
Note on math font group organization

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This note is based on an electronic mail discussion between Alan Jeffrey and Justin Ziegler. Our suggested breakdown of tasks for the math font group (MFG) is:

1. *Organization*: writing papers such as this one, about the structure and direction of the group.
2. *Requirements analysis*: looking at the needs and current practice of mathematical typesetting, and setting (perhaps unachievable!) goals.
3. *Technical studies*: individual technical analysis, with clear conclusions and stating the advantages and disadvantages of the approaches investigated.
4. *Standardization*: recording the WG's decisions, leading towards the proposal of new math font encodings and related standards.
5. *Implementation*: designing software to support the new encodings.

These are only rough suggestions, all better suggestions welcomed! We might want to break each task down into subtasks. Organization could include:

- *Statement of purpose*: a one-page document setting out the WG's aims.
- *Outlining goals*: general papers like this one.
- *Setting timetables*: completion dates for these goals.

Requirements analysis could include:

- *Common mathematical usage*: what features are common across different subjects?
- *Specific mathematical usage*: what features are specific to particular subjects? (For example setting of scripts on roman letters in chemistry, multiletter identifiers in computer science...)
- *Non-mathematical usage*: what is math mode used for other than for mathematics? (For example, setting computer programs, fractions, footnote markers, trademark signs...)
- *Compatibility*: how compatible should a new encoding be with Knuth's?
- *Extensions*: what new symbols and other features are users crying out for?
- *Non-CM fonts*: what are the requirements for users of non-CM fonts (for example PostScript outline fonts).

Technical studies could include:

- *The current state of T_EX*: what are the good and bad points of T_EX's current mathematical typesetting?

- *The limitations of T_EX*: what restrictions does T_EX make to mathematical typesetting? (For example, the math spacing table in Chapter 18 of *The T_EXbook* is hard-wired, Appendix G of *The T_EXbook* overloads many font dimensions...)
- *Prototype implementations*: each part of the standard should be α -tested before standardization.
- *Studying requirements*: work on problems suggested by the requirements analysis task.

Standardization could include:

- *Font encodings*: this is probably the most important point!
- *Encoding vectors*: naming all the symbols as PostScript encoding vectors.
- *Font information*: any new font dimensions, kerning information, charlists, and so on.
- *(L^A)T_EX interface*: how the fonts can be used in (L^A)T_EX, for example giving default control sequence names for each glyph.

Implementation could include:

- *METAFONT programs*: implementing of the encodings using character shapes based on `cmmi`, `cmsy` and `cmex`.
- *T_EX programs*: a replacement for `plain.tex`, and document styles for using the font encodings with L^AT_EX.
- *VPL manipulation tools*: to help install Non-CM fonts, we may need general virtual font manipulators.
- *Benchmarks*: equivalents of the `trip.tex` and `testfont.tex` tests for the new encodings.

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