

System Design and Analysis Tool

For effective system analysis it is necessary to design the system that will achieve the target outcomes. This involves identifying the set and sequence of elements and interactions between them that are needed to achieve the outcomes. Equipped with the design of an effective system it is easy to analyse current systems for opportunities to improve and innovate.

It is hard for most people to hold more than four things in their mind at one time, but there are more than four things involved in achieving business, organisational, community, environmental and regional improvement and innovation. Complex situations like these are difficult to get a shared picture of, and analyse for impact because the human brain cannot easily represent, interpret and integrate all the elements and interactions between the elements. So we need a tool that will help us to see the whole picture, the main parts, and the interactions between the parts. The System Design and Analysis Tool can help us do this. Using it as a group enables the group to develop a shared mental model of what the system is and how it works.

The Systems Design and Analysis Tool can be valuable for analysing current situations in two ways. For designing an effective system to achieve target outcomes and then comparing it to the current systems to see what could be improved. Or if no commonly understood and effective system exists, you can design one..

Support should be sought from a person who has significant experience in using this tool if you are using it for the first time yourself, or you are attempting to help others use it.

Steps for using the Systems Design and Analysis Tool

1. Identify and assemble participants (no more than 15) who are interested in the focus and want to improve their performance. Set up a venue so that participants are seated around an electronic whiteboard or large blank wall area.
2. Develop a SMARTT focus, target outcomes and outputs, and principles based on the 'need' and negotiate them with participants.
3. Identify the important (key) elements of the system that will ensure the focus and outcomes are achieved. Check these elements against the purpose of the system.
4. Describe each key element as a variable (e.g. morale, workforce) i.e. use words that indicate that the element can change up and down.
5. Place the key elements in a logical way so that you can map the relationships between the elements, and between the elements and the target outcomes.
6. Consider the interactions between the key elements. Show the type of interaction and rank its strength (high, medium or low). When elements move in the same direction the interaction is represented with a '+'. If they move in opposite directions the interaction is represented with a '-'.
7. After mapping the major interactions between elements, look at the whole map and work out where the 'points of leverage' are in the system i.e. those elements or interactions between elements that, if effort is put into them, will improve the performance of the system.
8. After considering the points of leverage, rank the elements as to their priority at this point in time. One way is to give each participant an imaginary \$100 000 which they invest in the elements they think will have most impact. They can invest the whole amount in one element or invest smaller amounts in several elements. Or give people an imaginary workforce of ten people or 100 hours and ask them to distribute these for the biggest bang for the buck in the system at this time.
9. From the analysis clearly identify and record opportunities to improve the situation/system.

10. The assumption is that the system design and management tool is being used purposefully to analyse a situation for opportunities for improvement, so two key questions should be considered as the last step in using the tool:
- How will I/we action the opportunities for improvement?
 - Who needs to be involved in implementing and leading the opportunities for improvement?

Inverse system design

Inverse system mapping involves mapping the opposite to the system you actually need. It:

- Uses the energy created by yin and yang
- Can be very challenging
- Can enable people to break out of the paradigms that surround the issue
- Can enable creative and lateral thinking
- Can provide some amazing insights into the 'real' system
- Can help people to break free of negativity about the system.