

# Interpretive Structural Modeling (ISM)

White Paper by D. M. Lee MSc.

This information package consists of two parts:

**Part 1** – The first part provides a overview of ISM which is useful if you are looking for basic information about ISM. (4 pages)

**Part 2** – The second part provides detailed information about methodology and use of ISM via an academic paper by Professor Janes. (F.R. Janes Senior Lecturer, Dept of systems Science, City University, London) (19 pages)

## Part 1 - High level description

### What is ISM?

Interpretive Structural Modeling (ISM) is a unique general purpose analysis and decision support technique that provides a structured method for dealing with complex situations. It generates a visual map of the situation (or problem) that is used to obtain new insights, and construct new approaches to the problem at hand.

ISM is a proven relationship modeling process that select consultants and organizations have used successfully for over 25 years. It is suitable for use as a personal desktop tool or a group problem solving or strategy formation tool. It is the basis component of Interactive Management Method.

ISM incorporates pair-wise comparison, Transitive Logic and Concept Synthesis to construct a visual map of the situation.

ISM is available as a computer application that is easy to use.

### What is ISM used for?

ISM is a general purpose tool, any knowledge work that deals with complex situations can benefit from ISM.

Some examples are:

1. making decisions in a complex situation.
2. create a path or strategy in a complex situation such as strategic planning
3. implementing Interactive Management methodology in an organization. For details on IM please visit [www.sorach.com/items/im/im.php](http://www.sorach.com/items/im/im.php)
4. design or understand a complex system
5. create or improve an organization (human or other).
6. find a structured way to think about a situation or problem
7. find a structured way to present a complex subject or situation to others

8. provide advanced management consulting services
9. design human interface for a computer application
10. design a course curriculum

## Who uses ISM ?

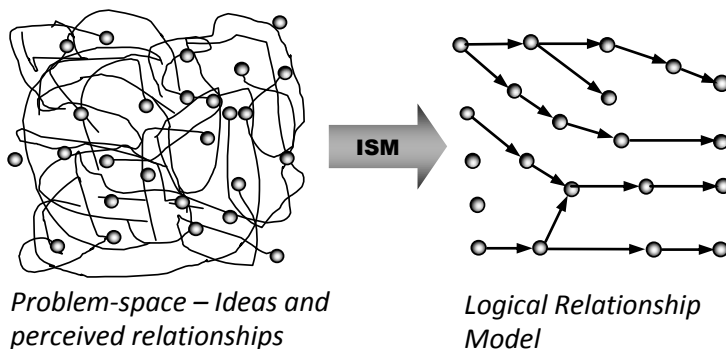
A few examples are:

1. Academic researchers
2. Management consultants
3. Analysts
4. Senior managers and Executives
5. Teachers
6. Social sciences researchers
7. Medical administrators
8. System engineers
9. Risk analysts
10. Policy analysts

Many Prestigious organizations such as IBM, NASA and universities around the world use ISM. For more details on applications please visit: [www.sorach.com/uses.html](http://www.sorach.com/uses.html)

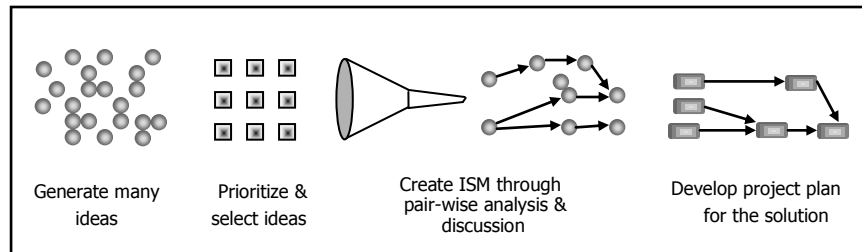
## How is ISM different than other analysis, problem solving and decision-making tools?

ISM is unique because it creates logical links between elements to form a visual map that is a higher level view of the system or problem at hand. Other tools generally breakdown the situation into finer detail and then create simple 'lumps' of information without structured logic and analysis. These tools are *dicoptic* (to divide) tools. In contrast, ISM is a *synthesis* tool. The figure below shows the conceptual synthesis result. These results are used to form solutions or system level understanding of the situation.



For scientific references see part 2 of this paper and visit: [www.sorach.com/references.php](http://www.sorach.com/references.php)

The process steps used for ISM based problem solving are shown in the following figure.



*High level view of ISM process*

### **Is ISM suitable for a group analysis or group problem solving situation?**

ISM fits naturally with group activity. Due to its unique process it creates a sharp focus on the problem at hand for the whole team, facilitates buy-in, and avoids turning off people because it links all of the ideas in the situation map rather than normal processes that work by deleting or selecting ideas.

### **How does ISM software (Concept Star specific) process the information to produce the visual map?**

**This process can be summarized in six steps:**

1. Receive and records votes
2. Calculate Reachability Matrix
3. Use Reachability Matrix to ensure all possible relationships have been determined by direct votes or Transitive Logic as mathematically specified J. Warfield in his definition of ISM theory.
4. Calculate Level Partitions from the Reachability Matrix for each element.
5. Calculate Conical Matrix from the Reachability Matrix in order to surface direct relationships between elements.
6. Finally draw a visual diagram on the screen using the information of Level Partitions and Conical Matrix that is constructed in previous steps.

### **What are the origins of ISM technology?**

ISM was first proposed by J. Warfield in 1973. John N. Warfield is University Professor and Director of the Institute for Advanced Study in the Integrative Sciences (IASIS) at George Mason University, a state university, in Fairfax, Virginia. IASIS is a part of the Institute of Public Policy (TIPP) at George Mason University. For further biographical information please visit: [http://en.wikipedia.org/wiki/John\\_N.\\_Warfield](http://en.wikipedia.org/wiki/John_N._Warfield)

### **If ISM is such an effective tool, why have I never heard about it before?**

Until now, ISM has been a closely guarded secret of select consulting professionals. Teaching this method can erode their competitive advantage. Commonly charged rates are \$4000.00 to \$10,000.00 per day of facilitation using ISM tools.

The main reason for lack of popularity of ISM is that in the past the software has been expensive and there is common misinformation that it is difficult to use. These arguments are false because the software now available is inexpensive and the visual capability makes it possible to learn it quickly.

Earlier versions of ISM software are difficult to use and give an incorrect impression of the value of the technique. Specifically, earlier versions of ISM software make the relationship map look like a set of levels or clusters of ideas which infer a relationship of higher to lower levels, which is ok if all one needs to do is prioritize or categorize ideas. The earlier software did not have graphical presentation capabilities, that means the relationship map had to be drawn manually. The real value of ISM lies in the paths or connections of thought that comprise the relationship map. To see this the ISM software needs to display the relationship map as a visual diagram. Currently available software automatically displays the visual relationship map in a manner that makes identifying these paths easy. The visual map is available at all times during the session for viewing the progress at any time.

Despite the underlying sophistication ISM is fairly straightforward and easy to learn as a group tool or as a personal analysis tool.

### **I am not interested in deep understanding of the theory of ISM, I need more application and general information so that I can understand ISM better. Where can I get it?**

Please use the following list of URLs for further general information including application examples.

[www.sorach.com/cstarone.html](http://www.sorach.com/cstarone.html)

[www.sorach.com/faq.html](http://www.sorach.com/faq.html)

visit [www.sorach.com](http://www.sorach.com) then click on *products* link

For current scientific references please visit

[www.sorach.com/references.php](http://www.sorach.com/references.php)

For purchasing information for ISM software please visit [www.sorach.com](http://www.sorach.com) and click on *products* to learn about Concept Star ISM software.

For detailed scientific and mathematical understanding of ISM please download Part 2.

**Part 2 - This part consists of a paper by Professor Janes that describes ISM technology and application in more detail. This is one of our favorite papers.**

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To download Part 2 – Janes Paper please visit:

[www.sorach.com/paperdownload.html](http://www.sorach.com/paperdownload.html)