Language Manual

North American Spanish

Rosa

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Rosa
Latin American Spanish
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1 General

This document discusses certain aspects of text-to-speech processing for the text-to-speech system, in particular the different types of input characters and text that are allowed.

This version of the document corresponds to the High Quality voice Rosa.

2 Letters in orthographic text

Characters from **A-Z** and **a-z** as well as “ñ, Ñ, á, é, í, ó, ú, ü” may constitute a word. Certain other characters are also considered as letters, notably those used as letters in other European languages, i.e. “è, õ, å”. These letters are not pronounced as in their native languages though, they are pronounced as regular “u, e, o, a” etc.

Characters outside of these ranges, i.e. numbers, punctuation characters and other non-alphanumeric characters, are not considered as letters.

3 Punctuation characters

Punctuation marks appearing in a text affect both rhythm and intonation of a sentence. The following punctuation characters are permitted in the normal input text string:
, : ; “ ” . ¿ ? ¡ ! ( ) { } [ ]'

3.1 Comma, colon and semicolon

Comma < **,** >, colon < **:** > and semicolon < **;** > cause a brief pause to occur in a sentence, accompanied by a small rising intonation pattern just prior to the character.

3.2 Quotation marks

Quotes < **“ ”** > appearing around a single word or a group of words cause a brief pause before and after the quoted text.

3.3 Full stop

A full stop < **.** > is a sentence terminal punctuation mark which causes a falling end-of-sentence intonation pattern and is accompanied by a somewhat longer pause. A full stop may also be used as a decimal marker in a number (see chapter 5) and in abbreviations (see chapter 8).

3.4 Question mark

A closing question mark <**?**> ends a sentence and causes question-intonation, first rising and then falling.

3.5 Exclamation mark

The closing exclamation mark <**!**> behaves in a similar manner to the full stop, causing a falling intonation pattern followed by a pause.

3.6 Parentheses, brackets and braces

Parenthesis < **( )** >, brackets < **[ ]** > and braces < **{ }** > appearing around a single word or a group of words cause a brief pause before and after the bracketed text.

4 Other non-alphanumeric characters

4.1 Non-punctuation characters

The characters listed below are processed as non-letter, non-punctuation characters. Some are pronounced at all times and others are only pronounced in certain contexts, which are described in the following sections of this chapter.

Symbol	Reading
/	barra
+	más
$	dólar
£	libra
€	euro
¥	yen
<	menor que
>	mayor que
%	por ciento
^	acento circunflejo
|	barra vertical
~	tilde
@	arroba
=	igual
²	See below
³	See below
-	See below
*	See below

Table 1 Non-punctuation characters

4.2 The ² and ³ signs

The reading of expressions with ² and ³ is:

Expression	Reading
mm²	milímetros cuadrados
cm²	centímetros cuadrados
m²	metros cuadrados
km²	kilómetros cuadrados
mm³	milímetros cúbicos
cm³	centímetros cúbicos
m³	metros cúbicos
km³	kilómetros cúbicos

4.3 Symbols whose pronunciation varies depending on the context

4.3.1 Hyphen

A hyphen < **-** > is pronounced “menos” if it is part of a mathematical expression. In certain date formats, in between days or years, the hyphen is pronounced “a”. In other cases the hyphen is never pronounced.

Expression	**Reading**
44-3	44 guión 3
44-3=41	44 menos 3 son 41
Enero 12-14	enero 12 a 14
Feb 6-10	febrero 6 a 10
1998-2004	mil novecientos noventa y ocho a dos mil cuatro
02-02-2002	dos de febrero de dos mil dos
ex-ministro	ex ministro

4.3.2 Asterisk

Asterisk < ***** > is pronounced “multiplicado por” if enclosed by digits. In other cases it is pronounced “asterisco”.

Expression	**Reading**
2*3	dos asterisco tres
2*3=6	2 multiplicado por 3 son 6
*bc	asterisco b c

5 Number processing

Strings of digits that are sent to the text-to-speech converter are processed in several different ways, depending on the format of the string of digits and the immediately surrounding punctuation or non-numeric characters. To familiarise the user with the various types of formatted and non-formatted strings of digits that are recognised by the system, we provide below a brief description of the basic number processing along with examples. Number processing is subdivided into the following categories:

Full number pronunciation
Leading zero
Decimal numbers
Currency amounts
Ordinal numbers
Arithmetic operators
Mixed digits and letters
Time of day
Dates
Phone numbers

5.1 Full number pronunciation

Full number pronunciation is given for the whole number part of the digit string.

Example

2425	full number
2.425	full number
24,25	24 is a full number, 25 is the decimal part

Numbers denoting thousands, millions and billions (numbers larger than 999) may be grouped using space or full stop (not comma). In order to achieve the correct pronunciation the grouping must be done correctly.

The rules for grouping of numbers are the following:

- Numbers are grouped in groups of three starting from the end.
- The first group in a number may consist of one, two, or three digits.
- If a group, other than the first, does not contain exactly three digits, the sequence of digits is not interpreted as a full number.
- The highest number read is 999999999999 (twelve digits). Numbers higher than this are read as separate digits.

Number	**Reading**
2580	dos mil quinientos ochenta
2 580	“
2.580	“
25800	veinticinco mil ochocientos
25 800	“
25.800	“
2580350	dos millones quinientos ochenta mil trescientos cincuenta
2 580 350	“
2.580.350	“
1000000000	mil millones
123456789012	ciento veintitrés mil cuatrocientos cincuenta y seis millones setecientos ochenta y nueve mil doce
2123456789012	dos uno dos tres cuatro cinco seis siete ocho nueve cero uno dos

5.2 Leading zero

Numbers that begin with 0 (zero) are read as a zero followed by the number read as a whole.

Number	**Reading**
09253	cero nueve mil doscientos cincuenta y tres
020	cero veinte

5.3 Decimal numbers

Comma or full stop may be used when writing decimal numbers.

The full number part of the decimal number (the part before comma or full stop) is read according to the rules in 5.1. If the decimals (the part after comma or full stop) are more than three, the decimal part is read as separate digits. Note: A number containing full stop followed by exactly three digits is not read as a decimal number but as a full number, following the rules in 5.1.

Number	**Reading**
16,234	dieciséis coma doscientos treinta y cuatro
3,1415	tres coma uno cuatro uno cinco
1251,04	mil doscientos cincuenta y uno coma cero cuatro
1.251,04	mil doscientos cincuenta y uno coma cero cuatro
2,50	dos coma cincuenta
2.50	dos punto cincuenta
3.141	tres mil ciento cuarenta y uno

5.4 Currency amounts

The following principles are followed for currency amounts:

- Numbers with zero or two decimals preceded or followed by the currency markers **£, $, ¥** or **€** are read as monetary amounts.
- Numbers with zero or two decimals followed by the words “peseta”, “pta”, “libra”, “dólar”, “yen” or “euro” (singular or plural) are read as monetary amounts.
- Accepted decimal markers are comma and full stop**.**
- No spaces are allowed in the number.
- The decimal part (consisting of two digits) in monetary amounts is read as “y nn peniques” and “y nn céntimos”.
- If the decimal part is “00” it will not be read.

Example	**Reading**
$15.00.	quince dólares
15.00£.	quince libras
15.00 euros.	quince euros
€ 200.50	doscientos euros y cincuenta céntimos
1.000.000 **¥**	un millón de yenes

There is also the possibility of writing large amounts as follows:

$ 1 millón	un millón de dólares

5.5 Ordinal numbers

Numbers are read as ordinals in the following cases:

- The number "1" is followed by a month name or one of the month name abbreviations. (The particle "de" can be included between the number and the month name or abbreviation.) The number may be preceded by a day. Examples: 1 enero, 1 de enero, jueves 1 feb., jueves 1 de feb.
- The number is "1er, 3er".
- The number is followed by "o, a, °, ª". Examples: 2o, 3a, 4ª, 5°.

Valid abbreviations for months: ene, feb, abr, jun, jul, set, sept, oct, nov and dic.

5.6 Arithmetic operators

Numbers together with arithmetical operators are read according to the examples below.

Expression	**Reading**
-12	menos doce
+24	más veinticuatro
2*3=6	dos multiplicado por tres son seis
2*3	dos asterisco tres
2/3=0.67	dos dividido por tres son cero punto sesenta y siete
2/3	dos tercios
25%	veinticinco por ciento
3,4%	tres coma cuatro por ciento

5.7 Mixed digits and letters

If a letter appears within a sequence of digits, the groups of digits will be read as numbers according to the rules above. The letter marks the boundary between the numbers. The letter will also be read. Examples:

Expression	**Reading**
77B84Z3	setenta y siete B ochenta y cuatro Z tres
0092B87-B	cero cero noventa y dos B ochenta y siete B

5.8 Time of day

The colon is used to separate hours, minutes and seconds.

Possible patterns are:

a) **hh:mm (or h:mm)**

b) **hh:mm:ss (or h:mm:ss)**

c) **hh (or hh-hh)**

h = hour, m = minute, s = second.

In pattern a): If the "mm"-part is equal to "00", this part will not be read. This pattern can be preceded or followed by time indications such as "A.M., AM, P.M., or PM". The abbreviations "h" and "h." can follow the pattern. A "y" will be inserted before the "mm"-part.

In pattern b): After the "hh"-part "horas" will be added. A "y" will be inserted before the "mm"-part, and "minutos" will be added after it. After the "ss"-part, "segundos" will be added. If the "ss"-part is equal to "00", this part will not be read. This pattern can be preceded or followed by time indications such as "A.M., AM, P.M., or PM".

In pattern (c) the hours can appear alone but must be preceded or followed by time indications such as "A.M., AM, P.M., or PM". They can also appear in a time range and must then be followed by a time indication. Examples: "10 h.","10-11 AM".

5.9 Dates

The valid formats for dates are:

1. dd-mm-yyyy, dd.mm.yyyy, and dd/mm/yyyy
2. dd-mm-yy, dd.mm.yy, and dd/mm/yy

"**yyyy**" is a four-digit number, **"yy"** is a two-digit number, "**mm**" is a month number between 1 and 12 and "**dd**" a day number between 1 and 31.

Hyphen, full stop, and slash may be used as delimiters.

In all formats, one or two digits may be used in the "mm" and "dd" part. Zeros may be used in front of numbers below 10.

Examples of valid formats and their readings:

Type 1:	dd-mm-yyyy, dd.mm.yyyy, and dd/mm/yyyy		
10-02-2003	or	10-2-2003	diez de febrero de dos mil tres
10.02.2003	or	10.2.2003	"
10/02/2003	or	10/2/2003	"

Type 2:	dd-mm-yy, dd.mm.yy, and dd/mm/yy		
10-02-03	or	10-2-03	diez de febrero de dos mil tres
10.02.03	or	10.2.03	"
10/02/03	or	10/2/03	"

Ranges of days and years are also supported.

Examples:

1998-1999	mil novecientos noventa y ocho a mil novecientos noventa y nueve
1939-45	mil novecientos treinta y nueve a cuarenta y cinco
2002/3	dos mil dos a tres
14-15 enero	catorce a quince de enero
abril 2-3	abril dos a tres

Other possible formats include :

- Lunes, 15 de enero
- Jueves, 30 de abril de 1999
- 3 de mayo de 1953

5.10 Phone numbers

In this section the patterns of digits that are recognised as phone numbers are described. In the pronunciation of phone numbers each group of digits is read as a full number (see also Leading zero section 5.2) with pauses between groups of numbers. Groups that contain more than three digits are read out digit by digit.

5.10.1 Ordinary phone numbers

Sequences of digits in the following formats are treated as phone numbers.

The following sequences of digits can be separated by a space or a hyphen:

- xxx xxxxxx
- xxx xxxxx
- xxx xxx xxxx
- xxx xxx xxx
- xxx xxx xx xx
- xxx xxx xx
- xx xxx xxxx
- xx xxx xxx
- xx xxx xx xx

The following sequences can only appear in these formats:

- (xxx) xxx-xxxx
- xx- xxx xxx
- xx- xxx-xxx
- xx- xxx-xx-xx
- xx- xxx xx xx

5.10.2 International phone numbers

International phone numbers follow the pattern below:
International Prefix + Country code + space or hyphen + Local number

International prefix: “00” or “+”
Country code: 1-3 digits
Local number: 8-10 digits

Examples:

0034 (971) 123-4567
0034 971 123456
001 21- 123-45-56

6 How to change pronunciation errors

Words that are not pronounced correctly by the text-to-speech converter can be entered in the user lexicon (see User's guide). In this lexicon, the user enters a phonetic transcription of the word (see chapter 7). Phonetic transcriptions can also be entered directly in the text, using a PRN or PRX tag (see User's guide).

7 Latin American Spanish Phonetic Text

The Latin American Spanish text-to-speech system uses the Latin American Spanish subset of the SAMPA phonetic alphabet (Speech Assessment Methods Phonetic Alphabet) and includes some additional allophones. The symbols are written with a space between each phoneme.

Only the symbols listed here may be used in phonetic transcriptions. Symbols not listed here are not valid in phonetic transcriptions and will be ignored if included in the user lexicon or in a PRN or PRX tag.

7.1 Consonants

7.1.1 Symbols for the Latin American Spanish consonants

Symbol	Word	Phonetic text	Comments
p	pala	/ p a1 l a /	Voiceless bilabial plosive
t	tela	/ t e1 l a /	Voiceless dental plosive
k	cala	/ k a1 l a /	Voiceless velar plosive
b	bala	/ b a1 l a /	Voiced bilabial plosive
d	dar	/ d a1 r /	Voiced dental plosive
g	gala	/ g a1 l a /	Voiced velar plosive
m	mala	/ m a1 l a /	Voiced bilabial nasal
n	nada	/ n a1 D a /	Voiced alveolar nasal
nt	antes	/ a1 nt t e s /	Nasals before a dental
nc	concha	/ k o1 nc tS a /	Nasals before a palatal
M	ánfora	/ a1 M f o r a /	Nasals before a labiodeltal
N	hongo	/ o1 N g o /	Nasal before a velar
J	caña	/ k a1 J a /	Voiced palatal nasal
tS	chico	/tS i1 k o /	Voiceless palatal affricate
f	falso	/ f a1 l s o /	Voiceless labiodental fricative
s	sala	/ s a1 l a /	Voiceless alveolar fricative
z	mismo	/m i1 z m o /	/s/before a voiced phoneme
st	pasta	/ p a1 st t a /	/s/ before a voiceless dental
sd	desde	/ d e sd d e /	/s/ before a voiced dental
sr	Israel	/ i sr rr a e1 l /	/s/ before a “vibrante”
r	caro	/ k a1 r o /	“Vibrante” alveolar simple
rr	carro	/ k a1 rr o /	“Vibrante” alveolar multiple
l	la	/l a1 /	Voiced alveolar lateral
lt	alto	/ a1 lt t o /	/l/ before a dental
lc	colcha	/ k o1 lc tS a /	/l/ before a palatal
x	jamón	/ x a m o1 n /	Voiceless velar fricative
dZ	hielo	/dZ e1 l o /	Voiced palatal plosive
jj	ayer	/ a jj e1 r /	Palatal approximant
j	miedo	/ m j e1 D o /	Palatal glide
w	cuento	/ k w e1 nt t o /	Labiovelar glide
W	hueso	/ W e1 s o /	Voiced labial velar approximant
B	lava	/ l a1 B a /	Voiced bilabial approximant
D	cada	/ k a1 D a /	Voiced dental approximant
G	lago	/ l a1 G o /	Voiced velar approximant
Bh	objetivo	/o Bh x e t i1 B o /	/B/ before a voiceless phoneme
Dh	adjetivo	/a Dh x e t i1 B o /	/D/ before a voiceless phoneme
Gh	zigzag	/s i Gh s a1 G /	/G/ before a voiceless phoneme

Table 2 Latin American Spanish consonants

7.2 Vowels

7.2.1 Symbols for the Latin American Spanish vowels

Symbol	Word	Phonetic text	Comment
i	tila	/t i1 l a /	Front close vowel
e	tela	/t e1 l a /	Front mid vowel
a	tal	/t a1 l /	Central open vowel
o	todo	/t o1 D o /	Back mid rounded vowel
u	tul	/t u1 l /	Back close rounded vowel

Table 3 Latin American Spanish vowels

7.3 English sounds

7.3.1 Symbols for English sounds

Symbol	Word	Phonetic text	Comment
S	shop	/S A1 p/	English consonant
v	festival	/f e1 s t I v I/	English consonant
T	Smith	/ s m I1 T /	English consonant
R	Green	/ g R i1 n /	English consonant
Th	this	/ Th I1 s /	English consonant
Z	rouge	/ R u1 Z /	English consonant
h	happy	/ h {1 p i /	English consonant
A	talkshow	/t A k S o1 w/	English vowel
{	Standard	/s t { n d @ d /	English vowel
@	Edward	/e1 d w @ d/	English vowel
I	Minneapolis	/m I n i {1 p @ l I s/	English vowel
r=	Worth	/w r=1 T /	English vowel
V	Company	/k V1 m p @ n i/	English vowel

Table 4 Latin American Spanish vowels

7.4 Lexical stress

In words with more than one syllable, one (and normally only one) of the syllables is more prominent than the others. This is referred to as word stress, or lexical stress. Words of one syllable also have word stress when spoken in isolation, although many may lose the stress in certain contexts. For the correct pronunciation of a word, it is important to include the symbol marking the word stress.

In the phonetic transcriptions the word stress is indicated by the symbol "1" placed directly after the stressed vowel (with no space between the vowel symbol and the stress symbol).

7.5 Pause

An underscore < _ > in a phonetic transcription generates a small pause.

8 Abbreviations

In the current version of the Latin American Spanish text-to-speech system, the abbreviations in table 4 below are recognised in all contexts. These abbreviations are mostly case-insensitive (except for those indicated below by "*") and require no full stop in order to be recognised as an abbreviation.

As previously mentioned, there are also abbreviations for the month names.

Abbreviation	Reading
cía (or cia)	compañía
Exc	Excelencia
RENFE*	Red Nacional de los Ferrocarriles Españoles
SA*	Sociedad Anónima
sr	señor
srs	señores
sres	señores
sra	señora
srta	señorita
TVE*	Televisión Española
ud (or vd)	usted
uds (or vds)	ustedes
cl	centilitros
cm	centímetros
cts	centavos
dcha	derecha
dl	decilitros
dm	decímetros
dupdo	duplicado
etc	etcetera
izda	izquierda
kg	kilogramos
km	kilómetros
lic	licenciado
mg	miligramos
ml	mililitros
min	minutos
mm	milímetros
n°	número
orig	original
pral	principal
prov	provincia
tel	teléfono
°C *	grados celsius
°K *	grados kelvin
°F *	grados fahrenheit
apdo	apartado
av (or avda)	avenida
dr	doctor
dra	doctora
esq	esquina
gob	gobierno
gral	general
ing	ingeniero
núm	número
pág	página
prof	profesor
profa	profesora
vol	volumen
NIF*	Número de Identificación Fiscal
am (or a.m.)	de la mañana

pm (or p.m.)	de la tarde

Table 5 Abbreviations

9 Web-addresses and email

Web-addresses and email-addresses are read as follows:

- "www" is read as three w's spelled letter by letter.
- Full stops are read as "punto", hyphens as "guión", underscore ("_") as "guión bajo", slash ("/") as "barra".
- "es, uk, fr" and all the other abbreviations for countries are spelled out letter by letter.
- The "@" is read "arroba" .
- Words/strings (including "org", "com" and "edu") are pronounced according to the normal rules of pronunciation in the system and in accordance with the lexicon.

String	**Reading**
www.babeltech.com	w w w punto babeltech punto com
http://www.babeltech.com	h t t p dos puntos barra barra w w w punto babeltech punto com
garcia@yahoo.es	garcia arroba yahoo punto e s
ana_garcia@yahoo.es	ana guión bajo garcia arroba yahoo punto e s