(As of April, 2011)
This book is in process of being translated from Japanese language to English

Book Title (draft)

DTCN Series 2

Redefining WBS (Work Breakdown Structure) and its use
For PM and SE
(DTCN/WBS Method)
By using
the Method for Creating Wisdom from Knowledge

PM (Project management)
SE (Systems Engineering Management)
DTCN (Design To Customers' Needs)

Michihiko Esaki Ph.D.
Translated by
Chris Chikara Nishihama
DTCN Series No.2

**Redefining WBS (Work Breakdown Structure) and its use**

DTCN/WBS Method for PM and Systems Engineering

PM: Project Management

SE: Systems Engineering management

DTCN: Design to Customers' Needs

Michihiko Esaki Ph.D

Supervised by Hiroshi Kikuchi, Managing Director of Japan Manned Space Systems Corporation (JAMSS)

Published by Japan Materials Management Association

Organization of this book

This book is divided into the following sections.

Ⅰ Precise: as Executive Summary: The issues concerning conventional WBS are indicated.

Ⅱ Outline of recognition, measures and effects of the issues indicated in Ⅰ, which will lead to their solutions.

Ⅲ Detailed supplementations for Ⅰ by Ⅱ.

Together with the insights gained from the “Method for creating Wisdom from Knowledge”, the reader will find this to be a valuable book on implementation.

Please periodically check the following URL for new information supplementing this book.


The main references for this book are the following (1), (2).

(1) **Method for creating Wisdom from Knowledge** (2009), published by Japan Materials Management Association


Reference (2) is as mother book for reference (1) and reference (2) is cited in many parts for Book of this “Redefining WBS (Work Breakdown Structure) and its use”.

Please utilize reference (1) book as it is essential reference book for reading this “Redefining WBS (Work Breakdown Structure) and its use”.

The originator: Michihiko Esaki esaki@dtcn-wisdom.jp

This book: “Redefining WBS (Work Breakdown Structure) and its use” was written after reviewing the following materials and books, and then supplemented any insufficient explanations of the conventional WBS method for a more creative thinking and its implementations by using as
reference (1) “Method for creating Wisdom from Knowledge”
http://dtcn-wisdom.jp/00001-R3E1.pdf  ··· through supplementation, the WBS can be identified to include creative and strategy map.
(see http://dtcn-wisdom.jp/E-explanations/2009-7-14-Wikipedia-WBS.pdf)

The reviewed books are

(1) MIL-HDBK-881A : Work Breakdown Structure for Defense Material Items
(2) DOD : MIL-STD-499 (A〜C) Systems Engineering Management
(3) PMI : PMBOK Edition 3
(5) NASA SP-6105 : System Engineering Handbook
(6) INCOSE : System Engineering Handbook
(7) DSMC : System Engineering Management Guide
(8) DAU : System Engineering Fundamentals
(9) Gregory T. Haugan : Effective Work Breakdown Structure
(10) IIBA : BABOK

And Japanese books related to how to create and use “WBS”.


Contents
Preface (as Executive Summary).
1. The position and necessity of this book. ................................................................. 5
2. The necessity of ‘Recognition of WBS’ and ‘Method of Creating Wisdom from Knowledge’ .... 5
3. Essentials of ‘Method of Creating Wisdom from Knowledge’ ....................................... 6
4. ‘What is one able to do by following the instructions of this book’ ................................ 8
5. Indicating the issues of utilizing conventional WBS from the perspective of management... ................................................................................................................................. 14

Chapter Overview
Outcome of solving problem points in the upper-level purpose tasking ............................... 21
1. Understanding WBS through its interpretation ............................................................... 22
2. Mission statement and WBS that indicates Direction of will ....................................... 24
3. Connecting SE and PM with the Direction of will of WBS ........................................... 32
4. Removing the Black Box in business between owner and contractor ............................ 39
5. Relationship of “WBS of name tree structure” and WBS of Function tree ..................... 43
6. Relationship of a faultless phased input and output of the ‘work unit of WBS’ = Work Package of WBS (faultless 4-frame work unit) ........................................................................ 49
7. Phased procedure of WBS capable of induction / deduction approaches by Faultless-Phased work units of WBS ......................................................................................................................... 53
8. What needs to be done in order to have said something is evaluated (in addition to the relationship of Decision Making and Judgment) ................................................... 58
9. Organizational WBS capable of Induction / Deduction approach tasks .......................... 62
10. WBS method of layered hierarchizing, synchronizing and activating related organizations and structures .................................................................................................................. 69
11. DTCN-S MAP method in overall planning and facilitating follow-ups in multi-dimensional matrix formats .............................................................................................. 74
12. Preventative measures and perspectives in risks generated by human error .................. 84
13. Creation of ‘Development/Management requirement’ after the Mission Statement ........... 92
14. Making of Scope and SOW (Statement of Work).......................................................... 98
15. Why PMD (Purpose Measure Diagram WBS) must be made vertically .......................... 101
16. Organizing the Overview (Part 1): example of making a straight forward WBS combination and the instruction and relationship of utilizing it .................................................. 110
17. Organizing the Overview (Part 2): Effect of rewording the expression ‘efficient’ in Article 1 of the National Government Organization Law (for government at Japan only) ... 115

Details .................................................................................................................................. 117

Introduction ............................................................................................................................... 118
Chapter I. Particulars that should be recognized ..................................................................... 119
Chapter II. 5 Patterns of WBS and their combinations
1. WBS that indicates the Direction of will ............................................ 141
2. WBS that indicates the filiation of things, and systems ........................................ 147
3. WBS that indicates Faultless-Phased processing procedures and the Basic model of
   the process Work Package having input and output ............................................. 158
4. Organizational WBS that can conduct induction and deduction approaches ......... 172
5. WBS of the Implementation Plan that ties and hierarchizes the WBS of the Owner, Prime
   contractor and Subcontractor ............................................................................ 177
6. Multi-WBS Method that ties all types of WBS (DTCN-S / MAP methods) ........ 188

Note: Special note : Essence of Super-Map Methodology (Super-Map Management Research
Association, presiding Kazuo Terai) ................................................................. 193

Chapter III. How to utilize the subtleties of WBS .................................................. 204
1. WBS of the Moebius strip that is useful in the early stages of design ................. 204
2. Evaluation and Breakdown Structure techniques by reasonable subjectivity
   for preliminary assessment .............................................................................. 219

Part IV Policy Expression, Mission Statement, etc. .................................................. 229
1. Regarding Mission Statement, etc. ................................................................ 229
2. Integral WBS, component of WBS ................................................................ 231

Afterword ............................................................................................................. 234

Index .................................................................................................................... 245
The main comparison between the conventional WBS method and Redefined WBS method.

<table>
<thead>
<tr>
<th>Conventional WBS management problem in PMBOK and BABOK before 2009</th>
<th>WBS management in this book solves the problem in PMBOK and BABOK after 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No Common Direction of &quot;Will&quot; WBS between PM and SE</td>
<td>Add &quot;WBS of common direction of will among concerned people or stakeholders&quot;.</td>
</tr>
<tr>
<td>2. Therefore, no way to solve the problem in the beginning early stage of Project</td>
<td>i.e. Add PMD WBS Diagram. By this, Black box in business is eliminated in the beginning (early stages) of Project management.</td>
</tr>
<tr>
<td><strong>No Definition of the word “Work”</strong></td>
<td>Word &quot;Work&quot; means ① Work (job), ② Result of work (something or system), ③ Work place (organization), ④ Will of Work</td>
</tr>
<tr>
<td>3. The WBS for things or Systems, the relationship between &quot;Name WBS&quot; and Function breakdown WBS&quot; is not fully explained.</td>
<td>① The relationship of Name WBS for things or systems and Function WBS is clearly explained, and</td>
</tr>
<tr>
<td>② &quot;WBS of things&quot; and &quot;WBS of Procedure&quot; are still mixed up.</td>
<td>② In order create the most preferable plan, and to create comparable and evaluate and select them, the format of trade study for comparison and selection is prepared.</td>
</tr>
<tr>
<td>③ The relationship between PM and SE is not classified yet.</td>
<td>③ The 100% Rule is maintained with each block unit connected as a process with input/output.</td>
</tr>
<tr>
<td>Things or System WBS (filial relationship)</td>
<td>④ Between input and output there is the work (job) block and its assurance conditions,</td>
</tr>
<tr>
<td>Procedure WBS WBS, filial style is connected with procedural sequence.</td>
<td>⑤ After output block there is inspection work with its assurance conditions for next process input.</td>
</tr>
<tr>
<td>Gannto chart that centers around deductive approach</td>
<td>Gannto chart which include inductive and deductive approach</td>
</tr>
<tr>
<td>Each output has no connecting activities to next input (PMBOK)</td>
<td>To connect output to the next process input, there is a work package</td>
</tr>
<tr>
<td>Because of lacking build in QC/QA, QC/QA activities do not effective by work</td>
<td>Controls of QA, QC, and QI can be done simultaneously</td>
</tr>
<tr>
<td>Inputs</td>
<td>Work (Job)</td>
</tr>
<tr>
<td></td>
<td>Item</td>
</tr>
<tr>
<td>Quality Control is to balance between these relationship</td>
<td>Activities of Quality Improvement (QI) is to be built in.</td>
</tr>
<tr>
<td>Control of QA, QC, QI, can be done with PM and SE</td>
<td></td>
</tr>
<tr>
<td>Thing or System WBS</td>
<td>Common Will of SE and PM expressed by PMD WBS.</td>
</tr>
<tr>
<td>Because of allocation of work is allocated in two dimension, it is difficult for inductive approach</td>
<td>SE is method for structuralization.</td>
</tr>
<tr>
<td>Relationship of PM and SE only explained as two sides of a coin</td>
<td>PM is the method for procedure and organization.</td>
</tr>
</tbody>
</table>