

TeXworks: Lowering the barrier to entry

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1 Introduction

One of the most successful TeX interfaces in recent years has been Dick Koch’s award-winning TeXShop on Mac OS X. I believe a large part of its success has been due to its relative simplicity, which has invited new users to begin working with the system without baffling them with options or cluttering their screen with controls and buttons they don’t understand. Experienced users may prefer environments such as iTeXMac, AUCTeX (or on other platforms, WinEDT, Kile, TeXmaker, or many others), with more advanced editing features and project management, but the simplicity of the TeXShop model has much to recommend it for the new or occasional user.

Besides the relatively “clean” interface, a second factor in TeXShop’s success is probably the use of a PDF-centric workflow, with pdfTeX as the default typesetting engine. PDF is the de facto standard for fully-formatted pages; every user knows what a PDF file is and what they can do with it. Bypassing DVI reduces the apparent complexity of the overall process, and so reduces the “intimidation factor” for a newcomer. But TeXShop is built on Mac OS X-specific technologies, and is available only to Mac users. There does not seem to be an equivalent tool available on other platforms; there are many TeX editors and environments, but none with this particular focus.

The TeXworks project is an effort to build a similar TeX environment (“front end”) that will be available for all today’s major desktop operating systems—in particular, MS Windows (XP and Vista), typical GNU/Linux distributions, and other X11-based systems, in addition to Mac OS X.

To achieve this, TeXworks is based on cross-platform, free and open source tools and libraries. In particular, the Qt toolkit was chosen for the quality of its cross-platform user interface capabilities, with native “look and feel” for each platform being a realistic target. Qt also provides a rich application framework, facilitating the relatively rapid development of a usable product.

The standard TeXworks workflow will also be PDF-centric, using pdfTeX and XeTeX as typesetting engines and generating PDF documents as the default formatted output. Although it will still be possible to configure a processing path based on DVI, newcomers to the TeX world need not be concerned with DVI at all, but can generally treat TeX as a system that goes directly from marked-up text files to ready-to-use PDF documents.

TeXworks includes an integrated PDF viewer, based on the Poppler library, so there is no need to switch to an external program such as Acrobat, xpdf, etc., to view the typeset output. The integrated viewer also allows it to support source ↔ preview synchronization (e.g., control-click within the source text to locate the corresponding position in the PDF, and vice versa). This capability is based on the “SyncTeX” feature developed by Jérôme Laurens, now integrated into the XeTeX and pdfTeX engines in TeX Live 2008, MiKTeX, and other current distributions.

2 Features for initial release

Figure 1 shows the current TeXworks prototype running on Windows Vista. While this is not a finished interface, it gives an impression of how the application will look. TeXworks version 0 will be an easy-to-install application offering:

1. Simple (non-intimidating — this is *not* emacs or vi!) GUI text editor with
 - i. Unicode support using standard OpenType fonts
 - ii. multi-level undo/redo
 - iii. search & replace, with (optional) regular expressions as well as simple string match
 - iv. comment/uncomment lines, etc.
 - v. (L^A)TeX syntax coloring
 - vi. TeX-aware spell checker
 - vii. auto-completion for easy insertion of common commands
 - viii. templates to provide a starting point for common document types

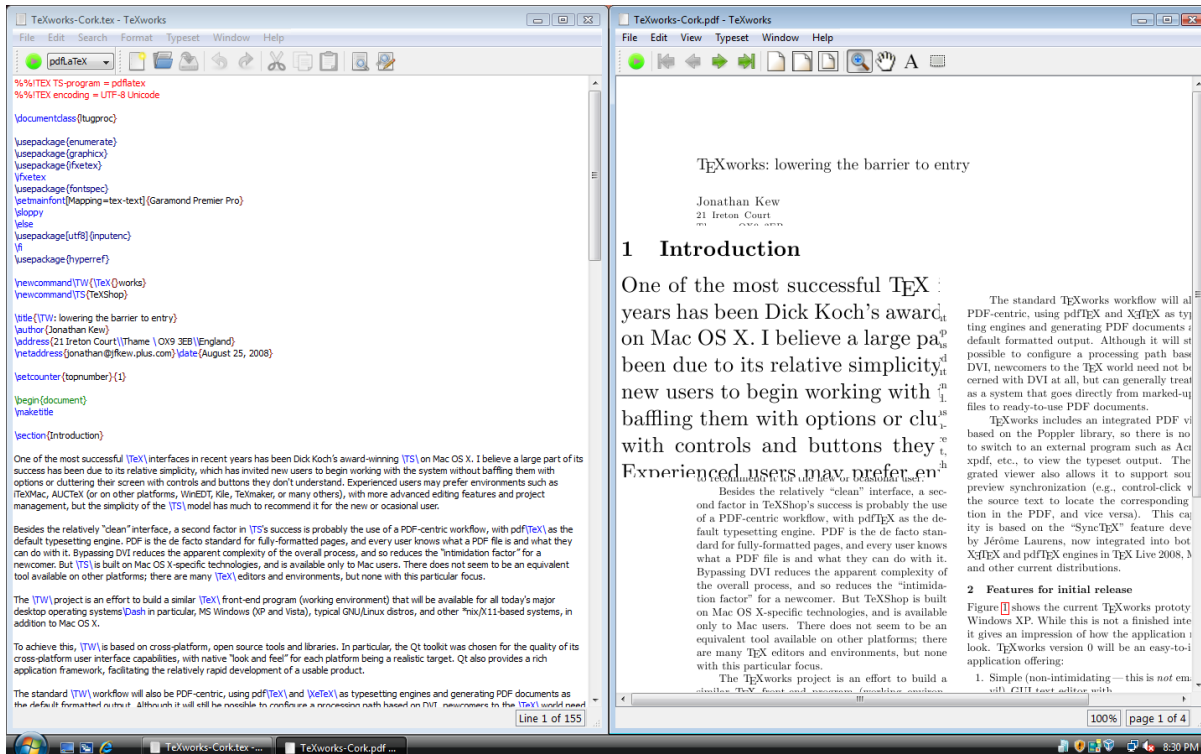


Figure 1: A recent TeXworks build running on Windows Vista: source and preview windows, with the TeXShop-style magnifying glass in use.

2. Ability to run TeX on the current document to generate PDF:
 - i. extensible set of TeX commands (with common commands such as `pdftex`, `pdflatex`, `xelatex`, `context`, etc. preconfigured)
 - ii. also support running BibTeX, Makeindex, etc.
 - iii. any terminal output appears in a “console” panel of the document window; automatically hidden if no errors occur
 - iv. “root document” metadata so “Typeset” works from an `\included` file
3. Preview window to view the output:
 - i. anti-aliased PDF display
 - ii. automatically opens when TeX finishes
 - iii. auto-refresh when re-typesetting (stay at same page/view)
 - iv. TeXShop-like “magnifying glass” feature to examine detail in the preview
 - v. one-click re-typesetting from either source or preview
 - vi. source ↔ preview synchronization based on Jérôme Laurens’ SyncTeX technology

3 Current status

An early TeXworks prototype was demonstrated at the BachoTeX conference (April 2008). It became more widely available (though still considered a prototype, not a finished release) when a version was posted in mid-July before the TUG 2008 conference. The current code is available as source (easy to build on typical GNU/Linux systems), and as precompiled binaries for Windows and Mac OS X.

At this time, the application supports text editing and PDF viewer windows, and has the ability to run a typesetting job and refresh the output view, etc. There is not yet any documentation, and many potential “power user” features do not yet exist, but it is a usable tool in its current state. In addition to Windows (XP and Vista), it runs on Mac OS X (see figure 2) and GNU/Linux systems (figure 3).

A few features remain to be implemented before a formal release of “version 0”, including “single instance” behavior, and various options for window positioning; appropriate installer packages for Mac OS X and Windows are also needed, to simplify setup.

More information may be found online via the TeXworks home page at <http://texworks.org/>.

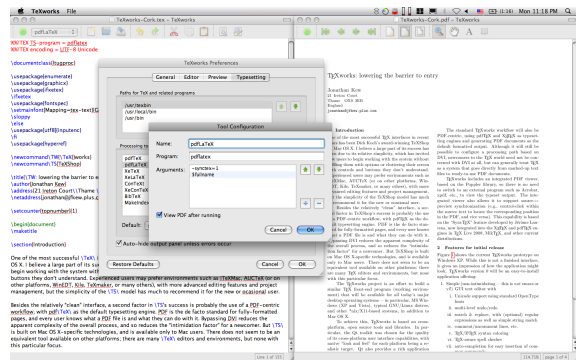


Figure 2: TeXworks running on Mac OS X: using the Preferences dialog to configure a typesetting tool.

4 Future plans

After the release of version 0, several major additional features are planned; some ideas high on the priority list include:

- intelligent handling of TeX errors
- assistance with graphics inclusion and format conversions
- text search and copy in the PDF preview
- support rich PDF features such as transitions, embedded media (sound, video), annotations, etc.
- customizable palettes of symbols, commands, etc.
- TeX documentation lookup/browser
- interaction with external editors and other tools
- additional support for navigating in the source, e.g., “folding” sections of text, recognizing document structure tags such as `\section`, etc.

I expect development priorities to be guided by user feedback as well as developer interest, once the initial version 0 release is available.

5 Invitation to participate

TeXworks is a free and open source software project, and all are welcome to participate and contribute to its development. This does not necessarily mean writing code; many other roles are equally important. Some possible ways to participate include the following.

- Use the prototype for some real work, and give feedback on what’s good, what’s bad, what’s broken:
 - if there’s a current binary download available for your platform, try that;
 - get the code and try building it on your platform; provide bug reports (and fixes!) for whatever problems show up.

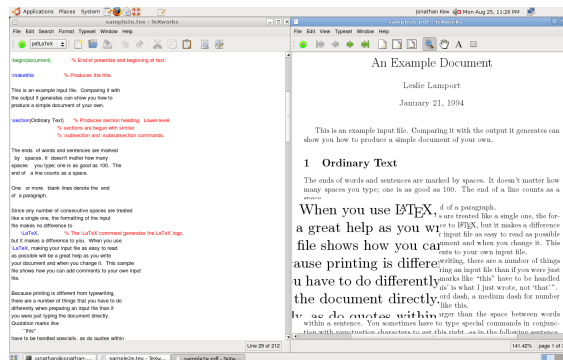


Figure 3: TeXworks running on a typical GNU/Linux system (Ubuntu).

- Dig in to the code, and submit patches to implement your favorite missing features.
- Write on-line help, documentation and tutorials for newcomers to TeXworks and TeX.
- Review and enhance the command completion lists available for the integrated editor.
- Provide well-commented templates for various types of documents.
- Design icons for the toolbars, etc.; TeXworks has some nice icons from Qt and the Tango project, but others are merely rough placeholders.
- Use the Qt Linguist tool to localize the user interface for your language.
- Package TeXworks appropriately for your favorite GNU/Linux or BSD distribution, or create an installer for Windows or Mac OS X.

There is a TeXworks mailing list for questions and discussions related to the project; see <http://lists.tug.org/texworks/> to subscribe, for the list archives, etc.

The TeXworks source itself is maintained in a Google Code project at <http://code.google.com/p/texworks/>. Resources available through this site include the Subversion source repository, precompiled binaries for Windows and Mac OS X, and an issue tracker for bug reports and feature suggestions.

6 Thanks

The TeXworks project arose out of discussions at several recent TeX Users Group meetings, and has received generous support from TUG’s TeX development fund and its contributors, and from UK-TUG. Special thanks to Karl Berry for his encouragement and support, and to Dick Koch for showing us the potential of a clean, simple TeX environment for the average user.