TEX AND SGML
Kees Van der Laan


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TEX and SGML*

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1. Setting the scene

Lifecycle-phases of documents

- preparation
- distribution
- reading
- storing (Paper? Electronically? Optically?)
- other usage, reuse?

SGML supports the complete Lifecycle, where FUTURE usage of the document is not necessarily restricted to printing.

\TeX supports formatting and electronic exchange.

2. What is SGML?

It stands for

Standard Generalized Markup Language

For the definition see, [20]. An introduction is [8], and courseware is [11]. A Dutch chapter of the SGML Users Group exists.¹

2.1. Purpose

To facilitate INFORMATION exchange

— Then and There —

via a description LANGUAGE, where information is packed in documents, containing, text, graphics, ...

2.2. META LANGUAGE

SGML is a META LANGUAGE which can be used to define an arbitrary number of markup languages in a standardized way.

2.3. Markup

Formerly: (typeset) MARKS in the margin (Marks are bound to a version; no 'data-integrity')

Presently: Marks are integrated with copy (Note: Discriminate copy from MARKUP! Data-integrity is preserved.)

Markup def Term used to describe codes added to the electronically prepared document

2.4. Generalized

Formerly: (typeset) MARKS for specific 'here and now' printers

Presently: Marks are generic (Not specific to print/plot/photoset hardware)

Generalized def Abstraction from the specific to the general to describe the structure of a document and to specify intent without regard for appearance
2.5. Standard

**Formerly:** no consensus on mark-up 'codes' (wordperfect, wordstar, applewrite, ... ; Scribe, \TeX, \LaTeX, ... )

**Presently:** SGML ISO standard

Standard \( \equiv \) It can be used to define an arbitrary number of markup languages in a **standardized** way.

Entails: general applicability, longer life-time, improved reusability, enhanced exchange possibilities.

2.6. Example markups

2.6.1. No markup

\TeX\texttt{system for formatting text} \TeX\texttt{ and the accompanying macro package} \LaTeX\texttt{ provide powerful means ...}

2.6.2. Presentational markup

\TeX:
A system for formatting text.

\TeX\texttt{ and its accompanying macro package} \LaTeX\texttt{ provide powerful means of formatting text to be output on either}
- a simple matrix printer,
- a laser printer or
- a photo typesetter.

Nice in this context is poetry, e.g., Alice's mousetail, [12], or \TeX's favourite poem of Piet Hein, [24].

2.6.3. Procedural (\LaTeX\texttt{)} markup

\subsection{\LaTeX\texttt{}}
A system for formatting text.
\par
\LaTeX\texttt{ and its accompanying macro package} \LaTeX\texttt{ provide powerful means of formatting text to be output on either}
\begin{itemize}
\item a simple matrix printer,
\item a laser printer or
\item a photo typesetter.
\end{itemize}

2.6.4. Descriptive (SGML) markup

\begin{verbatim}
\texttt{<\&\TeX;}\texttt{
\texttt{<p>A system for formatting text.}
\texttt{<p>\TeX;} and its accompanying macro package \LaTeX; provide powerful means of formatting text to be output on either
\texttt{<\&\LaTeX;}\texttt{ simple matrix printer,
\texttt{<\&\LaTeX;} a laser printer or
\texttt{<\&\LaTeX;} a photo typesetter.
\end{verbatim}

2.7. What is SGML not?

- No WYSIWYG (WYSIWY(A)G, ...) way of working
- Not a formatter, certainly not a standard formatter

3. What is \TeX?

\TeX\texttt{ is a formatter for 'making beautiful books', developed by Knuth, [23]. An introduction is given in [14].}

\LaTeX, [29], is a macro collection for simplified use of \TeX, in the **procedural** markup way. A Dutch \TeX\ Users Group exists.\(^2\) Courseware is [10].

3.1. Processing \LaTeX

'\LaTeX' is processed in three steps

\begin{verbatim}
\texttt{copy} \texttt{editor }\texttt{ASCII} \texttt{LaTeX} \texttt{dvi-file} \texttt{driver }\texttt{results}
\end{verbatim}

The more steps the more cumbersome is correction handling

\(^2\)NTG: Nederlandse \TeX\ Gebruikersgroep. Secretary: G.J.H. van Nes, ENR Postbus 1, 1755ZG, Petten, 02246-4185. e-mail: vannes@cn.nl.

Évidemment, pour la communauté francophone : GUTenherg, BP 21, F-78554 Jouy-En-Josas Cedex, e-mail : gut@irisa.fr (ndlr).
3.2. Availability

\TeX{} is available on many computers under various operating systems with a variety of drivers for the VDU (previewing), printer (hardly any), and photo setter. So documents written in (La)\TeX{} can be ported. Sending documents via e-mail is also generally possible except for the incorporated graphics. When graphics is part of the document \TeX{} combined with Postscript is used within the \TeX{} community. \TeX{} is in the public domain. Drivers and in general added value by companies have to be paid for. See figure 1. See ads in [36].

4. Relationship: SGML, \TeX{} and ...

The relationship of \TeX{}, SGML and other applications is illustrated in the diagram in figure 2. The coupling — 'converters' — can be done in SGML, in \TeX{} or via special 'compilers'. An integrated\footnote{Ikons user interface, SGML layer, \TeX{} layer, Postscript handling (optionally); with SGML, \TeX{} and dvi files as intermediate results} implementation is Arbortext's The Publisher on a SUN.
5. Examples

5.1. Letter

5.1.1. Structure

- Background
  Heading (Logo, address, phone, ...)
- Footer (numbering, ...)
- Context (running heads next pages, ...)
- Reference
- Your reference
- Date
- Addressee (name, company, address, zip code)
- Beginning (Dear...)
- Contents
- End matter (Salutation, name, position)
- Additions (PS, enclosure, cc)

5.1.2. Letter result

Because a sample \LaTeX\ letter could not be processed simultaneously in this context, the result is omitted. (Of course it could be pasted in, but that is not available electronically; it has been 'pasted into' the transparencies)

5.1.3. SGML markup

\begin{verbatim}
<!DOCTYPE letter PUBLIC
 "-//HTG//DTD Letter//EN">
<letter -- start-tag -->
<ref> CGL/Ba/B89-007
<yourref> MC/L1/L89-001
<date> 4 august 1989
<address> Malcolm Clark
  Imperial College Computer Centre
  Exhibition Road
  London SW7 2BP, England
<email> janet: fps@uk.ac.ic.cc.vaxa
\end{verbatim}
5.2. Bridge card deal

The \LaTeX\ aspects have been published in [25]. An SGML elaboration has been done by Grootenhuis, [17].
5.3.2. **SGML markup**

\begin{verbatim}
<fd><xcap;((X\cup A)\cap(X\cup B))>
\int \frac{1}{\sqrt{1+z^2}} \, dz = \log(1+\sqrt{1+z^2})
</fd>
\end{verbatim}

Note. DTD used is an adapted version of AAP's DTD by D.C. Coleman, [26].

5.3.3. **\LaTeX** specification

\begin{verbatim}
X \cap (A \cup B) = (X \cap A) \cup (X \cap B)
\int |x+y| \, dx = \int \frac{1}{\sqrt{1+z^2}} \, dz
</verbatim}

6. Developments

A survey is given in [8].

6.1. Usage

- DOD (Automated Technical Order System)
- European Communities (FORmalised EXchange of Electronic Documents; office official publications)
- Publishers (AAP, British Library, KNUB-Elsevier, Kluwer, ...)
- Her Majesty's Stationary Office (legal text)
- HP Technical documentation
- Oxford University Press (abridged forms, database applications)
- McGraw Hill Encyclopedia of Science and technology (CD-ROM)
• SGML Users Group (chapters in various countries)
• ... 

6.2. Plans

• DOD (Computer-aided Acquisition and Logistic Support)
Object: To produce an integrated system in which information is held electronically, and which interfaces to CAD/CAM systems, electronic publishing systems and databases and those operated by the many defense contractors who supply the department, so that it will be possible to receive, distribute and use technical information in digital form.

6.3. Local work in progress

• Elsvier's experiment, [9]
• Examples tabular matter (\LaTeX and SGML)
• Coupling SGML to \LaTeX
• ...

Acknowledgements

This article is an article representation of a presentation prepared via TRSPAR.STY the author's modification of REPORT.STY. Although the structure is such that the TRSPAR copy can be processed by any other style, the file needed some adaptation. E.g. some more text here and there, removing \Large from within the description labels, adaptation of the minipage size, and omitting \Large in the literature list. The latter is used by the author to supply the full literature list on the hand-outs of the transparencies while attention is focussed on the enlarged items on the transparency. Most SGML codings are tentative, only the original SGML codings of mathematics have been parsed, [26]. No coupling of SGML to \LaTeX has been done yet by the author.

References

[12] Clark, M. (1989): \TeX and/or SGML. Proceedings Euro\TeX\textsuperscript{89}. Karlsruhe. (Context sensitivity as a tool for checking input correctness is stressed; an example of how to do this within \TeX is given.)

*Association of American Publishers, 2005 Massachusetts Avenue, NW. Washington, DC 20036, Phone: (202) 232-3335


[16] Grootenhuis, J. (priv. comm.): Koppelen \LaTeX\ aan SGML.


[19] Herwijnen, E. van (1988): Electronic submission of Physics articles to publishers. De 1\textdegree Nederlandse SGML conferentie. SGML: De Consequenties. (Also submitted to: EP-ODD (Electronic Publishing Originating, Dissemination and Design). In the context of this paper the discussion of SGML related to \TeX is relevant.)


[35] SGML Users' Group Newsletters. Editorial address: Pindar Infotek, 2 Grosvenor Road, Wallington, Surrey SM6 0ER, UK.

[36] TUGboat. Quaterly of \TeX Users Group. Editorial address: \TeX Users Group. P.O. Box 9506. Providence RI 02940. email: TUGboat@Math.AMS.com.


Addentum Quelques références bibliographiques publiées en français (ndlr).

Références bibliographiques

