BEST PRACTICE
The Measurement Program

A measurement program is defined as the entire set of activities that occur around quantitative data. It can be as simple as measuring whether a system is completed on time or completed within budget, or it can be extensive and complex.

Quantitative measurement occurs at all levels of IT maturity. As organizations mature, their use of measurement changes with the maturation of the management approaches. Immature organizations typically measure for budget, schedule, and project status, and management relies on project teams to determine when requirements are done. When work processes are optimized, management relies on the quantitative data produced from the processes to determine whether or not the requirements are complete, and to prevent problems.

There are four major uses of quantitative data (i.e., measurement):

1. Manage and control the process.

A process is a series of tasks performed to produce deliverables or products. IT processes usually combine a skilled analyst with the tasks defined in the process. In addition, each time a process is executed it normally produces a different product or service from what was built by the same process at another time. For example, the same software development process may be followed to produce two different applications. Management may need to adapt the process for each product or service built, and needs to know that when performed, the process will produce the desired product or service.

2. Manage and control the product

Quality is an attribute of a product. Quality level must be controlled from the start of the process through the conclusion of the process. Control requires assuring that the specified requirements are implemented, and that the delivered product is what the customer expects and needs.

3. Improve the process

The most effective method for improving quality and productivity is to improve the processes. Improved processes have a multiplier effect because everyone that uses the improved process gains from the improvement. Quantitative data

gathered during process execution can identify process weaknesses, and, therefore, opportunities for improvement.

4. Manage the risks

Risk is the opportunity for something to go wrong - for example, newly purchased software will not work as stated, projects will be delivered late, or workers assigned to a project do not possess the skills needed to successfully complete it. Management needs to understand each risk, know the probability of the risk occurring, know the potential consequences if the risk occurs, and understand the probability of success based upon different management actions.

The same database of quantitative data is employed for these four uses, but different measures and metrics may be utilized. Table 8-2 illustrates how the four uses of measurement can be achieved.

Table 8-2 Achieving the Four Uses of Measurement

Use	Questions Answered	Measurement Category	Examples of Measures/Metrics Used
Manage and Control the Process	- How much have we made? - How much is left to make?	Size	- Lines of code (LOC) - Boxes - Procedures - Units of output
	How much progress have we made?	Status	- Earned Value - Amount of scheduled work that is done - % of each activity completed
	How much effort has been expended?	Effort	Labor hours that differentiate requirements, design, implementation and test
	When will the product be completed?	Schedule	Calendar times (months, weeks) of activity completed
Manage and Control the Product	How good is the product?	Quality	- Number of defects found - Mean time to failure - Mean time to repair
	How effectively does the product perform?	Performance	- Technical performance - Measures specified by customers and management
Improve the Process	- How cost-efficient is the process? - What is the current performance?	Time and effort	- Unit costs - Time to complete
Manage the Risks	What are the risks?	Risks	Probability of exceeding constraints or not meeting requirements

References

Guide – CSTE Common Body Of Knowledge, V6.1 and CSQA Common Body Of
    Knowledge, V6.2