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Study on USIT Operators Application Examples

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1. Background

(1) USIT Operators:
   The Powerful Tool, unified various TRIZ Solutions
 however
(2) somehow difficult to use, because of abstraction

2. What to do

(1) a guide for USIT users
   to utilize USIT Operators

(2) easy case studies for
   applicatin of USIT Operators

3. Tools developed

(1) Technical problem grouping
   - USIT Operators
   relevant matrix

(2) (Familiar examples')
   USIT Operators
      Application Examples

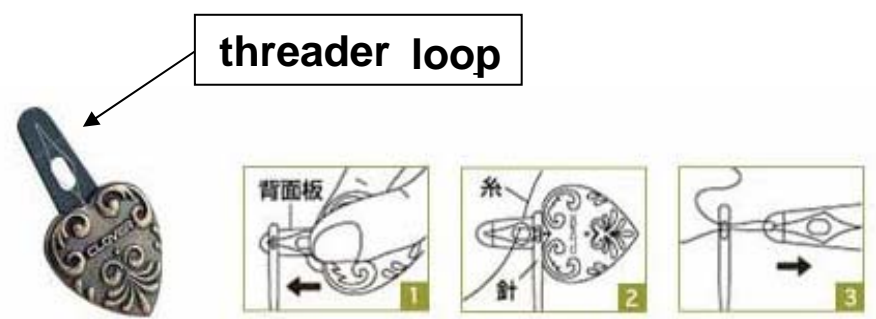| group	No.	example	Needle threader	sources
A	3			mfr report

(1) problems	① Difficult to insert the tip of thread into the needle hole. ② After the thread tip enters the hole, the thread easiy bents and comes out
(2) root causes	① **Needle hole is small.** ② **Edge of thread is fuzzy. ③ Thread is flexible.**
(3) generalized root causes	**B3: transfer efficiency of energy is low ②spacial misalignment**

(4) Description & sketch of the case

1. Place and slide the needle on the back plate. --> The threader loop (made of thin wire) passes through the needle hole easily.

2. Enter the thread into the hole of the threader loop (which is larger than the needle hole).

3. Pull the threader. The threader loop comes out of the needle hole, and the thread passes through the needle hole.

threader loop

(5) Interested/impressed points

A familiar work like passing the thread through a needle hole is analyzed and investigated seriously as an engineering activity. (Maybe the metal material of the threader loop is difficult to develop.)

(6) presumed applied USIT Operators

1d. Introduce or modify
2d. Introduce a spatial attribute or vary in space
3i. Reassign to a different Object
3b. Introduce a new Function
3g. Vary the Function in time.

Usage of Technical problem grouping-
USIT Operators relevant matrix &
USIT Operators Application Examples

① Abstraction of one's problem
→ **What kind of Technical problem grouping**

Ex. Filter for blood plasma
B3 transfer efficiency of energy is low
② spacial misalignment

② Searching solution viewpoints
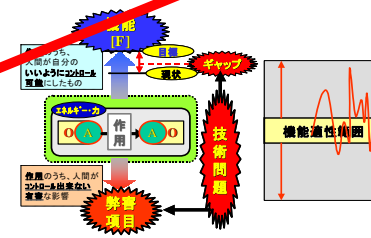→ **frequent USIT Operators in the technical problem grouping?**

2d. Introduce a spatial attribute or vary in space
3b Introduce a new Function
1d Introduce or modify

③ Empowerment for the week viewpoints
→ **idea generation from half-baked USIT Operators**

3b Introduce a new Function
⇒"press blood cell to the tube wall"
= a spiral tube makes it