

An overview of the Hard Systems Methodology

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It is perhaps interesting that the term “hard systems” thinking appeared not to exist until Peter Checkland used it in 1975 to justify the development of “soft systems” approaches. It can be argued that its basis existed in the Systems Analysis and Systems Engineering and does now have a life of its own. It is a systems-based process that can be used to take a problem or opportunity through to the implementation of change. Or in plain English it can help you fix things.

There are several hard systems approaches available all of which are based on a refined version of the problem solving meta-process shown figure 1. The one I would like to offer as an exemplar comes from the Open University and is shown in figure 2.

The Hard Systems Methodology (HSM) starts with a problem – or opportunity, shown at the top of figure 2 as a hexagon. This is something that exists in the real world and is waiting to be “processed” through the HSM to arrived at an implemented change. The idea is that by performing the actions in the boxes successively in a clockwise direction, the desired end result will “pop out”. There is no doubt that the HSM does work. Indeed, the process improvement approaches, mentioned earlier, Six Sigma and Global 8D are firmly based on the HSM of which by now there must be millions of successful examples.

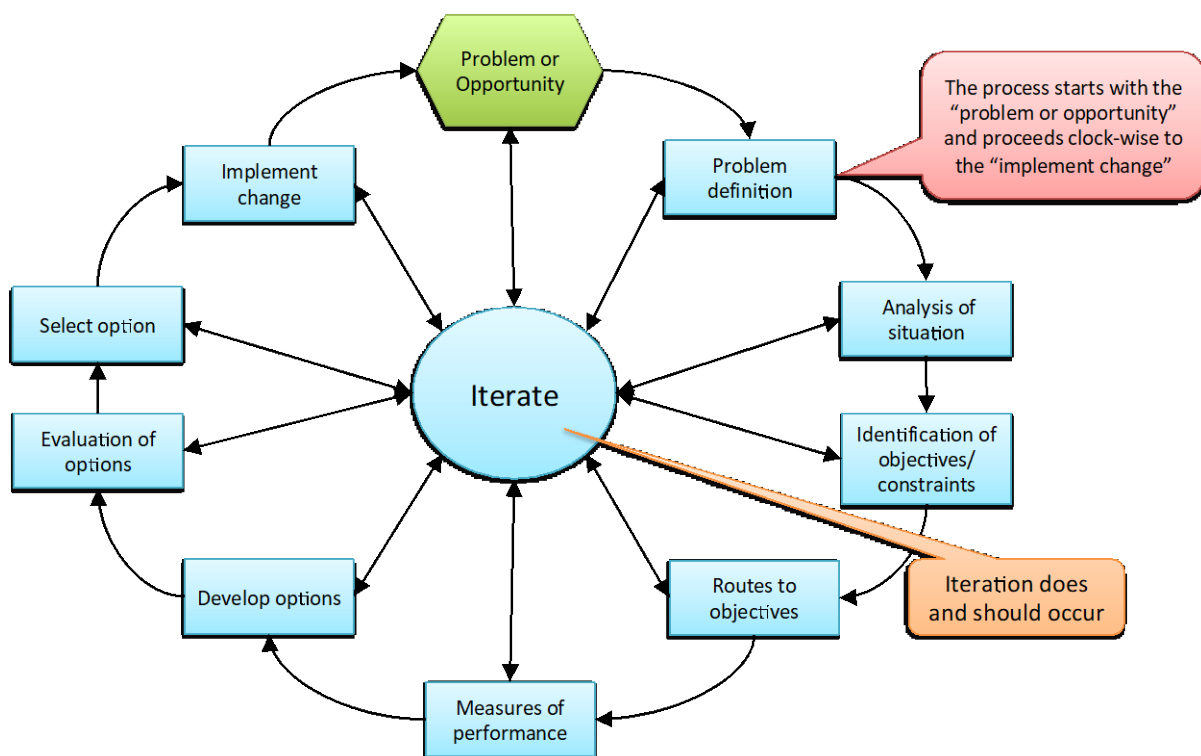


Figure 2: The Hard Systems Methodology

Lets have a look at the process steps in a bit more detail.

Problem definition is about answering the question “what is the problem or opportunity?” In systems terms we are saying that there exists a system whose output(s) is demonstrating an unwelcome deviation from an expected performance. This is a problem and the solution involves the restoration of the existing, satisfactory performance. An opportunity can be viewed as a chance to improve on the existing performance. The aim, therefore, of the initial step is to identify and describe the problem or opportunity and obtain agreement from any interested parties that this is what will be addressed.

Analysis of situation is about defining the current “as is” state and performance level. It is at this point the system boundary is defined in order to decide on “what’s in and what’s out”. The analysis of situation may also require the collection of data and information to quantify the current state and performance level. Iteration with the first step often occurs because the analysis of the existing system nearly always means a redefinition or refinement of the problem or opportunity.

Identification of objectives and constraints is about defining where we would like to be and the constraints that make affect our ability to achieve the new state. It is an important step because it forces stakeholders to clarify what they hope to achieve, but also to understand the external factors and constraints that will restrict our change choices and therefore the level of change.

Routes to objectives is about exploring the different ways of achieving the defined objectives. This itself is a Divergent-Convergent Thinking activity with the divergent phase concerned with generating as many ideas as possible then to converge on a realistic number of definite possibilities to take forward. It is important to note that at this point we are looking for “solution’ in outline with sufficient detail to be able to remove the “weaker” ones to leave the definite possibilities.

Measures of performance is about defining measurable means of assessing the efficacy of any definite possibility. It’s really asking and answering the question “how will we know if the change has occurred?”

Develop Options is about developing the definite possibilities to the position where they could be implemented. This involves doing sufficient work on each option for technical and other details to be defined, and for costs and benefits to be assessed, while at the same time minimising the time and resources devoted to the task.

Evaluation of options is about evaluating how well each option will work. The objective of this step is to determine whether:

- the option will meet the operational objectives
- it is technically feasible
- it is organizationally feasible
- it will meet the financial objectives.

Select Option is about making the choice. This is often not clear-cut and it is not unusual for there to be iteration back to **Routes to objectives** to refine choice and even develop hybrids. It is at this step that any qualitative measures of performance are brought into play.

Implementation is about the detailed design, development and installation tasks required to get the agreed proposal operating. I have also found a very important activity is collecting data on the measures of performance to prove that the desired change has occurred. I often find that people are given promises about the future state that never materialise. By requiring a formal step to prove the change helps ensure the change happens. In the Six Sigma improvement approach one of the formal steps in the DMAIC is the last one Control. This step is about establishing measures and controls to hold and embed the change. It is interesting to note that the improvement approaches, Six Sigma and Global 8D, mentioned earlier are actually both incarnations of the hard systems approach.

One final point about the Hard Systems Methodology shown in figure 2 is that there is an arrow from **Implementation** to **Problem or Opportunity**. This is present to indicate the never-ending nature of change. The successful completion of a project will give rise either to other opportunities or to a further set of problems that need to be addressed.