

# **Function Enhancement Evaluation of VE Proposal by Function Classification**

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## Introduction

### VE(Value Engineering)?

#### ❖ Two Important Concepts of VE

- Cost : expressed quantitatively
- Function : recognized to be important, but hard to express quantitatively

$$\text{Value} = \frac{\text{Function}}{\text{Cost}}$$

The Evaluation is needed for the Function of VE Proposals

## Introduction

### Status of Function Enhancement Evaluation

#### ❖ Status of Evaluation

- 22 among 24 cases showed a function enhancement for the VE proposal
- however, 13 cases of them were expressed as a word of “function improvement”
- Finally, the degree of the function enhancement was evaluated in only 9 cases

#### ❖ Evaluation Method

- the evaluation unit was not specific and was based on the subjective evaluation to the whole suggestion

# Introduction

## Research Scope

- ❖ The VE study in the design phase
- ❖ ②, ④ among the followings, were considered

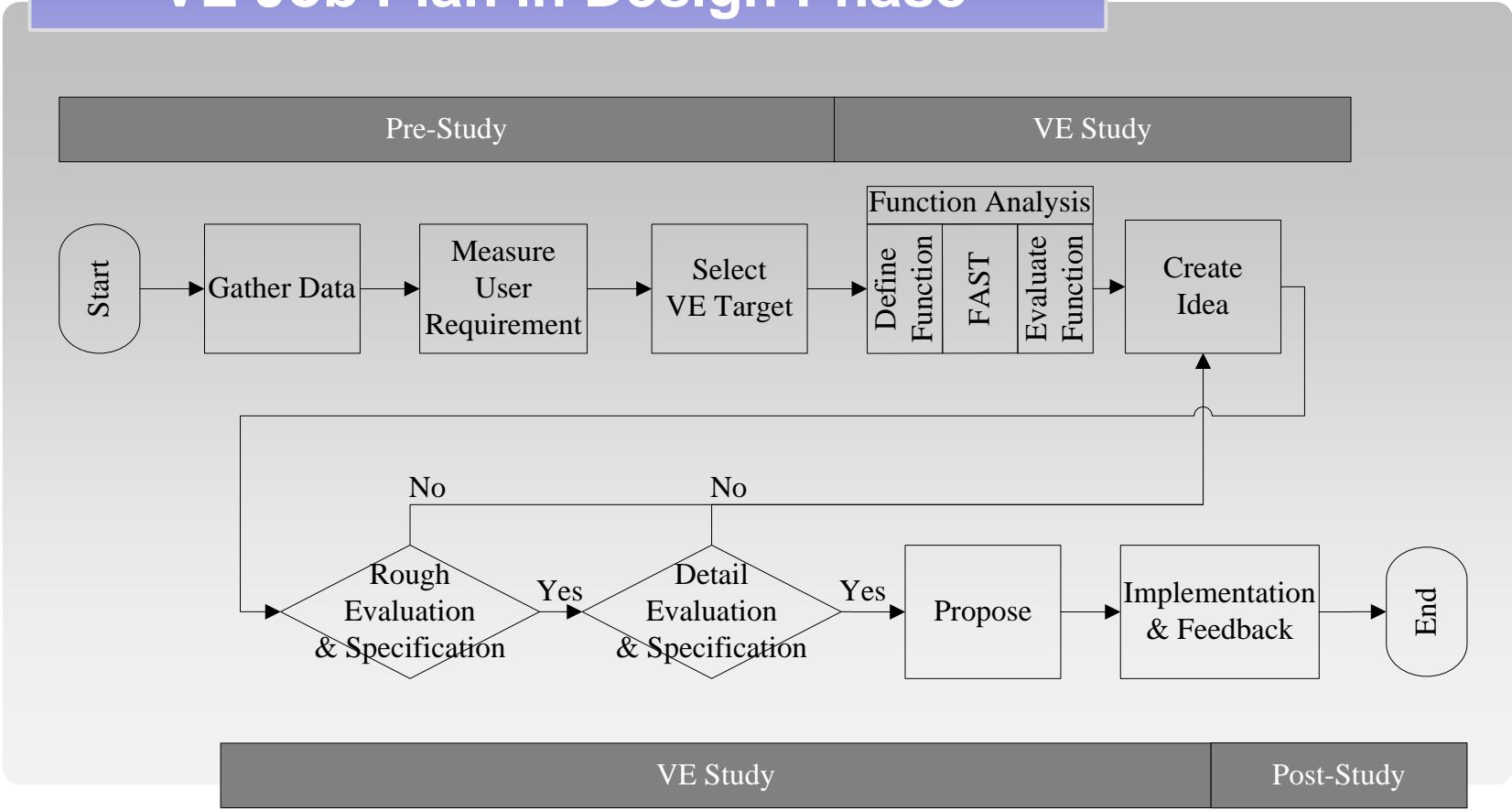
Table. Correlation between Cost and Function

	①	②	③	④
F	→	↗	↗	↗
C	↘	→	↘	↗

- ❖ The development of an evaluation method was not included.

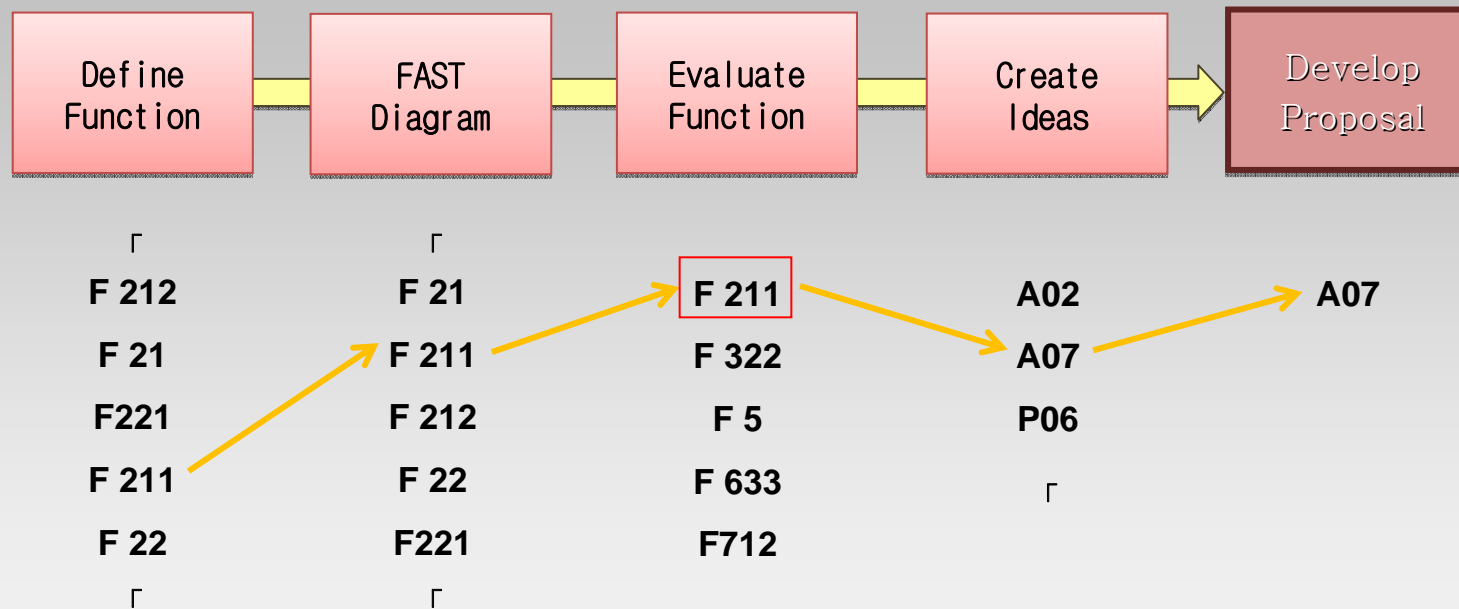
# Literature Review

## VE Job Plan in Design Phase



# Literature Review

## VE Procedure in Design Phase



Is it only one function that could be enhanced by a VEP ?

# Function Enhancement Evaluation by Function Classification

## Development Direction

- ❖ the Number of Function Enhanced by a VEP
  - 215(67%) proposals out of 320 could enhance 2 or more Functions per a VEP

Table. The Number of Function Enhanced by a VEP

The Num. of Enhanced Functions	1	2	3	Over 4	Total
Case A	8	3	5	2	18
Case B	8	6	7	2	22
Case C	4	2	4	1	11
Case D	3	4	5	4	15
Case E	11	13	13	6	43
Case F	10	13	11	7	41
Case G	17	10	17	2	46

It is necessary to classify functions for evaluating VEPs

# Function Enhancement Evaluation by Function Classification

## Instance

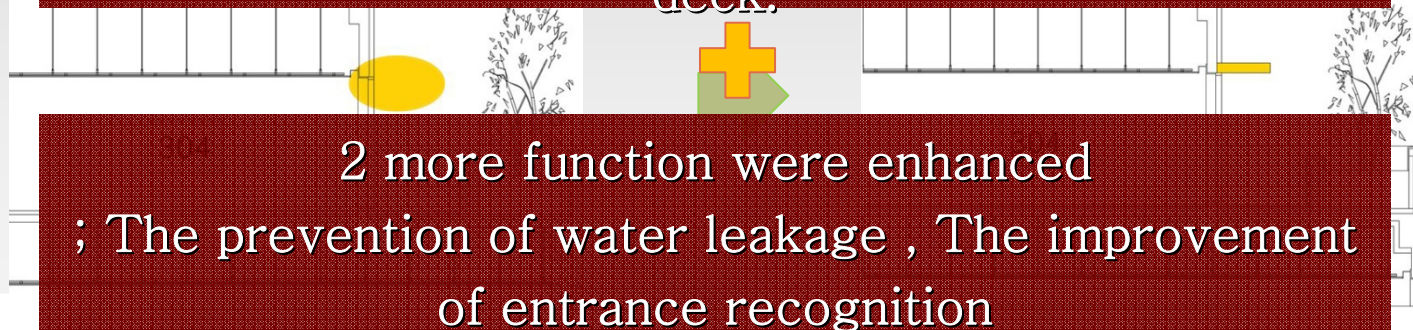
### ❖ VE Proposal (3 function enhanced)

VE Proposal No. : A-20

Function : F2042 Improve Recognition of the Entrance

VE Proposal : In the changing of the upper canopy located at the gate towards the deck on the 3rd floor

It was possible to enhance efficiency for the use of a deck.



2 more function were enhanced  
; The prevention of water leakage , The improvement  
of entrance recognition

## Function Enhancement Evaluation by Function Classification

### Classify Functions Enhanced by VEP

- ❖ **Intended Function(IF)**
  - Function enhanced by intent
  
- ❖ **Additionally Obtained Function(AOF)**
  - Function enhanced additionally, not intended

Evaluating functions enhanced in VEP  
by classified them into two type (IF, AOF)

# Function Enhancement Evaluation by Function Classification

## Existing Evaluation Method

### ❖ Comparing merits with demerits between alternative and origin

- Merits : The prevention of water leakage, The efficiency enhancement for the use of a deck, The improvement of entrance recognition
- Demerits : The difficulty for constructability of structure and finish

→ Result of Evaluation : Possible to enhance user

satisfaction

Result of evaluation is not objective and rational

# Function Enhancement Evaluation by Function Classification

## Modified Function Enhancement Evaluation

### ❖ Classifying “IF” , “AOF”

- The improvement of entrance recognition  
→ IF : Improve the Entrance Recognition
- The prevention of water leakage  
→ AOF1 : Prevent water leakage (positive)
- The efficiency enhancement for the use of a deck  
→ AOF2 : Create a fresh environment (positive)
- The difficulty for constructability of structure and finish  
→ AOF3 : Improve the constructability (negative)

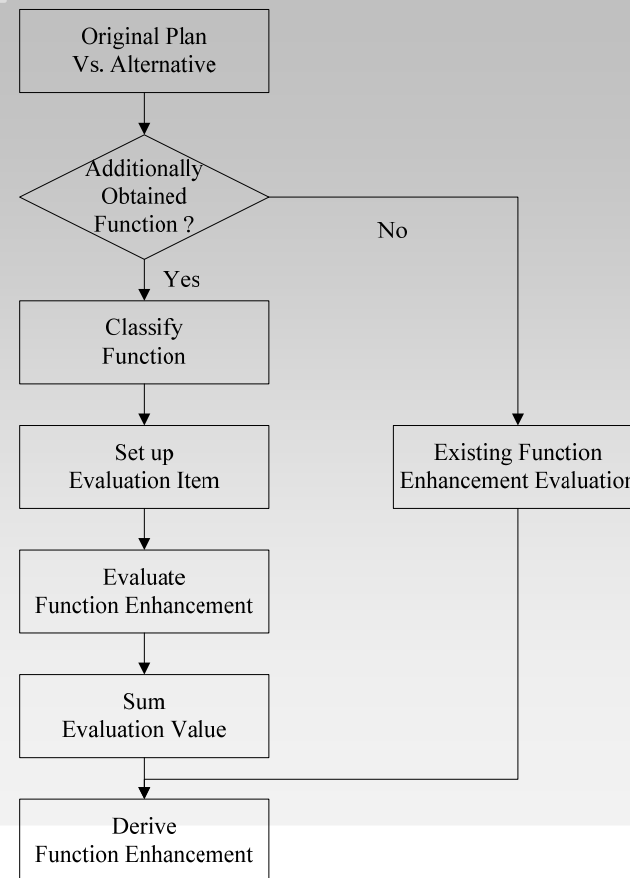
Setting up evaluation units by classification

# Function Enhancement Evaluation by Function Classification

## Evaluation Procedure

### ❖ Modifying Existing Evaluation Procedure

- Recognizing Additionally Obtained Function
- Setting up evaluation unit
- Considering the effect of Additionally Obtained Function (Positive or Negative)



## Conclusion

### Summary and Expectation

#### ❖ Summary

- Problems of existing evaluation method for VEP was Investigated
- The existing simple function enhancement evaluation procedure was modified
- Function enhancement evaluation via function classification in the VE proposal was suggested

#### ❖ Expectation

- It is expected to be a great help in function enhancement evaluation of VEP
- The development of an accurate evaluation method is needed

THANK YOU !!

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