Chapter 9 – GUIDELINES FOR USE

The CM is a set of variables and relationships that represent influences between the variables. In order to carry out the study of a particular C2 concept, there is first a need to instantiate the model so as to capture the factors that contribute to the targeted C2-related outcomes. In some cases, this might be sufficient, but in others there will be a need to develop a more fully formed instantiation of the model.

There are two potential ways to exploit the richness of the CM. In the first case, we start with a customer's problem and then trace this back to the controllable variables in order to understand what the influencing factors are. In the second case, we might want to follow through the effects of a particular intervention from changing a variable to the propagation of this change through other linked variables.

The user of the CM should start by selecting the variables of interest (primary variables) for the study. Then, the user must look at the variables that influence the primary variables by following the relationships in the CM. Not all of these will be relevant for the particular study, but the user should consider each of them carefully as part of the problem formulation process, development of the human and organisational issues, development of the measures of merit, and assessment of risk for the study. The interrelation of these factors is described in the *NATO Code of Best Practice for C2 Assessment* as shown in Figure 9-1.

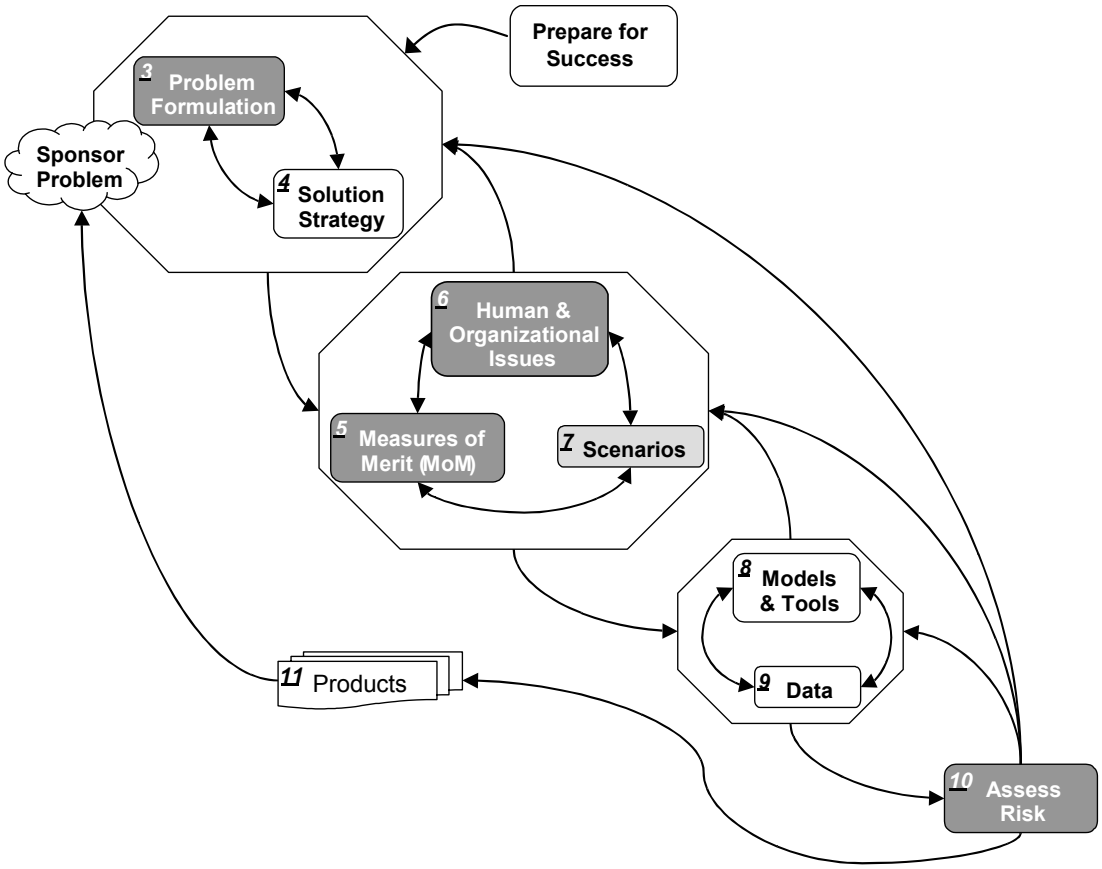

Figure 9-1: Top Level View of COBP for C2 Assessment.

In the first case, the steps Problem Formulation, Human and Organisational Issues, and Measures of Merit are particularly relevant.

PROBLEM FORMULATION

In terms of selecting the primary variables, the user should follow the first stages of the problem formulation process. This involves:

- Identifying the high level measures of merit relevant to the customer's problem;
- Identifying the variables that influence these high level MoMs;
- Determining which of them are controllable and uncontrollable; and
- Determining the primary variables of interest.

In general, this will be an iterative process that should involve close interaction with the customer in order to get to the real issues.

HUMAN AND ORGANISATIONAL ISSUES

The CM contains a rich set of variables describing behaviours and characteristics of individuals and teams. This part of the CM is developed in more detail than other parts because it was recognized to be an important area for current and future C2 concepts and assessments that had not been well represented. The user is encouraged to consider this in detail particularly for analysis where human performance and team behaviour are influencing the overall effectiveness of the system.

MEASURES OF MERIT

Development of the MoM should start with creation of high level MoM as part of the problem formulation process. Subsidiary MoMs should then be created during further iterations of problem formulation. The CM in conjunction with the COBP provides a rich set of potential MoMs from which to choose for the particular instantiation. The CM extends the COBP by briefly discussing the concept of agility, which is particularly important for future scenarios that have rapid dynamic change.

In the second case, the Assessment of Risks is particularly relevant.

ASSESSMENT OF RISKS

Here we are particularly interested in the effects of an intervention through the changing of a specific variable. The CM helps us by looking at the variables dependent on that intervention variable. This results in a cascade of consequences describing the effects of the changed variable.

When instantiating this model, the user has to think about the range of the variables' values and the functional form of their relationships. For that activity, the CM provides a basis in terms of links to the relevant literature, which gives some example applications and experiences of these variables and relationships. In a particular application, there will be other influencing factors, such as time or modelled events that are important in the application and that are not part of the CM. The aim of the CM is thus to ensure that a broad potential range of factors is taken account of when developing the specific instantiation.