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Chapter 2

Seven Basic Methods of DTCN

Abstract

This chapter describes the following 7 basic methods of DTCN.

(1) PMD Method

Method to:

a. create a common direction of values among the people concerned for each theme.

b. find the key word for coming up with ideas and procedures

c. do the above in a visible form

(2) Steplist Management Method

Method to create phased faultless thinking, operations, and procedures for decision-making.

(3) 3-5 Phase Improvement

Method to realize a balanced improvement pattern from the present state in 3 or 5 stages.

(4) FBS Technique

Method to create the image structure of the objective. This can also be combined with the NM method if necessary. (Refer Appendix A for of NM method)

(5) WBS Theme Phasing Technique

Method to extract themes and ideas from the people concerned, and assign the theme/ideas in appropriate phases for examination.

(6) RO Method

Method to perform root organizing, and to create and realize new things within the organization.

(7) Implementation Plan Method

Method to combine the above methods to achieve the objective/target.

For the PMD Method and the Steplist Method, more details of their practical use and appropriate combination with conventional methods are described in the next chapter.

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Chapter 2

Seven Basic Methods of DTCN (Design to Customers' Needs)

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2.1 PMD (Purpose-Measure Diagram) Method to Clarify the Relationship between Purpose and Measures (alias the Method of Key Word)

2.1.1 Introduction

In this section, we explain how to create the correct relationship between purpose and measure with the PMD (Purpose-Measure Diagram) Method (alias the Method of Key Word). What it can do and achieve is the following:
(1) When one doesn't know where or how to begin a task, PMD can clarify the focal expression of the goal, and where and how to begin to realize that goal.
(2) The vectors of thought and action of the people concerned can be aligned and fixed clearly on paper.
(3) When explaining an involved situation to a person in a first meeting, such as a superior or a foreigner, it is best to have them read the PMD first. This prevents the content from being transmitted incorrectly or one getting sidetracked, which can often occur with conventional oral communication.
(4) Resolve disagreements when there is a welter of different opinions

2.1.2 Procedure

In ordinary conversation or action, there is always a subject or theme. Our methodology starts with this theme. That is,
(1) Identify the theme for the object of thought or action. (If necessary, use the Theme PMD Method at the end of this section to find the most appropriate expression for the theme.)
(2) Next, ask "In brief, what are we are trying to do with it (subject)?" "In brief, what do we at least have to do?" in relation to the theme, and write down on a piece of paper as many expressions "Do something," as possible in verb and noun form, as they come into mind. When doing this, read aloud the "In brief do something," and try to formulate each expression as "in order to do something, it is necessary to do something" in terms of verbs and nouns.

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(3) In this case, a minimal number of adjective or adverb phrases may be added.
(4) Cut the paper into cards with scissors to obtain independent expressions.
(5) Compare the cards in pairs, and arrange them from top to bottom in a sequence of repeating “In order to do A, its is necessary to do B,” “In order to do B, it is necessary to do C”, and so on, on a large piece of paper, (One may start to compare from any pair.) and create a reasonable “In order to do what”, “how to do” repetition, i.e. reasonable purpose-measure relationship. (One may start the comparison from any pair.) When there is a card which does not fit this vertical sequence in any way, place it horizontally.
(6) After placing all the cards, adjust each sequence so that it makes perfect sense of purpose measure relationship “In order to do A, it is necessary to do B,” “In order to do B, it is necessary to do C.” If necessary, rewrite or add expressions. Also, you can add a blank card where there should be an expression, but it is not yet clear.
(7) When all the sequences become reasonable, fix all the expressions on a large piece of paper with transparent tape.
(8) Looking at the “In order to do what”, “How to do” sequence, seek the expression “In brief, this is what we are going to do” which summarizes both the expressions above and below it. (As if by magic, this expression usually can be found near the middle of the sequences.) This is called the Main Key Word, which expresses the desired result.
(9) In the sequence above, the starting point to realize the Main Key Word appears at the bottom. If it cannot be found, add the expressions “In order to do xx, it is necessary to do yy” below until the starting point appears. This is called the Entrance Key Word. This Entrance Key Word expresses where we start and what we do. The Entrance Key Word may be singular or plural. If it is plural, it shows the division of starting operations.
(10) The sequence read downwards is a repetition of purpose and measures, and when read from the bottom up, gives rough procedures to realize the desired result.. This constitutes the Purpose-Measure Diagram (PMD).

Note: The reason we are saying rough procedure is that to create a faultless procedure requires the Steplist method, which is described later. The PMD only provides a framework and establishes the feasibility in a very rough manner.

2.1.3 Supplementary notes

(1) When the expression on a card cannot be understood, ask the original author. If necessary, revise or rewrite it.

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(2) Because this method uses cards, it can be done with many people. However, 5 or 6 people is optimal.
(3) Using different colors for each person, each person's strengths can be found. As if by magic, almost all the expressions of the participants can be included in the relation of purpose and measure with some adjustments. Making a PMD which uses all the written cards makes the method significant.
(4) In the first PMD, if there is an expression whose content requires more detail, another PMD is performed with that expression.
(5) This is repeated until what to do is perfectly clear. If a relationship of purpose and measure which is incompatible with the laws of physics appears, this means that the goal or desired result is impossible to achieve.
(6) When making a PMD with many people, too many expressions may arise, so it may be useful to provide a summarized PMD. If one has the summarized PMD, it is easy to get people (e.g., superiors and other people who did not participate in the making of the original PMD) to understand the rough structure of the purpose-measure relationship and the expression of the Key Word, and it is also easy to get some additional opinions from them.

2.1.4 Examples

(1) Fig. 2.1-1 shows a PMD made by an office worker in his thirties on the theme "Building and managing an apartment house."

The man is now in his fifties and, using this PMD and the steplist described in Section 2.1, succeeded in building and managing an apartment house. He leads a comfortable life.
(2) Fig. 2.1-2 is a PMD with the theme "A cheap and reliable small handy light." The Key Word appears on level (C). Because the basic items of a small handy light are a battery and a bulb, the PMD shows that the key is to have a reliable ON-OFF circuit for a small electric bulb and battery combination. Therefore, one may concentrate on ideas for this circuit. The above shows that it is easier to come up with ideas once the expression of the Key Word is grasped.

Also, if we look closely at the row of expressions in the PMD, we see that the expressions above the Key Word are more abstract, and that the Key Word is the expression for the desired result. In addition, the expressions below the Key word read from the bottom up constitute a rough procedure for realizing the Key Word.

If we put this diagram into the shape of Fig. 2.1-3, and then compare with Fig. 1.3-1 "Image diagram showing the proper use of the questions "In order to do what", "how to do" and "Why?". We see that the Main Key Word in Fig. 2.1-3 corresponds to point A in Fig. 1.3-1, and the Entrance Key Word corresponds

to point B.
(3) Fig. 2.1-4 shows “A summary of the relation between purpose and measure in project management activities for product development.”

The diagram shows the context of purpose and measures in which PMD and other DTCN methods are used when developing something new to use. The PMD Method comes at the lowest end in the diagram, and hence it must be used first in development plan management.

2.1.5 Considerations

(1) Using the PMD method, what clever people are doing in their heads manifests itself and becomes available and visible to everyone.
(2) Also, if used in a group, the method can combine the knowledge of all the people in the group, and extract their wisdom.
(3) By arranging written expressions of purpose-measure relationships, PMD becomes a positive thinking tool for groups, as well as individuals, for promoting thought along purpose-measure relations.
(4) With existing Value Engineering (VE) methods, first grasping the basic function is considered important. However, textbooks on VE methods define the basic function only as “the expression of function without which the *raison d’etre* ceases to exist,” and leaves open the question of how to actually grasp it. The PMD method expresses the basic function as a Key Word, and thus represents a new development for Value Engineering.

Note: Old textbooks on Value Engineering give the rule that adjectives and adverbs should be omitted in the expression of the basic function “Do something to something,” only allowing verbs and nouns. However, adjectives and adverbs can be important. The expressions “mark temporarily” and “mark permanently” naturally lead to different ideas. For example, the former expression may be lead to ”mark with chalk,” whereas the latter to “mark by carving.” Therefore in Value Engineering for a new era, one should allow a minimum number of adjectives and adverbs in the expression of the basic function, as is the rule for PMD. But this comment does not deny the conventional VE technique, because it is very effective in specific applications to review thoroughly the existing or planned thing or system without adjective and adverb and in support of the new concept above.

2.1.6 Theme PMD Method (Method of Theme Key Word)

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This method is used when the theme required for the PMD Method is unclear. Instead of writing ”Do something to something,” write down as many expressions as possible which serve as candidates for the theme expression (a noun or noun clause). Arrange according to the theme order: up is purpose and down is measure (measure-purpose when read upwards).

Choose the theme expression at the most appropriate level as the theme expression for the desired result. (To distinguish between the two methods, we shall call the ordinary PMD Method the Function PMD Method, and the Theme PMD Method the Noun Key Word Method.)

(Note 1) This method is effective in the following cases:

(1) When determining a theme name which embodies the content

(2) Exiting from chaos faster than with the Function PMD Method

(3) Grasping the structure of the entire theme which is the object of the PMD

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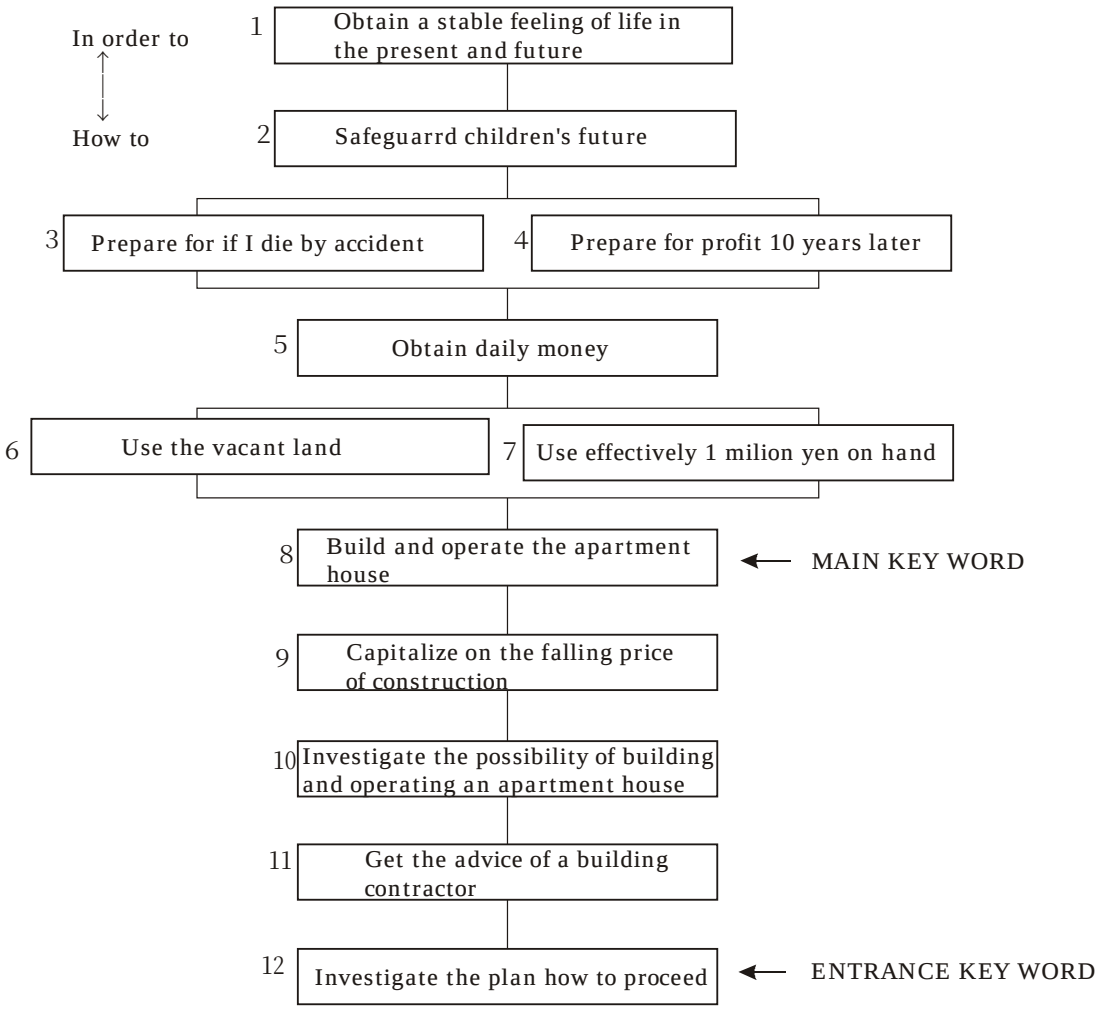
Fig 2.1-1 PMD for building and managing an apartment house



(Note: This PMD is relatd to Fig 2.2-7)

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Fig.2.1-2 PMD(Purpose-Measure Diagram) for a cheap, reliable,handy light

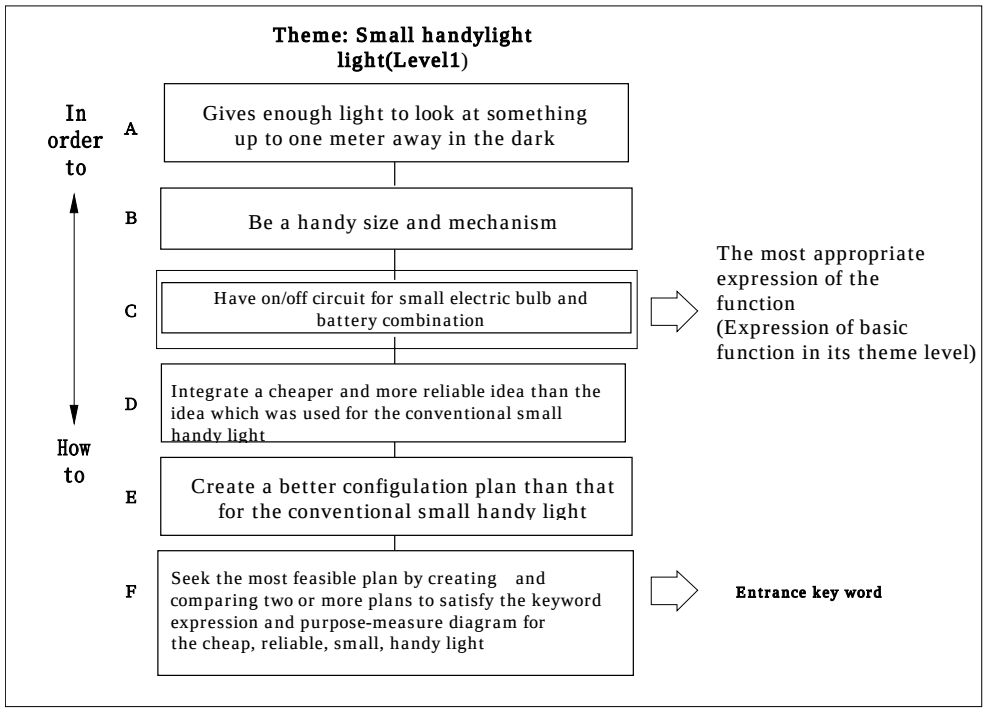

Fig.2.1-3 The Correspondence point between Fig.2.1-2 and Fig.1.3-1

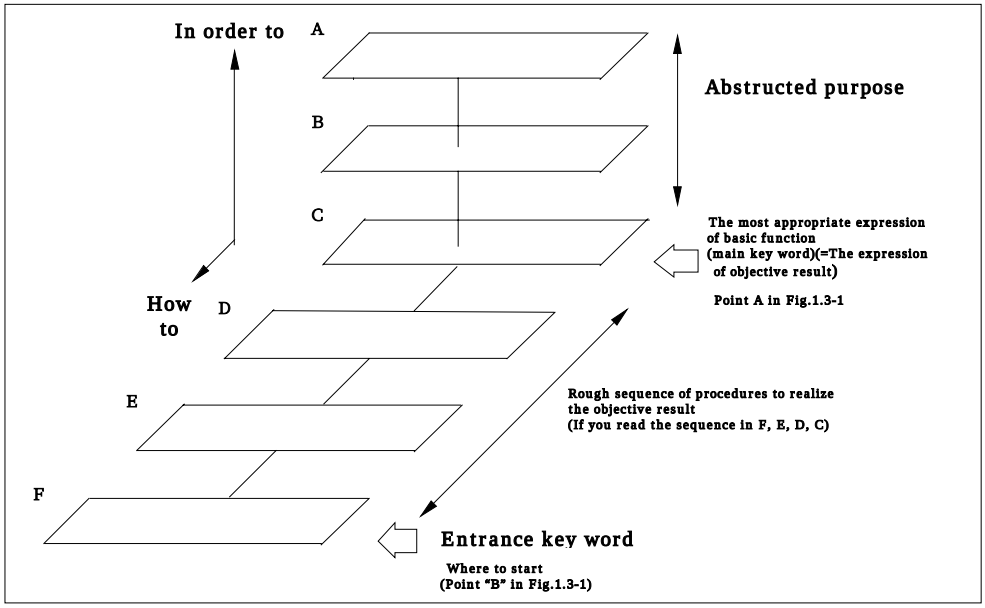

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Fig 2.1-4 Purpose-measure relationhip of project management activities for in product development