Budget and Performance Integration through EVM, BSC, and 6 Sigma at Public Sector

Dr. InKyoung Park, KNDU

2006. 11. 18
## Contents

1. Government Performance Management

2. EVM (Earned Value Management)

3. The Characteristics of BSC, EVM, Six Sigma

4. Budget Allocation through EVM, BSC, and 6Sigma

5. Status of EVM Application at R.O.K
EVM Role at Performance Management (U.S.A)

<< Integration Total Scoring System >>

Method
- PMA Scorecard
- GPRA (Annual Perf. Plan)
- PART
- OMB A -11 Section 300

Object
- President’s Mgmt.Agenda
- Agency Mission & Strategic Plan
- Program
- Program
- Program
- Investment
- Investment
- Investment
- Investment

EVMS

Effectiveness
- 1
- 2
- 3
- 4
- 5

Outputs
- Efficiency

Earned Value Management
Performance Management (U.S.A)

Expanded Electronic Government

Competitive Sourcing

Budget / Performance Integration

Improved Financial Performance

Strategic Mgmt. of Human Capital

Earned Value Management
우리나라 성과 관리 제도

<table>
<thead>
<tr>
<th>R.O.K 정부 업무 평가 기본법</th>
</tr>
</thead>
<tbody>
<tr>
<td>주요 정책</td>
</tr>
<tr>
<td>국무조정실</td>
</tr>
<tr>
<td>재정성과</td>
</tr>
<tr>
<td>기획예산처</td>
</tr>
</tbody>
</table>

-4-Earned Value Management
GPRA 요구사항을 만족시키는 프로젝트 요건들입니다.

<< GPRA Requirements >>

Set-Up
- Compile List of Available Contract Vehicles

Planning & Estimates
- Determine Available
  - Contractors
  - In-House Performers

Execution
- Select:
  - Contractors
  - In-House Performers
- Monitor Contract Usage

Tracking
- Review Actual vs. Estimated Budgets
- Collect Actual Performance & Cost Data
- Compare Fund Utilization, Obligations, Invoices, Etc.
- Sample Reports:
  - Contract Detail Report
  - Vendor Detail Report
  - Contractor Performance

Reporting
- Sample Reports:
  - Contract Detail Report
  - Vendor Detail Report
  - Contractor Performance

Contract Management
- Determine Baseline, Budget
- Build Budget Submissions & Execution Plans and Scenarios

Budget Management
- Determine Baseline, Budget
- Build WBS
- Identify Related Strategic Goals
- Set Project EVIs
- Tie EVIs to Strategic Goals
- Set Performance Metrics

Earned Value Management
- Build WBS
- Create WBS
- Performance Metrics
- Estimate Resources
- Develop IGE (Costs)

Contract/Task Order Management
- Execute Orders:
  - Contracted
  - In-House Performers
- Compare Spend Plans To Available Funds

Funds Management
- Identify Fund Sources
- Compare Fund Utilization, Obligations Invoices, Etc.
- Fund Detail Report
- Project Funding Allocation Tree
- Make/Buy Analysis
- WBS Summary/Detail
- CV & SV by EVI
- Contribution to Goal
- EVI Detail Report

Planning & Estimates
- Build WBS

Earned Value Management
미정부 성과 관리 제도

PART는 Program Assessment Rating Tool의 약자입니다.

✔ 프로그램 수준의 성과 평가에 초점을 맞춤

✔ 구성으로는...
  • 4개 영역으로 나누어진 25개의 기본 질의 사항
    - [Program purpose and design (20%), Strategic planning (10%), Program management (20%), and Program results (50%)]
  • program types 7개의 프로그램 유형
    - [Competitive grant programs, Block/formula grant programs, Regulatory-based programs, Capital assets and service acquisition programs, Credit programs, Research and development programs, and Direct federal programs]
      - Seven Excel Spreadsheets at http://www.whitehouse.gov/omb/part/
      - Five (5) potential rating categories
        - [Effective, Moderately Effective, Adequate, Ineffective, or Results not demonstrated]

✔ 2007년 예산 기준으로, 1000 여개 프로그램 PART를 사용하여 OMB를 평가하였음
OMB CIRCULAR NO. A-11

PART 7

PLANNING, BUDGETING, ACQUISITION, AND MANAGEMENT OF CAPITAL ASSETS

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
JUNE 2005
A-11 Section 300

• Instructs on budget justification and reporting requirements for major acquisitions

• Requires the Exhibit 300

• Establishes policy for planning, budgeting, acquisition and management of Federal capital assets, including IT
  - designed to coordinate OMB’s collection of agency information for its reports to the Congress required by the Federal Acquisition Streamlining Act of 1994 (FASA) (Title V) and the Clinger-Cohen Act of 1996
  - to ensure that the business case for investments are made and tied to the mission statements, long-term goals and objectives, and annual performance plans that you developed pursuant to the Government Performance and Results Act of 1993 (GPRA)
  - for IT, to ensure that security, privacy and electronic transactions policies are fully implemented
### Comparison of OMB-Approved Baseline (original or current) and Actual Outcome for Phase/Segment/Module of a Project (Investment)

<table>
<thead>
<tr>
<th>Description of Milestone</th>
<th>Schedule</th>
<th>Planned Cost ($M)</th>
<th>Funding Agency</th>
<th>Actual Outcome</th>
<th>Percent Complete</th>
<th>Actual Cost ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Date</td>
<td>End Date</td>
<td>Duration (days)</td>
<td></td>
<td>Start Date</td>
<td>End Date</td>
</tr>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion date: OMB-approved baseline:</td>
<td>Estimated completion date:</td>
<td>Total cost: OMB-approved baseline:</td>
<td>Estimate at completion:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B.** Provide the following investment summary information from your EVMS data (as of date):

**B.1.** Show the budgeted (planned) cost of work scheduled (BCWS): $__________

**B.2.** Show budgeted (planned) cost of work actually performed (BCWP): $__________

**B.3.** Show the actual cost of work performed (ACWP): $__________

**B.4.** Provide a performance curve graph plotting BCWS, BCWP and ACWP on a monthly basis from inception of this phase or segment/module through the latest report. In addition, plot the ACWP curve to the estimated cost at completion (EAC) value, and provide the following EVMS variance analysis.
미정부 성과 관리 제도

<< EVM at Exhibit 300 >>

PLANNING, BUDGETING, ACQUISITION, AND MANAGEMENT OF CAPITAL ASSETS

<table>
<thead>
<tr>
<th>Project (Investment) Summary (Cumulative)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Variance = (BCWP-ACWP) =</td>
<td></td>
</tr>
<tr>
<td>Cost Variance % = (CV/BCWP) x 100% =</td>
<td></td>
</tr>
<tr>
<td>Cost Performance Index (CPI) = (BCWP/ACWP) =</td>
<td></td>
</tr>
<tr>
<td>Schedule Variance = (BCWP-BCWS) =</td>
<td></td>
</tr>
<tr>
<td>Schedule Variance % = (SV/BCWS) x 100% =</td>
<td></td>
</tr>
<tr>
<td>Schedule Performance Index (SPI) = (BCWP/BCWS) =</td>
<td></td>
</tr>
<tr>
<td>Two independent Estimates at Completion (EAC) = ACWPcum +</td>
<td></td>
</tr>
<tr>
<td>(Performance Factor (PF) X (BAC minus BCWPcum)), where PF1 = 1/CPI, and PF2 = 1/(CPI X SPI). =</td>
<td></td>
</tr>
<tr>
<td>Variance at Completion (VAC) = (BAC minus EAC) for both EACs above =</td>
<td></td>
</tr>
<tr>
<td>Variance at Completion % = (VAC/BAC) x 100% for both EACs above =</td>
<td></td>
</tr>
<tr>
<td>Estimated Cost to Complete (ETC)=</td>
<td></td>
</tr>
<tr>
<td>Expected Completion Date = (ECD)=</td>
<td></td>
</tr>
</tbody>
</table>
Performance Management System

- Performance Management System Framework (R.O.K.)

Ministry

President Report

Strategic Planning

Contracting for MBO

1/3 of Program (every 3 year term)

Ministry MPB

K-PART: Program Review: Self-Assessment

Ministry MPB

Significant Problem

Program Evaluation

Earned Value Management
BPS (Budget Performance System) Framework of Korea Coast Guard

Program Evaluation Outcome Resources Allocation Budget Allocation

# of Program BSC (45%) AHP Portfolio Outcome Analysis Top Down (Policy Decision)

25 Logic (55%)

Feed Back

Earned Value Management -12-
Contents

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EVM (Earned Value Management)

- Actual vs. Plan
- Measure Earned Value
- Estimate EAC and ECD
EVM Evolution

- **1950**
  - WBS

- **1960**
  - PERT/CPM

- **1970**
  - PERT/COST
  - EV

- **1980**
  - C/SCSC

- **1990**

- '62
- '67

- '96

※ **C/SCSC**: Cost/Schedule Control Systems Criteria
## EVMS의 5개 범주/32개 기준
(미국규정 : ANSI/EIA)

<table>
<thead>
<tr>
<th>기 준</th>
<th>내용</th>
</tr>
</thead>
</table>
| 조직구성 (5) | 1. WBS, CA 정의  
2. OBS 정의  
3. WBS에 따른 계약자 내부 시스템 통합  
4. 간접비 관리 조직 및 책임 정의  
5. WBS와 OBS 통합 |
| 일정계획 및 예산편성 (10) | 6. 작업의 연관관계를 고려한 일정계획 수립  
7. 마일스톤, 수행목표, 성과측정단위 결정  
8. 원가통제계정 중심 실적측정기준선 설정  
9. 비용요소가 파악된 원가통제계정에 예산편성  
10. 개별작업폐거지식별 및 측정단위 예산수립  
11. 원가통제계정에 예산배정 및 내부 예산편성  
12. LOE의 정의  
13. 각 조직 단위의 간접비 책정 및 편성  
14. 예비비와 미배정 예산 설정  
15. 사업목표예산과 예비비/편성예산 비교 |
|  | 16. 회계규정에 따른 직접비 기록  
17. 원가통제계정의 직접비를 직업항목과 연계  
18. 원가통제계정의 직접비를 조직별 직접비  
19. 소요될 간접 비용 기록  
20. 단위가격 펀드  
21. 자원계획시스템을 통한 지원관리  
22. 월 단위 통제계정상의 비용/일정 편차 파악  
23. 비용/일정 펀차의 원인 분석  
24. 간접비 주요 펀차 파악  
25. 비용/일정 펀차에 따른 데이터 수집  
26. 문제해결을 위한 조치 실행  
27. 사업완료시점의 예산 추정  
28. 변경사항에 따른 비용/일정의 영향 파악  
29. 기준예산을 계획된 예산으로 조정  
30. 변경사항에 대한 소급적용 통제  
31. 승인되지 않은 수정/변경 방지  
32. 실적측정기준선 변경사항 기록 및 문서화 |

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**Earned Value Management**

-16-
EVMS 적용기준 및 절차

활동

범주

기준

조직 구성

업무 정의

작업분해구조, 조직분해구조 정의

일정/예산 계획

업무 계획

RAM 작성 및 원가통제계정 설정

회계고려사항

업무 수행

원가통제계정별 예산 편성 및 일정 계획

분석 및 보고

성과 측정

실적측정기준선 설정

변경/Data 관리

성과 분석

원가통제계정별 직접비, 부서별 간접비 기록

변경/Data 관리

변경 통제

비용/일정편차 및 편차발생 이유분석

변경사항 기록 및 데이터 유지관리

미국 규정 (ANSI/EIA): 5개 범주와 이를 세분화한 32개 기준으로 구성

Earned Value Management
Earned Value Management
Comparison of Standards

- PMBOK 2000 identifies generally accepted Project Management knowledge and practice ('in the large')
- ANSI/EIA 748 outlines basic guidelines for establishing and applying an EVM system ('in the large')
- AS4817 defines the essential process steps of the EVM method (consistent with PMBOK & ANSI)

Different Standards for Different Needs
# Earned Value Management
## Comparison of Standards

<table>
<thead>
<tr>
<th></th>
<th>PMBOK 2000</th>
<th>AS4817-2003</th>
<th>ANSI/EIA 748</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5 Process Groups</strong></td>
<td>5 Categories</td>
<td>11 Steps</td>
<td>5 Categories</td>
</tr>
<tr>
<td><strong>(9 Knowledge Areas)</strong></td>
<td>(32 Guidelines)</td>
<td>(54 Requirements)</td>
<td></td>
</tr>
</tbody>
</table>

**INITIATE**
- Decompose the Project Scope
- Assign Responsibility
- Schedule the Work
- Develop Time-Phased Budget
- Assign Objective Measures of Performance
- Set the Performance Management Baseline

**PLAN**
- ORGANISATION
- PLANNING, SCHEDULING AND BUDGETING

**EXECUTE**
- Authorise and Perform the Work
- Accumulate and Report Performance Data
- Analyse Project Performance Data
- Take Management Action
- Maintain the Baseline

**CONTROL**
- ACCOUNTING CONSIDERATIONS
- ANALYSIS AND MANAGEMENT REPORTS
- REVISIONS AND DATA MAINTENANCE

**CLOSE**
Performance Measurement Baseline (PMB)

Source: Humphreys & Associations, 2004

Earned Value Management
EVM Metrics and Analysis

Cost

EAC

ETC

EV

AC

PMB

PV

SV=EV-PV

CV=EV-AC

Overrun

Slippage

BAC

VAC

Now

Time

TCD

ECD

Earned Value Management
1. THE PLAN

Work Scope

Time Period

Work Plan

Budget Plan

2 4 2

2 2 2 2

1 1 1 1

$20

Earned Value Management
The Program Plan

DEFINE WORK

SCHEDULE

BUDGETED COST OF WORK SCHEDULED ($M)

Design △△ 4
Manufacture △△ 6
Component Test △△ 4
Assemble △△ 4
Integrated Test △△ 2

Months

$20

-24-
Plan = $17

Cost = $13

Earned Value Management
**Plan, Actuals & Earned Value**

**VARIANCES**

**Schedule Variance** = Performed - Plan

\[
SV = \frac{10}{17} - \frac{10}{17} = \frac{-7}{17}
\]

**Cost Variance** = Performed - Actuals

\[
CV = \frac{10}{13} - \frac{10}{13} = \frac{-3}{13}
\]
Measurement/Analysis/Estimation

Source: Humphreys & Associations, 2004
EV Variance and CPI

Source: Humphreys & Associations, 2004

Earned Value Management
The Top 10 CST Risk Drivers illustrate that Project X has 5 Low CST Risks, 3 Medium CST Risks, and 2 High CST Risks. These are the areas the RMT would focus their attention and in preparation of an IBR, the PM/RM should request in advance, program documentation for these elements.

Schedule Variances tend to pose a greater degree of risk because their impact is typically horizontal across multiple WBS elements. Cost Variances are more vertical and impact primarily the same leg of the WBS for which it belongs.
* Control Account (CA) :
PMB Cascading: Performance and Cost Integration

Bottom-Up Approach with EVM
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Dimensional Evolution of Measurement and Management Practices

Measure (Quality)

Time or Sequence

Cost

Cost

Quality (KPI, TPM)

Time

Now

Earned Value Management
WBS ALLOCATION with WORK PACKAGE

Source: SPAR PERCEPTION, 2004

Earned Value Management
# The Characteristics and Role of BSC, EVM, and 6 Sigma

![Diagram showing the characteristics and role of BSC, EVM, and 6 Sigma](image)

## Performance Management

- **Pre-Performance Validation**: TCO, BSC, ROI
- **In-Process**: PMBOK, EVMS
- **After-Performance Analysis**: CSI

## Comparison Table

<table>
<thead>
<tr>
<th></th>
<th>BSC C</th>
<th>EVM</th>
<th>6 Sigma</th>
</tr>
</thead>
</table>
| **Focus**             | - Strategy  
- Performance Management  | Performance Measurement  | CPI |
| **Criteria**          | KPI   | - Performance  
- Cost  
- Schedule  | CTQ |
| **Function**          | - Management  
- Plan  | - Measurement  
- Forecasting  
- Early Warning  | - Improvement  
- Control |
| **Application**       | Program | Project | Process |
| **Position**          | - Pre-Investment  
- After-Investment  | Interim-Investment  | - Pre-Investment  
- After-Investment |
Strategic Planning and BSC

<<Performance-Based Budget>>

Strategic Goals

Goal 1
Goal 2
Goal 3
Goal 4
Goal 5
Goal 6
Goal 7
Goal 8
Goal 9

Source: ROHM, “Perform”, 2005
Top-Down Approach (CTQ and Theme)

- Corporation Strategy
- SUB Strategy
- Team Strategy and Direction
- Theme

Company Y’s CSF/Big Y

CTQ

KPI

Theme

Earned Value Management
DMAIC/DMARIC / MADV / IDOV / DMADOV

Six Sigma

Define → Process?  Measure → Analyze → OK?  Improve → Control

N  Y  N  N

Y  N

Re-Design

Design  Optimize  Validate

DFSS

Identify  Design  Optimize  Validate
BSC / EVM / TQM / 6 Sigma 상호 연계성

Mission Vision

경영 목표

Performance

개선 활동

Lean 6 Sigma 개선활동 (DIDOV / DMAIC)

Earned Value Management
The Combination of BSC, EVM, and 6 Sigma

- BSC Methodology with Performance and Cost Management Solution
- Balanced Six Sigma
- EVM with Quality
- Total Solution
Hybrid Framework of BSC and 6 SIGMA
The Integration of Strategy, BSC, EVM, and 6Sigma
Integrated Measurement Framework of Earned Value

QWBS  PWBS  SWBS  OBS

Contract

Project

New Construction Program

Source: SPAR, PERCEPTION, 2004

Earned Value Management
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Mission and Performance Alignment

Source: John Mercer 2003
Budget and Performance Integration

Strategic Plan
- Mission/Vision
  - Strategic Goals
  - Objectives
  - Performance Goal
  - Measures

Performance Model (EVM)
- Targets

Budget Cycle
- Appropriation
- Program
- Initiatives

Program Manager
Bureau
Agency
OMB
President
Congress

Source: SAS Korea, 2006
BPS of Korea Coast Guard

Budget Performance System (BPS)

Planning

Execution

OUTCOME

BSC Model (45%)

KPI (15%) (Qualitative)

Performance (30%) (Quality + Quantities)

Logic model (55%)

Program Management (15%) (Qualitative)

Program Progress (20%) (Qualitative)

Effectiveness (20%) (Qualitative)

Quantity for Program Performance and Priority

Earned Value Management
Budget and Performance Integration through the Harmony of BSC, EVM, and 6 Sigma

- Strategy
- Strategic Learning Cycle Chain
- KPI
- BSC
- Budget
- Operation Management Cycle Chain
- Resource
- Operating
- Performance
- Improvement
- EVM
- 6s

Review

INPUT

OUTCOME

Earned Value Management
Cascading Hybrid PM: KPI (BSC), Budget (COST), Progress (EVM), and Improvement (6Sigma)

- Mission statement
- Strategic Goal
- Strategic Objective
- Strategic Performance Goal
- Annual Performance Goal
- Performance Indicator
- Program Measure
- Activity
- Task (Sub-activity)
- Theme
- Mega Y
- Big Y
- CTQ

<table>
<thead>
<tr>
<th>BSC</th>
<th>Budget</th>
<th>EVM</th>
<th>6Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPI</td>
<td>Cost</td>
<td>Progress</td>
<td>Quality</td>
</tr>
<tr>
<td>%</td>
<td>$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Budget and Performance Integration with Cascade

Strategic Goal 1: ₩626M
- Strategic Objective 3.1: ₩208M
  - SPG 3.1.1: ₩76M
  - APG 3.1.1.1: ₩76M
  - Program Measure 3.1.1.1-PM.A: ₩24M
  - Program Measure 3.1.1.1-PM.B: ₩18M
  - Program Measure 3.1.1.1-PM.C: ₩11.1M
  - Program Measure 3.1.1.1-PM.D: ₩9.02M
- Strategic Objective 3.2: ₩256M
  - SPG 3.2.1: ₩168M
  - APG 3.2.1.1: ₩163M
  - Program Measure 3.2.1.1-PM.A: ₩34M
  - Program Measure 3.2.1.1-PM.B: ₩22M
  - Program Measure 3.2.1.1-PM.C: ₩18M
  - Program Measure 3.2.1.1-PM.D: ₩11.08M

Strategic Goal 2: ₩441M
- Strategic Objective 3.1: ₩208M
  - SPG 3.1.2: ₩132M
  - APG 3.1.2.1: ₩132M
  - Program Measure 3.1.2.1-PM.A: ₩18M
  - Program Measure 3.1.2.1-PM.B: ₩11.1M
  - Program Measure 3.1.2.1-PM.C: ₩9.02M
- Strategic Objective 3.2: ₩256M
  - SPG 3.2.2: ₩93M
  - APG 3.2.2.1: ₩93M
  - Program Measure 3.2.2.1-PM.A: ₩11.08M
  - Program Measure 3.2.2.1-PM.B: ₩9.02M
  - Program Measure 3.2.2.1-PM.C: ₩6.372M

Strategic Goal 3: ₩472M

Strategic Goal 4: ₩464M

Strategic Goal 5: ₩132M

Department Mission: ₩2,135M

Source: John Mercer, 2003

Earned Value Management
Hybrid Model for BPI

Mission

Strategic Goal

Strategic Objective

Strategic Performance Goal

Annual Performance Goal

Performance Indicator

Program Measure

Activity

Task (Sub-activity)

EVM, BSC, 6 Sigma Program-Activity-Task PM

Earned Value Management
EVM (Earned Value Management)를 통한 예산/성과 관리

상황실의 진도상황을 이용하여 대통령-부-국...등의 조직 단위에서 다양한 측면의 성과 분석 현황과 예측에 대한 **Reporting**이 가능하여야 합니다.
EVM is Everywhere —
“Let’s do it!”

Welcome to this Year’s 17th Annual International Integrated Program Management Conference

If you are new to the field, sessions will help you gain a better understanding of the fundamentals of EVM and its practical applications and benefits. If you are an experienced veteran, the conference will help you stay abreast of new developments and give you a chance to impact evolving trends—your input just might make the difference!

With 90 sessions of training seminars, practice symposia, workshops, and tool tracks, you will truly have a chance to see how EVM is everywhere!

Professional Education Training Seminars

Training Seminars are part of the Professional Education Program of PMI-CPM. The training program provides opportunities to improve knowledge and abilities in applying performance management. To satisfy this need, the training program focuses on proven and effective processes that are broadly applicable in industry and government.

2005 Conference Program Team
You’re invited...

to the dynamic world
of Earned Value
Management (EVM)!

18th Annual International Integrated Program Management Conference
Hilton Alexandria Mark Center, Alexandria, VA
November 6-8, 2006

Proven, real-world EVM solutions emphasizing successful performance management with …

• Special guest speakers, professional education training seminars, topical workshops, practice symposia, and networking opportunities hosted by leaders in business and government

• The latest technology innovations, including a full track devoted to EVM and PM tools

• Innovative scheduling and cost estimating techniques

• The fundamentals of EVM

Sponsored by:
Project definition and plan integration are key elements of the organizing and planning processes early in the program management process.
Baseline Change Request

COMMERCIAL SENIOR MANAGEMENT
CONTROL ACCOUNT MANAGER
PROJECT CONTROL GROUP
HUMAN RESOURCES
FINANCE

Determine Budget
Assignments

Initiation of a Project
Work Scope and Definition of a Project
Scheduling and Resource Planning of a Project
Formal Work Authorisation of a Project
Recording Expenditure for a Project
Cost Collection and Resource Availability for a Project
Schedule and Cost Updating of a Project
Reviewing and Reporting Status of a Project
Baseline Change and Control Management of a Project
Contract Change

CAT 1

CAT 2

CAM Plans
Budget
Project Status Report
Performance Reports
Measures

Corrective Action Log

Variance Analysis Reports
CAT 3 Baseline Maintenance
Stage 2-4 Planning

Compile CAM Folder (Part 2)

Consolidate information and generate reports

Progress Review and Update

Forecast Estimate to Complete
Update risk register

Story Board – With Examples

PLAN – STEPS 1-6
EXECUTE - STEPS 7-11

Error! Reference source not found.

Earned Value Management

-61-
EVM 시스템 구현과 Interface Mapping Program

효과적인 EVM 구축을 위해서는 다양한 DATA원천 (ERP, Legacy 등)에서 원활한 Interface가 가능해야 하며, 분석, 평가 및 예측이 가능해야 합니다.
EVM 시스템 구축을 위한 솔루션 구성도

PMS, Legacy Sys.  PBI 구성도

Microsoft Project  Performance-Based Plan
Cobra
공정
회계
재무
인사

ETL  Data 집계

PBB  Data Mart

사이드계획솔루션 ➫ 사이드계획솔루션을 통한 성과 위주 프로젝트 계획, 예실 분석 및 Forecasting

예실 분석 ➫ 예실 분석을 통한 성과 관리솔루션 활용

EVM Index 분석 ➫ EVM Index 분석을 통한 성과보고서 생성

Forecasting 분석 ➫ Forecasting 분석을 통한 성과보고서 생성

Web Portal

Contractor

Project 담당자

분석보고서 ➫ 분석보고서를 통해 프로젝트별 다양한 통계 분석 및 보고서 작성

심사위원회

성과보고서 ➫ 성과보고서를 통해 프로젝트별 성과 관리솔루션 활용

업무관리솔루션 ➫ 업무관리솔루션 활용을 통한 주요 성과 지수 분석 및 관리

Earned Value Management
국외 EVMS 추진동향

- 1992년 미국, 캐나다, 호주 등이 방위능력 개선을 위한 협력 사업의 효율적 수행을 지원하기 위한 국제성과관리위원회(IPMC) 창설
- IPMC는 사업 성과관리에 관해 회원국 간의 정책(policy) 및 실례(practice)에 대한 정보를 상호 공유하고 EVM의 채택을 촉진시키기 위해 설립된 정부대 정부간의 포럼(forum) 형태로 활동 중
Contents

1. Government Performance Management

2. EVM (Earned Value Management)

3. The Characteristics of BSC, EVM, Six Sigma

4. Budget Allocation through EVM, BSC, and 6Sigma

5. Status of EVM Application at R.O.K
EVM is Coming
Earned Value Management
Application

1. Government and Public Side

2. Industry (Construction and Civil Engineering)

3. Defense (Korea Helicopter Project)

4. IT (S/W Development Project)

5. University (Risk Management)
Construction Ship and Repair

Cost Estimating

Planning, Budgeting & Scheduling

Labor & Manpower Cost Management

Purchasing & Material Cost Management

Earned Value Management Reporting

Cost/Schedule Analysis

Source: SPAR PERCEPTION, 2005
Hybrid Model

- Parametric Estimation Model
- E V M Plan
- Compare Actual vs. Planed
- Adaptive Forecasting
- Revision PMB
- Measurement
Software Control & Adaptive Forecasting (QSM)

Estimation/Planning

Measurement

Control & Forecasting

Benchmarking/Process Improvement

Viable Strategy

Make Commitment

Baseline for Comparison

Manage Commitment

Long Term Corporate Knowledge Base

Analyze Performance on Commitment

Source: QSM, 2005
By applying statistical process control concepts to software projects, we can assess how much variance is normal and when corrective action is needed.
Thank You!
경영목표와 6 시그마 활동 연계

경영상태

COPQ 감축 (내부 낭비비용)
VOC/VOB 대응 (고객, 시장)

원가 절감
생산성 향상
품질 향상

매출 증대
Speed 향상
고객 만족

사업 단위

Level1 CTQ(Small y) 선정
Level2 CTQ(Small y) 선정
챔피언/BB/GB 프로젝트 추진 (단기 과제)

기능단위

업무 프로세스 표준화
 의사결정 스피드화

서비스
판매/마케팅
물류

6 σ
개발/제조단계의 QM 프로세스 사례

요구 품질 전개

부품 전개

설계 FMEA

설계 FTA

설계검증 DOE

동적 시뮬레이션

요구 품질평가

공정능력

CONTROL PLAN

작업표준

검사표준

Earned Value Management
프로젝트 전개 Process

경영목표

VOC 분석
VOB 분석

전략·목표 확정

Core CTQ (Big Y)

Level1 CTQ(Small Y1)
Level2 CTQ(Small Y2)

Quick Fix과제

No

Project 선정

Project 우선순위

챔피언 Project
BB Project
GB Project

Project 수행

Project 성과 측정

성과 관리

평가·보상

Level1 CTQ(Small Y1)
Level2 CTQ(Small Y2)

성과 관리

영업목표

COPQ 분석

 Earned Value Management

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6 Sigma 개선활동 프로세스 사례

제7장의 MSA

분석의 순서

개선의 단계

- Process Mapping
- C&E Matrix
- FMEA
- MSA (Cause & Effect)
- Capability Study
- Multi-Vari Analysis
- Design Of Experiment
- Control Plan

Input 변수

Input 30

10-15

연속 전환

8-10

연속 2차 필터링

4-8

변수 변이 분석

3-6

변수 변이 경사

Earned Value Management