

EuroT_EX 2001

Directions for the T_EXLive

September 24, 2001

Fabrice Popineau



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TeXLive, 6th edition: Current Status

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TEXLive: what is it? Where does it come from?



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TEXLive: what is it? Where does it come from?

☞ TEX used to be difficult to install



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TEXLive: what is it? Where does it come from?

- ☞ TEX used to be difficult to install
- ☞ *Precompiled distributions* like emTEX for dedicated platforms



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T_EXLive: what is it? Where does it come from?

- ☞ T_EX used to be difficult to install
- ☞ *Precompiled distributions* like emT_EX for dedicated platforms
- ☞ *Web2C* for Unix, but portable to Amiga, VMS, DOS, Win32



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TEXLive: what is it? Where does it come from?

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- ☞ *Precompiled distributions* like emTEX for dedicated platforms
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- ☞ Web2C gave birth to the *teTEX* distribution, complete and easy to use and easy to install



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- ☞ Web2C gave birth to the *teT_EX* distribution, complete and easy to use and easy to install
- ☞ Great and greater number of T_EX macros packages on *CTAN*
- ☞ Standardization of the *TDS* (T_EX Directory Structure)



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- ☞ Web2C gave birth to the *teTEX* distribution, complete and easy to use and easy to install
- ☞ Great and greater number of TEX macros packages on *CTAN*
- ☞ Standardization of the *TDS* (TEX Directory Structure)
- ☞ Time to build the first multi-platform, ready-to-use TEX distribution.

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The T_EXLive Project



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The T_EXLive Project

☞ First version in 1996, headed by *Sebastian Rahtz* (many thanks to him!)

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- The T_EX software is usable without any prior installation and simple to setup if/when convinced

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The T_EXLive Project

- ➡ First version in 1996, headed by *Sebastian Rahtz* (many thanks to him!)
- ➡ T_EX distributed on a CD-Rom
- ➡ Directly usable projection of the T_EX related software available on the CTAN
- ➡ The T_EX software is usable without any prior installation and simple to setup if/when convinced
- ➡ How to present the user with all these 40000 files?

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What's new in the 6th edition?

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What's new in the 6th edition?

👉 New structured description files

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What's new in the 6th edition?

- 👉 New structured description files
- 👉 New layout for the packages

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What's new in the 6th edition?

- ➡ New structured description files
- ➡ New layout for the packages
- ➡ New handling of language .dat

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- ➡ New handling of language .dat
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What's new in the 6th edition?

- ➡ New structured description files
- ➡ New layout for the packages
- ➡ New handling of language .dat
- ➡ New *Welcome* application (Win32)
- ➡ All packages up to date

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The repository



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The repository

👉 CVS-like system : Perforce

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The repository

➡ CVS-like system : Perforce

➡ <http://www.perforce.co.uk/>

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The repository

- ➡ CVS-like system : Perforce
- ➡ <http://www.perforce.co.uk/>
- ➡ Clients for Mac, Unix, Win32

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The repository

- ➡ CVS-like system : Perforce
- ➡ <http://www.perforce.co.uk/>
- ➡ Clients for Mac, Unix, Win32
- ➡ Servers for Win32 and Unix

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The repository

- ➡ CVS-like system : Perforce
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- ➡ Repository handled by <http://texlive.dante.de>

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The factory



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The factory

- ➔ The repository machine has access to the Dante CTAN ftp site



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The factory

- ➡ The repository machine has access to the Dante CTAN ftp site
- ➡ Sebastian Rahtz has written some Perl script that will install most of the CTAN \TeX packages right to their final location in the repository tree
- ➡ Kaja Christiansen runs the compilations for all architectures but Linux and Win32



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- ➡ Sebastian Rahtz builds the documentation, ISO images and ensures the consistency



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The factory

- ➡ The repository machine has access to the Dante CTAN ftp site
- ➡ Sebastian Rahtz has written some Perl script that will install most of the CTAN T_EX packages right to their final location in the repository tree
- ➡ Kaja Christiansen runs the compilations for all architectures but Linux and Win32
- ➡ LUGS contribute to the documentation
- ➡ Sebastian Rahtz builds the documentation, ISO images and ensures the consistency
- ➡ Intermediate images available from <http://www.tug.org/texlive/tlprod/Images/>



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Structured description files



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Structured description files

☞ *TPM* : T_EX Package Management

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Structured description files

☞ *TPM* : T_EX Package Management

☞ *RDF* format, ie. XML application

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Structured description files

- ☞ *TPM* : T_EX Package Management
- ☞ *RDF* format, ie. XML application
- ☞ *RDF* = Resource Description Framework

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Structured description files

- *TPM* : T_EX Package Management
- *RDF* format, ie. XML application
- *RDF* = Resource Description Framework
- *RDF* based on the *OAV* model: Object, Attribute, Value

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Structured description files

- 👉 *TPM* : T_EX Package Management
- 👉 *RDF* format, ie. XML application
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- 👉 RDF based on the *OAV* model: Object, Attribute, Value
- 👉 RDF use for managing software packages: describing information *about* some URL

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Structured description files

- ☞ *TPM* : T_EX Package Management
- ☞ *RDF* format, ie. XML application
- ☞ RDF = Resource Description Framework
- ☞ RDF based on the *OAV* model: Object, Attribute, Value
- ☞ RDF use for managing software packages: describing information *about* some URL
- ☞ Simple use of the RDF formal model, but always good to work with a consistent frame.

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New layout for the packages



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New layout for the packages

☞ The whole set has been split in *collections* and *packages*



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New layout for the packages

- ☞ The whole set has been split in *collections* and *packages*
- ☞ Not a tree data structure, but a *graph* data structure

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New layout for the packages

- ☞ The whole set has been split in *collections* and *packages*
- ☞ Not a tree data structure, but a *graph* data structure
- ☞ Almost all of the free $\text{T}_\text{E}\text{X}$ macros available on the CTAN repository

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New layout for the packages

- The whole set has been split in *collections* and *packages*
- Not a tree data structure, but a *graph* data structure
- Almost all of the free T_EX macros available on the CTAN repository
- About 240 (a bit more for the Win32 platform) programs and scripts from the Web2C/teT_EX distribution augmented by bonus programs

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New layout for the packages

- The whole set has been split in *collections* and *packages*
- Not a tree data structure, but a *graph* data structure
- Almost all of the free T_EX macros available on the CTAN repository
- About 240 (a bit more for the Win32 platform) programs and scripts from the Web2C/teT_EX distribution augmented by bonus programs
- Net result : about 50 collections and 750 packages

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TPM format



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TPM format

- ☞ Information about the component itself: name, date, version ...



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TPM format

- ➡ Information about the component itself: name, date, version ...
- ➡ File lists:



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TPM format

- ➡ Information about the component itself: name, date, version ...
- ➡ File lists:
 - ➡ bin files: tagged for the target architecture



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TPM format

- ☞ Information about the component itself: name, date, version ...
- ☞ File lists:
 - ☞ bin files: tagged for the target architecture
 - ☞ run files: used by the $\text{T}_{\text{E}}\text{X}$ system and architecture independent



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TPM format

- ➡ Information about the component itself: name, date, version ...
- ➡ File lists:
 - ➡ bin files: tagged for the target architecture
 - ➡ run files: used by the T_EX system and architecture independent
 - ➡ source files: source files for the macros packages only



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TPM format

- ➡ Information about the component itself: name, date, version ...
- ➡ File lists:
 - ➡ bin files: tagged for the target architecture
 - ➡ run files: used by the T_EX system and architecture independent
 - ➡ source files: source files for the macros packages only
 - ➡ doc files: documentation files accompanying the component



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TPM format

- ➡ Information about the component itself: name, date, version ...
- ➡ File lists:
 - ➡ bin files: tagged for the target architecture
 - ➡ run files: used by the T_EX system and architecture independent
 - ➡ source files: source files for the macros packages only
 - ➡ doc files: documentation files accompanying the component
 - ➡ remote files: non free files (Win32 only)



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Package management system

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Package management system

☞ Features:

☞ Installation: install the files for the first time

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Package management system

👉 Features:

- 👉 Installation: install the files for the first time
- 👉 Maintenance: add or upgrade (or remove?) components

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Package management system

☞ Features:

- ☞ Installation: install the files for the first time
- ☞ Maintenance: add or upgrade (or remove?) components
- ☞ Removal: remove everything
- ☞ Consistency needed, but enforcing it can be tricky

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TEXLive: How to go further?

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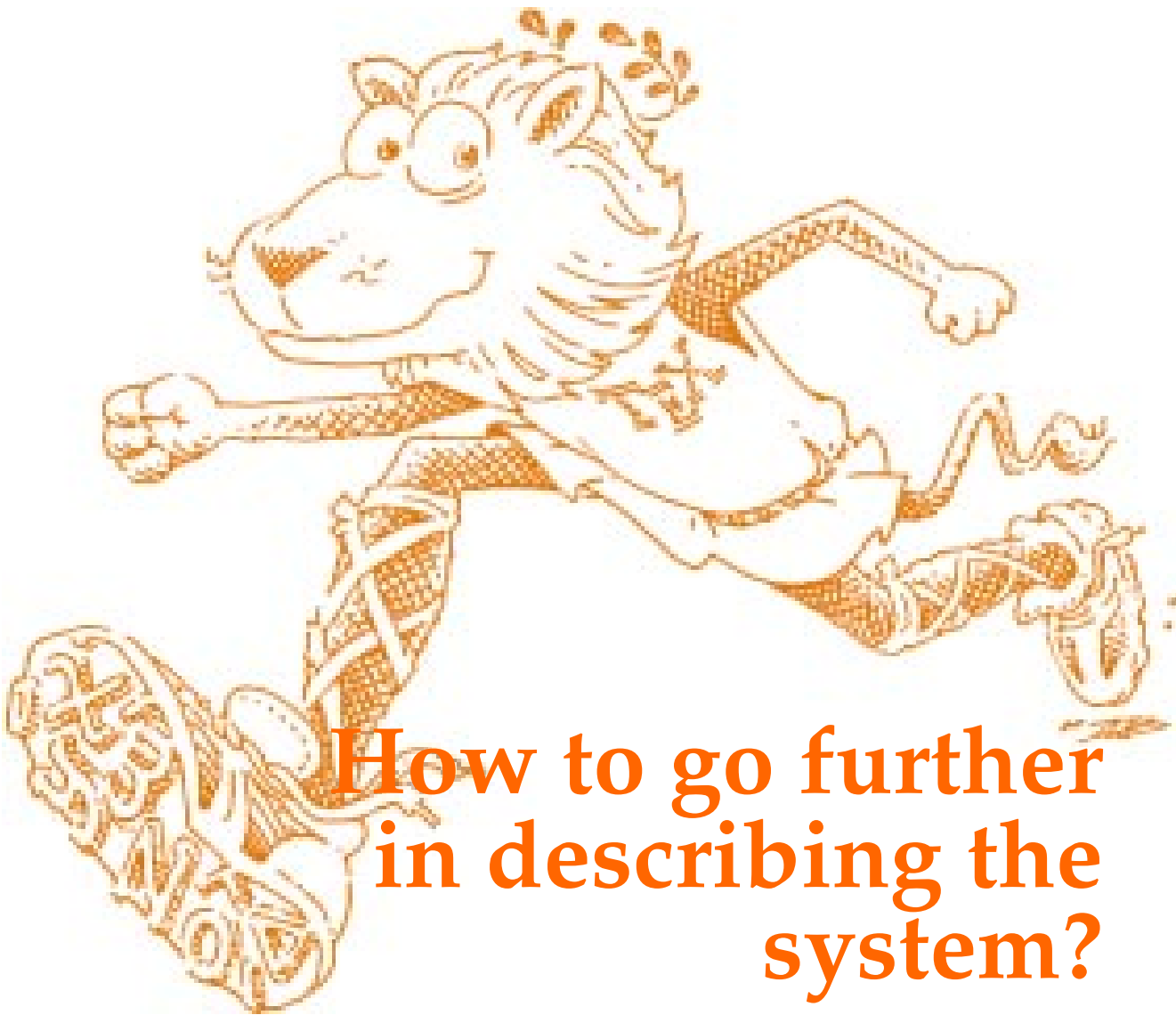
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How to go further
in describing the
system?

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Better description of the system



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Better description of the system

- ☞ Collections should not hold files, only require other collections or packages



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Better description of the system

- ☞ Collections should not hold files, only require other collections or packages
- ☞ Binaries should be made a separate list of packages and dependencies between binaries introduced



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Better description of the system

- ☞ Collections should not hold files, only require other collections or packages
- ☞ Binaries should be made a separate list of packages and dependencies between binaries introduced
- ☞ Problem with run-files, doc-files and source-files



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Better description of the system

- Collections should not hold files, only require other collections or packages
- Binaries should be made a separate list of packages and dependencies between binaries introduced
- Problem with run-files, doc-files and source-files
- More general problem of maintaining descriptions: at least 3 sources:



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Better description of the system

- ☞ Collections should not hold files, only require other collections or packages
- ☞ Binaries should be made a separate list of packages and dependencies between binaries introduced
- ☞ Problem with run-files, doc-files and source-files
- ☞ More general problem of maintaining descriptions: at least 3 sources:
 - ☞ .tpm files



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Better description of the system



- ➡ Collections should not hold files, only require other collections or packages
- ➡ Binaries should be made a separate list of packages and dependencies between binaries introduced
- ➡ Problem with run-files, doc-files and source-files
- ➡ More general problem of maintaining descriptions: at least 3 sources:
 - ➡ .tpm files
 - ➡ Graham Williams Catalogue

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Better description of the system

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 - .tpm files
 - Graham Williams Catalogue
 - texdoctk database



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Better description of the system

- Collections should not hold files, only require other collections or packages
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 - Problem with run-files, doc-files and source-files
 - More general problem of maintaining descriptions: at least 3 sources:
 - .tpm files
 - Graham Williams Catalogue
 - texdoctk database
- Something needs to be done there!



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Remaining problems with the setup system



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Remaining problems with the setup system

☞ Configuration files: solved for language.dat ...



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Remaining problems with the setup system

- ➡ Configuration files: solved for `language.dat` ...
- ➡ but what for the others: `fmtutil.cnf`, `config.ps`, `pdftex.cfg`?



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Remaining problems with the setup system

- ➡ Configuration files: solved for `language.dat` ...
- ➡ but what for the others: `fmtutil.cnf`, `config.ps`, `pdftex.cfg`?
- ➡ No GUI installer for Unix, `install-cd.sh` does not use the actual XML files



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Remaining problems with the setup system

- ➡ Configuration files: solved for `language.dat` ...
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 - ➡ TPM files as a common denominator
 - ➡ TPM files could hold part of the installation instructions



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Layout of the packages



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Layout of the packages

☞ More granularity is needed



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Layout of the packages

- More granularity is needed
- Example: langgreek collection has 5 different setups for the Greek language ... which one is best?

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Layout of the packages

- ➡ More granularity is needed
- ➡ Example: langgreek collection has 5 different setups for the Greek language ... which one is best?
- ➡ Far too many packages, maybe some selection is needed

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Layout of the packages

- ➡ More granularity is needed
- ➡ Example: langgreek collection has 5 different setups for the Greek language ... which one is best?
- ➡ Far too many packages, maybe some selection is needed
- ➡ Different schemes should be offered: ConT TEX t users, basic L $\text{A}\text{T}\text{E}\text{X}$ users ...

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Layout of the packages

- ➡ More granularity is needed
- ➡ Example: langgreek collection has 5 different setups for the Greek language ... which one is best?
- ➡ Far too many packages, maybe some selection is needed
- ➡ Different schemes should be offered: ConT $\text{T}_{\text{E}}\text{X}$ t users, basic L A T $\text{E}}\text{X}$ users ...
- ➡ We need small and simple T $\text{E}}\text{X}$ distributions to make T $\text{E}}\text{X}$ more popular.

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TEXLive: what do we miss ?

👉 More testers ! Thanks to the people currently involved,
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TEXLive: what do we miss ?

- ➡ More testers ! Thanks to the people currently involved, but we need more feedback
- ➡ Some enhanced web site, something with some of the Sourceforge features

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- ➡ People who want to write better documentation

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**How to go further:
at the heart of the
system.**

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Unforeseen usage of Web2C

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Unforeseen usage of Web2C

☞ `\write18` primitive largely used

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Unforeseen usage of Web2C

- 👉 `\write18` primitive largely used
- 👉 Overhead in calling chains of Kpathsea linked programs: the library is initialized several times

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Unforeseen usage of Web2C

- ☞ `\write18` primitive largely used
- ☞ Overhead in calling chains of Kpathsea linked programs: the library is initialized several times
- ☞ Situation even worse under NT/Win2K

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Unforeseen usage of Web2C

- ☞ `\write18` primitive largely used
- ☞ Overhead in calling chains of Kpathsea linked programs: the library is initialized several times
- ☞ Situation even worse under NT/Win2K
- ☞ An experiment has been made: sharing these data structures decreased the run time.

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Kpathsea and remote files



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Kpathsea and remote files

- 👉 Kpathsea implements a common interface to *paths* across different platforms



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Kpathsea and remote files

- ☞ Kpathsea implements a common interface to *paths* across different platforms
- ☞ URLs are only a new kind of *paths*



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Kpathsea and remote files

- ☞ Kpathsea implements a common interface to *paths* across different platforms
- ☞ URLs are only a new kind of *paths*
- ☞ We could imagine this kind of syntax:

```
\RequirePackage{tds:graphics.sty}
```

```
...
```

```
\font\foo=http://www.font.net/foo/bar/x
```



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 - ☞ Display the download progression
 - ☞ Caching file system LRU based
 - ☞ Turn Kpathsea itself into a server?



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Other extensions

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Other extensions

- ➡ Dynamic memory allocation
 - ➡ Format files need to be rebuild when arrays are enlarged

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Other extensions

- ➡ Dynamic memory allocation
 - ➡ Format files need to be rebuild when arrays are enlarged
 - ➡ Nothing to warn users in the documents typeset using an enlarged engine

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Other extensions

☞ Dynamic memory allocation

- ☞ Format files need to be rebuild when arrays are enlarged
- ☞ Nothing to warn users in the documents typeset using an enlarged engine
- ☞ Not all arrays in the source code has been made extensible!

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Other extensions

☞ Simplify Kpathsea:

☞ It should be simpler for Kpathsea to put files in the TDS tree



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Other extensions

☞ Simplify Kpathsea:

- ☞ It should be simpler for Kpathsea to put files in the TDS tree
- ☞ OK to keep a user defined procedure to place the files but ...



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Other extensions

☞ Simplify Kpathsea:

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Core code considerations



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Core code considerations

- ☞ Sharing and reusing code: various routines duplicated
 - ☞ basic ones, like reading a line in a text file



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Core code considerations

- ☞ Sharing and reusing code: various routines duplicated
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 - ☞ higher ones like reading a DVI file



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- ☞ Integrated, plug and play T_EX system
 - ☞ We need an integrated system to make T_EX more popular

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- ➡ Integrated, plug and play T_EX system
 - ➡ We need an integrated system to make T_EX more popular
 - ➡ (X)Emacs as a shell
 - ➡ T_EX might need to share some of its data to achieve better effect.

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Conclusion

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Conclusion

☞ Things have become smoother over the years

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Conclusion

- ☞ Things have become smoother over the years
- ☞ but (free) T_EX is not yet up to the current standards of the plug-and-play software

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Conclusion

- ☞ Things have become smoother over the years
- ☞ but (free) T_EX is not yet up to the current standards of the plug-and-play software
- ☞ Any new T_EX project (NTS?) should take these issues into serious consideration.

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