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A STEP TOWARDS LIGHT - LIFE CYCLE GLOBAL HYPERTEXT

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Abstract

Life Cycle Global HyperText offers easier information access to all members of a software development project, with all documents resulting from the software life cycle being available through WWW hypertext. These documents are connected, via hypertext links, to the documents produced in other stages of the life cycle. To experiment with this concept we have developed converters that transform several kind of documents into the WWW format. Up to now we have focused on source code, but we are now concentrating on documents produced in earlier stages of the software life cycle, such as requirements specification, analysis and design.

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Mastering the life cycle of large software projects implies the generation of lots of documents by different persons working in several sites. These documents are produced at each stage of the life cycle process and include requirement specifications, analysis documents, modelling diagrams, data dictionaries, source code, implementation notes and end-user documentation. The documents share common properties in that they are heavily structured and cross-referenced. They are also interdependent since each of them refines statements decided in the previous stages of the life cycle.

Within software development projects there is a clear need for more visibility and easier access to this chain of interrelated documents. The LIGHT concept is an attempt to solve this problem through use of HyperText systems. As a first experiment we have focused on a well delimited domain: ADAMO Fortran applications.

Reading and maintaining such programs may be tedious, especially when they are large, because Fortran's lack of modularity. The reader needs several information sources:

- thick Fortran listings,
- the ADAMO DDL files of the application (ER model of the application out of which the data structure are automatically generated)
- the ADAMO reference manual that explains routines of the ADAMO library.

Our approach was to use WWW as the target hypertext system and to develop a set of tools that convert reference documentation as well as ADAMO DDL and Fortran 77 source code into HTML format. The converters insert hypertext links that allow navigation inside and between these documents. The members of the development team have then read-only access to all these documents. When looking at a Fortran program with a WWW browser mouse clicks on sensitive areas lead to the display of corresponding information:

- a click on an ADAMO routine name displays its documentation,
- a click on a subroutine call shows the corresponding source code,
- a click on an ADAMO variable point to the relevant DDL declaration.

We are now concentrating on earlier stages of the life cycle: requirement specifications (ESA methodology), analysis and design (OMT), exploring the ways to connect requirements definition documents, OMT diagrams and source code. We think that navigating from source code to design and analysis decisions and back to original requirements will speed up and strengthen the development process.

Examples of hyperised Fortran source code and User Requirements Specification can be found at the following URL:

<http://www.cern.ch/Light/>

References

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