## About upLATEX $2\varepsilon$

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This document provides a brief description of upLATEX  $2_{\varepsilon}$ , the Unicode version of Japanese pLATEX  $2_{\varepsilon}$ . This version is based on 'pLATEX  $2_{\varepsilon}$  Community Edition.'

ASCII pTEX is the most popular TEX engine in Japan and is widely used for a high-quality type setting, even for commercial printing. However, pTEX has some limit ations:

- The Character set available is limited to JIS X 0208, namely JIS level-1 and level-2
- Difficulty in handlign 8-bit Latin, due to legacy double byte Japanese encodings
- Difficulty in typesetting CJK (Chinese, Japanese and Korean) multilingual documents

To overcome these weak points, a Unicode extension of pTEX, upTEX, has been developed. The Unicode pLATEX format run on upTEX is called upLATEX. Current upLATEX is maintained by Japanese TEX Development Community, in sync with pLATEX community edition. The development version is available from GitHub repository. Any bug reports and requests should be sent to Japanese TEX Development Community, using GitHub Issue system.

<sup>1</sup>http://www.t-lab.opal.ne.jp/tex/uptex.html

<sup>&</sup>lt;sup>2</sup>https://texjp.org

<sup>3</sup>https://github.com/texjporg/platex

<sup>4</sup>https://github.com/texjporg/uplatex

#### 1 Introduction to this document

This document briefly describes upIATEX  $2_{\varepsilon}$ , but is not a manual of upIATEX  $2_{\varepsilon}$ . The basic functions of upIATEX  $2_{\varepsilon}$  are almost the same with those of pIATEX  $2_{\varepsilon}$  and IATEX  $2_{\varepsilon}$ , so please refer to the documentation of those formats.

For upTEX, please refer to the official website or [1] (in English).

This document consists of following parts:

- Section 1 This section; describes this document itself.
- Section 2 Brief explanation of extensions in upLaTeX  $2_{\varepsilon}$ . Also describes the standard classes and packages.
- **Section 3** The compatibility note for users of the old version of upIATFX  $2_{\varepsilon}$  or those of the original pIATFX  $2_{\varepsilon}$ /IATFX  $2_{\varepsilon}$ .
- **Appendix A** Describes DOCSTRIP Options for this document.
- **Appendix B** Description of 'upldoc.tex' (counterpart for 'source2e.tex' in LATEX  $2_{\varepsilon}$ ).
- **Appendix C** Description of a shell script to process 'upldoc.tex', etc.

## 2 About Functions of pL $^{4}$ T<sub>E</sub>X $2\varepsilon$

The structure of upLaTeX  $2_{\varepsilon}$  is similar to that of pLaTeX  $2_{\varepsilon}$ ; it consists of 3 types of files: a format (uplatex.ltx), classes and packages.

#### 2.1 About the Format

To make a format for upLaTeX, process "uplatex.ltx" with INI mode of  $\varepsilon$ -upTeX.<sup>5</sup> A handy command 'fmtutil-sys' (or 'fmtutil') for this purpose is available in TeX Live. The following command generates uplatex.fmt.

```
fmtutil-sys --byfmt uplatex
```

The content of uplatex.ltx is shown below. In the current version of uplateX, first we simply load latex.ltx and modify/extend some definitions by loading plcore.ltx (available from plateX) and uplcore.ltx.

 $_1$   $\langle *plcore \rangle$ 

<sup>&</sup>lt;sup>5</sup>Formerly both upTeX and  $\varepsilon$ -upTeX can make the format file for upI&TeX, however, it's not true anymore because I&TeX requires  $\varepsilon$ -TeX since 2017.

Temporarily disable \dump at the end of latex.ltx.

- $2 \left\lceil \frac{1}{2} \right\rceil$
- 3 \let\dump\relax

Load latex.ltx here. Within the standard installation of TeX Live, hyphen.cfg provided by "Babel" package will be used.

4 \input latex.ltx

```
Load plcore.ltx and uplcore.ltx.
```

Load font-related default settings, upldefs.ltx. If a file upldefs.cfg is found, then that file will be used instead.

In the previous version, we displayed upIATEX version on the terminal, so that it can be easily recognized during format creation; however \everyjob can contain any code other than showing a banner, so now disabled.

18 %\the\everyjob

```
Load uplatex.cfg if it exists at runtime of upLATEX 2_{\varepsilon}. (Counterpart of platex.cfg in pLATEX 2_{\varepsilon}.)
```

Dump to the format file.

```
27 \let\dump\orgdump
```

- $28 \left( \frac{9}{28} \right)$
- 29 \makeatother
- 30 \dump
- 31 %\endinput

32 (/plcore)

The file uplcore.ltx, which provides modifications/extensions to make upl $^{\perp}$ TeX  $2_{\varepsilon}$ , is a concatenation of stripped files below using DOCSTRIP program.

- uplvers.dtx defines the format version of upl $AT_FX 2_{\varepsilon}$ .
- uplfonts.dtx extends NFSS2 for Japanese font selection.
- plcore.dtx (the same content as pIATEX  $2_{\varepsilon}$ ); defines other modifications to IATEX  $2_{\varepsilon}$ .

Moreover, default settings of pre-loaded fonts and typesetting parameters are done by loading upldefs.ltx inside uplatex.ltx.<sup>6</sup> This file upldefs.ltx is also stripped from uplfonts.dtx.

#### Attention:

You can customize uplaTEX  $2_{\mathcal{E}}$  by tuning these settings. If you need to do that, copy/rename it as upldefs.cfg and edit it, instead of overwriting upldefs.ltx itself. If a file named upldefs.cfg is found at a format creation time, it will be read as a substitute of upldefs.ltx.

As shown above, the files in upIATEX is named after pIATEX ones, prefixed with "u."

#### 2.1.1 Version

The version (like "2018-12-01u02") and the format name ("pLaTeX2e") of upLaTeX  $2_{\mathcal{E}}$  are defined in uplvers.dtx. This is similar to pLaTeX  $2_{\mathcal{E}}$ , which defines those in plvers.dtx.

#### 2.1.2 NFSS2 Commands

upLATEX  $2_{\varepsilon}$  shares plcore.dtx with pLATEX  $2_{\varepsilon}$ , so the extensions of NFSS2 for selecting Japanese fonts are available.

#### 2.1.3 Output Routine and Floats

upIATEX  $2_{\varepsilon}$  shares plcore.dtx with pIATEX  $2_{\varepsilon}$ , so the output routine and footnote macros will behave similar to pIATEX  $2_{\varepsilon}$ .

<sup>&</sup>lt;sup>6</sup>Older upLATEX loaded upldefs.ltx inside uplcore.ltx; however, upLATEX community edition newer than 2018 loads upldefs.ltx inside uplatex.ltx.

#### 2.2 Classes and Packages

Classes and packages bundled with upIATEX  $2_{\mathcal{E}}$  are based on those in original pIATEX  $2_{\mathcal{E}}$ , and modified some parameters.

up IATEX<br/>  $2\varepsilon$  classes:

- ujarticle.cls, ujbook.cls, ujreport.cls

  Standard *yoko-kumi* (horizontal writing) classes; stripped from ujclasses.dtx.

  uplateX edition of jarticle.cls, jbook.cls and jreport.cls.
- utarticle.cls, utbook.cls, utreport.cls
   Standard tate-kumi (vertical writing) classes; stripped from ujclasses.dtx. upLATEX edition of tarticle.cls, tbook.cls and treport.cls.

We don't provide up IATEX edition of jltxdoc.cls, but the one from pIATEX can be used also on up IATEX without problem.

uplateX  $2\varepsilon$  packages:

• uptrace.sty

upLATEX  $2_{\varepsilon}$  version of tracefnt.sty; the package tracefnt.sty overwrites upLATEX  $2_{\varepsilon}$ -style NFSS2 commands, so uptrace.sty provides redefinitions to recover upLATEX  $2_{\varepsilon}$  extensions. Stripped from uplfonts.dtx.

Other pLATEX packages work also on upLATEX.

# 3 Compatibility with Other Formats and Older Versions

Here we provide some information about the compatibility between current upLaTeX  $2_{\varepsilon}$  and older versions or original pLaTeX  $2_{\varepsilon}$ /LaTeX  $2_{\varepsilon}$ .

#### 3.1 Compatibility with pLATEX $2\varepsilon$ /LATEX $2\varepsilon$

upI&TEX  $2_{\varepsilon}$  is in most part upper compatible with pI&TEX  $2_{\varepsilon}$ , so you can move from pI&TEX  $2_{\varepsilon}$  to upI&TEX  $2_{\varepsilon}$  by simply replacing the document class and some macros. However, the default Japanese font metrics in upI&TEX  $2_{\varepsilon}$  is different from those in pI&TEX  $2_{\varepsilon}$ ; therefore, you should not expect identical output from both pI&TEX  $2_{\varepsilon}$  and upI&TEX  $2_{\varepsilon}$ .

Note that upLaTeX is a new format, so we do *not* provide support for 2.09 compatibility mode. Follow the standard LaTeX  $2\varepsilon$  convention!

We hope that most classes and packages meant for LATEX  $2_{\varepsilon}$ /pLATEX  $2_{\varepsilon}$  works also for upLATEX  $2_{\varepsilon}$  without any modification. However for example, if a class or a package uses Kanji encoding 'JY1' or 'JT1' (default on pLATEX  $2_{\varepsilon}$ ), an error complaining the mismatch of Kanji encoding might happen on upLATEX, in which the default is 'JY2' and 'JT2.' In this case, we have to say that the class or package does not support upLATEX  $2_{\varepsilon}$ ; you should use pLATEX, or report to the author of the package or class.

#### 3.2 Support for Package 'latexrelease'

pLATEX provides 'platexrelease' package, which is based on 'latexrelease' package (introduced in LATEX <2015/01/01>). It could be better if we also provide a similar package on upLATEX, but currently we don't need it; upLATEX does not have any recent upLATEX-specific changes. So, you can safely use 'platexrelease' package for emulating the specified format date.

### A DOCSTRIP Options

By processing uplatex.dtx with DOCSTRIP program, different files can be generated. Here are the DOCSTRIP options for this document:

Option	Function	
plcore	Generates a fragment of format sources	
$\operatorname{pldoc}$	Generates 'upldoc.tex' for type setting upl $\mbox{TEX}2_{\ensuremath{\mathcal{E}}}$ sources	
shprog Xins	Generates a shell script to process 'upldoc.tex' Generates a DOCSTRIP batch file 'Xins.ins' for generating the above shell/perl scripts	

## B Documentation of upLATEX $2\varepsilon$ sources

The contents of 'upldoc.tex' for type setting upLaTeX  $2\varepsilon$  sources is described here. Compared to individual processings, batch processing using 'upldoc.tex' prints also changes and an index.

By default, the description of upLATEX  $2_{\varepsilon}$  sources is written in Japanese. If you need English version, first save

\newif\ifJAPANESE

as uplatex.cfg, and process upldoc.tex (upLATEX  $2\varepsilon$  newer than July 2016 is required).

Here we explain only difference between pldoc.tex (pLATEX  $2\varepsilon$ ) and upldoc.tex (upLATEX  $2\varepsilon$ ).

```
33 <*pldoc〉
34 \begin{filecontents}{upldoc.dic}
35 西暦 せいれき
36 和暦 われき
37 \end{filecontents}
```

The document of pIATEX  $2_{\varepsilon}$  requires plext package, since plext.dtx contains several examples of partial vertical writing. However, we don't have such examples in upIATEX  $2_{\varepsilon}$  files, so no need for it.

```
in upLATEX 2\varepsilon files, so no need for it.
38 \documentclass{jltxdoc}
39 %\usepackage{plext} %% comment out for upLaTeX
40 \listfiles
41
42 \DoNotIndex{\def,\long,\edef,\xdef,\gdef,\let,\global}
43 \DoNotIndex{\if,\ifnum,\ifdim,\ifcat,\ifmmode,\ifvmode,\ifhmode,\%
              \iftrue,\iffalse,\ifvoid,\ifx,\ifeof,\ifcase,\else,\or,\fi}
45 \DoNotIndex{\box,\copy,\setbox,\unvbox,\unhbox,\hbox,%
              \vbox,\vtop,\vcenter}
46
47 \DoNotIndex{\@empty,\immediate,\write}
48 \DoNotIndex{\egroup,\bgroup,\expandafter,\begingroup,\endgroup}
49 \DoNotIndex{\divide,\advance,\multiply,\count,\dimen}
50 \DoNotIndex{\relax,\space,\string}
51 \DoNotIndex{\csname,\endcsname,\@spaces,\openin,\openout,%
              \closein,\closeout}
53 \DoNotIndex{\catcode,\endinput}
54 \DoNotIndex{\jobname,\message,\read,\the,\m@ne,\noexpand}
55 \DoNotIndex{\hsize,\vsize,\hskip,\vskip,\kern,\hfil,\hss,\vss,\unskip}
56 \DoNotIndex{\m@ne,\z@,\z@skip,\@ne,\tw@,\p@,\@minus,\@plus}
57 \DoNotIndex{\dp,\wd,\ht,\setlength,\addtolength}
58 \DoNotIndex{\newcommand, \renewcommand}
60 \ifJAPANESE
61 \IndexPrologue{\part*{索 引}%
                  \markboth{索 引}{索 引}%
                  \addcontentsline{toc}{part}{索 引}%
64 イタリック体の数字は、その項目が説明されているページを示しています。
65 下線の引かれた数字は、定義されているページを示しています。
66 その他の数字は、その項目が使われているページを示しています。}
67 \else
68 \IndexPrologue{\part*{Index}%
                  \markboth{Index}{Index}%
                  \addcontentsline{toc}{part}{Index}%
71 The italic numbers denote the pages where the corresponding entry
72 is described, numbers underlined point to the definition,
```

```
73 all others indicate the places where it is used.}
   74 \fi
   75 %
   76 \ifJAPANESE
   77 \GlossaryPrologue{\part*{変更履歴}%
                                                                     \markboth{変更履歴}{変更履歴}%
   78
                                                                     \addcontentsline{toc}{part}{変更履歴}}
   79
  80 \ensuremath{\setminus} \texttt{else}
   81 \GlossaryPrologue{\part*{Change History}%
                                                                     \markboth{Change History}{Change History}%
   82
                                                                     \addcontentsline{toc}{part}{Change History}}
   83
   84 \fi
   86 \text{ } \text{\ } \text{
   87 \def\changes@#1#2#3{%
                 \let\protect\@unexpandable@protect
   88
                  \edef\@tempa{\noexpand\glossary{#2\space
   89
                                                               \currentfile\space#1\levelchar
   90
                                                               \ifx\saved@macroname\@empty
   91
                                                                         \space\actualchar\generalname
   92
   93
                                                               \else
                                                                         \expandafter\@gobble
   94
                                                                         \saved@macroname\actualchar
   95
                                                                         \string\verb\quotechar*%
   97
                                                                         \verbatimchar\saved@macroname
                                                                          \verbatimchar
   98
                                                              \fi
   99
                                                               :\levelchar #3}}%
 100
                  \@tempa\endgroup\@esphack}
 101
 102 \renewcommand*\MacroFont{\fontencoding\encodingdefault
                                                                             \fontfamily\ttdefault
 103
104
                                                                             \fontseries\mddefault
105
                                                                             \fontshape\updefault
106
                                                                             \small
                                                                             \hfuzz 6pt\relax}
108 \verb|\command*| @ dotted to cline {2} {1.5em} {2.8em} }
109 \renewcommand*\l0subsubsection{\0dottedtocline{3}{3.8em}{3.4em}}
110 \makeatother
111 \RecordChanges
112 \CodelineIndex
113 \EnableCrossrefs
114 \setcounter{IndexColumns}{2}
115 \settowidth\MacroIndent{\ttfamily\scriptsize 000\ }
   Set the title, authors and the date for this document.
116 \title{The \upLaTeXe\ Sources}
117 \author{Ken Nakano \& Japanese \TeX\ Development Community \& TTK}
118
119 % Get the (temporary) date and up-patch level from uplvers.dtx
120 \makeatletter
```

```
121 \let\patchdate=\@empty
122 \begingroup
      \def\ProvidesFile#1[#2 #3]#4\def\uppatch@level#5{%
124
         \date{#2}\xdef\patchdate{#5}\endinput}
      \input{uplvers.dtx}
125
126 \endgroup
127
128 \% Add the patch version if available.
129 \def\Xpatch{}
130 \ifx\patchdate\Xpatch\else
131
     \edef\@date{\@date\space version \patchdate}
132 \fi
133
134 % Obtain the last update info, as upLaTeX does not change format date
135 % -> if successful, reconstruct the date completely
136 \def\lastupd@te{0000/00/00}
137 \begingroup
      \def\ProvidesFile#1[#2 #3]{%
138
         \def\@tempd@te{#2}\endinput
139
140
         \@ifl@t@r{\@tempd@te}{\lastupd@te}{%
             \global\let\lastupd@te\@tempd@te
141
         }{}}
142
      \let\ProvidesClass\ProvidesFile
143
      \let\ProvidesPackage\ProvidesFile
144
145
      \input{uplvers.dtx}
      \input{uplfonts.dtx}
146
147
      \input{ukinsoku.dtx}
      \input{ujclasses.dtx}
148
149 \endgroup
150 \@ifl@t@r{\lastupd@te}{0000/00/00}{%
     \date{Version \patchdate\break (last updated: \lastupd@te)}%
152 }{}
153 \makeatother
Here starts the document body.
154 \begin{document}
155 \pagenumbering{roman}
156 \maketitle
157 \renewcommand\maketitle{}
158 \tableofcontents
159 \clearpage
160 \pagenumbering{arabic}
161
162 \DocInclude{uplvers}
                           % upLaTeX version
163
164 \DocInclude{uplfonts} % NFSS2 commands
165
166 \DocInclude{ukinsoku} % kinsoku parameter
167
168 \DocInclude{ujclasses} % Standard class
```

```
170 \StopEventually{\end{document}}
172 \clearpage
173 \pagestyle{headings}
174 % Make TeX shut up.
175 \hbadness=10000
176 \newcount\hbadness
177 \hfuzz=\maxdimen
178 %
179 \PrintChanges
180 \clearpage
181 %
182 \begingroup
183
     \def\endash{--}
     \catcode'\-\active
184
     \def-{\futurelet\temp\indexdash}
185
     \def \in \mathcal{L}_{ifx\temp-\endsh} if
186
187
     \PrintIndex
188
189 \endgroup
190 \let\PrintChanges\relax
191 \let\PrintIndex\relax
192 \end{document}
193 (/pldoc)
```

## C Additional Utility Programs

#### C.1 Shell Script mkpldoc.sh

A shell script to process 'pldoc.tex' and produce a fully indexed source code description. Run sh mkpldoc.sh to use it.

The script is almost identical to that in pLATEX  $2_{\varepsilon}$ , so here we describe only the difference.

```
194 (*shprog)
195 (ja)rm -f upldoc.toc upldoc.idx upldoc.glo
196 (en)rm -f upldoc-en.toc upldoc-en.idx upldoc-en.glo
197 echo "" > ltxdoc.cfg
198 (ja)uplatex upldoc.tex
199 (en)uplatex -jobname=upldoc-en upldoc.tex
```

To make the Change log and Glossary (Change History) for upLATEX using 'mendex,' we need to run it in UTF-8 mode. So, option -U is important.<sup>7</sup>

```
200 \langle ja \ranglemendex -U -s gind.ist -d upldoc.dic -o upldoc.ind upldoc.idx
```

<sup>&</sup>lt;sup>7</sup>The command 'uplatex' should be also in UTF-8 mode, but it defaults to UTF-8 mode; therefore, we don't need to add -kanji=utf8 explicitly.

```
201 \langle en \rangle mendex -U -s gind.ist -d upldoc.dic -o upldoc-en.ind upldoc-en.idx
202 \langle ja \rangle mendex -U -f -s gglo.ist -o upldoc.gls upldoc.glo
203 \langle en \rangle mendex -U -f -s gglo.ist -o upldoc-en.gls upldoc-en.glo
204 echo "\includeonly\{\}" > ltxdoc.cfg
205 \langle ja \rangle upldoc.tex
206 \langle en \rangle upldoc.cfg
208 \langle ja \rangle upldoc.cfg
208 \langle ja \rangle upldoc.tex
209 \langle en \rangle upldoc.tex
209 \langle en \rangle upldoc.tex
210 # EOT
211 \langle shprog \rangle
```

#### C.2 Perl Script dstcheck.pl

The one from pIATEX  $2_{\varepsilon}$  can be use without any change, so omitted here in upIATEX  $2_{\varepsilon}$ .

#### C.3 DOCSTRIP Batch file

Here we introduce a DOCSTRIP batch file 'Xins.ins,' which generates the script described in Appendix C.1. The code is almost identical to that in pLATEX  $2_{\varepsilon}$ .

```
212 \langle *Xins \rangle
213 \setminus input docstrip
214 \keepsilent
215 {\catcode'#=12 \gdef\MetaPrefix{## }}
216 \declarepreamble\thispre
217 \endpreamble
218 \usepreamble\thispre
219 \declarepostamble\thispost
220 \endpostamble
221 \usepostamble\thispost
222 \generate{
      \file{mkpldoc.sh}{\from{uplatex.dtx}{shprog,ja}}
      \file{mkpldoc-en.sh}{\from{uplatex.dtx}{shprog,en}}
224
225 }
226 \endbatchfile
227 (/Xins)
```

## References

[1] Takuji Tanaka, UpTEX — Unicode version of pTEX with CJK extensions TUGboat issue  $34:3,\ 2013.$ 

(http://tug.org/TUGboat/tb34-3/tb108tanaka.pdf)

## Change History

2011/05/07 v1.0c-u00	$2017/11/29 \text{ v}1.0\text{q}) \dots \dots$
Created upLATEX version based on	2017/12/05 v1.0s-u01
pIPTEX one (based on	Moved loading default settings
platex.dtx $1997/01/29 \text{ v}1.0c) \dots 1$	from uplcore.ltx to
2016/05/08 v1.0h-u00	uplatex.ltx (based on
Exclude uplpatch.ltx from the	platex.dtx $2017/12/05 \text{ v}1.0\text{s}$ ) 3
document (based on platex.dtx	2017/12/10 v1.0s-u02
$2016/05/08 \text{ v}1.0\text{h}) \dots 8$	Load plcore.ltx before
2016/06/06 v1.0k-u01	uplcore.ltx (recent version of
Update documents for up $IATEX$ 1	pITEX is assumed) 3
2016/06/19 v1.0l-u01	2018/04/08 v1.0w-u02
Get the patch level from	Stop showing banner during
uplvers.dtx (based on	format generation for safety
platex.dtx $2016/06/19 \text{ v}1.01$ ) 8	(based on platex.dtx
2016/08/26 v1.0m-u01	$2018/04/08 \text{ v}1.0\text{w}) \dots 3$
Moved loading uplatex.cfg from	2018/09/03 v1.0x-u02
uplcore.ltx to uplatex.ltx	Update document. (based on
(based on platex.dtx	platex.dtx $2018/09/03 \text{ v}1.0x$ ) 1
$2016/08/26 \text{ v}1.0\text{m}) \dots 3$	2018/09/22 v1.0y-u02
2017/11/29 v1.0q-u01	Show last update info on
New English documentation added	upldoc.pdf (based on
(based on platex.dtx	platex.dtx $2018/09/22 \text{ v}1.0\text{y}) \dots 8$