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## Measuring and Managing the CMMI® Journey Using GQM



- **Why change initiatives fail?**
- **Metrics driven initiative management**
- **GQM: Big picture**
- **GQM for CMMI® Program**
- **References**



## Why change initiatives fail?

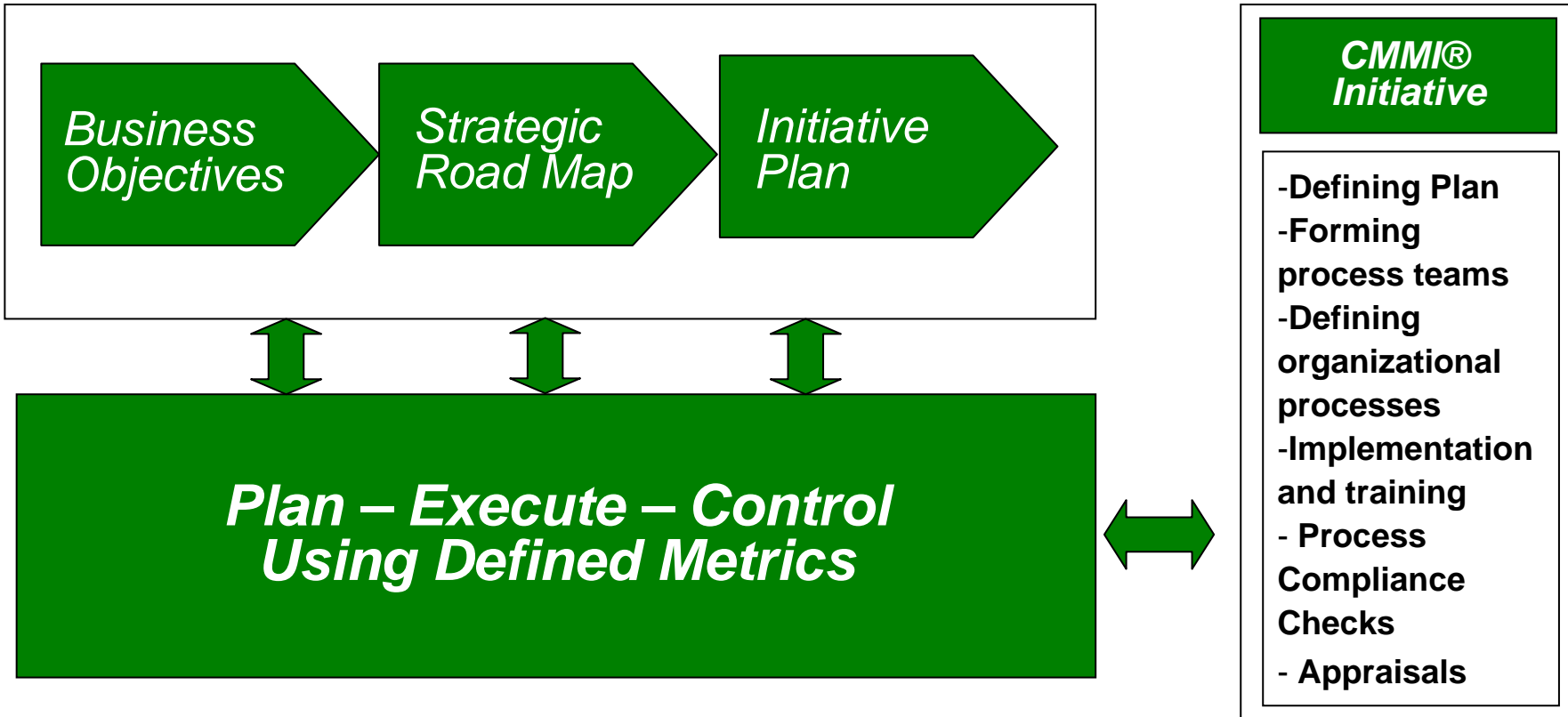


**Two out of every three change initiatives fail.**

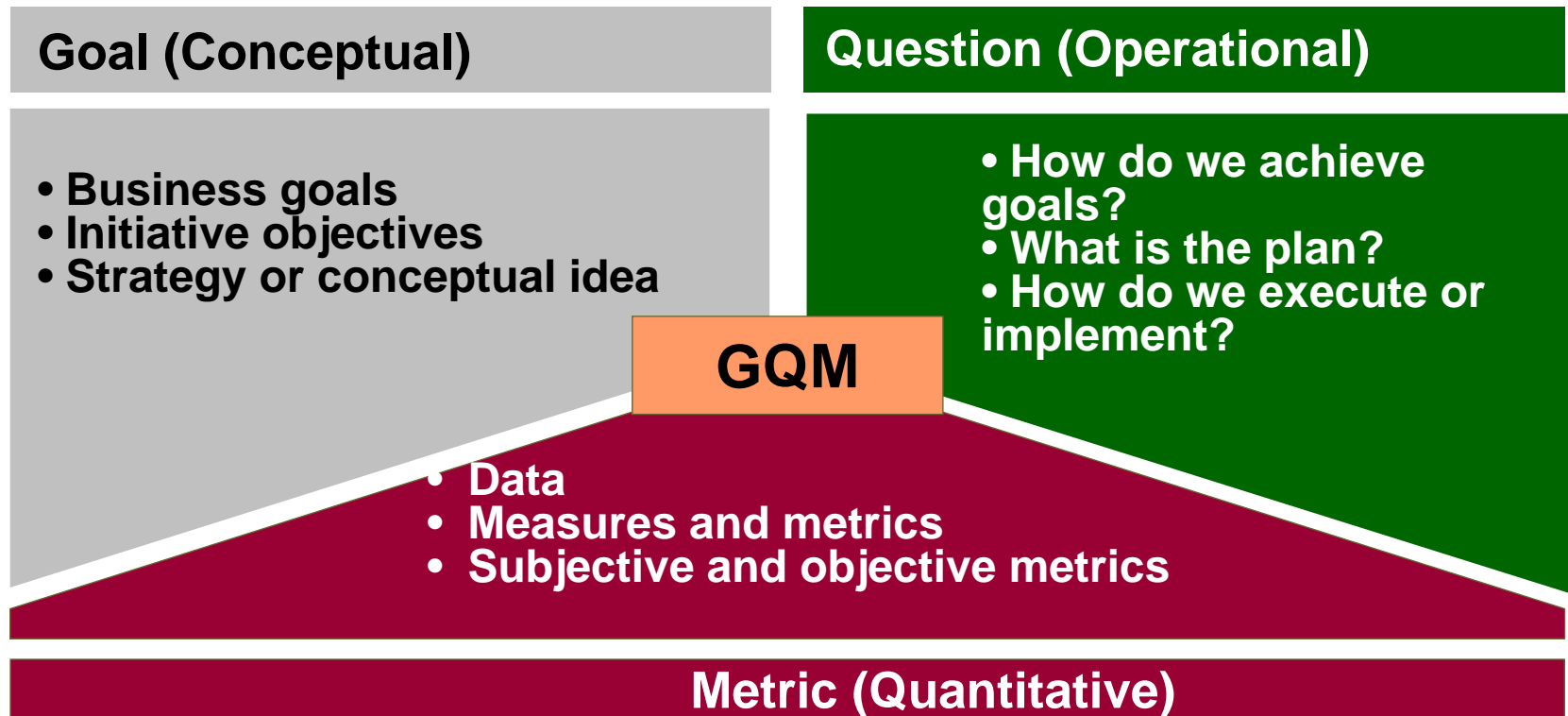
### ***Why:***

- Lack of initiative alignment to business needs
- No convincing evidence to leadership team on initiative progress
- Initiative team size is too small
- History of unsuccessful change initiatives
- Inadequate indication of implementation status or progress
- Lack of quantitative program management rigor

*Measure and Manage While You Drive Change*



*Creating Initiative Memory using Metrics*





## Typical Goals for a CMMI® program:

- *Better control on IT/Software Development budget spend*
- *High Quality Software Delivery*
- *Better control over project management*
- *Obtain institutionalization of processes*

*Achieve Target Maturity Level*



# Translating Goals to Questions

## ➤ *Goal 1: Better control on budget spend*

- ? *G1Q1: How to reduce budget overrun or budget variations?*
- ? *G1Q2: What is the current effort estimation process confidence level?*
- ? *G1Q3: What are the existing budget review methods?*

## ➤ *Goal 2: High Quality Software Delivery*

- ? *G2Q1: How to reduce # of errors reported after Implementation?*
- ? *G2Q2: What is the peer review process effectiveness?*
- ? *G2Q3: Is there a plan to reduce re-work effort?*
- ? *G2Q4: How do we improve test efficiency ?*



## Translating Goals to Questions

### ➤ ***Goal 3: Better control over project management***

? ***G3Q1: What is the project management effort?***

? ***G3Q2: What is the compliance to project management processes?***

? ***G3Q3: How do we improve project management competency?***

### ➤ ***Goal 4: Obtain institutionalization of processes***

? ***G4Q1: How do we reduce process non-compliances?***

? ***G4Q2: What are the current challenges in implementing PPQA?***

? ***G4Q3: How do we build buy-in into the processes?***



## Translating Questions to Metrics

### ➤ Goal 1: Better control on budget spend

- ? G1Q1: How to reduce budget overrun or budget variations?
- ? G1Q2: What is the current effort estimation process confidence level?
- ? G1Q3: What are the existing budget review methods?

Phase wise effort  
Variation

Estimation Model  
Confidence Index

Earned Value  
Metrics

Effort Performance  
Index

### ➤ Goal 2: High Quality Software Delivery

- ? G2Q1: How to reduce # of errors reported after implementation?
- ? G2Q2: What is the peer review process effectiveness?
- ? G2Q3: Is there a plan to reduce cost of quality effort?
- ? G2Q4: How do we improve test efficiency ?

Defect Removal  
Efficiency

Phase wise  
Review efficiency

% of Cost of  
Quality

Testing activities  
efficiency



# Translating Questions to Metrics

## ➤ Goal 3: Better control over project management

- ? G3Q1: What is the project management effort?
- ? G3Q2: What is the compliance to project management processes?
- ? G3Q3: How do we improve project management competency?

% PM effort for a given project size

Compliance to PM processes

PM skill Training effort

Schedule Variance

## ➤ Goal 4: Obtain institutionalization of processes

- ? G4Q1: How do we reduce process non-compliances (NC)?
- ? G4Q2: What are the current challenges in implementing PPQA?
- ? G4Q3: How do we build buy-in into the processes?

NC count per PPQA effort spent

Generic Practices NC Score

Average Age of Unresolved NC

Compliance to PPQA/SEPG Staffing



## Translating Questions to Metrics

### ➤ *Big Goal: Achieve Target Maturity Level*

- ? *BGQ1: What is the CMMI® program plan for targeted maturity level?*
- ? *BGQ2: Is the performance of the initiative on track?*
- ? *BGQ3: What is the health of implementation for all Process Areas?*

*% Schedule  
variance as per  
defined plan*

*Process Area  
wise Compliance  
Score to SPs*

*Compliance to  
CMMI® Program  
Staffing Needs*

*Selected Goal 1  
metrics  
performance*

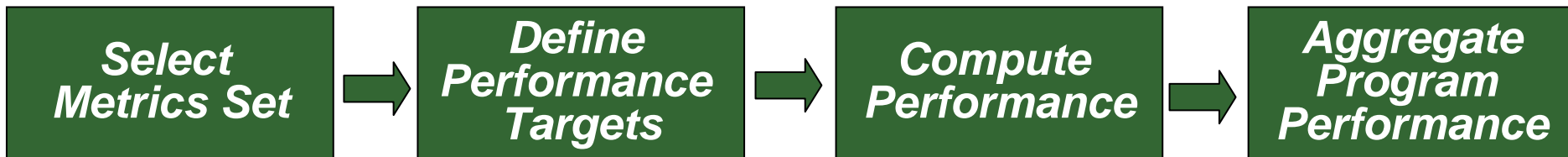
*Selected Goal 2  
metrics  
performance*

*Selected Goal 3  
metrics  
performance*

*Selected Goal 4  
metrics  
performance*



Process to arrive at health of CMMI® Program

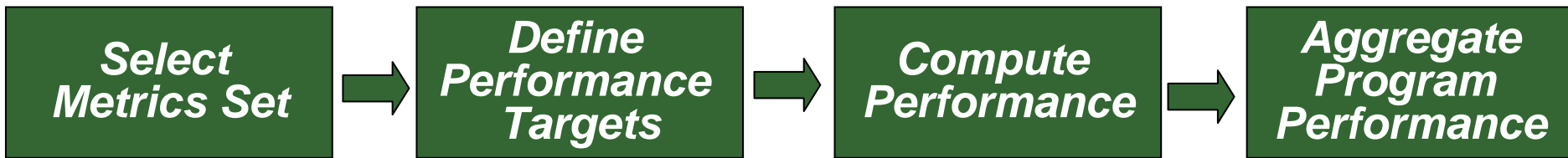


**Plan**

- **Data collection and validation**
- **Management review mechanism**
- **Identifying corrective actions**
- **Stakeholders communication**



Example :



**OPF Process Area (PA)  
Compliance  
Score for SPs**

**5 – Max Compliance  
1 – Min Compliance  
6 – SPs in OPF  
Max Score = 30  
Min Score = 6  
Month 1: Target > 70  
Month 2: Target > 80  
Month 3: Target > 90**

**In first month:  
Actual score = 22  
% =  $100 * 22/30$   
% = 73%**

**Metric  
Performance  
is GREEN**



## Sample Program Dashboard:

Metric	Month 1	Month 2	Month 3
G1Q1	Yellow	Yellow	Green
G1Q2	Green	Green	Yellow
G2Q1	Yellow	Green	Green
G2Q3	Green	Green	Green
G3Q4	Green	Green	Green
G4Q1	Yellow	Green	Green
G4Q2	Green	Green	Green
BGQ1	Green	Yellow	Green
BGQ3	Orange	Yellow	Yellow

Sample

## Benefits:

- *Metric driven initiative management*
- *Visibility into early warning signals*
- *Initiative alignment to business goals*
- *Better stakeholders communication*
- *Readiness indicator for appraisals*
- *Strengthens metrics program*

*Metrics Driven CMMI® Initiative Management*



1. Experiences in implementing measurement programs, Wolfhart Goethert, Will Hayes, Nov 2001, CMU/SEI-TN-026
2. CMMI®: Guidelines for Process Integration and Product Improvement Mary Beth Chrissis, Mike Konrad and Sandy Shrum; Addison-Wesley Professional
3. The Software Engineering Laboratory Web site: <http://sel.gsfc.nasa.gov/website/exp-factory/gqm.htm>
4. <http://www.sei.cmu.edu/cmml/>
5. The hard side of change management, by Harold L Sirkin, Perry Keenan and Alan Jackson , Harvard Business Review, October 2005



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**Thank You**

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