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**AN AUTOMATED SYSTEM FOR THE MAINTENANCE OF
MULTIFORM DOCUMENTATION**

B.Rousseau, M.Ruggier, M.Smith

CERN ECP/PT

Abstract

Software documentation for the user often exists in several forms including paper, electronic, on-line help, etc. We have built a system to help with the writing and maintenance of such kinds of documentation which relies on the FrameMaker product. As an example, we show how it is used to maintain the ADAMO documentation, delivered in 4 incarnations: on paper, WWW hypertext, KUIP and running examples. The use of the system results in both time saving and quality improvements.

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An Automated System for the Maintenance of Multiform Documentation

B.Rousseau, M.Ruggier, M.Smith

rousseau@ptsun00.cern.ch

Programming Techniques Group

CERN, ECP Division, 1211 Geneva 23, Switzerland

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MULTIFORM DOCUMENTATION

The maintenance of a consistent set of software documentation including tutorials, user guide, reference manual and so forth is a difficult task. This is especially true when the documentation exists on paper and in electronic forms such as man pages, hypertext and on-line help, or when the documentation consists of the integration of pieces produced independently, for instance source code examples and their output, database queries, etc. As the software evolves the documentation has to be changed accordingly and the changes have to be propagated in the different incarnations of the documents. The source code examples and their output may themselves be modified by software revisions. It becomes almost impossible to keep the various versions of the documents in step and to maintain their consistency with included examples.

THE ADAMO EXAMPLE

The documentation of the ADAMO system [1] relies upon four different formats: paper (FrameMaker format - Figure 2.); electronic (HTML format - Figure 3.); online help (KUIP CDF format - Figure 4.); and examples written in Fortran, C and KUIP with their output.

OUR AUTOMATED SYSTEM

To facilitate the maintenance of the ADAMO documentation we have developed a set of generic tools whose primary goals are to avoid redundancy by minimizing the number of "master" formats and to allow the automatic propagation of a change from a master to all derived documents. Our system uses FrameMaker [3] as the master format and automatic converters are able to convert FrameMaker MIF (Maker Interchange Format) documents to HTML [2] and CDF [5] formats. Examples are dynamically compiled, run and included at MIF generation time. Current components of the system are:

A FrameMaker to WWW converter

WebMaker processes FrameMaker files or books and generates a set of HTML files, according to a configuration file supplied by the user. For a given type of document, a configuration specifies the rules to convert each paragraph format. WebMaker is particularly well suited for the conversion of large FrameMaker documents but may also be used just as easily on smaller ones.

WebMaker can:

- generate a configurable hierarchy of interlinked HTML files (chapter, sections, ...),

- translate FrameMaker cross references into hypertext links,
- generate tables of contents, indices and glossaries,
- produce hypertext links to external HTML documents
- convert footnotes, imported graphics, FrameMaker native graphics, equations and tables,

WebMaker is designed such that the author of a FrameMaker document has very few constraints to fulfill. In particular he can use as many Paragraph and Character formats as he wishes, with the tag names that he likes. No impositions are made on the writing of a FrameMaker document that may compromise its printed appearance.

You may find more details (including complete user requirements) in the WebMaker Web [4].

A FrameMaker to KUIP CDF converter

This tool is an adaptation of WebMaker but produces CDF files. The CDF format is used by KUIP-based software (e.g. PAW, ADAMO[1] MAD and TIP) to provide on-line help. Three parts of the ADAMO reference manual are directly translated from MIF to CDF.

A system which dynamically includes running examples.

The ADAMO documentation contains numerous examples based upon source code examples and associated output. These examples exist also in the form of running programs that are part of the ADAMO package. They are subject to changes. To avoid the tedious task of maintaining both running and included examples, we have built a system that allows Unix shell scripts to be incorporated within FrameMaker documents. These scripts are executed at MIF generation time (Figure 1.) and their output is included in the FrameMaker document.

We use this facility to include source code, but also to compile and link it, execute it, and include the resulting output

Figure 1. The overall process that builds the documentation relies on 4 steps. To begin with, FrameMaker files are converted to MIF. Next, included Unix shell scripts are expanded to build the examples. Finally, Both CDF and HTML files are generated by CDFMaker and WebMaker.

CONCLUSION

These components are applicable to a wide range of documents. We use it to write and maintain the ADAMO documentation [1]

Our experience shows that defining FrameMaker templates is sometimes delicate and requires some experience. Nevertheless, the combined use of a WYSIWYG text editor and automatic translators results in ease of writing and large quality improvements.

As a separate element, WebMaker is also used to convert many kinds of

FrameMaker documents. The HTML+ specification document [2] is one such example.

Figure 2. A Typical page of the ADAMO Reference Manual under edition with FrameMaker.

REFERENCES

- [1] ADAMO, ER Programming System, URL address: http://www1.cern.ch/Adamo/ADAMO_ENTRY.html
- [2] HTML, HyperText Markup Language, URL: <http://info.cern.ch/hypertext/WWW/MarkUp/MarkUp.html>
- [3] FrameMaker Reference Manual, Frame Technology Incorporated.
- [4] WebMaker, A FrameMaker to WWW converter, URL: <http://www.cern.ch/WebMaker/>
- [5] KUIP, Kit for a User Interface Package, CERN Program Library Long WriteUp I102.

Figure 3. WWW page corresponding to the FrameMaker page of Figure 2.

Figure 4. KUIP online help corresponding to the page of Figure 2.