DVIPDFMx, an eXtension of DVIPDFM

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Dance with the Rachmaninov!

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What is DVIPDFMx?

- A DVI driver program generating PDF from DVI

$$\text{DVIPDFM}x \equiv \text{DVIPDFM} + x \text{ (eXtension)}$$

$$\text{DVIPDFM} \equiv \text{DVI} \xrightarrow{\text{to}} \text{PDF} + \text{M (Mark A. Wicks; 0.13.2c)}$$

- Combined project of
  - DVIPDFM-jpn by Shunsaku Hirata (Jun 2001)
  - DVIPDFM-kor by Jin-Hwan Cho (Nov 2001)

(patch!) $\Rightarrow$ DVIPDFM-cjk by Cho & Hirata (Mar 2002)

(independent!) $\Rightarrow$ DVIPDFMx (Oct 2002)

Why DVIPDFMx instead of pdfTeX?

- YES! The excellent and powerful TeX variant by Hàn Thế Thành

$$\text{pdfTeX} = \text{PDF} \xleftarrow{\text{to}} \text{TeX}$$

- Who needs DVI $\xrightarrow{\text{to}}$ PDF?
  - Those who do not have TeX sources or who want to hide TeX sources
  - Those who use TeX extensions: Omega or ASCII pTeX
  - Those who need HUGE character sets:

Chinese中國, Japanese日本, Korean韓國

or

Unicode

How to use CJK character sets in TEX?

1. Omega Ω

- 16-bit extension of TEX by John Plaice and Yannis Haralambous
- Not popular yet in CJK countries, why?
- Not supported by pdfTEX (Any volunteer?)
- Supported by DVIPDFM since July 2000 (version 0.13)
  - Can use only PK bitmap fonts for CJK character sets
  - ∵ Use subfont scheme in the font level!

$$\mathrm{OFM}[65536] \Rightarrow \mathrm{OVF}[65536] \Rightarrow \begin{cases} \mathrm{TFM}_1[256] \Rightarrow \mathrm{PK}_1[256] \\ \vdots \\ \mathrm{TFM}_n[256] \Rightarrow \mathrm{PK}_n[256] \end{cases}$$

How to use CJK character sets in TEX?

2. ASCII pTEX

- Localized extension of TEX by ASCII co. only for Japanese
- Dominant in Japan but useless in other countries
- Not supported by pdfTEX
- Supported by DVIPDFM-jpn since June 2001
  - from the W32TEX distribution by Akira Kakuto*
  - Implemented CID-keyed font architecture

*Requires Adobe Reader Japansese Language Pack!

How to use CJK character sets in TEX?

3. TEX with subfont scheme

- Can use original 8-bit TEX
- Many packages are available: ConTEXt, CJK-LATEX, HLATEX, etc.
  - Use subfont scheme in the TEX level!
- Can use pdfTEX but not enough for CJK character sets!
- Supported by DVIPDFM-kor since November 2001
  -  from 'Old Korean Characters Discussion Group' in KTUG
  - Implemented subfont scheme based on ttf2tfm, ttf2pk model

gbsnlp01, . . . , gbsnlp32 ⇒ gbsnlp@UBig5.sfd@

New Features of DVIPDFMx

1. 16-bit character sets by CID-keyed font and subfont scheme

- Samples typesetted with Omega, ASCII pTEX, and TEX
  - CJK Character Sets in One Document (Omega; by S. Hirata)
  - Ama no Kaguyama (ASCII pTEX; by S. Hirata)
  - Several Languages in One Document (CJK-LATEX; by J.-H. Cho)
- Possible to extract and search 16-bit characters
  - Impossible with both pdfTEX and DVIPDFM!

New Features of DVIPDFMx

2. PDF text strings in Unicode

- PDF Text Strings*
  - Used in text annotations, bookmark names, article names, document information, etc.
  - Must be encoded in either PDFDocEncoding (8-bit) or Unicode character encoding (16-bit)
- Support automatic conversion from CJK encodings to Unicode using a new TEX special: `\special{pdf:tounicode [CMapFile]}`

*PDF Reference, Third Edition, Version 1.4, p.98

New Features of DVIPDFMx

3. Font manipulation

- OpenType with PostScript outline (.otf) and TrueType outline (.ttc and .ttf)
- Support system fonts without embedding font data
  - CJK Character Sets in One Document, embedded 78.9K and non-Embedded 9.14K* (CJK-LaTeX; by J.-H. Cho)
- Bold, Italic, or BoldItalic style even if there is no font data for that style
  - Korean TrueType Fonts in MS-Windows with Three Styles† (HLaTeX; by J.-H. Cho)

*Requires simsun.ttc, mingliu.ttc, msmincho.ttc, batang.ttc in the operating system!
†Requires batang.ttc, gulim.ttc in the operating system!

New Features of DVIPDFMx

4. ConTEXt

- The ConTEXt driver 'spec-dpx.tex' is contained in the distribution of ConTeXt (Beta) since December 2002
- To generate a DVI file to be converted to PDF by DVIPDFMx,
  - either '`texexec --output=dvipdfmx foo`' in the command line
  - or '`\setupoutput[dvipdfmx]`' in the ConTEXt source
- Samples contributed by Lei Wang
  - Chinese Zodiac*
  - MetaPost Graphics with Chinese Characters
  - PDF Interaction with Chinese Characters

*Requires Adobe Reader Chinese Language Pack!

New Features of DVIPDFMx

5. Miscellanies

- Support PDF encryption*
  - New '-S' option in the command line
  - Key bits (40-128 bits) with '-K' option and Permission flag† with '-P' option
- Support different page size in one document‡ using the modified TEX special '`\special{pdf:pagesize width 8in height 12in}`'

*password: 1234
†PDF Reference, Third Edtion, Version 1.4, p.77
‡Actual size (<CTRL>+1) is required to view its effect easily

Future, Interest, and Hope

- Future
  - Font mapping files compatible to those of DVIPS!
  - Catch up with pdfTEX!
  - Become a companion of teTEX, fpTEX and then TEXShop!
  - Move to SourceForge.net!
- Interest
  - Subfont scheme in both pdfTEX and DVIPS?
  - CID-keyed font architecture in pdfTEX?
  - PS CID fonts in DVIPS? pdf-Omega? MetaPDF?
- Hope: Omega 3 solves EVERYTHING!?!?!?!?!?!?!?!?!?!?!?!?!?!?!?!?!?!?!?

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