



Adobe[®] SING Technology

*Solving the missing
character problem*

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Agenda

- **Why SING?**
- **What is the gaiji problem & why is it global?**
- **How does SING solve it?**
- **Pieces of SING architecture/workflow**
- **SING present and future**



What are gaiji?

- Characters and/or glyphs that are legal, but not in desired font
- Ideographic (CJK) gaiji
 - Historical variants, personal names, new characters
 - 50,000 characters in kanji dictionary, only 8,000-25,000 in fonts
 - Ideographic writing systems fundamentally *open-ended*
 - But unavailable desired characters arise in all writing systems



Problem we're solving

- **Open-ended ideographic languages**
 - Variant forms of characters
- **Additional characters**
- **Users often want glyphs for specific fonts**
- **Must maintain glyphs through workflow**
- **Customized fonts are problematic**
 - Have to be carefully distributed
 - Most type vendors do not allow third-party modifications to their fonts
- **= huge customer problem!**



More uses for SING

- **Western languages have “gaiji” too**
 - New currency symbols (euro, hryvnia, etc.)
 - Add company logo to corporate ID fonts
 - Add other special symbols as needed
 - Extend fonts a glyph at a time without cracking open original fonts



Examples

辺邊邊邊邊邊邊邊邊邊邊邊
邊邊邊邊邊邊邊邊

岡 岡

1913
Personal name "oka"

2004

€ ₴

1997
*euro
currency*

2005
*hryvnia
currency*



Design goals of SING

- **Use OpenType as basis**
- **Maintain Unicode character/glyph model**
 - Can use Unicode PUA, but don't rely on it
- **Allow font vendors to have gaiji business**
- **Allow end users to add glyphs to fonts**
- **Extensibility**
 - Spec includes TrueType as well as OpenType CFF
- **Assume that 10,000-40,000 gaiji could be typical**
 - Reasonable performance up to 100,000



The SING solution for gaiji

- **SING glyphlets**
- **SING and Tin libraries**
- **Glyphlet management**
- **Glyphlet creation**



SING Glyphlets

- **SING: Smart INdependent Glyphlets**
- **“Single-glyph” font files**
 - Glyphlets (could have been “fontlets”)
 - May actually contain up to three glyphs
 - .notdef
 - horizontal glyph
 - potentially a vertical variant as well
- **Smart**
 - Contain metadata (character & glyph properties)
 - Based on OpenType format
 - GSUB/GPOS relationships for alternate glyphs
- **Independent**
 - Glyphlets used always embedded in docs
 - 1-4K each



SING Glyphlets

- **Built on existing standards**
- **SING glyphlet = very small OpenType font**
 - Omits several tables, including 'name', OS/2
 - Like SVG's CEF format
 - Glyphlet not directly usable as stand-alone font
 - Adds 'SING' & 'META' tables to hold metadata
 - Metadata format based on XMP
 - Refers to Unicode and CID character set standards
 - Lossless conversion to XML form and back



SING Glyphlets

- **Glyphlets can**
 - Be either font-specific or generic
 - Be added to a parent font
 - Be a new character
 - Be a variant of an existing character
 - Replace an existing character as the default
 - Be added to a generic “extra glyphlets” font



Making Glyphlets

- **Glyphlet Developers Kit (GDK)**
 - Command-line toolkit, no-charge license
 - Suitable for large-scale glyphlet production
 - Already used by Japanese type developers
- **Glyphlet Creation Tool (GCT)**
 - Illustrator CS2 plug-in
 - Ships with Creative Suite 2 in CJK versions
- **Future versions of various FontLab tools**



SING architecture and workflow

- **SING-savvy applications**
 - InDesign CS2 today
 - More in future
 - Applications need to actively be aware of SING
 - Glyphlets centralized, available to all SING savvy applications
- **Glyphlets must be embeddable (definition)**
- **Glyphlets always embedded in documents**
- **Output to print, PDF, EPS...**



SING today

- **Initial implementation functional, limited**
 - CID-keyed OT-CFF (Asian CCJK)
 - Only shipped with CCJK versions of InDesign CS2, Creative Suite CS2
- **Creative Suite 3: better version of same**



SING future: known

- **CS3 SING much like CS2 SING**
 - Stability improvements, bug fixes
- **Behind the scenes: more staff, more permanent staff (already in place)**



SING future: TBD in CS4 & beyond

- **Reasonably certain**
 - Augment TrueType
 - Augment name-keyed OpenType CFF
 - Huge performance improvement
 - 30x to 100x?
- **Adobe applications beyond InDesign?**
- **Support from IME vendors?**
- **SING for western applications?**
 - Usual western font formats will work in CS4
 - Promote it with western app versions?
 - Ship the Glyphlet Creation Tool & Adobe SING Glyphlet Manager with western app versions?



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