

Rules and steps to make an OpenType font + MSKLC

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Glyph Repertoires/Set

- Set of glyphs needed to provide expected font functionality for shaping and display of script(s) supported by the font.

What drives the glyph repertoire?

Answers to questions like:

- What does the font expect to achieve?
- Where is it expected to be used? (desktop, mobile devices, etc.)
 - UI?
 - Application or text?
 - Headline or display?

Fonts are used for various purposes:

UI fonts on Windows tend to have a larger set of constraints/restrictions compared to application fonts:

Need to be legible at small point sizes (8pt, 13ppem, 96dpi)

A design challenge because they need to retain only the 'essence' of character shapes— all frills are a no-no.

What drives the glyph ... (cont.)

- Is there a shaping engine or technology, that the glyphs depend on?
- Are there any basic shaping requirements?

A font that meets basic requirements

- Contains least amount of glyphs
- Some cases does not reflect high end type design and typography

A font for high end typography

- Will most likely not have just a minimal glyph set
- Will require more time to build.

Don't forget ... \$ # @ ¶ ◦ &

All complex script fonts for Windows also need to have

- Format characters necessary for the functioning of script(s) supported by the font. (dotted circle, NBSP etc.)
- Basic characters from other scripts expected to be partially supported: Dollar sign, non-digit signs like %, digits etc.
- <http://www.microsoft.com/typography/otfntdev/glyphs.htm>

A set of glyphs like the WGL4 is not applicable to all complex script fonts.

This makes glyph sets flexible enough for the designer, but it also means that the designer is responsible for making sure that the font displays well.

Steps for making OpenType fonts

- Planning
- Design
- Test
- Add OpenType Layout tables
- Test
- Hinting
- Final testing
- Digital signing

Planning

- Use a spreadsheet
 - Plan glyph repertoire
 - Identify Unicode values, glyph descriptions and PostScript names
- Include suggested glyphs
- Helpful URLs
 - http://www.microsoft.com/typography/otfn_tdev/glyphs.htm
 - <http://www.unicode.org/charts>

Design

- Use good tool, like FontLab
- Complete glyph repertoire for your script/language(s)
- Be consistent
- Make sure extremes are marked

Design - Outlines

- Use guidelines to keep heights consistent
- Overlaps used for connecting scripts (70 units @ 2048 em on trailing edge)
- Generate composite glyphs when possible

Design - Measurements

- Keep track of alignment heights and stroke widths. Use those values later for CVT values when hinting the font.
- Helpful URLs
 - <http://www.fontlab.com>
 - <http://www.microsoft.com/typography/specs/default.htm>

Development Testing

- Use Font Validator and KoalaT
 - Verify glyph repertoire is complete
 - Make sure outlines are in correct winding direction and marked correctly
 - Check font metrics are correct
 - Make sure font installs, displays and prints correctly
- Helpful URLs
 - <http://www.microsoft.com/typography/creators.htm>

OpenType Tables

- Use VOLT
- Use the OpenType specifications for required features and processing order for your script/language
- Make glyph groups, then lookups, then writing system and features.

OpenType Tables (continued)

- Wait on final GPOS until after font is hinted
- Helpful URLs
 - <http://www.microsoft.com/typography/developers/volt/default.htm>
 - <http://www.microsoft.com/typography/specs/default.htm>

Development Testing

- Verify OpenType tables are complete and shaping works as designed
 - Create relative test cases.

Hinting

- If using VTT
 - Open font in VTT and choose “Prepare Font” when starting for the first time
 - Enter CVT values by measuring with VTT tool or using measurements you took when designing the font.
- Helpful URLs
 - <http://www.microsoft.com/typography/tools/vtt.htm>

Final Testing

- Run font through CacheTT to calculate correct metrics.
- Run font through Font Validator to catch hinting errors
- Test font on screen as well as printing samples
- Helpful URLs
 - <http://www.microsoft.com/typography/creators.htm>

FAQs about keyboards

- Does Microsoft make these layouts up?
- How do I add every glyph for my language?
- Don't I need an IME for Tamil (Arabic, Hindi, Thai, etc.)?
- How do I replace the layout for my language if I do not like the one provided?
- How do I add my own keyboard layout?

Microsoft Keyboard Layout Creator

- Create new keyboard layouts:
 - Brand new layouts
 - Modified from existing keyboards
- Deploy the created keyboard layout to NT4, Win2000, WinXP, or Win Server 2003 machines
- Save the definition of the keyboard for later development

Microsoft Keyboard Layout Creator

- *Demo*

Thank you!
Any questions?