About upLATEX 2ε

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Attention:

This document provides a brief description of upLaTeX $2_{\mathcal{E}}$, the Japanese extended version of LaTeX $2_{\mathcal{E}}$. This version is based on 'pLaTeX $2_{\mathcal{E}}$ Community Edition.' It is now maintained by Japanese TeX Development Community¹.

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

- 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.² The Unicode pIATEX format run on upTEX is called upIATEX. Current upIATEX is maintained by Japanese TEX Development Community,³ in sync with pIATEX community edition.⁴ The development version is available from GitHub repository⁵. Any bug reports and requests should be sent to Japanese TEX Development Community, using GitHub Issue system.

https://texjp.org

²http://www.t-lab.opal.ne.jp/tex/uptex.html

³https://texjp.org

⁴https://github.com/texjporg/platex

 $^{^5 {\}rm https://github.com/texjporg/uplatex}$

1 Introduction to this document

This document briefly describes upIATEX 2_{ε} , but is not a manual of upIATEX 2_{ε} . The basic functions of upIATEX 2_{ε} are almost the same with those of pIATEX 2_{ε} and IATEX 2_{ε} , 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_{ε} . Also describes the standard classes and packages.
- Section 3 The compatibility note for users of the old version of upLaTeX 2_{ε} or those of the original pLaTeX 2_{ε} /LaTeX 2_{ε} .
- **Appendix A** Describes DOCSTRIP Options for this document.
- **Appendix B** Description of 'upldoc.tex' (counterpart for 'source2e.tex' in LATEX 2_{ε}).
- **Appendix C** Description of a shell script to process 'upldoc.tex', etc.

2 About Functions of pL 4 T_EX 2ε

The structure of upIATEX 2_{ε} is similar to that of pIATEX 2_{ε} ; it consists of 3 types of files: a format (uplatex.ltx), classes and packages.

2.1 About the Format

To make a format for upIATEX, process "uplatex.ltx" with INI mode of ε -upTEX.⁶ 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.

 $1 \langle *plcore \rangle$

⁶Formerly both upTeX and ε -upTeX can make the format file for upI&TeX, however, it's not true anymore because I&TeX requires ε -pTeX since 2017.

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

```
2 \let\orgdump\dump
```

```
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.

Display upLaTeX version on the terminal, so that it can be easily recognized during format creation.

```
18 \the\everyjob
```

Load uplatex.cfg if it exists at runtime of uplateX $2_{\mathcal{E}}.$ (Counterpart of platex.cfg in plateX $2_{\mathcal{E}}.)$

Dump to the format file.

```
27 \left( \frac{dump}{gdump} \right)
```

 $^{28 \}left(\frac{0}{28} \right)$

^{29 \}makeatother

^{30 \}dump

^{31 %\}endinput

^{32 (/}plcore)

The file uplcore.ltx, which provides modifications/extensions to make upLATEX 2_{ε} , is a concatenation of stripped files below using DOCSTRIP program.

- uplvers.dtx defines the format version of upLATEX 2ε .
- \bullet uplfonts.dtx extends NFSS2 for Japanese font selection.
- plcore.dtx (the same content as pL*TeX 2_{ε}); defines other modifications to L*TeX 2_{ε} .

Moreover, default settings of pre-loaded fonts and typesetting parameters are done by loading upldefs.ltx inside uplatex.ltx.⁷ 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 "2018/03/09u02") 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

upIATEX 2_{ε} shares plcore.dtx with pIATEX 2_{ε} , so the extensions of NFSS2 for selecting Japanese fonts are available.

2.1.3 Output Routine and Floats

upL $^{\perp}$ TEX 2_{ε} shares plcore.dtx with pL $^{\perp}$ TEX 2_{ε} , so the output routine and footnote macros will behave similar to pL $^{\perp}$ TEX 2_{ε} .

⁷Older 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
 2ε 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 2ε packages:

• uptrace.sty

upLATEX 2_{ε} version of tracefnt.sty; the package tracefnt.sty overwrites upLATEX 2_{ε} -style NFSS2 commands, so uptrace.sty provides redefinitions to recover upLATEX 2_{ε} 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_{ε} and older versions or original pLaTeX 2_{ε} /LaTeX 2_{ε} .

3.1 Compatibility with pLATEX 2ε /LATEX 2ε

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

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

We hope that most classes and packages meant for LATEX 2_{ε} /pLATEX 2_{ε} works also for upLATEX 2_{ε} without any modification. However for example, if a class or a package uses Kanji encoding 'JY1' or 'JT1' (default on pLATEX 2_{ε}), 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_{ε} ; 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	
pldoc	Generates 'upldoc.tex' for type setting upl $\mbox{\sc ip} \mbox{\sc I}_{\mbox{\sc E}} \mbox{\sc sources}$	
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 2ε sources

The contents of 'upldoc.tex' for type setting upLaTeX 2ε 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_{ε} sources is written in Japanese. If you need English version, first save

\newif\ifJAPANESE

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

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

```
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_{ε} requires plext package, since plext.dtx contains several examples of partial vertical writing. However, we don't have such examples in upIATEX 2_{ε} 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 \makeatletter
 87 \def\changes@#1#2#3{%
     \let\protect\@unexpandable@protect
 88
     \edef\@tempa{\noexpand\glossary{#2\space\currentfile\space#1\levelchar
 89
                   \ifx\saved@macroname\@empty
 90
                      \space\actualchar\generalname
 91
                   \else
 92
                      \expandafter\@gobble
 93
                      \saved@macroname\actualchar
 94
                      \string\verb\quotechar*%
 95
                      \verbatimchar\saved@macroname
 97
                      \verbatimchar
                   \fi
 98
                   :\levelchar #3}}%
 99
     \@tempa\endgroup\@esphack}
100
101 \makeatother
102 \RecordChanges
103 \CodelineIndex
104 \EnableCrossrefs
105 \setcounter{IndexColumns}{2}
106 \settowidth\MacroIndent{\ttfamily\scriptsize 000\ }
Here starts the document body.
107 \begin{document}
108 \title{The \upLaTeXe\ Sources}
109 \author{Ken Nakano \& Japanese \TeX\ Development Community \& TTK}
110
111 % Get the date and patch level from uplvers.dtx
112 \makeatletter
113 \let\patchdate=\@empty
114 \begingroup
      \def\ProvidesFile#1[#2 #3]#4\def\uppatch@level#5{%
115
         \date{#2}\xdef\patchdate{#5}\endinput}
116
      \input{uplvers.dtx}
117
118 \endgroup
119
120 % Add the patch version if available.
```

```
121 \def\Xpatch{}
122 \ifx\patchdate\Xpatch\else
    \edef\@date{\@date\space version \patchdate}
124 \fi
125 \setminus makeatother
126
127 \geq 127 \geq 127
128 \maketitle
129 \renewcommand\maketitle{}
130 \tableofcontents
131 \clearpage
132 \pagenumbering{arabic}
133
134 \DocInclude{uplvers}
                             % upLaTeX version
135
136 \DocInclude{uplfonts} % NFSS2 commands
137
138 \DocInclude{ukinsoku} % kinsoku parameter
139
140 \DocInclude{ujclasses} \% Standard class
141
142 \StopEventually{\end{document}}
143
144 \clearpage
145 \pagestyle{headings}
146 % Make TeX shut up.
147 \hbadness=10000
148 \newcount\hbadness
149 \hfuzz=\maxdimen
150 %
151 \PrintChanges
152 \clearpage
153 %
154 \begingroup
155
     \def\endash\{--\}
     \catcode'\-\active
156
     \def-{\futurelet\temp\indexdash}
157
     \label{limit} $$ \def\indexdash{\left(\inf_{ifx\neq p-\left(ifx\right)}\right) } $$
158
159
     \PrintIndex
160
161 \endgroup
162 \let\PrintChanges\relax
163 \let\PrintIndex\relax
164 \end{document}
165 (/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_{ε} , so here we describe only the difference.

```
166 (*shprog)
167 for f in upldoc.toc upldoc.idx upldoc.glo; do
168 if [ -e $f ]; then rm $f; fi
169 done
170 echo "" > ltxdoc.cfg
171 uplatex 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.8
```

'mendex,' we need to run it in UTF-8 mode. So, option -U is important.⁸

172 mendex -U -s gind.ist -d upldoc.dic -o upldoc.ind upldoc.idx

```
173 mendex -U -f -s gglo.ist -o upldoc.gls upldoc.glo
174 echo "\includeonly{}" > ltxdoc.cfg
175 uplatex upldoc.tex
176 echo "" > ltxdoc.cfg
177 uplatex upldoc.tex
178 # EOT
179 \/shprog\
```

C.2 Perl Script dstcheck.pl

The one from pLATeX 2_{ε} can be use without any change, so omitted here in upLATeX 2_{ε} .

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_{ε} .

```
180 (*Xins)
181 \input docstrip
182 \keepsilent
183 {\catcode'#=12 \gdef\MetaPrefix{## }}
184 \declarepreamble\thispre
185 \endpreamble
186 \usepreamble\thispre
```

⁸The 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.

```
187 \declarepostamble\thispost
188 \endpostamble
189 \usepostamble\thispost
190 \generate{
191 \file{mkpldoc.sh}{\from{uplatex.dtx}{shprog}}}
192 }
193 \endbatchfile
194 \(/Xins\)
```

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	uplcore.ltx to uplatex.ltx	
Created upLATEX version based on	(based on platex.dtx	
pIATEX one (based on	2016/08/26 v1.0m)	3
platex.dtx $1997/01/29 \text{ v}1.0c$) 1	2017/11/29 v1.0q-u01	
2016/05/08 v1.0h-u00	New English documentation added	
Exclude uplpatch.ltx from the	(based on platex.dtx	
document (based on platex.dtx	$2017/11/29 \text{ v}1.0\text{q}) \dots \dots$	1
$2016/05/08 \text{ v}1.0\text{h}) \dots 8$	2017/12/05 v1.0s-u01	
2016/06/06 v1.0k-u01	Moved loading default settings	
Update documents for upIATEX 1	from uplcore.ltx to	
2016/06/19 v1.0l-u01	uplatex.ltx (based on	
Get the patch level from	platex.dtx 2017/12/05 v1.0s)	3
uplvers.dtx (based on	2017/12/10 v1.0s-u02	
platex.dtx 2016/06/19 v1.0l) 8	Load plcore.ltx before	
2016/08/26 v1.0m-u01	uplcore.ltx (recent version of	
Moved loading uplatex.cfg from	pIATEX is assumed)	3