Use of Measurements and Metrics for the Project Management Office (PMO)

Presented by:

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**The Paradigm**

**Paradigm:** A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline.
People who want to establish a Project Management Office should realize that they are likely to encounter substantial skepticism and resistance to their efforts.

The PMO Wish List

1. Project Delivery Mentoring
2. Project Management Training
3. Project Management Info
4. Portfolio Management
5. Resource Management
6. Change Control Management
7. Methodology
8. Help Desk
9. Governance Reporting
10. Templates, Best Practices
11. Etc., etc., etc.
Performance Management

Performance management provides framework to:

- Establish performance goals
- Allocate and prioritize resources
- Inform management about needed change
- Share results of performance in pursuing those goals
Project Performance Measures to:

- Monitor and control project performance
- Achieve alignment of organizational goals and objectives with project objectives
- Drive process improvements
- Maximize the effectiveness of project effort
- Improve cross-functional collaboration
Measurement Philosophy

- What is sufficient?
- Who owns the measure?
- What are the risks?
- What is strategic value?
- Which Executive?
- Which Sponsor?
Goals and Measures

Measurements should be developed from each of four perspectives to achieve balance in setting objectives:

- Customer
- Financial
- Internal
- Innovation
Which Framework is the Best?

- The Flow Framework – traces project activities to impacts and related measures
- The Matrix – good for showing the rationale for prioritizing and selecting among groups of projects
- Causal Loop diagrams – show the cause and effect structure through relationship between the parts
- Balanced Scorecard – aligns measures with strategies to track progress, reinforce accountability, and define improvement opportunities/priorities
Measurement Dependencies

- Month
- Number Of Fatalities
- Weather Condition
- Road Condition
- Average Speed
- Number Of Journeys
- Number Of Fatalities

Fenton & Neil
### Who, Why, What, When, How?

<table>
<thead>
<tr>
<th>Who Develops Performance Measures?</th>
<th>Program Managers</th>
<th>Functional Managers</th>
<th>Project Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is Performance Measurement?</td>
<td>Process of Assessing Progress toward Achieving Goal</td>
<td>Effectiveness (Right Thing)</td>
<td>Efficiency (Best Use of Resources)</td>
</tr>
<tr>
<td>When Measures Applied?</td>
<td>Capital and Program Planning</td>
<td>Deciding Strategic Objectives</td>
<td>Tracking targets, Reporting, Proactive actions</td>
</tr>
<tr>
<td>How to Establish Performance Measures?</td>
<td>Balanced Scorecard Perspective</td>
<td>Stakeholders Customers</td>
<td>Internal Processes</td>
</tr>
</tbody>
</table>
The Goal Question Metric Methodology (GQM)

- GQM is a goal oriented approach that helps to define why and what to measure.
- Developed by Vic Basilli at the University of Maryland.
- Adapted by Software Engineering Institute at Carnegie Mellon for management of software development projects.
Measurement Definition Process

1. Business Goals
   - What do we want to achieve?
   - To do this we’ll need to..

2. Sub-goals
   - What do we want to know?

3. Measurement Goals
   - Questions
   - Indicators
   - Measures
   - Definitions

4. Process Model
   - Process Steps
     - Receives
     - Delivers
     - Entities
     - Attributes

5. Definitions checklist
The Goal Question Metric Methodology (GQM)

GQM specifies five dimensions:

- **Purpose** – the reason for the measurements
- **Object of study** – the entity or entities that should be studied
- **Quality focus** – the attribute or attributes that should be studied
- **Viewpoint** – the viewpoint from which the measures are taken
- **Environment** – the specific project or environment where the measurement take place
**GQM Goal Definition Example**

<table>
<thead>
<tr>
<th>Analyze</th>
<th>Change request processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the purpose of</td>
<td>Improvement</td>
</tr>
<tr>
<td>With respect to</td>
<td>CR processing cycle time</td>
</tr>
<tr>
<td>From the viewpoint of</td>
<td>Customer loyalty</td>
</tr>
<tr>
<td>In the context of</td>
<td>The current product quality</td>
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</tbody>
</table>
Goal-Question-Metric Example

1. Financial
   - Increase Customers
   - Increase Order Size
   - Increase Sales
   - Customer Satisfaction
   - Increase Referrals

2. Customer
   - Satisfaction Index
   - Referral Rate
   - Number of Complaints
   - Referrals

3. Internal Processes
   - Reduce Cycle Time
   - Cost of Rework
   - Reduce Cost
   - Time per Customer
   - Time per Order
   - Amount of Rework

4. Organization
   - Increase Core Skills
   - Training
   - Employees Trained
   - Employees
Effective KPI’s

Meaningful KPI should be:

- Goal oriented
- Applied to projects, processes, and resources
- Interpreted based on understanding of the organizational context, environment, and goals
- Monitor and control changes

Rule of Thumb: Develop your own KPI to answer your own management questions
<table>
<thead>
<tr>
<th>Issue</th>
<th>Category</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources and Cost</td>
<td>Personnel</td>
<td>Effort</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff Experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff Turnover</td>
</tr>
<tr>
<td>Financial Performance</td>
<td>Earned Value</td>
<td>Cost</td>
</tr>
<tr>
<td>Environment</td>
<td>Resource Availability</td>
<td>Dates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resource Utilization</td>
</tr>
</tbody>
</table>
The Dashboard Concept

Frames display one or more metrics

Control Panels display one or more frames

Reports contain one or more control panels

Metrics are composed of measures

Measures are units of measurement
Dashboard Types

- **Strategic**
  - KPA: Increase Customers, Increase Order Size, Increase Sales, Increase Comfort
  - Metrics: Number of Customers, Average Order Size, Sales Frequency, Sales Growth
  - Measures: Customers, Order Size per Region, Sales Growth per Region

- **Tactical**
  - Production downtime chart
  - Cycle time chart

- **Operational**
  - Pareto Chart of Defects
    - Scrap: 4
    - Missing Studs: 6
    - Unconnected Wire: 8
    - Incomplete Part: 10
    - Defective Housing: 19
    - Leaky Dasket: 43
    - Missing Clips: 59
    - Missing Screws: 274
Strategic (Balanced Scorecard)

- Measurements based on strategy to evaluate performance
- Executive scorecards linked to detailed scorecards based on strategy
- Results are measured, monitored and shared with all parties
- Links strategy and customer needs to the improvement efforts
Example of Scorecard Structure

Scorecard top element

Perspective

Critical success factors/
Strategic objectives

Measures

Unit measures
Tactical & Operational Dashboards

Project Resources

Management Board

Engineering Performance
PMO Dashboard Example
Quantitative Management

- Establish clear strategy, goals and targets
- Establish relationship between internal goals and environmental inputs
  - Influence of outside environment
- Set quantitative measurement goals to compare with actual results
- Construct KPI’s to achieve and maintain stability in dynamic internal and external environment
Common Measurement Mistakes

“Never mistake activity for achievement”

- Piles of numbers – use Dashboard to identify the vital few
- Inaccurate, late or unreliable data
- Trying to meet a target versus understand the process
- Measurements that are too broad or too specific
- Punishing people instead of fixing the process
Successful Metrics
Implementation

- Requires paradigm shift
- Delivers important information for the business decision making
- Gives managers control over business direction
- Increases process awareness
- Enables collaboration and process transparency
- Provides managers with tools to assess and analyze project performance and identify process improvement opportunities
Questions?
Contact Information

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Selecting Measures

**Schedule and Progress**
- Milestone completion
- Critical path performance
- Work unit progress
- Incremental Capability

**Prospective Measures**
- Requirements traced
- Requirements tested
- Requirements status
- Problem reports opened
- Problem reports closed
- Reviews completed
- SPR opened
- SPR resolved
- Units designed
- Units coded
- Units integrated
- Test cases attempted
- Test cases passed
- Action item opened
- Action item completed
- Components integrated
- Functionality integrated

The Question is not:
What metrics should I use?
Rather:
What do I want to know?
Why are we collecting the data?
How do we use the data?
Strategic Operational Alignment

Strategic:
- Profitability
- Closed contracts
- Product cost
- Revenue
- Customer satisfaction
- Customer Loyalty
- Market share

Operational:
- Resource Management
- On time Delivery
- Project management
- Productivity
- Process implementation
- Training
- SDLC
Process Parameters

*Process metrics define the effectiveness of a process and used for comparison between existing and changed processes*

**Examples**
- Cycle time
- Productivity
- Utilization of staff
- Cost of a finished product
- Throughput
- Time required to perform the task
- Task triggers
- Rework
Control Panels

Project
• Performance
• Progress
• Cost and Schedule
• Resources
• Software performance

• Requirements Stability, Quality
• Schedule milestones
• Cost, Schedule variance
• Staffing, Training, Tools
• Software Quality and Reliability
The purpose of measurements is to guide, forewarn, and inform:

- “in flight” course corrections
- Advance warning of potential problems (e.g. trends, process variances)
- Process progress (e.g. process transparency for cross-functional teams)

Measures are the key elements to achieve maximum business performance if they are:

- Driven by business requirements and organizational objectives
Management Panel

Leci n'est pas une pipe.