SOFTWARE SELECTION: A KNOWLEDGE-BASED SYSTEM APPROACH

D.G. Dologite
Baruch College - City University of New York

The knowledge-based system discussed in this paper, the Software Selection Assistant (SSA), is a concept testing prototype motivated by the needs of large organizations to support two microcomputer software selection tasks. One is the initial screening of packages before purchase or acquisition by an organization. The other is the follow-on matching of appropriate pre-selected packages with end-user task requirements. SSA’s knowledge-based system approach to these tasks are examined in terms of their grounding in the literature, operation, and construction. Conclusions are drawn about the SSA approach, which enables an organization to broaden its support and quality of service in the software selection area without adding more staff. The approach can be generalized and applied in other organizations with similar functions to support. Areas of interest to practitioners and researchers experimenting with expert systems for software selection are further highlighted.

Human expertise is being lost in the microcomputer support area of many organizations. This seems inevitable because contact between qualified individuals and the end-user, as well as vendor, communities present opportunities that encourage many job shifts (Heltne, 1988; Nunamaker et al., 1988). Among the many problems this drain creates, one can be singled out for a relatively risk-free pilot application of knowledge-based, or expert, system technology: the screening of software packages before purchase by an organization.

Several factors make the software selection problem appropriate for knowledge-based system (KBS) development. The primary one is that the expertise needed to do this task is becoming scarce within the organization. Another is that screening software for acquisition is a well-understood task (Hayes-Roth et al., 1983; Rauch-Hardin, 1986; Waterman, 1986).

The Software Selection Assistant (SSA), described in this paper, demonstrates a KBS approach to preserve valuable expertise used to support the software screening task. In addition, SSA will be shown to help support a related
software selection task. It concerns servicing the increased end-user demand for assistance in selecting software appropriate for their particular application.

Organizations find that a poor overall fit of packaged software with end-user requirements causes not only package disuse, but also a more important loss in potential end-user effectiveness (Dickson et al., 1985; Hartog & Klepper, 1988). This makes the matching of software with end-user tasks a high-priority issue in many organizations (Gerrity & Rockart, 1986; Rockart & Flannery, 1983).

The key factors that make this related problem appropriate for KBS development are: expertise is needed in many locations, and the solution has a high payoff (Harmon, Maus, & Morrisey, 1988; Waterman, 1986).

In general, SSA will be shown to be a useful tool which enables an organization to broaden its support and quality of service in the software selection area without adding more staff.

The KBS approach described in this paper can be generalized and applied in other organizations that have similar software selection tasks to support. In the following sections, SSA’s phase one screening module for software acquisition is detailed with a focus on background models in the literature, operation, and construction. A discussion of SSA’s phase two evolutionary direction into the end-user and package matching function follows. Conclusions are then drawn as to the SSA experience and, finally, areas are pointed out that are of interest to practitioners and researchers experimenting with KBS systems to solve software selection problems.

**Screening Module Background**

Previous work related to the software screening purpose of SSA is found in non-knowledge-based system studies. Work by Hasty, Herbst,
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