SOFT SYSTEMS ANALYSIS AND MODELING TOOL (SSAMT)

Computer-Based Support for Conducting Soft Systems Studies

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INTRODUCTION

A critical issue for would-be practitioners of Soft Systems Methodology (SSM) (Checkland, 1981) is the limited availability of support tools and guidance to aid an investigation and analysis. Potential users of SSM can be discouraged from participating in studies by the apparent lack of rigour and seeming ‘woolliness’ of SSM as an approach to problem solving in organisations. Indeed, critics argue that the richness of the understanding and subjective context of each individual problem situation could be hindered by over prescriptive tools (Kreher, 1993). Useful attempts have been made to provide interesting and exiting support for SSM. Avison et al (1992) have developed a rich picture diagramming tool and Stowell et al. (1991) an expert system trainer for teaching SSM. What has not been developed are specific modelling tools for practitioners to use in a study. It is well documented that practitioners find difficulty implementing significant parts of SSM, selecting ‘relevant systems’ (RS’s) to model, defining ‘root definitions’ (RD’s) and creating ‘conceptual models’ (CM’s) (Mingers, 1992). There is a need for suitable tools to aid SSM practitioners with modelling and analysis in a way which complements SSM without restricting the systemic nature of a study. This paper describes SSAMT a computer based modelling tool for SSM. Developed at Teesside Business School, SSAMT is a windows based application for assisting SSM practitioners with modelling and analysis, incorporating the selection of relevant systems to model, defining root definitions, creation of conceptual models and diagnosing potential change. It is concluded that such tools can be useful for practitioners and rather than constrain studies they can assist by providing rigour, diagnostic support and a focal point for debate.
FEATURES OF SSAMT

SSAMT is run from windows using an icon depicting the seven stage process of SSM (Fig 1.). The main menu for SSAMT is a screen version of the SSM process and is accessed by clicking the mouse onto the various stages of the process where the practitioner needs to work. SSAMT focuses on the below line system modelling activities of SSM, leaving rich pictures to a pen and paper exercise. The features included are:

- selecting relevant systems
- defining root definitions
- conceptual modelling
- problem diagnostics
- help
- reports

The system allows for all features in an analysis to be displayed and accessed together. This enables the practitioner to view relevant systems, root definitions, CATWOE analysis, conceptual models and diagnostics at the same time. It allows changes to be made to each component in an iterative, developmental way.

Selecting Relevant Systems

Clicking the mouse onto the main menu Stage 2. of the process presents the practitioner with the opportunity to summarise problems and problem owners from the rich picture phase of the study. The intention is to list the various problems and problem owners encountered from the rich picture and for the practitioner to identify ‘Weltanschauungen’ (‘W’) and relevant systems for each. The practitioner may then use this list to help select a system to model for either a primary task or issue based analysis. Help is provided in explaining how this feature operates and in defining ‘primary task’ and ‘issue based’ root definitions.

Defining Root Definitions

Root definitions may be developed from a relevant system selected or independently by clicking the mouse onto Stage 3. from the main menu. A CATWOE analysis can be defined and used to aid typing in the text of the root definition. Help and useful hints are provided explaining the CATWOE analysis and the preparation of root definitions e.g. given the defined purpose of the relevant system are the transformation process and ‘W’ consistent? If you were to perform the transformation would the desired purpose be achieved and the ‘W’ be satisfied? Would it be likely that a conceptual model of this RD would prove useful in the problem situation?

Developing Conceptual Models

Conceptual modelling of the root definition can then proceed by clicking on the toolbar item ‘Conceptual Model’ or Stage 4. of the main menu. The practitioner can then insert each model activity and the system will create a ‘bubble’ activity on screen. The activity ‘bubbles’ can then be moved anywhere on the screen and connecting lines inserted. The initial activities are inserted in short form, a more detailed description of each activity added behind the ‘bubble’ and accessed by clicking the mouse on each activity. An ‘Activity List’ is provided for assistance in selecting the verbs and words to include in the activity.