U-SIT And Think News Letter - 27

Updates and Commentary

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:

- Mini-lecture #27 continues concept generation for the drinking vessel using the CAF table and addresses query #2 from Professor Nakagawa.

1. USIT – How to Invent: the USIT textbook.	$44.50
2. USIT – an Overview	FREE

3. Mini USIT Lecture – 27

"USIT – an Alternative Method for Solving Engineering-Design Problems"

Continuation of **How to Invent** …

Recap of Mini USIT Lecture 26
In mini-lecture 26 we were systematically working our way though the CAF table generating new concepts for a drinking vessel. We reached [SC13]. This lecture continues from that point.

[CAF6]: Center of gravity above half height is characteristic of a truncated-cone design and increases probability of tipping.

Inverted cone shapes, for lower centers of gravity, are used for drinking vessels resting on dashboards of cars. These have flared lips at the narrow end. This type of shape, having a neck with a re-entrant angle, reduces probability of tipping but prohibits nested stacking. This shape brings to mind an idea for an easily rotated tumbler.

Notes and corrections
Several notes were inadvertently omitted from the last newsletter (#26) that belong in the Classroom Discussion section. In preparing the Solution Concepts column of the CAFS table I made some corrections:
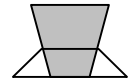#1b, "SCO4" was grayed (or should have been), "SCO4", because it introduced no new concept.
#2a, "trapezoidal" was changed to "truncated-cone" for a three-dimensional shape description.
Also I just noticed in writing this edition that the sketch of the drinking vessel in NL_23 is mislabeled. The comparative diameters should be labeled as D2<D1. (Nobody noticed?)
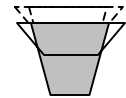
SC14 Move the neck of a double truncated-cone-shaped vessel to its center. This enables easy rotation between the hands for agitating and warming its contents without loosing grasp of the vessel. This shape also sacrifices nested stacking.

SC15 A two piece set of truncated cone shapes will reduce probability of tipping by using one for drinking and the other for supporting the drinking vessel when not in use. These two pieces can be separately nested for stacking.

SC16 The two pieces could be designed to fit together for nested stacking. When used, they would be separated and one used as the support.

****** To Be Continued in the next USIT Newsletter ******

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4. Classroom Commentary

Nakagawa Query #2 (In reference to the "messy newspaper ink" problem.)

Suppose the Team of engineers worked on this problem solving are now going to report their results to their boss, probably some intermediate manager taking care of engineering issues. I think the Team should select a few good solutions, which are worthy of trying. What kind of solution evaluation procedure do you recommend?

In many cases the problem solving Team is responsible to conduct the experiments/trials/prototyping. Thus they have to evaluate their own proposals and to select most promising solution concepts. This selection may often be a preliminary, and some steps before the final decision by the management. In this case, the Manager who ordered to solve this problem would not like to listen to proposals nor intermediate trial results; he just wants clear and clean newsprints.

Evaluation procedure
When a USIT exercise has been completed the problem solver (individual or team) has an unfiltered list of solution concepts. The next step is to deliver these to the owner of the problem and explain each concept in detail. From the onset of this event both parties will instantly question the technical plausibility, implied trade-offs, cost, timing, manufacturability, and many other issues of acceptability of the solution concepts. This is filtering. It is as an essential step.

The owner can be any knowledgeable person who has or is assigned responsibility for solving the problem or getting it solved. This person must be linked to the appropriate management decision-making level. This linkage is essential for establishing a credible problem-solving effort, committing resources, setting timing, and establishing a review process. (In small companies the whole combination of solver, owner, and decision maker may be a single individual. But the question raised regards solver and management relationship.)

Both the solver and the owner must participate in filtering. The owner can't do it alone for lack of knowledge of the thinking that went into creating each concept. Good ideas can be culled erroneously.

The solver can't do it alone for insufficient knowledge of system, product, manufacturing, business and other issues. Bad ideas could be put forth to the embarrassment of the solver.

My preference, from my Ford Motor Company experience, is to involve the owner, or a knowledgeable representative, as a problem-solving team member from the beginning of the USIT exercise (even though the owner may know nothing about USIT). Then end the USIT exercise with the entire team, plus the owner and experts he/she may want present, sharing in the filtering exercise. The results are recorded and the record presented to the owner, and his/her, management. Feedback to the team regarding final ranking of concepts and next-step decisions are requested from management to the team in two to three weeks. This final ranking is added to the record.

Typical owners and owner representatives are involved engineers who are experts in the technology of concern. Although they may not know USIT, they watch the USIT process and are invited to participate in idea generation at every stage of the process. This involvement commits them to ownership of the problem-solving process and its results as well as the problem. Involved owners are a key to successful adaptation of new ideas generated by the team. It also creates return customers.

Management need of results
Never surprise management. No matter how busy the problem-owning manager may be time must be committed up front to a problem-solving team (or individual) for setting initial goals, resources, reviews, and drop-dead timing. If this is not done, the team can waste corporate time and resources. And so can management. Furthermore, it's management's fault. (Tell 'em I said so! ☺) Without such commitment a solver is soon forgotten. Without such commitment management too easily decides, "I'm too busy to be bothered with less than final results – and successful ones at that!" This situation invites unwelcome surprises to management.

A good procedure is to institute a brief, weekly email progress note to management. Monthly, 15-minute meetings between solver (or team leader), owner, and owner's manager are recommended. Never surprise management.

Team participation in *experiments/trials/prototyping* is a common need. It is also a reasonable expectation when their ideas are being evaluated. The team is a corporate resource. Management must use this resource efficiently. Uninvolved management can't do it.

(If I sound too negative, I'll try to improve with Professor Nakagawa's next query.)

8.   Other Interests

Regarding inquiries about ordering the book, "Unified Structured Inventive Thinking – How to Invent", details may be found at the Ntelleck website: www.u-sit.net. The cost of the book is US$44.50 plus shipping and handling. See the website for S/H charges. Send a check made out to **Ntelleck, LLC** for the proper amount, drawn on a US bank, to

Ntelleck, LLC, P.O. Box 193, Grosse Ile, MI 48138 USA

Please send your feedback and suggestions to Ntelleck@u-sit.net
To be creative, U-SIT and think.