U-SIT And Think News Letter - 06

Updates and Commentary

Unified **S**tructured **I**nventive **T**hinking is a problem-solving methodology for creating unconventional perspectives of a problem, and discovering innovative solution concepts, when conventional methodology has waned.

Dear Readers:
First blanketing snow is arriving, delivering the quietude of winter.
Large, soft, white, floating flakes, drifting without purpose,
playing the background music of tranquility, are making the season bright.

My wife and I wish you the happiest of holidays.

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

2. USIT – an Overview

3. Mini Lecture – 06

Intuitive Solutions Update

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

Recap: We completed construction of a USIT well-defined problem for the publisher's messy newsprint problem. Our assignment for this lecture was to update our list of known and generated solution concepts that have come to mind since starting the problem. Normally we would make a written note of each idea as it arises, from start to finish of a USIT problem. In a problem exercise fractured into weekly, brief mini lectures this is difficult to do. So this pause to update our lists is a substitute for the recommended procedure.

As practiced problem solvers our first reaction to a new problem is an instantaneous attempt to solve it. We do this intuitively by recall and association of past experience. We do it subconsciously. First offerings are usually known solutions. Then follow obvious modifications of known solutions to fit the given 'filters" (attributes of the problem). In the present case, we have gone through problem definition and identification of root causes. Several of these should have brought up solution concepts. Here are mine, numbered as [xx]:

On first reading of the problem, "smeared ink" came to mind suggesting wetness of ink as the problem and quick drying as a solution concept – so, [1] heat the paper as it is passing through the presses. Note, this is a conceptual solution; how the heating is done is an "engineering detail" having many possibilities.

[2] Xerography came to mind suggesting using powder ink to avoid wetness. This, of course, doesn't

guarantee it will not smear (it simply responds to wetness). But, we don't throw out ideas at this stage. They may become problems for later consideration. Problems don't dissuade us because we have both the curiosity and the tools for the job.

[3] Lack of absorption, a root cause, suggests increasing the surface tension of the ink to increase its ability to wick into the roughness of the paper.

[4] Smoothness of paper, a root cause, suggests roughening paper.

[5] Air humidity, a root cause, suggests pre-drying and heating air and then forcing it across the paper during printing.

[6] Ink vapor pressure, a root cause, brings to mind heating of ink and applying it hot to aid evaporation of its liquid component.

[7] Physical bond, a root cause, again brought to mind xerography suggesting to use dry ink with high charge on the ink particles during ink application.

[8] Issues of ink possibly being hygroscopic, and air humidity, suggest establishing and maintaining an optimum ambient humidity in the paper-storage and pressrooms.

[9] Packing pressure, a root cause, suggests establishing and maintaining an optimum pressure for rolling newsprint before storage and optimum stress for unrolling it in a printing press.

[10] Chemical activity, a root cause, brings to mind to discuss with a chemist the chemistry of ink bonding to paper and determine what options are available for controlling bonding.

Now that we have updated our list of solution concepts we will move to the second phase of problem solving, the problem-analysis phase. In this phase two viewpoints of a problem are established. The first is to look at the selected set of objects and view them as functioning properly; i.e., as originally designed to operate. The second viewpoint is to identify in detail how the objects contribute to the problem; namely, what is wrong with the system.

For the next lecture your assignment is to examine the minimal set of objects selected, air, ink, and paper, and place them in a hierarchal tree structure showing their relative importance from a functional perspective. This is called a "closed-world" diagram because it analyzes only the limited, closed-world of objects. Sketch three boxes, label each one for one of the objects and see what, if any, functional connectivity they have in a properly functioning design (your view of the initial design intention).

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

To be creative, U-SIT and think.