi:phone">+82-02-3016-8541</vtml_sayas>

sapi:currency

Syntax : <vtml_sayas interpret-as="sapi:currency">Text</vtml_sayas>

Text : currency symbols('\$', '£', ...), integer, decimal

Example: <vtml_sayas interpret-as="sapi:currency">\$34.90</vtml_sayas>

sapi:web

Syntax :

<vtml_sayas interpret-as="sapi:web" format="format">Text</vtml_sayas>

Format : url

Text : English characters, number, symbol(' : ', ' / ', ' . ', ' _ ', ' - ')

Example:

<vtml_sayas interpret-as="sapi:web" format="url">www.Microsoft.com
</vtml_sayas>

sapi:email

Syntax : <vtml_sayas interpret-as="sapi:email">Text</vtml_sayas>

Text : English character, number, symbols('@', ' _ ', ' . ')

Example:

<vtml_sayas interpret-as="sapi:email">someone@microsoft.com
</vtml_sayas>

sapi:address

Syntax :

<vtml_sayas interpret-as="sapi:address" format="format">Text
</vtml_sayas>

Format : postal

Text : English characters, numbers, symbol(' # ', ' , ', ' . ', ' - ')

Example:

```
<vtml_sayas interpret-as="sapi:address" format="postal">A2C 4X5
</vtml_sayas>
<vtml_sayas interpret-as="sapi:address">One Microsoft Way, Redmond, WA,
98052</vtml_sayas>
```

Example

```
<vtml_sayas interpret-as="ssml:characters" format="characters">VoiceXML
</vtml_sayas>
You still owe me <vtml_sayas interpret-as="vxml:currency">USD30.10
</vtml_sayas>
Today's date is <vtml_sayas interpret-as="ssml:date" format="mdy">01/02/2006
</vtml_sayas>
Please push the <vtml_sayas interpret-as="vxml:boolean">true</vtml_sayas>
button.
I will get there at <vtml_sayas interpret-as="ssml:time" format="hms24">
07:30:30.0PM</vtml_sayas>
```

<vtml_speed>

Description

Among the prosody information, it sets the speed of text surrounded with this tags.

Syntax

```
<vtml_speed value="speed">  
  child elements  
</vtml_speed>
```

Attributes

Attribute	Description
speed	It sets the utterance speed with 50~400(%) value. <i>Required</i> (Anything beyond this range will be set minimum or maximum value. +, - symbols not usable)

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

<vtml_break>, <vtml_partofsp>, <vtml_pause>, <vtml_phoneme>, <vtml_pitch>,
<vtml_speed>, <vtml_volume>, <vtml_sayas>, <vtml_sub>

Example

```
<vtml_speed value="150">The arrest warrant issued in Florida links the attorney  
to a government probe of the Medhyin drug cartel headed up by kingpin Carlos  
Later who now serving a life sentence in federal prison.</vtml_speed>
```

<vtml_sub>

Description

Reads text by replacing text surrounded with tags with the alias value.

Syntax

```
<vtml_sub  
  alias="string">  
  text  
</vtml_sub>
```

Attributes

Attribute	Description
alias	It replaces the value surrounded with tags. <i>Required</i>

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

N/A

IMPORTANT LIMITATION

The length of the texts is max 512bytes including the NULL character. Anything longer will be truncated.

The length of the alias is max 512bytes including the NULL character. Anything longer will be considered as tag error.

Example

```
<vtml_sub alias="World Wide Web Consortium">W3C</vtml_sub>
```

<vtml_volume>

Description

Sets the volume of the text's prosody information surrounded with tags.

Syntax

```
<vtml_volume value="volume">  
  child elements  
</vtml_volume>
```

Attributes

Attribute	Description
volume	Set the volume within 0 to 500(%) value. <i>Required</i> (Anything beyond this range will be set as minimum or maximum value. +, - symbols not usable)

Parents

<vtml_pitch>, <vtml_speed>, <vtml_volume>

Children

<vtml_break>, <vtml_partofsp>, <vtml_pause>, <vtml_phoneme>, <vtml_pitch>,
<vtml_speed>, <vtml_volume>, <vtml_sayas>, <vtml_sub>

Example

```
<vtml_volume value="150">The arrest warrant issued in Florida links the attorney  
to a government probe of the Medhyin drug cartel headed up by kingpin Carlos  
Later who now serving a life sentence in federal prison.</vtml_volume>
```

Appendix D: SPR(Symbolic Phonetic Representations)

Symbolic Phonetic Representation is only supported in VoiceText English/Japanese synthesizer and the method of expressing the phonetic representation varies with each <vtml_phoneme>tag's optional alphabet.

English synthesizer supports only the below mentioned five types such as ipa, x-worldbet, x-sampa, x-sapi, x-cmu and each phonetic representation which can be used in each alphabet is a concise English version and defined in Symbolic Phonetic Table.

Japanese synthesizer supports only x-pentax and phonetic representation can only be used in KATAKANA and accent symbols such as (' ^ ', ' / '). Also, you can express the optional word class information. The word class is expressed between ' [' and '] ' behind the phonetic representations.

ipa : It is a method of expressing International Phonetic Alphabet-defined phonetic representation as Unicode and the alphabet value "ipa" must be small letters. The Unicode must be put in decimal numbers and semi-colon must be put at the end of it.

ex)

```
<vtml_phoneme alphabet="ipa" ph="116;601;712;109;101;105;116;111;650;">tomato</vtml_phoneme>
```

x-WORLDBET : It is a method of expressing World's Languages as ASCII and the prefix "x-" must be small letter.

ex)

```
<vtml_phoneme alphabet="x-worldbet" ph="t&'meitoU">tomato</vtml_phoneme>
```

x-SAMPA : It is a method of expressing Speech Assessment Methods Phonetic Alphabet-defined ASCII phonetic representation and the prefix "x-" must be small

letter.

ex)

```
<vtml_phoneme alphabet="x-sampa" ph="t@'meit@U">tomato
</vtml_phoneme>
```

x-SAPI : It's a method of expressing phonetic representation defined by SAPI Phoneme Representation and the prefix "x-" must be small letter.

ex)

```
<vtml_phoneme alphabet="x-sapi" ph="h eh - l ow 1">hello
</vtml_phoneme>
```

x-CMU : It's a method of expressing phonetic representation defined by Carnegie Mellon University pronunciation dictionary and the prefix "x-" must be small letter.

Use "vowel+stress number" to stress vowels. In English, there are 3 kinds of stress levels; 1 for primary stress, 2 for secondary stress, and 0 for no stress.

ex)

```
<vtml_phoneme alphabet="x-cmu" ph="T AH0 M EY1 T OW0">tomato
</vtml_phoneme>
```

x-PENTAX : Only used in Japanese synthesizer. It's a method of expressing phonetic representation by KATAKAGA and stress symbols (' ^ ', ' / ') and the prefix "x-" must be small letter.

Max 10 stress phrase are allowed and one stress phrase can express at least one stress. The stress symbols used are As follows;

^ : It shows the location of the stress.

/ : It shows the boundary of the stress phrase.

ex)

オシャベリデ^ンタク	(○ : stress phrase 1, stress 1)
オシャベリ / デ^ンタク	(○ : stress phrase 2, stress 1)
オシャ^ベリ / デ^ンタク	(○ : stress phrase 2, stress 2)
オシャ^ベリデ^ンタク	(× : stress phrase 1, stress 2)
オシ^ャベリ / デンタク	(× : wrong position of the stress)

You can select one word class among 18 types such as a common noun, last name, first name, name of a place, company name, other proper noun, pronoun, verb, adjective, keiyōdōshi , adverb, symbol, rentaishi, conjunction, prefix, suffix,

auxiliary word and so on.

ex)

```
<vtml_phoneme alphabet="x-pentax" ph="マルチメディアウェア[その他の  
固有名詞]">MMW</vtml_phoneme>
```

Symbolic Phonetic Table

The table below is a group of phonetic representations and word examples.

	Unicode	Decimal	IPA	WORLDBET	SAMPA	SAPI	CMU	Example
Consonant	70	112	p	p	p	p	P	pen
	62	98	b	b	b	b	B	but
	74	116	t	t	t	t	T	two
	64	100	d	d	d	d	D	do
	02A7	679	tʃ	tS	tS	ch	CH	chair
	02A4	676	dʒ	dZ	sZ	jh	JH	joy
	006B	107	k	k	k	k	K	cat
	67	103	g	g	g	g	G	get
	66	102	f	f	f	f	F	fool
	76	118	v	v	v	v	V	voice
	03B8	952	θ	T	T	th	TH	think
	00F0	240	ð	D	D	dh	DH	this
	73	115	s	s	s	s	S	see
	007A	122	z	z	z	z	Z	zoo
	283	643	ʃ	S	S	sh	SH	she
	292	658	ʒ	Z	Z	zh	ZH	pleasure
	68	104	h	h	h	h	HH	ham
	006D	109	m	m	m	m	M	man
	006E	110	n	n	n	n	N	no
	014B	331	ŋ	N	N	ng	NG	ring
	006C	108	l	/	/	/	L	left
	279	633	ɹ	9	r	r	R	run
	77	119	w	w	w	w	W	we
	006A	106	j	j	j	y	Y	yes
	028D	653	ɰ	W	W		W	while
	78	120	x	x	x		K	loch

	0251 02D0	593 720	ɑ:		A:	aa	AA	father
--	-----------	---------	----	--	----	----	----	--------

Monophthong	251	593	ɑ	A	A:		AA	bob
	0069 02D0	105 720	i:	i:	i:	iy	IY	see
	026A	618	ɪ	ɪ	ɪ	ih	JH	city
	025B or 0065	603 or 101	ɛ or e	E	E:	eh	EH	bed
	025C 02D0 or 0259 02D0	604 720 or 601 720	ɜ: or ə:		3:		AH	bird
	025C	604	ɜ	3	@:		AH	bird
	025D	605	ʒ	3r	3r		ER	bird
	00E6 or 0061	230 or 97	æ or a	@ or a	{	ae	AE	cat
	028C	652	ʌ	^	V	ah	AH	run
	252	594	ɒ	5	Q		AA	not
	0254 02D0	596 720	ɔ:		O:	ao	AO	law
	254	596	ɔ	>	O:		AO	law
	028A	650	ʊ	U	U	uh	UH	put
	0075 02D0	117 720	u:		u:	uw	UW	soon
	75	117	u	u	u:		UW	soon
	259	601	ə	&	@	ax	AH	about
	025A	602	ʒ	&r	=r	er	ER	butter

Diphthong	0065 026A	101 618	eɪ	eɪ	eɪ	ey	EY	day
	0065 0069	101 105	ei	ei	eɪ		EY	day
	0061 026A or 028C 026A	97 618 or 652 618	aɪ or ʌɪ	al	al	ay	AY	my
	0254 026A	596 618	ɔɪ	>ɪ	Oɪ	oy	OY	boy
	0254 0069	596 105	ɔi	>i			OY	boy
	0259 028A	601 650	əʊ		@U		OW	no
	006F 028A	111 650	oʊ	oU	@U	ow	OW	no, show

0061 028A	97 650	aʊ	aU	aU	aw	AW	now
026A 0259	618 601	lə		l@		IY AH	near, here
0069 0259	105 601	iə	i&	l@		IY AH	near, here
025B 0259 or 025B 02D0	603 601 or 603 720	ɛə or ɛ:		E@		EH AH	there
028A 0259	650 601	ʊə		U@		UW AH	tour, poor
0075 0259	117 601	uə	u&	U@		UW AH	tour, poor
006A 0075 02D0	106 117 720	ju:		ju:		Y UW	pupil

Syllable Symbols Table

Syllable symbols (syllable stress, pronunciation length mark and pause symbols) listed below can be used with phonetic representation.

	Unicode	Decimal	IPA	WORLDBET	SAMPA	SAPI	CMU	Definition
Syllable symbol							0	none stress
	02C8	712	ˈ	ˈ	ˈ	1	1	primary stress
	02CC	716	ˌ	ˌ	%	2	2	secondary stress
	02D0	720	ː	ː	ː			length mark : long
	002E	46	.	.	.	–		syllable break
	23	35	#	#		–	#	pause
						!		Sentence terminator
						&		word boundary
						,		Sentence terminator
						.		Sentence terminator
						?		Sentence terminator

Appendix E: Text preprocessing protocol

1. Numbers

1.1 Cardinal Numbers

Ordinary method of reading number. It reads by each digit.

Example	Expansion
123	one hundred twenty three
12,345	twelve thousand three hundred forty five
12345	

1.2 Ordinal Numbers

It follows ordinal number reading.

Example	Expansion
123rd	one hundred twenty third
12,345th	twelve thousand three hundred forty fifth

1.3 Decimal Fractions

It separates then reads numbers of left and right of the decimal point.

Example	Expansion
1.23	one point two three
.123	point one two three

1.4 Fractions

Example	Expansion
$\frac{2}{3}$	two thirds
3 $\frac{2}{3}$	three and two thirds

1.5 Digit Mode

It reads digit by digit regardless of cipher.

Example	Expansion
+82-2-1234-4567	plus eight two, two, one two three four, four five six seven
157-26-5734	one five seven dash two six dash five seven three four

1.6 Numbers used in product names

The way of reading varies by cipher.

Example	Expansion
LS1234	L S twelve thirty four
F-306	F three oh six

2. Date

Date is read in the order of month, day, year.

Example	Expansion
98/12/01	December first ninety eight
Sept. 11, 2004	September eleventh two thousand four
Mon, the 1st of May.	Monday, the first of May.
4-'03	April two thousand three

3. Time

Time is read in the order of hour, minute, second, and time related words.

Example	Expansion
01:12:34	one twelve and thirty four seconds
01:12:34 EST,	one twelve and thirty four seconds Eastern Standard Time
01:12:34 am., e.s.t.,	one twelve and thirty four seconds A M, Eastern Standard Time

4. Currency

Currency units are read according to singular or plural form.

Example	Expansion
\$10.09	ten dollars and nine cents
\$10.5	ten point five dollars
\$10.12US	ten point one two U S dollars
\$US10.50	ten point five zero U S dollars

5. E-Mail & URI

5.1 E-Mail

Example	Expansion
myid@my.com	myid at M Y dot com
mduerst@ifi.unizh.ch	mduerst at ifi dot U N I Z H dot C H

5.2 URI

Example	Expansion
http://www.voiceware.co.kr	H T T P W W W dot voiceware dot co dot kr
ftp://ds.internic.net/rfc/	F T P D S dot internic dot net slash R F C slash

6. Telephone Number

Telephone numbers are read in the order of nation number, regional number, telephone exchange number, subscriber number and extension number digit by digit.

Example	Expansion
1 800 260 2650	one, eight hundred, two six oh, two six five oh
02.3016.8541	oh two, three oh one six, eight five four one
02.3016.8541 Ext. 15	oh two, three oh one six, eight five four one, extension one five
Call me at 337-4291	Call me at three three seven, four two nine one

7. Social Security Number

It is read digit by digit.

Example	Expansion
157-26-5734	one five seven dash two six dash five seven three four
690823-2274321	six nine oh eight two three dash two two seven four three two one
12-1234567	one two dash one two three four five six seven

8. Mathematics Operator

The basic operators used in arithmetic are read differently according to their usages.

Example	Expansion
$1 + 5 = 6$	one plus five equals six
$2 * 6 = 12$	two times six equals twelve
$1 - 90^{\circ}\text{C}.$	one dash ninety degrees celsius
$1 - \frac{3}{5}$	one minus three fifths
95 mile/h	ninety five mile per hour
$3 \frac{3}{4}$	three and three quarters

9. Measure

It expands abbreviations used as measure through analyzing neighboring context.

Example	Expansion
t^4	ton to the forth
l/m^2	liter per square meter
$1\text{kg} + 35g$	one kilogram plus thirty five grams
$18^{\circ} f$	eighteen degrees Fahrenheit
The length is $10m.$	The length is ten meters.

10. Address

Addresses are read in the order of Primary Street, Secondary Street, Post-Office Box, City, State & Zip-code.

It follows the U.S. and Canadian address reading method.

Example	Expansion
2381 Dutch Fork Rd. Chapin, SC 29036	twenty three eighty one Dutch Fork Road, Chapin, South Carolina, two nine oh three six
2005 Pan Am Cir Ste. 800 Tampa, FL 33607	twenty oh five Pan Am Circle Suite eight hundred, Tampa, Florida, three three six oh seven
Voice Response, Inc. One Corporate E. 1910 E. Kimberly Pl. Montreal , QC L7C 4P8	Voice Response, Incorporated One Corporate E. nineteen ten East Kimberly Place Montreal , Quebec L seven C four P eight

11. Title & Person Name

Abbreviated title/name expands through analyzing neighboring context.

Example	Expansion
<i>Capt. Wm. O. Barnett</i>	Captain William O Barnett
Jill <i>St.</i> John lives on	Jill Saint John lives on
<i>2nd Lt. Jas. Keil</i>	second Lieutenant James Keil

12. Symbols

Specific symbols' reading method is set by the neighboring context. 2 byte symbols have no ambiguities therefore they are read according to the symbols.

Example	Expansion
10 ~ 20	ten to twenty
3.5 > 2.5	three point five more than two point five
X ¹	X to the first
i	one
(a)	A

13. Abbreviations

Widely used abbreviations or abbreviations without ambiguity on expansion always expand regardless of the context.

Example	Expansion	Example	Expansion
bldg	Building	c.f	compare
corp	corporation	vs	versus