Measurement and Analysis Procedure

Version No: 1.1

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**Revision History**

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# Objective

The Metrics procedure deals with collecting and analyzing appropriate project metrics to meet the information needs of the organization for managing its projects and product quality effectively.

# Scope

This process is applicable to all projects and related areas like SEPG, Internal Audits, and Training and Project performance evaluation during the closure of the Project etc.

# Entry Criteria

* Project Plan.
* Organizational Metrics Framework.

# Inputs

* Project Plan.
* Time sheets/ schedules/estimation sheets/ defect logs.
* Status Reports.
* Organizational Metrics Framework.

# Responsibilities

* Project manager.
* Senior Management (if Needed).
* SEPG

# Tasks

The tasks for the Metrics process are as follows:

* **Data Collection**: Data is collected generally from the periodic time sheets/ schedules/estimation sheets/ defect logs/plans/change request tracker.
* **The collected data**: PM will make sure that data will be collected as per need of the organization and stored in appropriate storages as specified in CM plan. CC should make necessary steps to keep the data available on demand to Sr. management for taking appropriate decision.
* **Compute Metric**: The appropriate input data is applied to the Metric and the results computed. The computational logic for each metric is unique. Please refer to Metrics in project management plan.
* **Analyse and Review Results**: The obtained for analysis has to be checked for completeness and integrity. The results of the metric shall be analysed with the help of metrics analysis report and reviewed with the Senior Management based on set measurement objectives. Appropriate action needs to be decided thereon and same to be communicated to all relevant stake holders. **Action**: A feedback needs to be sent to the relevant Application development phase to ensure that the application development is improved.
* Store measurement related information as historical data and make available for use only to appropriate groups and staff members in PAL under shared network folder. Stored information contains information needed to understand and interpret the measures and to assess them for reasonableness and applicability.

The senior / top management reviews the implementation of this process. The results of the implementation of the Metrics process itself are recorded by the SEPG and are maintained for future use of the organization and improvement of the organization’s processes and process assets.

**Note**: Prevent access to inappropriate use of data by controlling access to data and educating people on the appropriate use of data.

## 6.1 Core Metrics

The Metrics-based scheduling is about establishing realistic software development or maintenance schedules based on accurate estimates of software size and effort.  The practice necessitates use of a minimum set of four core metrics (software size, effort, time/schedule and quality) for software development, along with a “productivity” metric that is derived from the core metrics and is often referenced as the fifth core metric.

* **Size** - Quantity of work or functionality (software product), usually measured in terms of size such as source lines of code or functional size measures, that ultimately executes on the computers; a way of measuring the amount of functionality a project/product represents --- before we embark on it.
* **Quality** – Level of quality or reliability required for the product, quantified by measures such as the defect rate.
* **Time (Schedule)** - the duration of the project, typically measured in calendar months or weeks for shorter projects (often referenced as the schedule).
* **Effort** – the amount of work expended, typically measured in person-months or person-hours
* **Productivity** – the rate of progress, expressed in terms of the functionality produced for the time and effort expended.  The conventional measure of productivity has been source lines of code per person-month (SLOC/PM), calculated from past projects. In recent years with increased reuse, and code generation, this measure has become less accurate and is being set aside in favour of Functional Size Units per person-month.
* The various other organizational processes metrics related to projects could vary on client to client and contractual basis that would include Process definition, Delivery Assurance and Training.

**Note:** Evidence of Quality Planning with 5 core metrics depends on client (varies with each client); therefore it is an optional to use all the core metrics. The PM or Senior Management has the authorization to show metrics based on client request (sometimes client may request to show 2 core metrics out of 5)

## 6.2 Measurement Objectives

Before analyzing the metrics, the targets / objectives of measures are specified for all the core metrics to meet the information needs of the organization for managing its projects and product quality effectively. Following are the measurement objectives for the core metrics described above;

* Effort variance (For Ex; more than 10%).
* Schedule variance (For Ex; more than 10%).
* Significant Quality Issues (More than expected defects).
* Productivity Variance (For Ex: more than 20%).
* Size Variance (For Ex: more than 10%)

# Outputs

* Organizational Metrics Framework.
* Corrective and Preventive actions.
* Review comments from senior management (if any).

# Validation

SEPG monitor the Measurement & Analysis process for its effective implementation

**8. Exit Criteria**

* Organizational Metrics Framework.
* Metrics Analysis Report
* Corrective and Preventive actions.
* Review comments from senior management (if any).

**9. Approvals**

The senior / top management reviews the implementation of this process.

**10. Quality Records**

Organizational Metrics Framework

**11. Reference /Related Documents**

* Organizational Metrics Framework Guidelines.
* Metrics Data.
* Metrics Analysis Report