

DESKTOP: An Adaptable User Interface

Michael Herczeg, Heinz-Dieter Böcker

Research Group INFORM, Institut für Informatik, Herdweg 51, Universität Stuttgart

User interfaces have to bridge the gap between the intentions and abilities of humans and the internal structure and functionality of application systems on computers. As a result of the individuality of human skills, knowledge and experience it is impossible to build *the* interface for all kind of users. A solution to this problem are *adaptable user interfaces*, that may be modified by the user her-/himself according to her/his needs or preferences (1).

In our research project we have constructed interfaces with deep and explicitly represented knowledge about visualization and interaction. *Interaction objects* (3) are views of structural (e.g. forms) or functional (e.g. menus) or both (e.g. communication sheets¹) kinds of properties of application objects. They serve as application independent communication media between the user and the application system and are external representations of the application. By changing their appearance or behavior the user interface will change.

Instead of plugging them to application objects, interaction objects may be bound to other interaction objects or even themselves to shape their appearance or behavior as well. By this we have created a *meta user interface* that allows to modify the user interface.

This is the method how the DESKTOP system was build. DESKTOP demonstrates how an already existing, predefined iconic and window based user interface (2) may be changed substantially by the end user. Even new interaction objects may be created and for example be connected to applications like UNIX² commands. All the modifications that usually have to be done by a programmer may be performed by users without any programming skills by the same interaction techniques they use when communicating with the application. The borderline between using and programming a system starts to vanish.

DESKTOP has been implemented in ObjTalk (4), an object-oriented extension of LISP.

References

- (1) J. Bauer, M. Herczeg: "*Software-Ergonomie durch wissensbasierte Systeme*". In H.-J. Bullinger (editor), *Software-Ergonomie*, pp 108-118. German Chapter of the ACM, Stuttgart, 1985.
- (2) H.-D. Böcker, F. Fabian Jr., A.C. Lemke: "*WLisp: A Window Based Programming Environment for FranzLisp*". In *Proceedings of the First Pan Pacific Computer Conference, Vol. 1*, pp 580-595. The Australian Computer Society, Melbourne, Australia, September, 1985.
- (3) M. Herczeg: "*Eine objektorientierte Architektur für wissensbasierte Benutzerschnittstellen*". Dissertation, Fakultät für Mathematik und Informatik der Universität Stuttgart, Dezember, 1986.
- (4) A. Lemke: "*ObjTalk84 Reference Manual*". Technical Report CU-CS-291-85, University of Colorado, Boulder, 1985.

¹a combination of forms, menus and icons

²UNIX is a trademark of Bell Laboratories