



U-SIT And Think News Letter - 08

Updates and Commentary

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Unified Structured Inventive Thinking is a problem-solving methodology for creating unconventional perspectives of a problem, and discovering innovative solution concepts, when conventional methodology has waned.

Dear Readers:

- Professor Toru Nakagawa, of the Osaka Gakuin University, and Mr. Hideaki Kosha, of Fuji Photo Film, Co., are now translating the U-SIT NewsLetters into Japanese and posting them at www.osaka-gu.ac.jp/php/nakagawa/TRIZ/

1. USIT – How to Invent: the USIT textbook.

2. USIT – an Overview

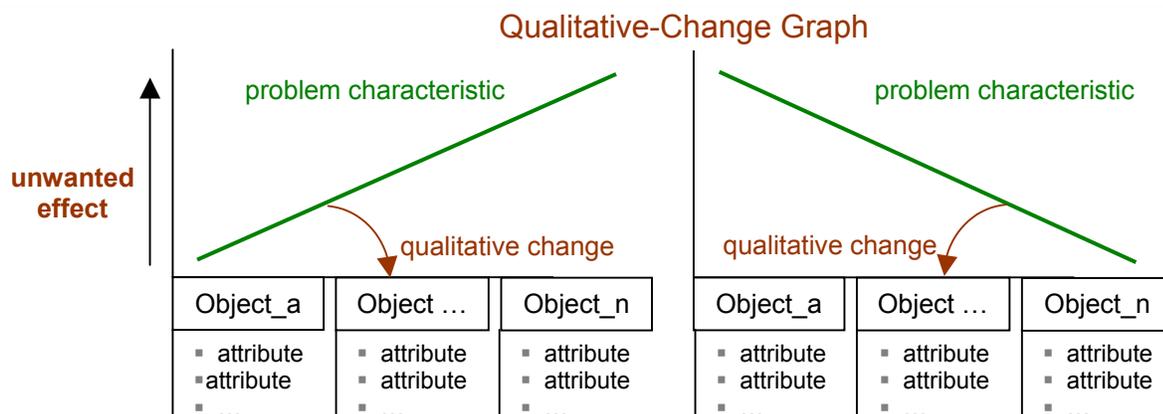
3. Mini USIT Lecture – 08

The Qualitative-Change Graph -- a Tool for Problem Analysis

Continuation of the publisher's problem – "Ink on newsprint is messy. Fix it!"

Recap: In Mini-Lecture_07 the closed-world diagram was constructed for ink, paper, and air. Ink was selected as the most important object. Paper localizes ink. Air has no functional connectivity to either object and is not connected to the other objects. Several of our intuitive solutions have involved air, perhaps more will.

ML_08: So far we have used two USIT analytical tools: the plausible root causes diagram and the closed-world diagram. The plausible root causes diagram allowed us to identify causal attributes. We now turn to the qualitative-change graph to identify trends in causal attributes that worsen the unwanted effect. This will define more clearly the problem we face



Procedure for constructing the qualitative-change graphs:

1. Draw two sets of orthogonal axes for two graphs (to have the same labels).
2. Draw a slanting line of positive slope in one graph and one with negative-slope in the other.
3. Label their common ordinate axis “unwanted effect” with an upward pointing arrow indicating that the unwanted effect becoming worse in the upward direction.
4. On the abscissas add a labeled box for each closed-world object (the same objects for both axes).
5. List under each object all causal attributes that have been identified; but first perform a test to see which of the two graphs the attribute belongs to.
6. Test: if increasing an attribute’s intensity causes the unwanted effect to worsen, the attribute goes in the left-hand graph; other wise it goes in the right-hand graph.

Each of these graphs describes a problem characteristic with the potential of becoming a source of solution concepts. Solution concepts can come from these graphs if we can produce a qualitative change in any of the problem characteristics. A qualitative change requires reducing the slope of the problem characteristic to zero. The problem characteristics are not mathematical functions; they are indicators of general trends.

To find solution concepts from problem characteristics treat each attribute listed individually and (1) make the attribute that apparently is working against us, work for us; or (2) force the slope to zero, which implies to remove the causal attribute. Making a causal attribute work for us may require changing the intensity of the attribute (increase it or decrease it).

Your exercise for the next lecture is to construct the qualitative-change graph for the messy ink problem. Begin with the causal attributes already discovered. But, be prepared to take each one to a deeper level of basic phenomenology if the opportunity presents itself. You may additional ones.

4. Classroom Commentary

An observation: The mini USIT lectures have raised not a single question from readers.

Conclusion: (1) This is the best set of lectures I have ever written; or (2) no body is reading them; or (3) no body understands them well enough to ask a question. [I prefer (1).]

5. Problem-Solving Tricks and Related Miscellany

6. Feedback

7. Q&A

8. Other Interests

Please send your feedback and suggestions to Ntelleck@u-sit.net

To be creative, U-SIT and think.
