

Technology Standards and Resources for Computing in Dzongkha

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This document governs the following Bhutanese **technology standards** pertaining to the use of Dzongkha within computer environments:

- A. Character Encoding Standard for Dzongkha Materials.
- B. Standardised Keyboard Layout for Typing in Dzongkha.
- C. Dzongkha Locale and Culture Information for the Kingdom of Bhutan.

Various **resources** for computing in national standard Dzongkha are being published concurrently with this document, including but not limited to:

- 1. Guide to determining the root letter when machine sorting Dzongkha.
- 2. Converter from common legacy formats to Unicode.
- 3. Dzongkha keyboard that installs within Microsoft Windows.
- 4. Dzongkha system font in Tsuyig style ("Tashi").
- 5. Dzongkha document font in typical Bhutanese style ("Wangdi").
- 6. Dzongkha document font in Tsuyig style ("Tsuyig").

These technology standards and resources represent outcomes of the Royal Government of Bhutan's *Information Technology Transfer Programme: the development of Unicode tools for computing in Dzongkha*, cooperation between the Dzongkha Development Authority, the Orient Foundation (UK), and the Department of Information Technology.

The Technology Standards

A. Character Encoding Standard for Dzongkha Materials.

It is in the interest of the Kingdom to gradually move away from proprietary, limited and mutually incompatible character encoding schemes that have characterized the use of Dzongkha in computer environments up to now. Therefore, to encourage the use of a single common Dzongkha encoding system across all computer platforms in Bhutan and to facilitate the interchange of digital data between Bhutan and the international community, Bhutan has adopted the Universal Character Set (UCS) as the standard character encoding for Dzongkha materials. The applicable standards are ISO/IEC 10646 (Basic Multilingual Plane) and Unicode.

B. Standardised Keyboard Layout for Typing in Dzongkha.

The standardised keyboard layout for Dzongkha was designed by the Dzongkha Development Authority following consultation with all the major Dzongkha users and the Department of Information Technology. In addition to the normal keyboard state, three further shift states are defined for Shift, Alt+Ctrl and Alt+Ctrl+Shift..

Normal:

མ	།	འ	ཡ	ལ	༥	༦	༧	༨	༩	༠	༡	༢	Backspace
Tab	ཀ	ཁ	ག	ང	འི	འུ	འོ	འོ	ཅ	ཆ	ཇ	ཉ	མ
Caps	༣	ཐ	ད	ན	པ	ཕ	བ	མ	ཙ	ཛ	ཞ	ཟ	Return
Shift	༤	༥	༦	༧	༨	༩	༠	༡	༢	༣	༤	༥	Shift
Control	Alt											Alt	Control

Shift:

༣	༥	༦	༧			༩	༠	༡	༢	༣	༤	༥	Backspace
Tab	ཀ	ཁ	ག	ང	འི	འུ	འོ	འོ	ཅ	ཆ	ཇ	ཉ	མ
Caps	༣	ཐ	ད	ན	པ	ཕ	བ	མ	ཙ	ཛ	ཞ	ཟ	Return
Shift	༤	༥	༦	༧	༨	༩	༠	༡	༢	༣	༤	༥	Shift
Control	Alt	S P										Alt	Control

Alt+Ctrl:

༣	1	2	3	4	5	6	7	8	9	0	-	=	Backspace
Tab	༣	༥		༩	༠	༡	༢	༣	༤	༥	[]	\
Caps	༣	ཐ	ད	ན	༥	༦	༧	༨	༩	༠	༡	༢	Return
Shift		༥	x	༩	༠	༡	༢	༣	༤	༥	/		Shift
Control	Alt											Alt	Control

Alt+Ctrl+Shift:

༣	!	@	#	\$	%	༥	&	*	()	-	+	Backspace
Tab				༩			༩	༠	༡	༢	༣	༤	༥
Caps	༣	ཐ	ད	ན	༥	༦	༧	༨	༩	༠	༡	༢	Return
Shift		༥	*	༩	༠	༡	༢	༣	<	>	?		Shift
Control	Alt											Alt	Control

Although not required, so as to avoid conflict with common keyboard shortcuts it is recommended that there be an alternate way to invoke the Alt+Ctrl layout and the

Alt+Ctrl+Shift layout (such as by additionally assigning these keyboard layout shift states to Caps and Caps+Shift, respectively).

C. Dzongkha Locale and Culture Information for the Kingdom of Bhutan.

The locale and culture information for Dzongkha-Bhutan was compiled by the Dzongkha Development Authority in consultation with major computer vendors and language experts. Dzongkha (also known as Bhutani) is recognized as a distinct language/culture within ISO 639 under the language codes "dz" and "dzo". Various international technology standards (such as SGML/HTML/XML) incorporate ISO 639 by reference.

Dzongkha Locale and Culture Information is available given here www.dit.gov.bt/dzongkha/locale_culture.pdf

The Resources

Although the resources for computing in Dzongkha are still in development and thus subject to occasional update, they are provided here in their current versions for the purpose of supporting a smooth transition to national standard Dzongkha across the Kingdom. These resources may be freely used and distributed. Users are encouraged to check back often for updated versions.

1. Guide to determining the root letter when machine sorting Dzongkha materials
www.dit.gov.bt/dzongkha/Determining_the_Root_Letter_when_Sorting_Dzongkha.pdf

2. Unicode converter
www.dit.gov.bt/dzongkha/converter.zip version number 1.04, size 2.15MB and posted on July 23, 2004.

3. Unicode keyboard package for standardised Dzongkha keyboard layout
www.dit.gov.bt/dzongkha/keyboard_installer.zip

4. Unicode Dzongkha system font in Tsuyig style
www.dit.gov.bt/dzongkha/dzongkha_font_xtashi.zip , size 548KB, posted on 16/11/2004.

5. Unicode Dzongkha document font in typical Bhutanese style
www.dit.gov.bt/dzongkha/dzongkha_font_wangdi.zip , size 320KB, posted on 16/11/2004.

6. Unicode Dzongkha document font in Tsuyig style
www.dit.gov.bt/dzongkha/dzongkha_font_tsuyig.zip , size 548KB, posted on 16/11/2004.