Seven Success Factors for CMMI based Process Improvement

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Risk of Failure

STRATEGIC PLANNING ASSUMPTION(S)

Two-thirds of process improvement initiatives within application development organizations will fail within three years of initiation (0.7 probability).

Definition of Success
Definition of Success

1950 - Deming

-5% Investment

Process

-20% defective

Output

-10% defective

Less Defect (High Quality) with less unit cost

+10% savings
Definition of Success

Impact of Software Process Improvement: Boeing Data

- Software Estimates (Efforts = Labor Hours)
  - Without Historical Data
  - With Historical Data

- Productivity
  - 1992: -12%
  - 1993: -28%
  - 1994: -39%
  - 1995: -52%
  - Increased Productivity

- Post Release Defects
  - Level 1: 10
  - Level 2: 5
  - Level 3: 1

- Cycle Time
  - 1992: 100
  - 1996: 30
  - 20% Faster

John Vu, Boeing, keynote talk at SEPG ’97, “Software Process Improvement Journey (From Level 1 to Level 5)”

Sept 2001
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Seven Success Factors

- Business Objectives & Leadership
- Separation of Powers & Ceasing Over-Commitment
- Result-Oriented Processes
- Wide Spread Involvement & Awarding System
- Correct Planning for Transformation
- Tools are Just Tools!
- Sustainable Transformation
# Meteksan - April 2006

## Table

<table>
<thead>
<tr>
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## Summary

- **Total # of PA**: 17
- **Red**: 7
- **Yellow**: 9
- **Green**: 1

## Graph

- **Total # of PA**: 20
- **Red**: 10
- **Yellow**: 15
- **Green**: 20

- **Red**: 7
- **Yellow**: 9
- **Green**: 1
<table>
<thead>
<tr>
<th>Typical Issues in CMMI Implementations</th>
<th>Status</th>
<th>Çözüm Önerileri</th>
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<tbody>
<tr>
<td>1 Business Objectives linked to CMMI</td>
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<td></td>
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<tr>
<td>2 Tools (too much expectations from tools)</td>
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<td></td>
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<tr>
<td>3 Plan (long term short term balance)</td>
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<tr>
<td>4 Separations of Powers (Implementation, Consulting, Appraisal)</td>
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<tr>
<td>5 Organization (no democracy during war) / Overcommitment</td>
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<tr>
<td>6 Human Factor (no slaves but believers)</td>
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<td></td>
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<tr>
<td>7 Leadership (from top to down) -- Group Mng, Prj Mng.</td>
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</table>

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<thead>
<tr>
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<tr>
<td>Aylık Gözden Geçirme Toplantılar</td>
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<tr>
<td>Süreç Sorumlulukları'nın Prj ve Grup Yöneticilerine dağılımı</td>
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<td>%20 fazla kestirimler</td>
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<td>Geçikmelere sempatik yakalıyoruz</td>
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<td>CMMI Fazla zaman alıyor demek yanlış (baka bir ifade bulmak)</td>
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<td>Proje Ynt. iş yükü</td>
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<td>&quot;Amacı ve faydasi&quot; anlamadığınız herşeyi lütfen sorun</td>
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<td>CMMI Süreç Alanları'nın üzerinden geçmek</td>
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<td>Ayda 2 kere toplantı- Grup Ynt, Prj Ynt, Süreç Sahipleri, Bireyler</td>
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Meteksan Sistem Kurumsal Uygulamalar ve Yazılım Geliştirme Direktörlüğü

CMMI ML3
Seven Success Factors

- Business Objectives & Leadership
- Separation of Powers & Ceasing Over-Commitment
- Result-Oriented Processes
- Wide Spread Involvement & Awarding System
- Correct Planning for Transformation
- Tools are Just Tools!
- Sustainable Transformation
Business Objectives & Leadership

Typical Business Objectives:

1. Increase Scope
2. Decrease Cost
3. Decrease Duration
4. Decrease Defects
Business Objectives & Leadership

How many leaders? Who is leader?
Business Objectives & Leadership

The Broken Windows Theory

- Identify the broken windows
- Fix them
- Warn the one who broke it, punish if necessary
Business Objectives & Leadership

Three Secrets of Japan Emperor
Business Objectives & Leadership

Three Secrets of Japan Emperor
Business Objectives & Leadership

Three Secrets of Japan Emperor

Objective

Info

Penalty

Award
Business Objectives & Leadership

Deming's 14 points

1. "Create constancy of purpose towards improvement".
2. "Adopt the new philosophy".
3. "Cease dependence on inspection".
4. "Move towards a single supplier for any one item".
5. "Improve constantly and forever".
6. "Institute training on the job".
7. "Institute leadership".
8. "Drive out fear".
9. "Break down barriers between departments"
10. "Eliminate slogans"
11. "Eliminate management by objectives".
12. "Remove barriers to pride of workmanship"
13. "Institute education and self-improvement"
14. "The transformation is everyone's job".
Business Objectives & Leadership

WHY?
Seven Success Factors

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Separation of Powers & Ceasing Over-Commitment
Separation of Powers & Ceasing Over-Commitment
Separation of Powers & Ceasing Over-Commitment

Overload

Resource Shortage

Quality Result

Rush Unhappy Employee

Neat Happy Employee

Normal Load

Resource Abundance

Poor Quality Result
Separation of Powers & Ceasing Over-Commitment

**LEGISLATIVE BRANCH**
- The Congress
  - House of Representatives; Senate
  - House and Senate can veto each other's bills

**EXECUTIVE BRANCH**
- The President
  - Executive office of the president; executive and cabinet departments; independent government agencies
  - The president can veto congressional legislation.

**JUDICIAL BRANCH**
- The Courts
  - Supreme Court; Courts of Appeal; District courts

Congress approves presidential nominations and controls the budget. It can pass laws over the president's veto and can impeach the president and remove him or her from office.
Separation of Powers & Ceasing Over-Commitment
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Result-Oriented Processes

Meaningful Processes for Customer

A Large Financial Software Company
1. Provide good products at good prices
2. Acquire customers and maintain good relations with them
3. Make it easy to buy from us
4. Provide excellent services and support after the sale

Texas Instrument
1. Strategy Development
2. Product Development
3. Customer design and support
4. Manufacturing capability development
5. Customer communication
6. Order fulfilment
Result-Oriented Processes

Simple

Meaningful

Result Oriented

Multi Layered

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Result-Oriented Processes

- Build Planning and Download
  - Milestone and Release Builds
  - Build Planning
  - Nightly Build
  - Commit
  - Approved Code
  - Review
  - Modified Code
  - Code Changes

- Modify

- Use
  - Software Use
  - Bugs, Requests
  - Bug Reports, Feature Requests
  - Users
  - Developers
  - Committers

- Voting and Code Access
  - Requirements
  - Get Code
  - Approved Features
  - Latest Code
Result-Oriented Processes

Heterarchy

Hierarchy
Result-Oriented Processes
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Wide Spread Involvement & Awarding System
**Wide Spread Involvement & Awarding System**

<table>
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<tr>
<th>#</th>
<th>PA</th>
<th>Processes</th>
<th>Process Owner</th>
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<th>CM</th>
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<th>Test</th>
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Wide Spread Involvement & Awarding System

The Fifth Discipline

1. Personal Mastery
2. Shared Vision
3. Mental Models
4. Team Learning
5. Systems Thinking
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Correct Planning for Transformation

- IDEAL
- Short and Long Term Balance
- Water Drop Technique
Correct Planning for Transformation

Level 1
Individual Learning

Level 2
Group Learning

Level 3
Organizational Learning
IDEAL

- Learning
  - Propose Future Actions
  - Analyze and Validate
  - Implement Solution
- Acting
  - Refine Solution
  - Pilot/Test Solution
  - Create Solution
- Establishing
  - Plan Actions
- Diagnosing
  - Develop Recommendations
  - Set Priorities
- Initiating
  - Charter Infrastructure
  - Build Sponsorship
  - Set Context
- Stimulus for Change
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Definition of Software Process

Process – a sequence of steps performed for a given purpose (IEEE)

Software process – a set of activities, methods, practices, and transformations that people use to develop and maintain software and the associated products (SEI)

September 2001

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11/15/2007
Tools are Just Tools!

Recognized Adoption Issues

“70% of tools purchased by the organizations in the surveys are never used, other than perhaps in initial trial

25% are used by only one team or person within each organization

5% are widely used, but not to capacity. Perhaps only 10% of the capacity of the tool is used.”

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Sustainable Transformation

- Up or down!
- There is no "Let's stay here"
Seven Success Factors for CMMI based Process Improvement

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