Quality Metrics, Scorecards and Dashboards

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Quality Metrics, Scorecards and Dashboards

What are “Quality Metrics”?  
- A “metric” is a measure.  
- “Quality” is something a “customer” defines.  
- A “Quality Metric”, therefore, is a measure of quality as defined by the customer.
  - NOTE 1: A “customer” might be defined as anybody with an expectation of receiving something of value in exchange for something else of value, either external to or internal to an organization.
  - NOTE 2: Not all “Metrics” are “Quality Metrics”

What are KPI’s?  
- KPI = Key Performance Indicator  
  There are MANY definitions:  
  - Chosen factors that directly and indirectly influence the effectiveness of a product or process.  
  - A significant measure used on its own, or in combination with other key performance indicators, to monitor how well a business is achieving its quantifiable objectives.  
  - A proxy measure of the success of part of an organization, or a manager of that part. A type of indicator. The future of the unit or person depends on achieving a satisfactory figure.  
  - Also known as Key Success Indicators (KSI). Financial or non-financial metrics used to reflect the critical success factors of an organization.
  - NOTE 1: All KPI’s are also Metrics, but not all Metrics are KPI’s.
  - NOTE 2: Not all KPI Metrics are Quality Metrics.
**What are Dashboards?**

- A dashboard is a dynamic set of indicators about the state of a process, piece of equipment, or business metric *at any specific point in time*.

- A Quality Metrics Dashboard is analogous to the dashboard in a car or the cockpit in a plane but, instead of driving a car, the user is “driving” a process.
Some Definitions

Dashboard Example 2
(http://www.enterprise-dashboard.com/sitemap/)

Dashboard Example 3
(http://dashboardspy.com/templates-wireframe-coolblue.html)

Some Definitions
What are Scorecards?

- A scorecard is part of a broader corporate methodology or management discipline and is a report card of how a given person, business unit or entity performed with respect to certain goals *over a previously defined period of time* (such as quarterly or annually).
- An Executive Scorecard is analogous to a student’s Report Card.
- There are two popular formats for “Balanced Scorecards” (BSC’s):
  1. Customer, Employee, Shareholder, Process

Some Definitions

A popular scorecard concept model ([http://www.balancedscorecard.org/basics/bsc1.html](http://www.balancedscorecard.org/basics/bsc1.html)):
What are Scorecards? (continued)

Another scorecard concept model

Some Definitions

<table>
<thead>
<tr>
<th>Objectives/Plans (Strategy)</th>
<th>Metrics (KPIs)</th>
<th>Targets/Goals</th>
<th>Initiatives/Actions (Tactics)</th>
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<tr>
<td>Customer Relations</td>
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<td>(Customer Satisfaction/Regulatory Compliance)</td>
<td>Sales (Customer)</td>
<td>Launches promotion offer targeted to existing customers</td>
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<td>Order Satisfaction</td>
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<td>Achieves 40% turnover rate</td>
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<td>Accounts Receivable</td>
<td>Reduces DSO to 30 days</td>
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<td>Operations</td>
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<tr>
<td>(Continual improvement, best-in-field, capable processes)</td>
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<td>Launches promotion offer targeted to existing customers</td>
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<tr>
<td>Organization Sustainability</td>
<td>(Competency personnel, employee satisfaction, world class)</td>
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Quality Metrics, Scorecards and Dashboards

- Scorecard Example 1
  (http://www.primedonline.com/PulseMonitor.htm)

Some Definitions

- Scorecard Example 2
  (http://www.hospitalsoup.com/public/scorecardshell.pdf)

Quality Metrics, Scorecards and Dashboards

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What Do Standards Require with Regard to Quality Metrics?

Compliance with ISO 9001 and ISO 13485 are addressed in the following sections of the standard:

- **5.4.1 Quality objectives**
  Top Management shall ensure that quality objectives, including those needed to meet requirements for product, are established at relevant functions and levels within the organization. The **quality objectives shall be measurable and consistent with the quality policy.**

- **7.1 Planning of product realization**
  … In planning product realization, the organization shall determine the following, as appropriate:
  a) **quality objectives and requirements** for the product;
  c) records needed to provide evidence that the realization processes and resulting product meet requirements.

What Do Regulations Require with Regard to Quality Metrics?

Compliance with the Code of Federal Regulations governing Quality Systems for Medical Device & Equipment/Software Manufacturers, 21 CFR Part 820, is addressed in the following subparts and subsections of the Code:

- **820.20 Management responsibility**
  a) Quality policy. Management with executive responsibility **shall establish its policy and objectives for, and commitment to, quality.**
  b) Organization,(3) Management Representative. … shall have … responsibility for:
    i) Ensuring that quality system requirements are effectively established and effectively maintained in accordance with this report; and
    ii) Reporting on the performance of the quality system to management with executive responsibility for review.
Quality Metrics, Scorecards and Dashboards

What Do Regulations Require with Regard to Quality Metrics? (continued)

Compliance with the Code of Federal Regulations governing Quality Systems for Medical Device & Equipment/Software Manufacturers, 21 CFR Part 820, is addressed in the following subparts and subsections of the Code:

- “820.20 Management responsibility (c) Management Review. … shall review the suitability and effectiveness of the quality system at defined intervals and with sufficient frequency according to established procedures to ensure that the quality system satisfies the requirements of this part and the manufacturer’s established quality policy and objectives.”

Quality Management System Considerations

What Do Regulations Require with Regard to Quality Metrics? (continued)

Compliance with the Code of Federal Regulations governing Quality Systems for Medical Device & Equipment/Software Manufacturers, 21 CFR Part 820, is addressed in the previously noted and following subparts and subsections of the Code:

- “820.70 Production and process controls.
  - General. Each manufacturer shall develop, conduct, control, and monitor production processes to ensure that a device conforms to its specifications.”

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**How do Quality Metrics directly support the Quality Management System?**

1. Quality Metrics can be flowed down from the Quality Policy of an organization into every major element of the Quality Management System and the Procedures that support them.
2. Quality Metrics can be flowed from Customer Requirements into Product and Process Specifications.

**Where in the QMS should Quality Metrics be established?**

- Break the **Quality Policy** into discrete subparts.
- Establish **Quality Objectives** for each subpart of the Quality Policy.
- Create Scorecards for Quality Objectives that involve multiple processes. These will be used in **Quality Management Reviews**.
- Establish Quality Metrics requirements within **Operating Procedures** that support each Quality Objective.
- When feasible, consider establishing Dashboard requirements within **Production Procedures, Work Instructions, or Process, Material and Product Specifications** for critical Quality Metrics.
- When products or processes are outsourced, flow requirements for Quality Metrics to Suppliers via their **Contracts or Purchase Orders**.
Tips for Selection of Quality Metrics

- Use the S.M.A.R.T. criteria:
  - SPECIFIC
  - MEASURABLE
  - ATTAINABLE
  - RELEVANT
  - TIME-CONSTRAINED

Tips for Selection of Quality Metrics (continued)

- Avoid being UN-S.M.A.R.T.:
Quality Metrics, Scorecards and Dashboards

Tips for Selection of Quality Metrics (continued)

- Other helpful selection criteria

(http://web.mit.edu/tdqm/www/tdqmpub/PipinoLeeWangCACMApr02.pdf)

Elements of an Effective Scorecard

- Tracks total Organizational Performance against a Strategic Plan and is Management-driven
- Represents longer term intervals (weeks, months, quarters)
- Includes Goals for every Metric
- Balances Financial Considerations against all Other Considerations (Quality, Schedule, etc.)
- Emphasizes Use of Metrics that are Leading Indicators

Note:
- Leading Indicators Predict Future Performance
- Lagging Indicators Report Past Performance
Elements of an Effective Dashboard

- Provides Tactical Indicators about the State of a Process, Piece of Equipment or Business Metric and is Worker-driven
- Represents Near Term Time Intervals (minutes, hours, days)
- Information is Dynamic and is “Real-time” (or as close to “Real-time” as possible)
- Information is Very Visible and Is Used “Close” to the Process that Generates it
- Trend Lines are Used
- Goals Are Not Necessary but Action Limits Are

Scorecard and Dashboard Pitfalls to Avoid

- Measurement Pitfalls
- Approach Mistakes
- Technology Red Flags
Scorecard and Dashboard Pitfalls to Avoid (continued)

Measurement Pitfalls
- Information Overload (keep it simple)
- Functional Bias (be crossfunctional)
- Hindsight (look forward)
- Limited Perspective (see the forest AND the trees)
- Inconsistent Definitions (collaborate)
- Irrelevant Metrics (use metrics that can be controlled by the user or could significantly impact action taken by the user)

Approach Mistakes
- Strategic Confusion (NO Scorecards without Strategic OBJECTIVES)
- Tactical Confusion (NO Dashboards without Action Limits)
- Destination Unknown (focus as much upon where to go as to where the organization has been)
- No Executive Mandate (See Next Slide for Explanation)
Scorecard and Dashboard Pitfalls to Avoid (continued)

- Approach Mistakes (continued)
  - Misalignment (Prioritize, Harmonize, Integrate, etc.)
  - Big BANG (Avoid ‘One Hit Wonders’, Adopt Metrics as the Way of Doing Business Throughout the Organization)
  - Incorrect Results a.k.a. “Solution Suicide” (Use only Validated Data from Qualified Sources)
  - Unguided Exploration (Train Everybody and Make How-To Information Readily Available)
Scorecard and Dashboard Pitfalls to Avoid (continued)

- **Technology Red Flags**
  - Complex User Experience (Again, Keep it Simple, Avoid Esoteric Metrics, Unnecessary Barriers to Access, Challenging On-Line Navigation, etc.)
  - Only Used for ad hoc Research (Again, Avoid ‘One Hit Wonders’, Adopt Metrics as the Way of Doing Business Throughout the Organization)
  - No Knowledge Retention (Collect and Use “Lessons Learned”)

- **Technology Red Flags (continued)**
  - Inflexible (Enable the Metrics to Change as the Organization Changes without Losing Data Integrity or Access to Past Metrics Information)
  - Segregated (No standalone systems like Excel spreadsheets, integrate with other existing systems like MRP and CRM, include financial reporting)
Scorecard and Dashboard Pitfalls to Avoid (continued)

- Technology Red Flags (continued)
  - Dead-end Results (Finish What You Start! Maintain Forward and Backward Traceability for Information Used and Actions Taken)
  - Outdated Information (use near real-time data to support as many metrics as possible, establish alerts for instances where action limits are approached)

Scorecards and Dashboards – When All Else Fails


Excel 2007 Dashboards & Reports For Dummies

By Michael Alexander

Pages: 336 Pages
Pub. Date: March 2008
Price: $24.99
Quality Metrics, Scorecards and Dashboards

- Quality Metrics References have been cited throughout this presentation but are summarized on the next few pages
  - Dilbertisms: [www.comics.com](http://www.comics.com) (paid members can sort comics by key words)
  - Definitions: Do a Google search using “Definition of _____” ([www.google.com](http://www.google.com))

Quality Metrics References Summary (continued)

- Dashboard Examples:
  - [http://www.primedonline.com/PulseMonitor.htm](http://www.primedonline.com/PulseMonitor.htm)

- Scorecard Models and Examples:
  - [http://www.balancedscorecard.org/basics/bsc1.html](http://www.balancedscorecard.org/basics/bsc1.html)
  - [http://www.capatrak.com](http://www.capatrak.com)
  - [http://www.primedonline.com/PulseMonitor.htm](http://www.primedonline.com/PulseMonitor.htm)
Quality Metrics, Scorecards and Dashboards

Quality Metrics References Summary (continued)
- Tips for Quality Metrics Selection:
- Elements of an Effective Scorecard:
  - Ref.: The Certified Manager of Quality/Organizational Excellence Handbook from ASQ’s Quality Press
- Elements of an Effective Dashboard:
  - http://www.datamanagementgroup.com/Resources/Articles/Articles.asp?offset=50/
- Scorecard and Dashboard Pitfalls to Avoid
  - http://www.dmreview.com/white_papers/library.html

Quality Metrics Tools You can Put To Use Immediately
- The following free templates will be provided to you via email upon request (send request to dkulisek@capatrak.com) and are also available from the CAPAtrak Download pages at www.capatrak.com. These include:
  - Strategic Quality Plan Template
  - Operating Procedure Template for Inclusion of Quality Metrics
  - Scorecard Template
  - Dashboard Template
- A .pdf version of the handouts for this presentation is also available for download from the CAPAtrak download page.
THANK YOU!
May I answer Your Questions?