A VIEW FROM THE TOP:

DEVELOPING A QUALITY DRIVEN MEASUREMENT FRAMEWORK

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1   EXECUTIVE SUMMARY

The purpose of this document is to describe an approach for how IT can measure performance through metrics that are designed to facilitate decision-making, and improve performance and accountability through collection, analysis and reporting. This Global practice applies to all of IT: Divisions, Functions, Departments and Teams.

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2 TERMINOLOGY

Term	Definition
Critical Success Factor	Critical Success Factor (CSF) is a business term for an element which is necessary for an organization or project to achieve its mission.
Key Performance Indicator	Key Performance Indicator (KPI) is a measurable quantity against which specific performance criteria targets can be defined, which are relevant to the overall effectiveness of a process.
Balanced Scorecard	The Balanced Scorecard (BSC) is a conceptual framework for translating an organization's vision into a set of performance indicators distributed among four perspectives: Financial, Customer, Internal Business Processes, and Learning and Growth.
IT Infrastructure Library	The IT Infrastructure Library (ITIL) is a framework that provides comprehensive, consistent and coherent set of best practices focused on the management of IT service processes.

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3   ROLES & RESPONSIBILITIES

Resources are required for formulating and constructing IT Service Management (ITSM) Metrics, Balanced Scorecards and Dashboards. Roles will include those individuals tasked with defining, measuring and reporting on Critical Success Factors (CSFs), Key Performance Indicators (KPIs) and Balanced Scorecards.

Role	Responsibilities
IT Management	Ensure that the KPI and CSF procedures are being performed as described, procedures are reviewed and updated as necessary, and that proper support documentation is being maintained.
Process Owner	Define, get agreement on, and communicate CSFs and KPIs. Follow a consistent approach to reporting their key performance areas in a means that is understandable, relevant and actionable – and supports a proactive and measurable approach to continuous improvement. Implement corrective actions, identified through measuring IT performance are implemented.
Service Owner	Facilitate effective service monitoring and solicit required data, metrics and reports for analysis and identify improvement opportunities for CSI.
CSI Manager	Ensure that monitoring tools are in place to gather data and that baseline data is captured to measure improvement against it. Define and create reports on CSI critical success factors (CSFs), key performance indicators (KPIs) and CSI activity metrics.

4   FRAMEWORK CONSIDERATIONS

4.1   The Seven-Step Improvement Process

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Based on Figure 3.4 Continual Service Improvement 3.9.3

Measurement is an activity used to identify and perform data gathering. In order to make use of this data, one needs to create a measurement process (i.e. a set of activities designed to move from simple data gathering through to information assessment, to produce knowledge and understanding of the infrastructure that is being managed).

Organizations will realize a greater probability for success if they adopt the following guidelines in the development of metrics, whether for the entire enterprise or for departmental or individual performance plans:

1. **Identify The Strategy For Improvement**

    Identify the overall vision, business need, the strategy and the tactical and operational goals.

2. **Define What You Will Measure**

Based on the goals of the target audience (Operational, Tactical or Strategic), a Process Owner needs to define what should be measured in a perfect world. To do this, map the activities of the process you need to measure. Then, consider what measurements would indicate that each activity is being performed consistently and can determine the health of the process.

3. **Gather The Data**

Gathering concentrates on collecting the raw data required for monitoring and measuring IT services and components. Gathering the data is a repetitive set of tasks. Consider automation, or assign the tasks to gather the data to the appropriate roles in your organization. You should ensure that you have the correct data collection methodology in place.

4. **Process The Data**

Once you have gathered the data, the next step is to process the data into the required format. This step begins the transformation of raw data into packaged information. Use the information to develop insight into the performance of your process. Exceptions and alerts need to be considered at this step, as they can serve as early indicators that processes are breaking down. Process the data into information (i.e. creating logical groupings which allow you to perform step 5).

5. **Analyze The Information & Data**

An important and often overlooked step is data analysis. As data is brought into context it transitions from raw data into information that can be used to answer questions about trends and business impact. Data Analysis transforms the information into knowledge of the events that are affecting the organization:

- Are there any trends?
- Are changes required?
- Are we operating according to plan?
- Are we meeting targets?
- Are corrective actions required?

6. Present & Use The Information

Considering the target audience, make sure that you identify exceptions to the process and benefits that have been revealed or can be expected. Data gathering occurs at the fourth level of an organization. Format this data into knowledge that all levels can appreciate and gain insight into their needs and expectations. This can be done by way of:

- Reports Monitors
- Action plans
- Evaluations
- Recommendations

Once the data has been analysed it is communicated to the business and any other stakeholders to provide a summary of the improvement initiative. The information must be presented in a way that is relevant and applicable to the target audience. It is at this stage that the question 'Did we get there?' is answered.

7. Implement Improvement

The information and solutions gathered in the above steps can now be used to improve services and processes. These improvement initiatives should be communicated to the organization. It is at this stage that a new baseline is created and the improvement process begins again.

4.2 Risks

Many metrics end up being used because they're easy to measure, not because they measure meaningful information. Often, organizations mistakenly fail to define what they should measure and also fail to execute on analysis and implementing corrective action.

Failure to define what should be measured will result in metrics that are not aligned to the organizational goals and strategies. Bad metrics can drive dysfunctional behavior that can set an organization in the wrong direction.

Without analysis of the metrics, what you end with is nothing more than a string of numbers showing metrics that are meaningless. It is not enough to simply look at this month's figures and accept them without question, even if they meet Service Level Agreement targets. You should analyze the figures to stay ahead of the game. Without analysis, you merely have information; with analysis, you have knowledge. If you find anomalies or poor results, then you have an opportunity to improve.

4.3   Requirements

Each Process Owner will follow a consistent approach for reporting their key performance areas in a means that is understandable, relevant and actionable – and supports a proactive and measurable approach to continuous improvement. This can be achieved by:

- Cleary defined links between operational, tactical and strategic level goals and measurements
- Clearly defined Corporate and IT goals
- Identification of CSFs to support the overarching goals of IT and the Business
- Development of KPIs and Key Goal Indicators (KGIs) to support the CSFs selected by IT and the Business
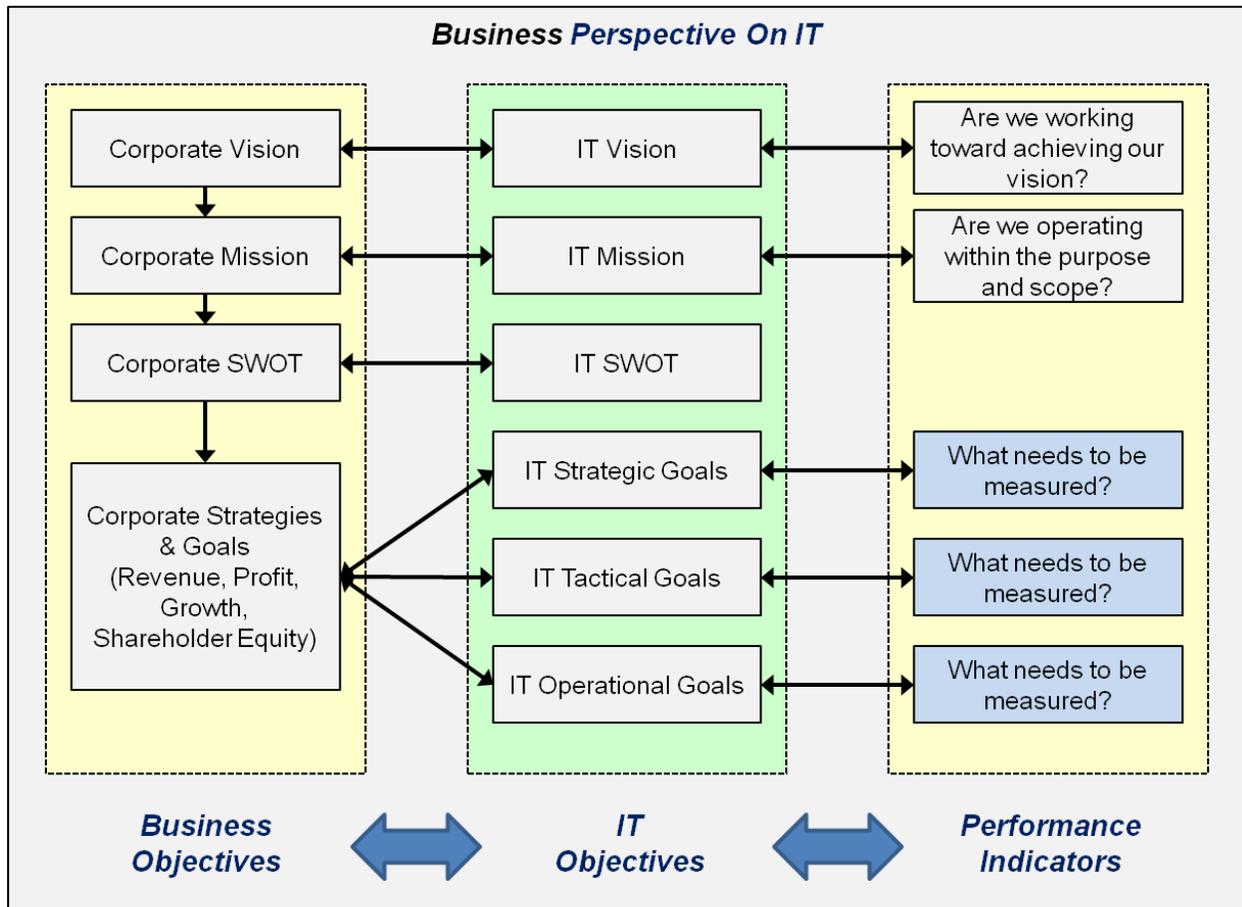
In developing business plans and conducting strategic planning and goal setting, some very basic questions needs to be addressed:
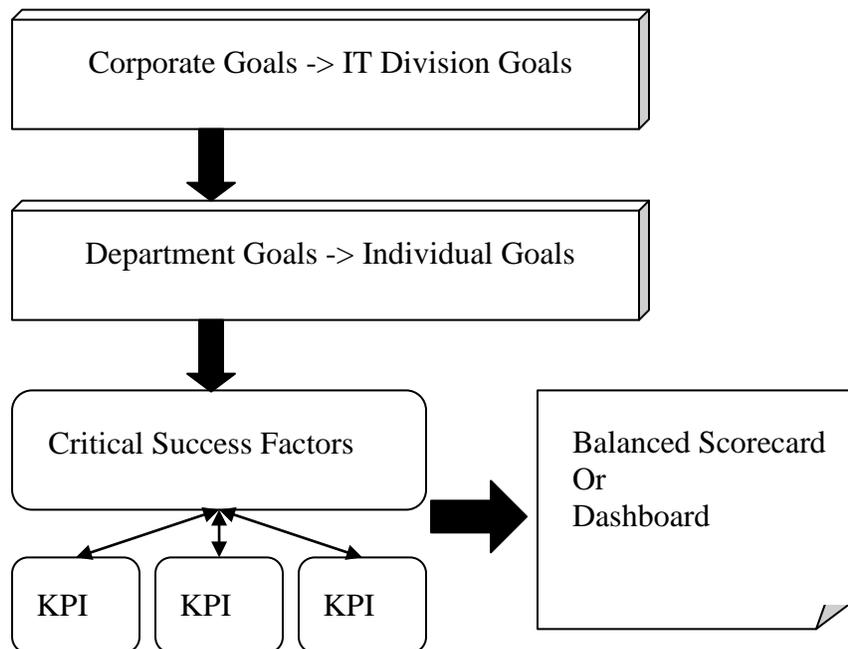
- What is our vision statement and where do we want to be?
- What is our mission or why do we exist as an organization?
- Where are we now? *SWOT analysis*
- How can we get there? *Business plans*
- What would tell us if we arrived? *Metrics*
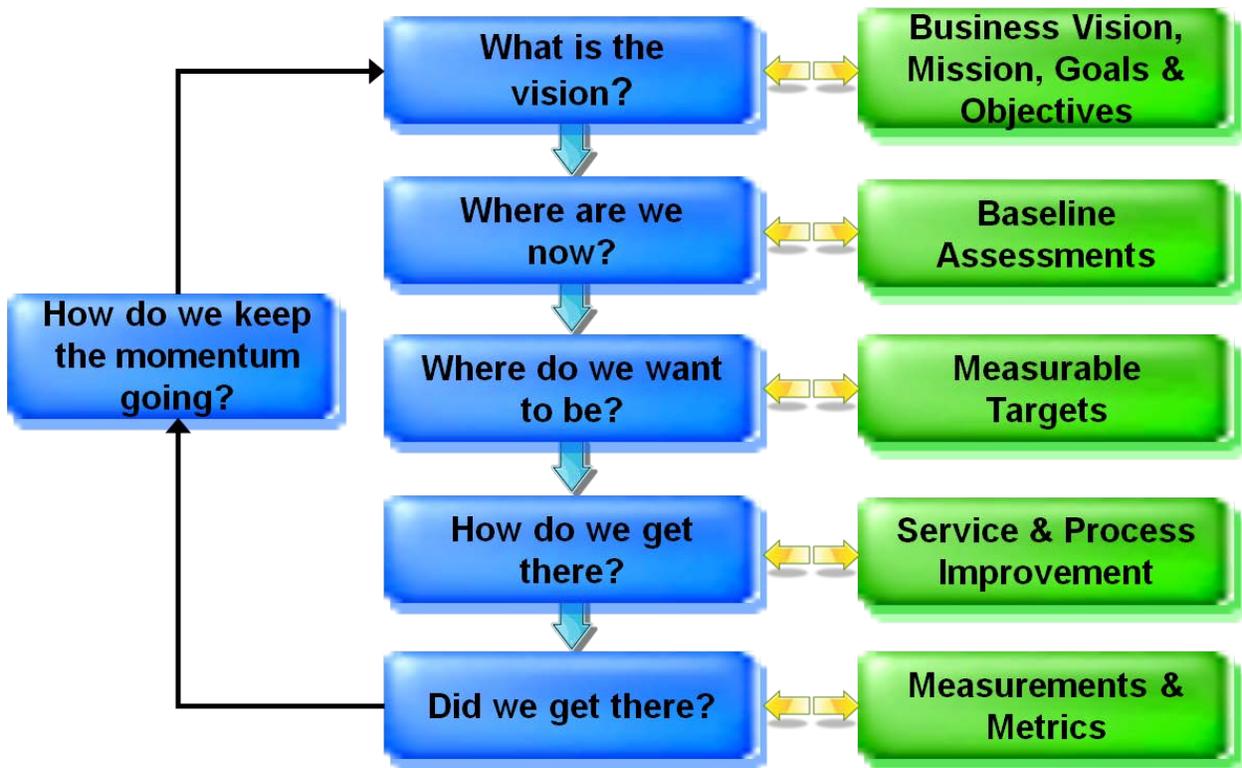
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Figure 3.1 Continual Service Improvement 3.1

Guidance documents include the vision statement and mission statements. With values, vision and mission understood, a strategy should be developed. Details of how to live the mission statement and reach the vision are captured in the specific business plans. Develop goals using the SMART test:

S = Specific: clear and focused to avoid misinterpretation
M = Measurable: can be quantified and compared to other data
A = Attainable: achievable, reasonable, and credible under conditions expected
R = Realistic: fits into the organization's constraints and is cost effective
T = Timely: doable within the time frame given

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4.4   Rationale For Measurement

We measure to:

- Validate what we do and how we are helping meet organizational goals and objectives
- Justify the need for resources, technology to meet organizational goals and objectives
- Direct actions to be taken when appropriate
- Intervene when processes are not working the way they are supposed to

The business perspective of measuring IT:

- Ability of IT services to meet business needs by understanding the high-level business objectives
- Demonstrate value realized for services delivered. Namely business benefits in the areas of productivity, effectiveness, efficiency, and economy
- Justify IT costs: Understanding cost of IT service, control of IT costs, accountability of IT costs to the business
- Align IT services with changing business needs
- Understand measurement and what the successful outcomes should be
- Review and analyze service level achievement
- Assess the current situation to obtain an accurate, unbiased snapshot of where the organization is right now in terms of the business, organization, people, process and technology for the decision makers

- Verify that measurements and metrics are in place and that the milestones were achieved, process compliance is high, and business objectives and priorities were met by the level of service
- Communication between the business and IT, and degree of mutual understanding of IT and the quality of IT service provision
- Business benefits in the areas of productivity, effectiveness, efficiency, and economy
- Diagnostic feedback into various services and processes to guide improvements on a continual basis
- Quantitative inputs to forecasting methods and models for decision-support systems

5   BALANCED SCORECARD

The development and communication of a balanced scorecard (BSC) is the responsibility of the IT Management Team. First introduced in 1990s, BSC is an aid to organizational performance management. It helps to target not only on financial targets, but also internal processes, customers, innovation/learning organizational issues. The BSC is a conceptual framework for translating an organization's vision into a set of performance indicators distributed among four perspectives: Financial, Customer, Internal Business Processes, and Learning and Growth.

Indicators are maintained to measure an organization's progress toward achieving its vision; other indicators are maintained to measure the long term drivers of success. Through the BSC, an organization monitors both its current performance (finances, customer satisfaction, and business process results) and its efforts to improve processes, motivate and educate employees, and enhance information systems. These are comprehensive measures that can directly relate the value of IT to corporate performance metrics.

BSC is not a typical IT principle; nevertheless, it is complementary to ITIL. When implemented within IT, it provides a means to measure the performance of the IT organization. BSC proposes that department goals, targets and metrics need to be developed for the following areas to truly understand the health of an organization:

- Customer: How do customers see us?
- Internal: What must we excel at?
- Innovation: Where can we improve and create new value?
- Financial: How do we improve cost efficiency?

Of the four perspectives, three deal with the future. Financial is the only perspective that looks at the past.

5.1   Links To ITIL

- Customer perspective: IT as a service provider, primarily documented in SLAs
- Internal processes: Operational excellence utilizing incident management, problem management, change management, service asset and configuration management, and release and deployment management, as well as other IT processes; successful delivery of IT projects
- Learning and growth: Business productivity, flexibility of IT, investments in software, professional learning and development
- Financial: Align IT with the business objectives, manage costs, manage risks, deliver value; financial management for IT services is the process used to allocate costs and calculate ROI
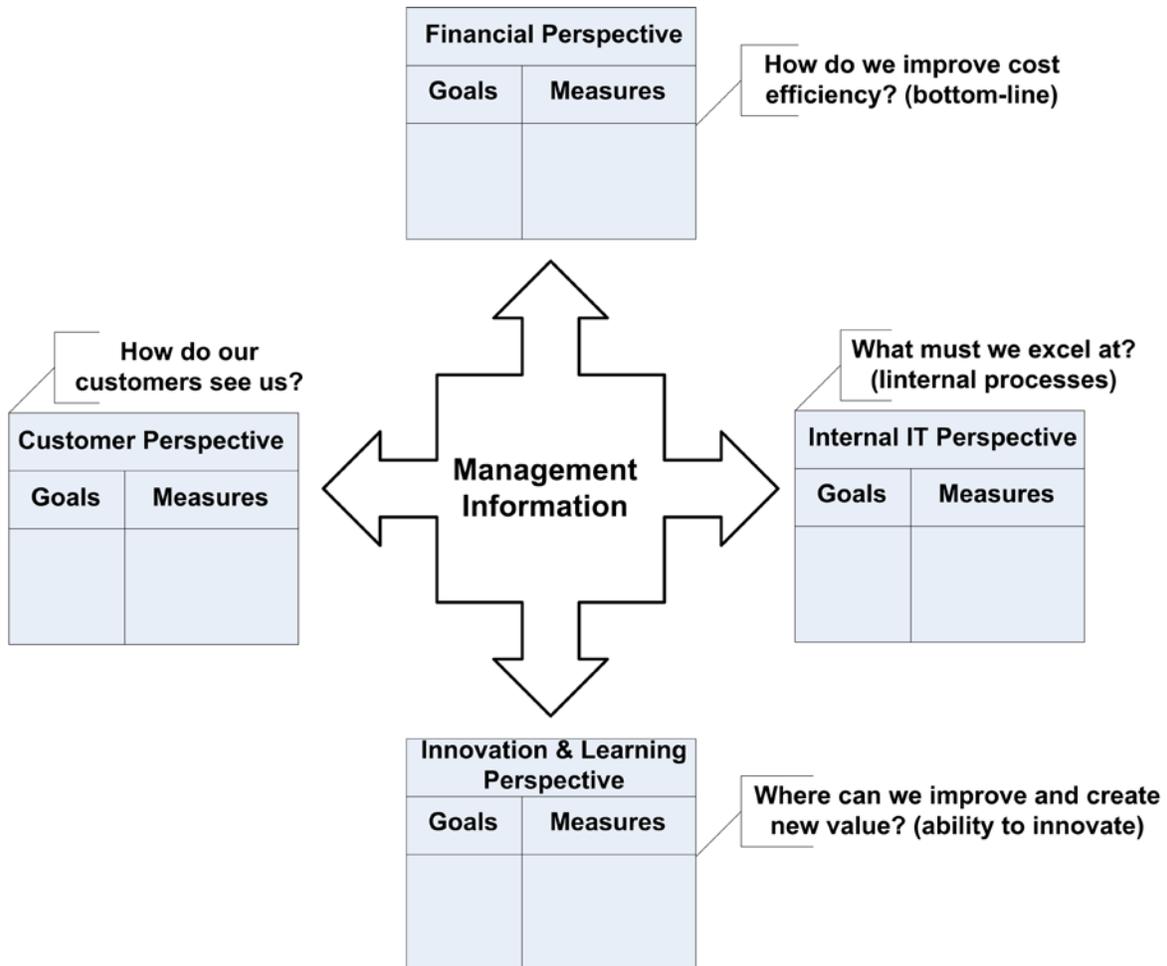
6   KEY PERFORMANCE INDICATORS

6.1   Management Reporting & KPIs

To govern or manage any information-based process, it is necessary to establish a variety of reports and metrics to understand how the process is being executed. The Process Owner and management team will need to choose KPIs to provide information on the health and relative maturity of the process. KPIs measure progress toward goals as reflected in CSFs; KPIs are then quantifiable measurements, or metrics.

The four categories of KPIs are:
- Compliance: Are we doing it? A measure of the level of service or process adoption
- Quality: How well are we doing it? Measurement of as they relate to the objective of the service or the end to end process
- Performance: How fast or slow are we doing it?
- Value: Is what we are doing making a difference? Reports and surveys to measure the effectiveness and perceived value to the stakeholders and users
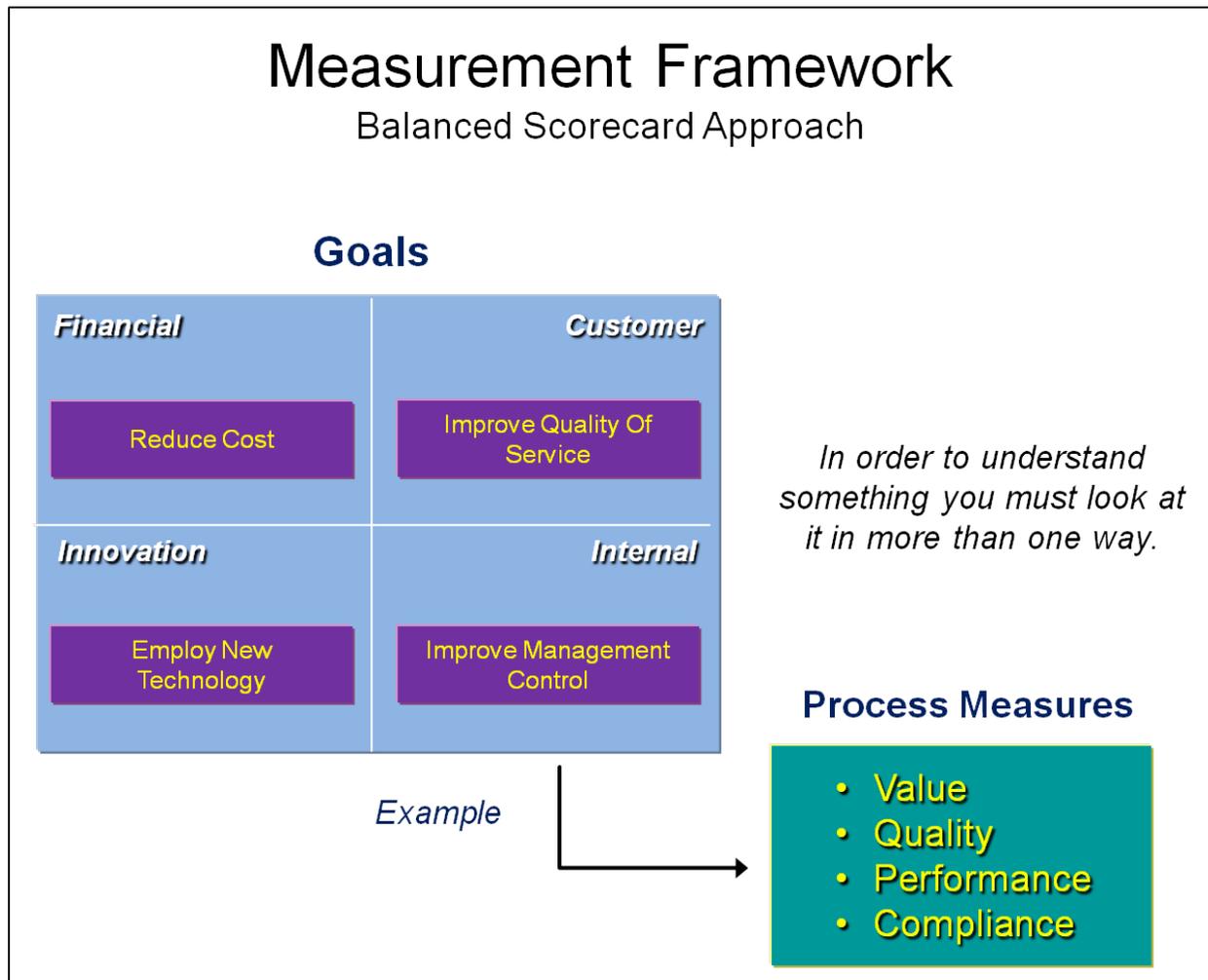
A single measure may contain or cover more than one category. This in itself is not an issue; understand that when this occurs, the success criterion for this measure is more difficult to satisfy.

6.1.1   Choosing The KPIs

It is recommended that no more than two to five KPIs are defined per CSF at any given time and that a service or process has no more than two to five CSFs associated with it at any given time. However, due to the difficulty of measurement or tool limitation, a process management staff may find it necessary to limit what is measured according to what category is the most important to the objective of the process.

1. Establish the core objective of the process.
2. Evaluate which category is of the highest priority to achieve the process objective.
3. Define measures according to the categories which are appropriate to achieve the overall process objective.

In order to select which KPIs are most suited to provide a health and maturity reading, a framework for measurement identification will be employed.

Measurement Framework
Balanced Scorecard Approach

Goals

Financial	Customer
Reduce Cost	Improve Quality Of Service
Innovation	**Internal**
Employ New Technology	Improve Management Control

In order to understand something you must look at it in more than one way.

Process Measures

- Value
- Quality
- Performance
- Compliance

Example

The above diagram represents a dashboard by which the Process Owner can determine the health of a process. A minimum of one or two measurements should be determined for each quadrant to ensure a balanced perspective on the use and effectiveness of the process.

1. Value: Reports or surveys to measure the effectiveness and perceived value of the process to the stakeholders and users.
2. Quality: Process quality indicators are typically activity-based and are established to measure the quality of individual or key activities as they relate to the objective of the end-to-end process.
3. Performance: Metrics established under this quadrant measure the average process throughput or cycle time (e.g. metrics to capture the speed and performance of the stated process objective and output).
4. Compliance: Process compliance seeks to measure the percentage of process deployment across the IT organization. A process may have a good perceived value, good quality and speedy throughput, but only be adhered to by a fraction of the IT organization.

6.1.2 Building A Measurement Grid

1. Determine Critical Success Factors.
2. Define what should be measured/be the measure.
3. Determine the KPI category.
4. Establish the policy and target (target will change with process maturity).
5. Determine the tool or medium to realize the report.
6. Define the output format (graph, data, etc.)
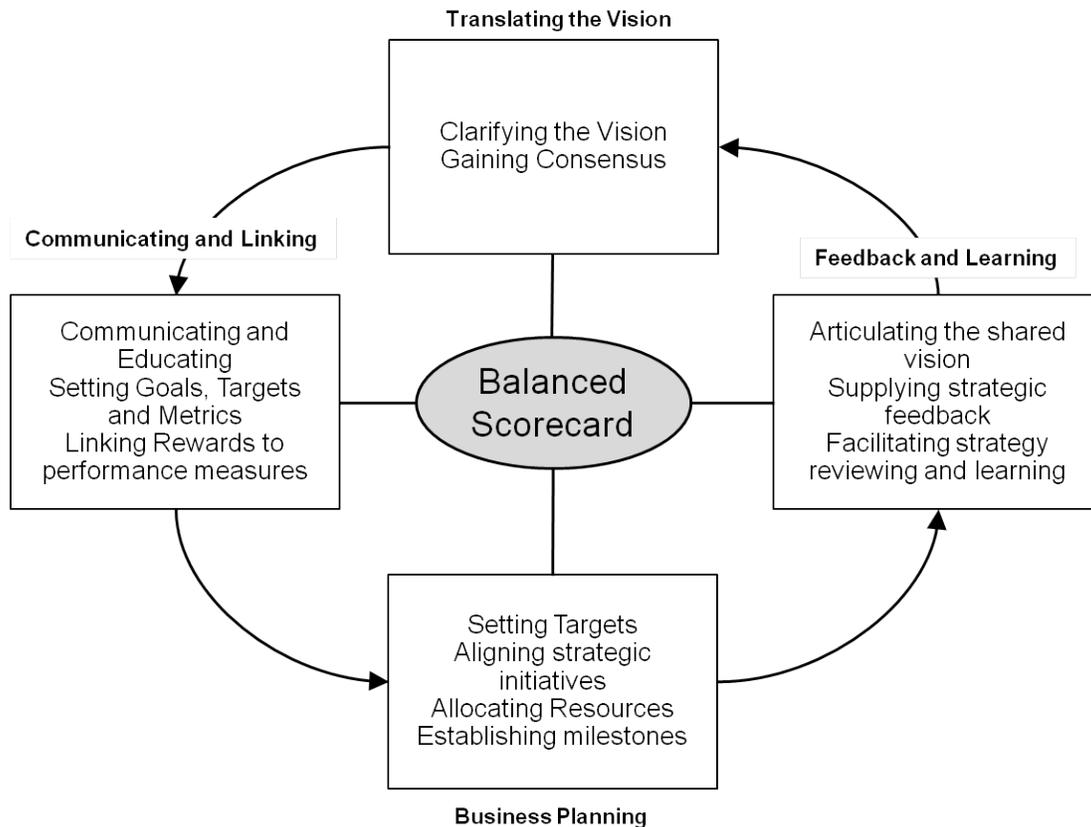7. Define distribution list and report frequency.

Category	Measure	Policy	Target	Tool
Value, Quality	# of Incidents resolved outside of SLA	All Incidents to be resolved within SLA	90% of the time	Incident Module

6.2 Implementation Strategy
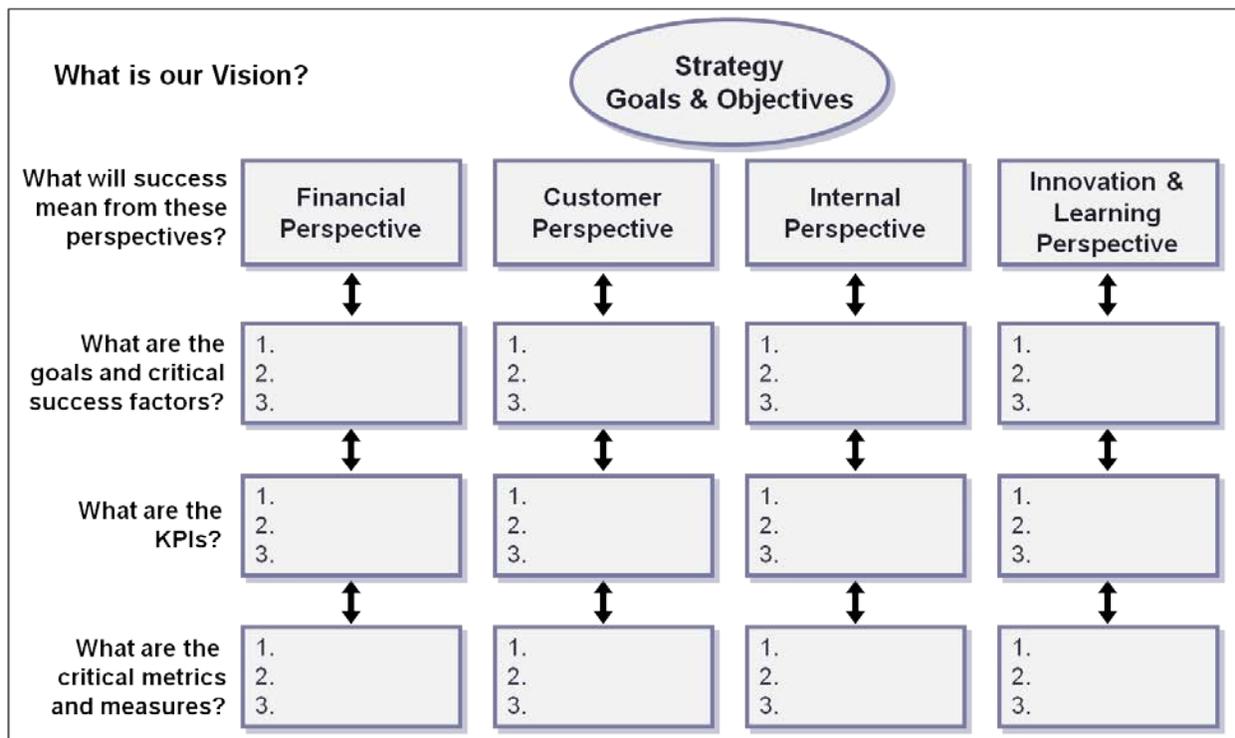
Figure 5.10 Continual Service Improvement 5.5.6.1

1. *Translating the vision* (building consensus around the organizations vision and strategy). The strategic mission statements must be translated into tactical and operational objectives.

2. Inventory your performance reporting and assess the relevance of these reports to the business. Are they action-oriented? Are they linked to business performance and goals? Are they intelligible to a non-IT person?

3. Interview your Customers/Executives to understand what is relevant to them. Customer expectations will enable you to tailor the IT organization's contribution to business processes.

4. Create performance reports that are clear, concise and action-oriented by the business stakeholders that receive them.

5. *Communicating and Linking* (communicating and setting goals, targets and metrics). Departmental, team, and individual goals, targets, and metrics must be directly linked to IT and Organizational goals.

6. *Business Planning* (applying measurement data to strategic plans). Measurement data should be used with modeling and forecasting for strategic planning and alignment with business objectives.

7. *Feedback and Learning* (opportunity for strategic learning) provides a balanced and informed basis for decisions regarding possible infrastructure and resource adjustments in real time.

Translating the Vision
Clarifying the Vision
Gaining Consensus

Communicating and Linking
Communicating and Educating
Setting Goals, Targets and Metrics
Linking Rewards to performance measures

Balanced Scorecard

Feedback and Learning
Articulating the shared vision
Supplying strategic feedback
Facilitating strategy reviewing and learning

Business Planning
Setting Targets
Aligning strategic initiatives
Allocating Resources
Establishing milestones

6.3   Translating A KPI Improvement To Productivity

When evaluating a KPI improvement for a productivity gain or cost reduction, one must determine the net gain by understanding how the improvement is offset by additional requirements for value add and non-value add work:

- **Value Add:** Activity that directly results in achieving the goal of the process
- **Non-Value Add:** Activity that is necessary, but is focused on tasks related to administration, governance or managerial activity that does not directly result in achieving the goal of the process
- **Waste Work:** Activity that is redundant, not required or inefficient and does not support the goal of the process

A balanced approach to expressing an improvement gain from a productivity viewpoint would be to understand how the improvement translates into the following three categories:

- **Resources:** Additional capacity, effectiveness and efficiency added to existing resources
- **Cost:** A reduction of cost or cost justification in achieving the objective or goal of the process
- **Quality:** The positive or negative relationship of the first two factors on the quality of the delivery of the goal or objective or supporting business outcomes.
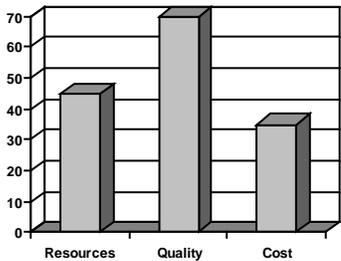
Measuring Intangibles To Tangible:
1. Can you identify what is being changed and why and what will be different?
2. Can the difference be observed? E.g.: Faster response time, increased revenue.
3. Can you measure the difference?
4. Can you compare it to the "before state" or a benchmark?

Example:

KPI: # of repeat Incidents reduced by 25%

Goal: Increased Productivity measured by allocated time Waste Removed = Reduced Incidents Value Added = Increased process activity Non-Value Add = Additional reporting effort	Waste Work Removed = -25% Value Added Work = +10% Non-Value Add = +5% Net Improvement = 10%

6.3.1 Productivity Approach

1. Balanced Score Card KPI Model

Value	Quality
Performance	Compliance

KPI: # of repeat Incidents removed

KPI: # of Problems identified and eliminated

KPI: % Improved Service Availability

2. Determine "Net" Improvement

Waste Work Removed = -25%

Value Added Work   = +10%

Non-Value Add   = +5%

Net Improvement   = 10%

3. Express Net Improvement As Productivity Using A Balanced Model

4. Show Localized vs. Overall View

1) Evaluate Productivity per Process

2) Evaluate Productivity for all processes together (Some processes may support or counterbalance productivity gains seen in others)

Balanced Scorecard For IT: ITIL

Financial		Customer	
Goals	**Performance Indicators**	**Goals**	**Performance Indicators**
• Ability to control IT costs • Economy of IT • Value of IT	• Accuracy of IT cost forecasts • Competitiveness of IT costs to the business • Costs of IT used in value adding business activities versus costs of IT used in overhead activities	• Quality of IT services • Reliability of IT services • Performance of IT services • Support of hands-on users	• Availability of IT services (in IT users' perceptions) • Compliance to SLAs; • Number and severity of IT • Service disruptions • On-time IT service delivery (defined by customer) • Number of registered user complaints about IT
Innovation		**Internal**	
Goals	**Performance Indicators**	**Goals**	**Performance Indicators**
• Business productivity • Service culture • Flexibility	• Improvements in business turnover ascribable to IT • Reduction in business costs ascribed to IT • Number of business improvements initiated by or with help from IT • Average lead-time of successful IT implementation	• Change control • Economy of IT • Value of IT	• Percentage of first time right IT changes • Hours spent on IT matters by business managers vs. total • Hours of IT use by business staff • Number of reported security violations

7   EXAMPLE METRICS – KPIs

7.1   Service Desk Function

- Monthly overall performance, achievements and trend analysis
- Telephony statistics such as number of inbound, outbound calls per agent, average talk time, average available time, per cent of abandoned calls, cost per call etc.
- Reduced average time to live response
- Reduced repetitive inquiries on solved issues
- Increased user satisfaction with the effectiveness and efficiency of the help desk
- Increased user confidence in the services of the help desk

7.2   Incident Management

- Total number of Incidents by phone, email, walk-in, etc.
- Mean time to achieve Incident resolution or circumvention, broken down by impact code
- Average elapsed time to resolve incidents
- Percentage within promised response time
- Cost per incident (need to be careful about this)
- Percentage closed by Service Desk on first contact
- Incidents per agent
- Incidents per business unit/department, etc.
- Incidents by category
- Incidents by priority
- Aged ticket analysis

7.3   Problem Management

- Percentage of Incidents defined as Problems
- Number of Problems and errors, split by: status, service, impact, category, user group
- Number and impact of Incidents occurring before the Root Problem is closed or a Known Error is confirmed
- Number of workarounds or temporary solutions provided and added to KEDB
- Number of RFCs issued
- Resolution times with respect to service level requirements
- Number of problems outstanding and expected resolution time

7.4   Change Management

- Total number of RFCs raised (trends)
- Number of Changes by item, type, service, etc.
- Breakdown of reasons for change
- Percentage of urgent Changes
- Number of successful Changes
- Number of Changes backed out
- Number of Incidents traced to changes
- Number of Changes that did not follow the process
- Size of review and implementation backlog by item/priority
- Number of Incidents/Problems reduced as a result of Change

7.5   Service Asset and Configuration Management

- Frequency and number of CMDB errors
- Number of new CIs
- Incidents and Problems by CI
- Frequency of unregistered CIs
- Number and severity of breaches in SLAs caused by inaccurate CMS information
- Frequency and impact of incidents affecting the CMS
- Number of occasions where distributed and remote software is at the wrong level
- Frequency and duration of bottlenecks
- Timeliness of management reports
- Ability to cope with growth

7.6   Release Management

Number of:

- Major and minor releases per reporting period
- Builds/distributions aborted during process
- Failed or backed out implementations plus builds rolled back after implementation
- Software builds from sources other than the DSL
- Unlicensed/unauthorized versions detected
- Times the DSL is out of step with the CMDB
- Detected viruses within the organization
- Incidents/Problems raised attributed to a release

Percentage Of:
- Urgent releases
- Installations completed within agreed timescale
- Resource costs per release

7.7   Service Level Management

A Service Level Agreement (SLA) is a mutually agreed on contract between the service provider and the customer; therefore, it is an objective measure of performance. If only one metric is reported, then it should be on meeting SLA terms.

- How many SLAs/OLAs/UC are in place
- New SLAs, OLAs, UCs negotiated and agreed to
- Number of reviewed and extended or renegotiated SLAs, OLAs, UCs
- Regular reports are being generated
- Reports generate action/discussion
- Regular review meetings and any service improvement programs
- Number of service breaches
- Customer perception improving?

7.8   Availability Management

- Actual levels of availability vs agreed levels
- Total down time per service
- Percentage reduction in the unavailability of services and components
- Improvement in Mean Time Between Failures (MTBF) and Mean Time Between Service Incidents (MTBSI)
- Time taken to repair per Incident
- Actual availability compared with SLA requirements
- Reliability – compared to expectations
- Maintainability – compared to expectations
- Serviceability – supplier performance compared with contractual conditions
- Availability plan is modified as required

7.9   Capacity Management

- Number of end-business processes suffering interruptions or outages caused by inadequate IT capacity and performance
- Number of critical business processes not covered by a defined service availability plan
- Percent of critical IT resources with adequate capacity and performance capability, taking account of peak loads

- Number of down-time Incidents caused by insufficient capacity or processing performance
- Percent of capacity remaining at normal and peak loads
- Time taken to resolve capacity problems
- Percent of unplanned upgrades compared with total number of upgrades
- Frequency of capacity adjustments to meet changing demands

7.10 IT Service Continuity Management
- Cost of:
    - Loss of service or business
    - Loss of revenue
    - Loss of resources (staff, equipment, facilities)
- Length of time to recover from occurrence
- Length of time before detection of impact of occurrence
- Percentage of reduction to vulnerability (chance of repeat)
- Cost of mitigating/preventive measure versus cost of recovery
- Number and details of Changes that require updates to the contingency plan
- Percentage of test output meeting SLA requirements
- Reduction in the risk and impact of possible failures of IT service
- Increase in validated awareness of business impact, needs and requirements throughout IT

7.11 Financial Management
- Percentage of CIs with incorrect financial data
- Percentage of cost predictions that are incorrect
- Percentage of Change Management decisions where cost impact is omitted
- Staff time spent on costing activities
- Software/hardware overheads in collecting data for cost management
- Percentage of variance between budgets, forecasts and actual costs
- Percentage reduction in information service rates
- Percentage increase in optimization of IT resources usage
- Software license fees vs. available licenses

8   APPENDIX - DASHBOARD KPI EXAMPLES

Process	KPI/Description	Type	Progress Indicator
Incident	Tickets resolved within target time	Value	Meets/exceeds target times
Incident	% of Incidents closed – first call	Performance	Service Desk only – target is 80%
Incident	Abandon Rate		Service Desk with ACD. 5% or less goal (after 24 seconds)
Incident	Count of Incident submitted by Support Group	Compliance	Consistency in number of Incidents – investigation is warranted for 1) rapid increase which may indicate Infrastructure investigation; 2) rapid decrease which may indicate compliance issues.
Problem	% of repeated Problems over time	Quality	Problems that have been removed from the infrastructure and have re-occurred. Target: less than 1% over a 12 month rolling time frame.
Problem	% Root Cause with permanent fix	Quality	Calculated from Problem Ticket start date to permanent fix found. This may not include implementation of permanent fix. Internal Target: 90% of Problems – within 40 days; External Target: 80% of Problems – within 30 days; Internal = BMO internal; External = 3rd Party/vendor
Problem	% and number of Incidents raised to Problem Management	Compliance	Sorted by Infrastructure (Internal and External) and Development (Internal and External)
Change	% of RFCs successfully implemented without back-out or issues	Quality	Grouped by Infrastructure/Development
Change	% of RFCs that are emergencies	Performance	Sort by Infrastructure or Development – and by Emergency Quick fix (service down) or Business requirement
SACM	Number of CI additions or updates	Compliance	Configuration Item Additions or updates broken down by group – CMDB/Change Modules
SACM	Number of records related to CI	Performance	Number of associations grouped by process
RDM	% of Releases using exceptions	Value	Exceptions are criteria deemed mandatory – identify by groups
RDM	% of Releases by-passing process	Compliance	Identify groups by passing Release Process
Capacity	Action required	Value	Number of services that require action vs. total number of systems
Capacity	Capacity related problems	Quality	Number of Problems caused by Capacity issues sorted by group