

## **2.5 WBS Theme Phasing Technique to Gather Themes and Ideas from the People Concerned and Examine Them in a Timely Manner**

### **2.5.1 Introduction**

### **2.5.2 Procedures**

### **2.5.3 Supplementary notes**

### **2.5.4 Considerations**

#### **2.5.1 Introduction**

In this subsection, we explain the WBS Theme Phasing Technique, a way of faultlessly gathering themes and ideas from the people concerned and examining them in a timely manner.

- (1) To promote a design or plan with a target value, one needs to faultlessly obtain proposals of themes and ideas from the people concerned, and examine them stepwise with the schedule in mind.
- (2) For the above, one has to create the necessary and appropriate framework.
- (3) To create an atmosphere where objections are few, and creative wisdom readily emerges, one adopts the way of thinking derived from the FBS technique; that is, "ideas are important, but one should first enter from a higher-level theme where objections are few."
- (4) What we want at the end is an implementation scheme. However, we should recognize and use the fact that there are 6 entrances to its creation (A, B, C, D, E, and F in Fig. 2.5-1).
- (5) In view of the above, the proposal of a theme for investigation, e.g. "investigate AAAA," is entirely acceptable.
- (6) As in Fig. 2.5-7, a graph should be made to determine whether the present ideas are adequate to achieve the target, and what the previously examined ideas have brought about.

#### **2.5.2 Procedures (cf. Fig. 2.5-2)**

- (1) In order for the people involved to recognize the link between the themes, present them with a springboard WBS (upper left corner of Fig. 2.5-2).
- (2) For the WBS theme at each level, fill in as many ideas or themes as possible in the Theme/Idea Proposal Sheet shown in Fig. 2.5-3. The secretary determines at which phase of research, development, or design they should be taken up and examined. The outlook at each schedule point is estimated by multiplying the sum of the "expected effect of the themes and ideas" with the rough yield rate of each

schedule present.

(3) The themes and ideas extracted in (2) are put into matrix form in the WBS Phasewise Theme List shown in Fig. 2.5-4. Check whether articles which should be considered in other WBS components and other phases are missing.

(Note) Suppose we have ping pong balls of the same type, and a distinction is desired. To do this, number them with a felt-tip pen. This would be an Immediately Feasible Implementation Scheme of Entrance 'F' in Fig. 2.5-1.

(4) Before beginning each phase in research, development, or design, have a design meeting and determine the Advisability of Examination of the theme or idea assigned to that phase (The advisability is considered because the examination of a theme may sometime become unnecessary by the examination of a higher level theme).

This advisability of examination and the follow-up process are shown in Fig. 2.5-2. The follow-up is performed using the form in Fig. 2.5-5, and the expected effects and examined results are summed up.

Fig. 2.5-6 is a form to assign the extracted themes into phases, and promote their idea creation and examination.

(5) Among the themes to be investigated, if there is one which several ideas can be associated with, compare the ideas and choose the most appropriate one. Do this using the trade study worksheet in Fig. 2.5-6.

(6) Make a plan drawing of the selected idea. Making the plan drawing means that materialization of the idea is decided.

(7) There are also themes and ideas, besides the ones associated with a WBS, which occur unexpectedly. They should be written out and added to the items in the FBS and WBS in parallel. This corresponds to Entrance B in the lower left column of Fig. 2.5-2.

### **2.5.3 Supplementary notes**

(1) The theme/idea proposal sheet is used to take down points one notices. The same applies to those used in the PMD or Steplist.

(2) Filling in the theme/idea proposal sheet is not restricted to creating an image sketch. The people concerned should fill in anything they notice.

(3) The point of using the theme/idea proposal sheet is to write out the theme, content, effect, and "where one got the idea from" in a single form. "Where one got the idea from" is particularly effective in concisely expressing the background image.

(4) Prepare a campaign to publicize the themes and ideas already presented, and use the themes and ideas already presented to trigger new ones.

(5) The scheduled curve of Fig. 2.5-7 allows an easy view of target achievement up to the end of each phase of research, development and design, and helps achievement.

The first point on the left in Fig. 2.5-7, Initial Value, indicates the estimate using conventional technology, design ideas and manufacturing know-how. The status curve shows the estimate, which varies as the comparative themes and ideas are created, compared, examined, and adopted. From experience, a scenario should be drawn up which attains 85% of the target upon completion of the plan drawing. (In other words, to within 15% of what must be achieved.)

(6) The idea comparison operation using the DTC trade worksheet, shown in Fig. 2.5-2, is mostly applicable in the design phase up to the completion of the plan drawing. Afterwards, up to the completion of the manufacturing drawing, detailed directions or ideas, as proposed by looking at the plan drawing, become frequent. The method "P drawing discussion meetings" will then be used. The details are explained in Chapter 7, Design To Cost.

#### 2.5.4 Considerations

The design of a product or system can be split into a basic design phase and a detailed design phase.

The basic design phase is where drawings are made to confirm the feasibility of the design, and the resulting drawing is called a plan drawing.

The detailed design phase is where a drawing to manufacture the product is made based on the plan drawing. Such a drawing is called a manufacturing drawing.

(1) The explanation of the making of the plan drawing and the manufacturing drawing in terms of the FBS Technique Diagram in Fig. 2.4-1 is the following:

A. The plan drawing goes downwards on the FBS, with the theme as a key. Therefore, starting from the left (theme) brain plays a major role.

B. The manufacturing drawing goes upwards on the FBS, so the plan drawing becomes concrete. Because looking at a picture (plan drawing) is necessary before making the manufacturing drawings, the process mainly starts from the right (image) brain.

This concept is shown on the left side of Fig. 2.4-8 as figures of the left and right brain, along with the FBS diagram.

The WBS Theme Phasing Technique is a way to accelerate the thinking starting from the left brain up to the plan drawing phase. Once the plan drawing is made, team members can look at it and ideas from

the right brains of people can be easily and quickly drawn on.

<References>

[1] Esaki, Michihiko. WBS Feejingu Teema Tekunikku (WBS Theme Phasing Technique). Paper presented at proceedings of Japan Society of Creativity, Tokyo, Oct. 1983.

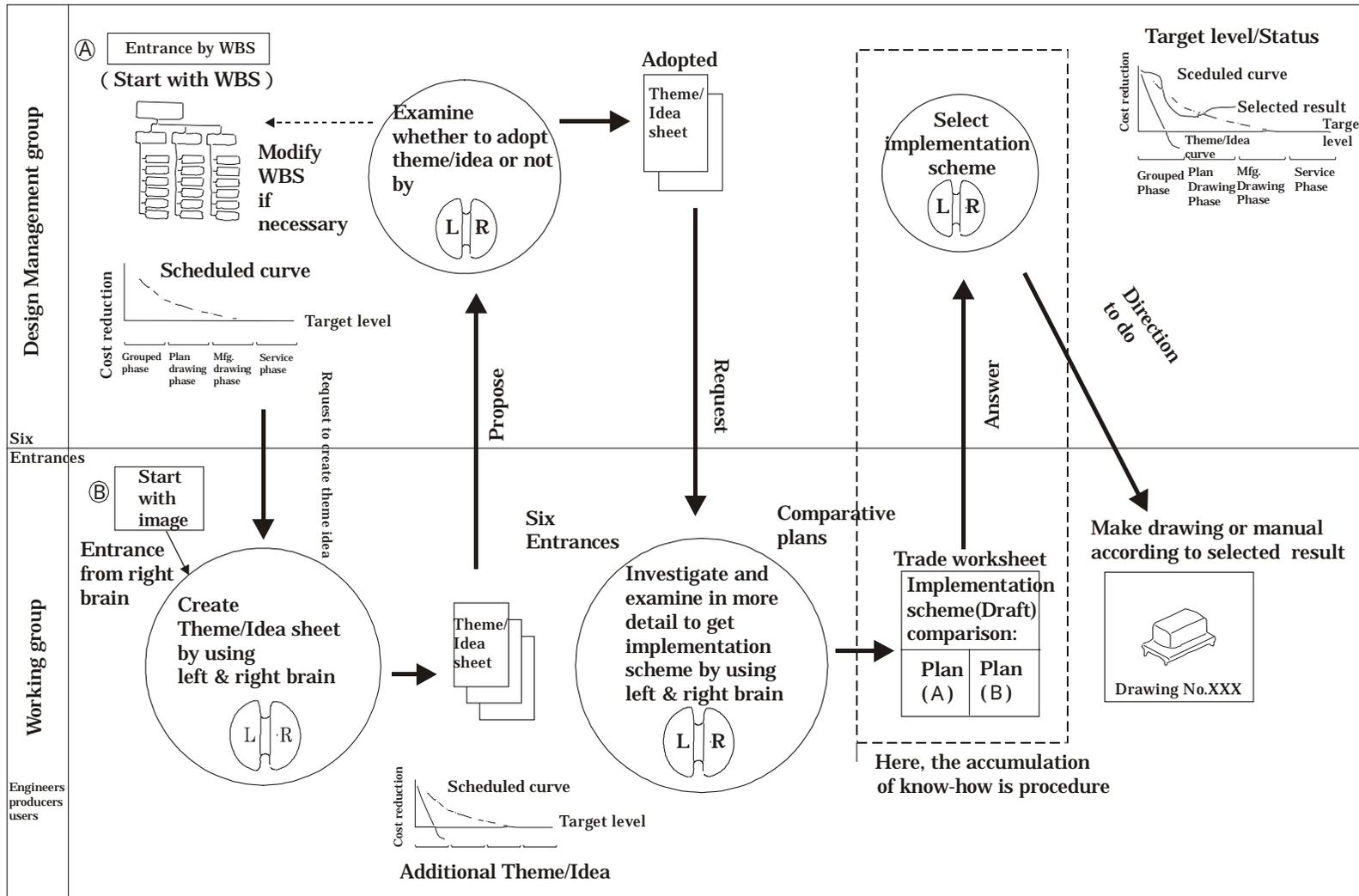
[2] Esaki, M. WBS Phasing Theme Technique. Paper presented at proceedings for International Conference of Society of American Value Engineers (SAVE), Torrance Calif., May 1988.

Fig. 2.5-1 Six entrances to creation of implementation scheme

Six entrances to creating(A-F) implementation scheme (There is feed back and forward feed)	Technique to be used (Example)	Fore and Aft and left and right brain to be used
A → 1 Main theme ↓ 2 Observation or experience of similar items ↓ B → 3 Sub-themes ↓ 4 Choose structure of sub-themes ↓ 5 Decide when to study sub-themes ↓ C → 6 Key Word ↓ 7 Idea/Image creation ↓ D → 8 Implementation plan ↓ E → 9 Comparative plan ↓ 10 Build up and choose scheme ↓ F → 11 Implementation scheme ↓ 12 Test and Review the schemes in relation to target (Realize the target)	1. Purpose-Measure block diagram 2. Differences between design target and present status  1. Photos of similar items. 2. Observation of scene. 3. Observation of nature.  1. In design stage: Use design area WBS 2. To develop manufacturing process: Use mfg. process WBS 3. To develop effective WBS: Use FBS technique.  1. WBS-management theme phasing technique  1. VE-technique or PMD method  1. NM-method  1. Make a plan 2. Make a sketch  1. Brainstorm result 2. Sketch 3. Trade worksheet and comparison table  1. Report results of choice and reasons (Use trade worksheet)  1. Issue work order 2. Issue purchase order 3. Incorporation of results into Drawing  1. Report on actual results	1. Conversation between fore and aft brain ,begin conversation between left and right brain with emphasis on differences.  1. Right brain  1. Left lower brain  1. Allocate phases and priorities for examining the theme by left brain  1. Clarify the relationship between purpose and measure by using fore and left brain  1. Image consideration by right brain  1. Right brain  1. Conversation between people's left and right brain  1. Visualize the peoples's consensus of choice among the people concerned by having a each other's left and right brain.  1. Issue order from left brain point of view 2. Draft drawing from right brain point of view  1. Observe from left and right brain points of view

Fig. 2.5-2 Work Flow by WBS and Theme Phasing management technique

There are two entrances i.e. ① and ② ; ① is the entrance from the left brain by WBS, ② is the entrance from the right brain by image



**Fig.2.5-3 Theme / Idea proposal sheet**

**ACTION**

( _____ ) <b>Theme / Idea proposal sheet</b>		Reg.No.			
<b>Theme*</b>		<b>Company</b>		<b>Proposer</b> TEL e-mail	
<b>W B S Nomenclature or System name</b>		Phase to Examine	0		
1 . Theme(Draft)/Idea(Sketch as necessary)					
2 . What is the purpose or prospective effect?*					
3 . What conditions must be satisfied to implement proposal?					
4 . What led you to create this proposal?					
<b>Result of investigation and/or examination</b>				<b>Theme accented</b>	
				<b>Idea accepted</b>	
				<b>Pending ( up to )</b>	
				<b>Not adopted</b>	
<b>Note:</b> 1. No need to complete all columns(columns marked with an asterisk*/must be completed.) 2. Do not hesitate to propose even if your idea may already have been proposed or is being considered. 3. Proposal must be forwarded to ( ).				<b>Follow up</b>	
				. .	
				. .	

Fig.2.5-4 WBS theme table to reach the design target

**WBS phasing theme matrix**

WBS	Image/Sketch	Concept phase Phase II	Plan DWG. phase Phase II	Mfg. DWG. phase Phase III	Reviwe phase Phase IV
1000		1.Theme 2.Theme		1.Theme	1. Theme 2. Theme 3. Theme
1100		1.Theme 2.Theme		1.Theme	
1110			1.Theme 2.Theme		1.Theme 2.Theme
1120					
1200		1.Theme			
1210		1.Theme			
1220	$\triangle \times 4$				

In this phase, themes to be examined are all plan drawing titles because prior to drafting manufacturing drawings there must be duscussion with manufacturing department personnel.

Fig.2.5-5 Theme-Idea promotion table to reach the design target

Theme/Idea promotion table for each phase Review phase PhaseIV

Theme/Idea promotion table for each phase Mfg.Dwg.phase PhaseIII

Theme/Idea promotion table for each phase Plan Dwg. phase PhaseII

Theme/Idea promotion table for each phase Concept phase Phase I

	WBS	Theme	Contents	Expected results	Assign'd person	Necessary conditions to implement the theme	Results of adjusted conditions	Data	Result
1									
2									
3									
4									
5									
6									



2.5-7 Status of target report

