SYSTEMS ENGINEERING OF DECISION SUPPORT SYSTEMS IN INTELLIGENT ARTIFACTS

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Decision Support Systems (DSS) as currently implemented are obasically information systems which provide a user a facility for posing questions and obtaining answers relevant to decision making in some defined area. Such systems are expected to elicit responses that equate to the human ''expert' and, typically provide for inferences over incomplete premises.

When a DSS is implemented as a knowledge based learning system (KBLS) it can be said to hold a pragmatic philosophy of truth, one consequence of which is that truth is something that happens to an idea rather than being a fixed property of an idea which we are trying to uncover. The pragmatic way of determining whether an action is likely to be good or bad involves a subjective evaluation based upon whether a given hypothesis has worked in the past and continues to yield satisfactory results. In system engineering terms, a system based upon predicate calculus and mathematical reasoning would, therefore, appear to be adequate with all system responses based upon logically defined rules or axioms and by logical deduction from them. However, the organisation and selection of items that are relevant to such a universe or domain relate to the need to develop workable solutions to difficulties. Experience is not an object known but rather an action performed. This implies two things: namely a need for a KBLS which reinforces or punishes previous decisions and the need for a knowledge representation scheme that stores previous decisions.

This paper examines the systems engineering problems in considering 'facts' as an encapsulated object domain rather than as attributes of an object, and offers a methodology for incorporating same in future intelligent artifacts.