TEX and the Interfaces

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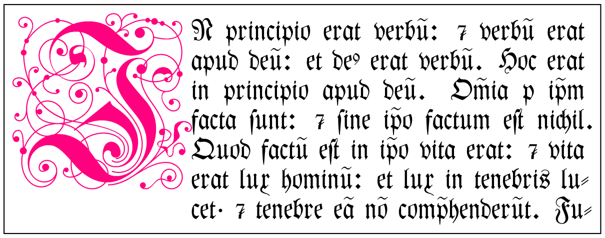
Abstract

TEX systems have been a cornerstone of research and academic publishing for a long time. Development of the interfaces with different classes of user or potential user, however, has been uneven. Recent developments in other areas of text processing are opening up new opportunities for TEX-based systems. Should TEX development become involved in these areas, or should it be restricted to those areas where it has traditionally been a strong player? This is a summary of my keynote presentation to the Practical TEX 2004 conference in San Francisco.

The cornerstone

Gutenberg's inventions were not Open Source: he worked on them alone, in relative secrecy, for many years before starting to print.



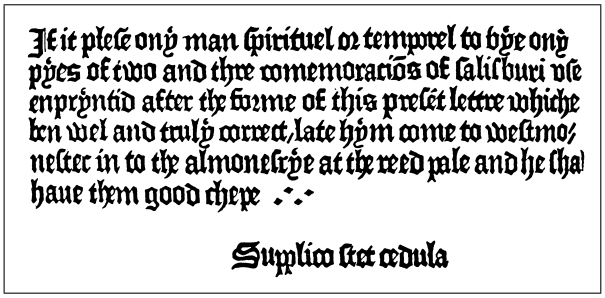
IN principio erat verbũ: ⁊ verbũ erat
apud deũ: et de⁹ erat verbũ. Hoc erat
in principio apud deũ. Om̃ia p ip̃m
facta ſunt: ⁊ ſine ip̃o factum eſt nichil.
Quod factũ eſt in ip̃o vita erat: ⁊ vita
erat lux hominũ: et lux in tenebris lu=
cet· ⁊ tenebre eã nõ comp̃henderũt. Fu=

- He had to get the blessing of the Church, his principal customer, and that meant keeping stumm.
- But he did have partners, and they had to know what he was doing and how he did it.
- He finally screwed up (or was screwed over) and sold out to his backers.
- Eventually someone had to teach the next generation of printers, and the 'secret' was out.

How different from the origins of TEX, where Knuth placed the whole system at the disposal of the world virtually from the start.

Development of the interfaces

If it hadn't been for the spread of the knowledge, Caxton would never have been able to bring the idea of printing from movable type to England, nor Ben Franklin have been able to print in America.



If it pleſe ony man ſpirituel or temporel to bye ony
pyes of two and thre comemoracio̅s of ſaliſburi vſe
enpryntid after the forme of this preſe̅t lettre whiche
ben wel and truly correct, late hym come to weſtmo=
neſter in to the almoneſrye at the reed pale and he ſhal
haue them good chepe ∴

Supplico ſtet cedula

The same holds true for most printing and publishing inventions down the ages — some they tried to keep secret, but in general you can't keep technological inventions from a technically literate and mobile workforce (printers).

In these old printed documents we see the first signs of an interface: between printer, reader, and publisher. Not a technical interface but a moral, social, and business interface.

TEX was explicitly freed from the normal commercial restrictions on software by its author. This was an unusual move in 1978. This was a major contributing factor to its initial success in research labs and academia (no money needed, no license to prevent copying), and also to its successful commercialization.

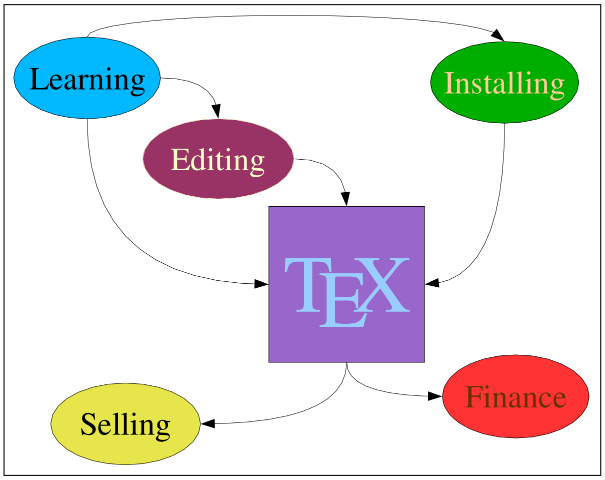
Printing equips your paragraphs of text with certain features and facilities: dissemination (you can make multiple identical copies), usefulness (people can use your text in different ways), education (literacy and the spread of printing have a wellestablished association), reusability (especially in involving photocopying, scanning, and reprinting!) — and there are many others. The use of an openly-accessible system like TEX equips your pars with other associated benefits:

Extensibility
Quality
Usability
I ndependence
Portability
Persistence
Accuracy
Robustness
S peed

Success is what has made TEX a cornerstone. Much of its success is due to the fact that it keeps on producing the goods, especially when other systems fail.

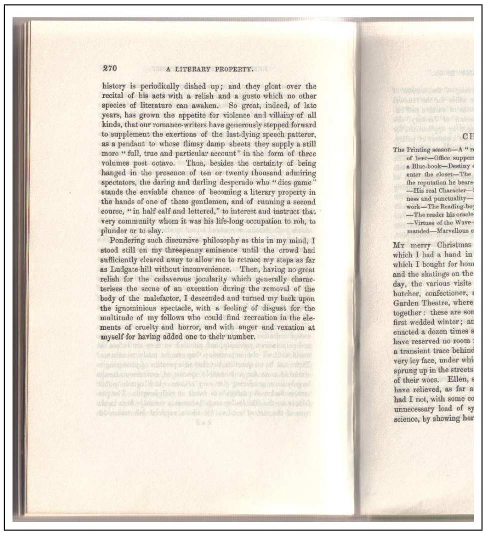
Differences between the interfaces

However, if you show TEX being edited to a publisher, or a business person, or a non-Computer Science, non-Physics, non-Math student, or Marketing, or Sales, or even Management, they'll take one look and laugh.



All they see is the physical (editing) interface: and we don't sell TEX as a solution to their problems, we sell it as something else, something akin to a religion.

In fact, there are lots of interfaces: Sales, Marketing, Finance, Management, Research, Production, Education ... and each is multi-faceted: it's not just the solution to a typesetting or information-management problem. For management, for example it may be the fact that it can be downloaded and installed without signing a contract.

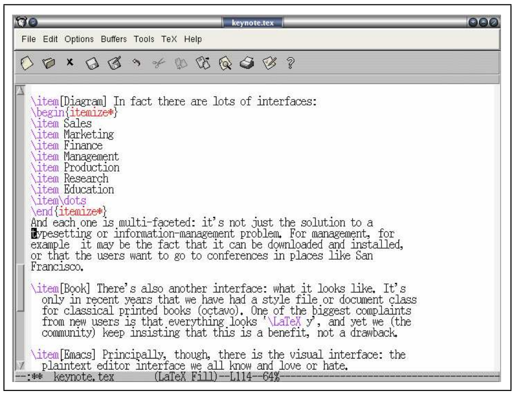


270 A LITERARY PROPERTY.

history is periodically dished up; and they gloat over the recital of his acts with a relish and a gusto which no other species of literature can awaken. So great, indeed, of late years, has grown the appetite for violence and villainy of all kinds, that our romance-writers have generously stepped forward to supplement the exertions of the last-dying speech patterer, as a pendant to whose flimsy damp sheets they supply a still more "full, true and particular account" in the form of three volumes post octavo. Thus, besides the certainty of being hanged in the presence of ten or twenty thousand admiring spectators, the daring and darling desperado who "dies game" stands the enviable chance of becoming a literary property in the hands of one of these gentlemen, and of running a second course, "in half calf and lettered," to interest and instruct that very community whom it was his life-long occupation to rob, to plunder or to slay.

Pondering such discursive philosophy as this in my mind, I stood still on my threepenny eminence until the crowd had sufficiently cleared away to allow me to retrace my steps as far as Ludgate-hill without inconvenience. Then, having no great relish for the cadaverous jocularity which generally characterises the scene of an execution during the removal of the body of the malefactor, I descended and turned my back upon the ignominious spectacle, with a feeling of disgust for the multitude of my fellows who could find recreation in the elements of cruelty and horror, and with anger and vexation at myself for having added one to their number.

There's also another interface: what it looks like. It's only in recent years that we have had a style file or document class for classical printed books (`octavo`, [3]). One of the biggest complaints from new users is that everything looks 'LATEXy', and yet we (the community) keep insisting that this is a benefit, not a drawback. Principally, though, there is the visual interface: the plain text editor interface we all know and love or hate.

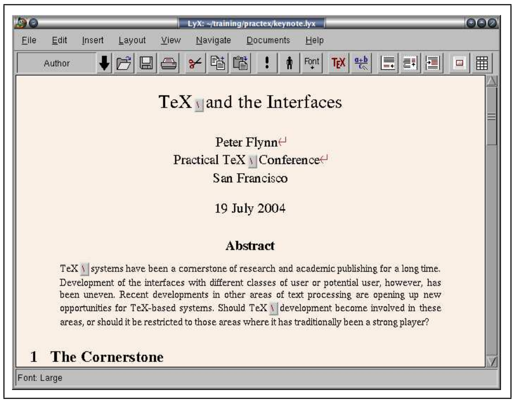


```
\item[Diagram] In fact there are lots of interfaces:
\begin{itemize*}
\item Sales
\item Marketing
\item Finance
\item Management
\item Production
\item Research
\item Education
\item\dots
\end{itemize*}
And each one is multi-faceted: it's not just the solution to a
typesetting or information-management problem. For management, for
example  it may be the fact that it can be downloaded and installed,
or that the users want to go to conferences in places like San
Francisco.

\item[Book] There's also another interface: what it looks like. It's
  only in recent years that we have had a style file or document class
  for classical printed books (octavo). One of the biggest complaints
  from new users is that everything looks '\LaTeX y', and yet we (the
  community) keep insisting that this is a benefit, not a drawback.

\item[Emacs] Principally, though, there is the visual interface: the
  plaintext editor interface we all know and love or hate.
--:**  keynote.tex       (LaTeX Fill)--L114--64%--------------------
```

But there are lots of others, including synchronous typographic interfaces like LyX. It's not WYSIWYG but What You See Is What You Meant.


LyX: ~/training/practex/keynote.lyx
File Edit Insert Layout View Navigate Documents Help
Author
Font
TEX
Font: Large

TeX and the Interfaces

Peter Flynn
Practical TeX Conference
San Francisco

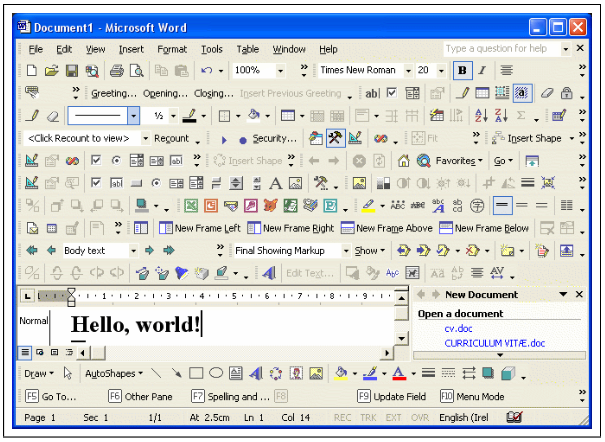
19 July 2004

Abstract

TeX systems have been a cornerstone of research and academic publishing for a long time. Development of the interfaces with different classes of user or potential user, however, has been uneven. Recent developments in other areas of text processing are opening up new opportunities for TeX-based systems. Should TeX development become involved in these areas, or should it be restricted to those areas where it has traditionally been a strong player?

1 The Cornerstone

And of course other interfaces we know and hate or love. If you turn on all the facilities LATEX has:


Document1 - Microsoft Word
File Edit View Insert Format Tools Table Window Help
Type a question for help
Times New Roman
Greeting... Opening... Closing...
New Frame Left New Frame Right New Frame Above New Frame Below
Body text
Final Showing Markup
Show
New Document
Open a document
cv.doc
CURRICULUM VITÆ.doc
Normal
Draw AutoShapes
Go To... Other Pane Spelling and ... Update Field Menu Mode
Page 1 Sec 1 1/1 At 2.5cm Ln 1 Col 14 REC TRK EXT OVR English (Irel

Hello, world!

Dissonance

So why are there all these differences? There is a considerable degree of disparity and dissonance between those who want TEX to stay plain text and therefore psychologically inaccessible to the user—whose mind-set has largely been conditioned by synchronous typographical interfaces; and those who want a more approachable interface.

There is the 'user-seductive' interface (Microsoft Word, for example) in all its forms (almost any 'office productivity' package, for example) which lets the user 'draw a document instead of writing it' [2].

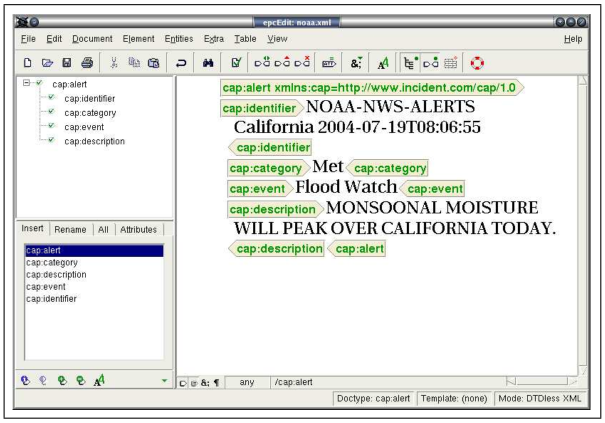
There is the learning interface which I mentioned a few years ago at the TUG meeting in Delaware [1], which ranged from 'sitting by Nellie' to a full-scale two-week training course tailored for your organization.

There is the support interface — fixed by commercial versions, but the free versions still use TUG and `comp.text.tex`, for obvious reasons.

And there is also another kind of interface growing, used for XML. Because of its ubiquity in business and publishing, there is a huge amount of software, and it has many of the features we know from LATEX.

```
<?xml version=’1.0’ encoding=’UTF-8’?>
<cap:alert xmlns:cap=
 ’http://www.incident.com/cap/1.0’>
  <cap:identifier>NOAA-NWS-ALERTS
    California 2004-07-19T08:06:55
  </cap:identifier>
  <cap:category>Met</cap:category>
  <cap:event>Flood Watch</cap:event>
  <cap:description>MONSOONAL MOISTURE
    WILL PEAK OVER CALIFORNIA TODAY.
  </cap:description>
</cap:alert>
```

XML has synchronous typographical interfaces too:

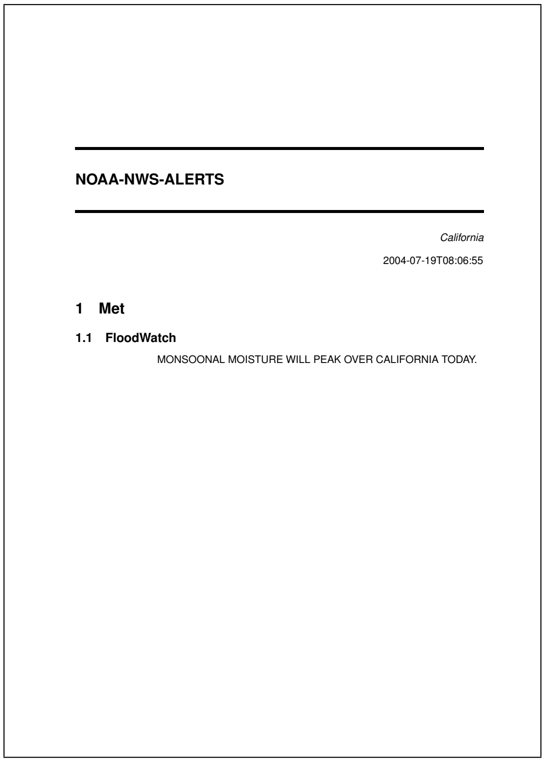


cap:alert xmlns:cap=http://www.incident.com/cap/1.0
cap:identifier NOAA-NWS-ALERTS
California 2004-07-19T08:06:55
cap:identifier
cap:category Met cap:category
cap:event Flood Watch cap:event
cap:description MONSOONAL MOISTURE
WILL PEAK OVER CALIFORNIA TODAY.
cap:description cap:alert

Doctype: cap:alert Template: (none) Mode: DTDless XML

I'm reminded of a paper presented at a TUG conference very many years ago, entitled something like 'TEX versus PostScript', as if PostScript were some kind of competitor. There are of course areas where LATEX and XML compete, and probably none more so than in the interface, but it's extremely easy to convert XML to LATEX for output using XSLT. The XSL-FO path to PDF means reinventing the wheel multiple times, whereas LATEX has everything already built in.

The following output was produced from the XML above, using XSLT into LATEX. (The source files `noaa.xml` and `noaa.xsl` are available at `http://silmaril.ie/xml` if you want to try it for yourself.)



NOAA-NWS-ALERTS

California

2004-07-19T08:06:55

1 Met

1.1 FloodWatch

MONSOONAL MOISTURE WILL PEAK OVER CALIFORNIA TODAY.

Paying attention

So why isn't everyone is paying attention to the interface? They're certainly not ... at least not for documents. Unless we are very careful, we run the risk of turning our primary asset into its primary liability. (I may be preaching to the converted here, but it is the current users who form the interface between the potential user and TeX.) We need more development. If you examine the interfaces in more detail, and start asking questions about new users' expectations, you find some surprising difficulties:

- What do you expect to happen when you press the Enter key?
- Can the B, I, and U buttons capture the reason why you want bold, italics, or underlining?
- Can the font style and size drop-downs be used to capture the reason why you want big bold type at this point?

As I noted earlier, I deliberately authored this in LaTeX: I missed the rigour of using XML, but I still haven't found anything to beat TeX and LaTeX for formatting. We just need to tell people.

References

[1] Peter Flynn. TeX—A mass-market product? Or just an image in need of a makeover? *TUGboat*, 22(3):137–139, Sept 2001.

[2] Anthony Goreham. Re: Installing a new font: PFM, PFB. `comp.text.tex`, (`m3r8qj42o3.fsf@micawber.queens.ox.ac.uk`), 28 November 2001.

[3] Stefan A. Revets. The octavo package. `http://www.ctan.org/tex-archive/macros/latex/contrib/octavo`.

Note: I am grateful to Prof. Knuth for permission to reproduce the mock-woodcut of a printer's shop experiencing the arrival of TeX, which he used in *Digital Typography*.