

# ON TOTAL SYSTEMS INTERVENTION AS A SYSTEMIC FRAMEWORK FOR THE ORGANISATION OF THE MODEL BASE OF A DECISION SUPPORT SYSTEMS GENERATOR

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## ABSTRACT

Decision Support Systems(DSS) have been dealing so far predominantly with semistructured problems for which existed well established Operations Research techniques. Most of them were originally oriented towards supporting a single decision maker. The situation is changing in the past decade. These changes have been observed in three directions. The concept of Group Decision Support Systems (GDSS) oriented towards supporting the process of decision making emerged in the United States in the late 1980s. Another trend is represented by the facilitator driven systems according to C.Eden that initially did not use computers as the centerpiece but now most are computerised. Among them are Soft Systems Methodology (SSM), Strategic Choice, Metagame Analysis, Decision Conferencing and Strategic Options Development and Analysis (SODA). A third trend has been the extension of MCDM decision aids into the group decision making situation.

A convergence of the three trends is observed in the extended research agenda in the field of DSS as presented by Khoong recently. The new developments in the field of DSS require also new and better ways for their design and specification, especially of their model base, which should be capable to handle the complexity of the new tasks. Computer hardware and software have made considerable progress in recent years aiming in providing the background for the design of better decision support systems. On the other hand there has been no considerable progress for the past ten years in the development of design methodologies for DSS.

It has been established by Keen, Sprague and others that the classic systems development life-cycle(SDLC) approach is insufficient as a prescriptive guide for building DSS. As a result of the fact that SDLC does not provide a means for bridging the gap between analysis, design and implementation, its usage frequently leads to the development of systems that do not meet user or organizational needs.

This research proposes a framework for the organisation of the model base of a Decision Support Systems (DSS) generator, capable to handle complex messy problems based on a recent meta-methodology in systems thinking Total Systems Intervention. It presents a review of the existing methodologies for the development of DSS. The suggested approach is a synthesis of ideas from the field of Soft Operations Research or Problem Structuring Techniques, Systems Thinking and Decision Support Systems. It may be perceived as a way of linking TSI as a meta-methodology for systems thinking with the actual methods that may be applied for handling a given issue - in our case it is to build a DSS for a messy management problem.

The proposed framework is systemic at two levels. First it is based on Problem Structuring Techniques and existing approaches to the design of DSS that are systemic in their own attempt to cover all aspects of a certain side of the problems that a developer faces while building a DSS for complex problems. Secondly it uses the systemic framework of TSI that helps to manage the process of building DSS, indicating what should be included in the model base of the DSS and how one should approach the process of constructing the DSS. The proposed framework for building DSS is particularly suitable for organisational decision support systems, covering all essential areas of activities across an organisation. That is important for the transformation of the developers' focus from building ad-hoc DSS to handling organisation-wide tasks.