

# Aligning Metrics Program to Business Strategy

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## Abstract

*Matured software organizations have deployed sophisticated statistical tools to arrive at control limits that forms the target for future projects. They also have defined specification limits to ensure that the poor quality of baselines doesn't lead to wide control limits and a check is thereby maintained if they are out of these specification limits.*

*Control and specification limits are arrived at for projects that are categorized in terms of execution models and other parameters like client, technology, competencies of the team members etc.*

*This paper attempts to bring a different focus to setting up of specification limits by bringing the business strategy component in the picture. The paper suggests that projects should be categorized not only as per the traditional criteria but also in the dimension of the account's growth potential and relative current share. The specification limits for various project management metrics must be decided based on the pressing business scenario.*

## 1. Introduction

Effective management of any process requires quantification, measurement, and modeling. Software metrics provide a quantitative basis for the development and validation of models of the software development process. Metrics can be used to improve software productivity and quality.[1]

Software metrics can be classified into three categories: product metrics, process metrics, and project management metrics. Product metrics describe the characteristics of the product such as size, complexity, design features, performance, and quality level. Process metrics can be used to improve software

development and maintenance. Examples include the effectiveness of defect removal during development, the pattern of testing defect arrival, and the response time of the fix process.

Project management metrics describe the project characteristics and execution. Examples include the number of software developers, the staffing pattern over the life cycle of the software, cost, schedule, and productivity. [2]

This paper shall concentrate of project management metrics. If any of the other metrics are not up to the mark there will be some effect on either or all of the above project management metrics.

## 2. The Metrics Aspects

The important aspect of the metrics program is: "What should be the range in which the project should fall at the end of execution?" Or in other words what is the range given to the project. This is controlled by various project management tasks.

Usually, the limits arrived at are based on statistical analysis of historical data. Process capability baselines or metrics baselines as they might be called are calculated using sophisticated statistical tools. In some of the organizations management specification limits are given to check the huge variance arrived at from the baselines. In order to ensure that apples are not compared with oranges, projects are categorized based on the execution of their engineering processes. Separate categories are identified for development, maintenance, migration, reengineering, production support, ERP implementations etc. Also there might be some stratification based on size and technology.

In most of the cases, the specification limits might be used to direct the project management activities.

**For example:**

1. Customer satisfaction rating: The history of projects executed may have got rating of 3.5 to 4 on a scale of 1 to 5 where 4 is meeting expectations and 2 is not meeting the expectations. In this case the specification limit shall be >4.
2. The effort variance may be in the range of -2% to +30%. The management would like this to be within +/- 10% and hence the specification limit is specified accordingly.
3. The schedule variance may be haywire and to have focus on “on time delivery” the specification limit might be kept at +/-5%.
4. The defect leaked to client may be over 10% of the total defects therefore the management decides on the specification limit for Defect removal efficiency to be 95 to 100%.
5. The percentage of defects found in testing might be more than that of review and in order to have some focus on review a specification limit in review effectiveness is given.

The question is: Are the above limits in line with the business objectives?

More importantly: Can we apply these specification limits for all projects? Or even for the stratified sample uniformly?

### 3. Strategic Issues

Most of the large organizations have various focused business units may be as per the verticals. Most of the time these are specific to domains like BFIMR and are called the strategic business units (SBUs). Each of these SBUs executes almost all types of projects like development, maintenance, migration, reengineering, production support, etc.

The baselines released for these categories of projects are same irrespective of the SBUs to which it belongs. The SBUs make the portfolio of an organization. Even in these SBUs the accounts perform in specific ways. One needs to know the characteristics of the relationship with the account to decide what is critical to the success of execution of that project.

### 4. The Account Positioning Matrix

Organizations should classify all the accounts (clients relationships) in an SBU in four quadrants of

the APM matrix. The APM model suggests that organizations should have a healthy balance of accounts.

Invariably, accounts will fall in any of these four categories relative to each other.

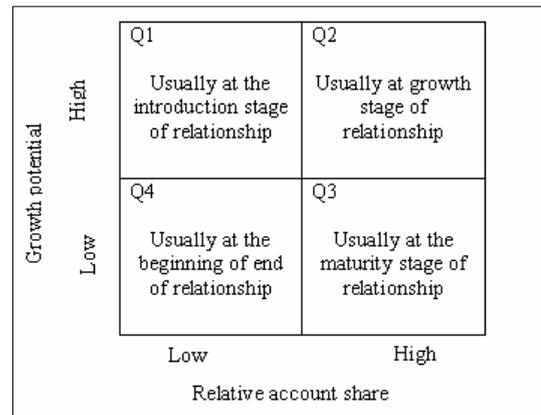


Figure 1: APM matrix

#### 4.1 The Quadrants of APM:

##### Q1 – Introduction Stage:

Normally the relations start at this stage. These accounts have high potential where the vendor has just entered. The company puts a lot of resources in this area in the hope that it will eventually increase market share and generate cash returns in the future. Vendors want to grow in this account, but the customer is not yet convinced and has doubts over their expertise.

The metrics baselines in this scenario should be so designed as to enable the projects to focus on technical solutions and valuable inputs while delighting the customer.

All the customer sensitive metrics should be well in control. For example: The CSS rating could be 4.1 to 5. Budget variance could be +/-15% and schedule variance could be +/- 5%. The organization should monitor Defects Removal Efficiency stricter than the Defect Density. Better verification and validation mechanism need to be in place to ensure that the defects do not escape to the customers’ site. The metrics baseline trends will be more or less stable. While the intent is to improve, the account dynamics may not favor it. However, there should be no deterioration in the trends.

### **Q2 – Growth stage:**

These accounts have growing account share that operates with customers that are in their growth stage of the life cycle. The relationships at this stage will be generating positive returns for the company. There are lots of busy activities happening at this stage. The customer is growing organically or inorganically and the vendor is helping them to grow and integrate operations. The vendor also grows with them as positive cash returns are generated.

The vendor has developed a fair understanding of the customers' business profile and urgencies. The vendor has generated reasonable amount of confidence. Some of the Q1 accounts may not come to this quadrant if the chemistry between the partnerships doesn't gel.

The metrics baselines should be focused to meet the customer's Critical to Quality aspects. For example: The CSS rating should be 4.1 to 4.5. Budget variance could be +/-10%, Schedule variance could be +/-5%. Defect Removal Efficiency could be 95 to 100%. While internal process metrics might be a second priority, initiatives need to start for projects to start thinking about being efficient. The trends of baselines should tend towards improvement, but may remain more or less stable due to the frequent changes in requirements and enhancements flowing in. . While flexibility might be the most important aspect for this customer, it should not be at the cost of vendor's profitability. The vendor has to strike a fair balance.

### **Q3 – Maturity Stage:**

These accounts are at the mature stage of the lifecycle, they generate high amounts of cash for the company, but the growth rate is sluggish. These are already huge accounts where the customer requirements are more or less stable and well understood. There is a fair amount of trust in the relation and a stage of mutual benefit and interdependence is reached. The Q2 quadrant relations can come to this quadrant.

The metrics baselines should be focused on internal improvements. For example: CSS could be 4 to 4.5, Budget variance could be +/-5%. Schedule variance could be +/-5%. Defect removal efficiency could be 95 to 100%. Productivity, defect density and COQ targets should be well set depending on the type of projects. Most important part in this category of projects is that trends of all the metrics baselines should be monitored. The trends should indicate improvements in efficiency

metrics like Productivity, Review Effectiveness and Defect Age.

### **Q4 – Beginning of End?**

These accounts have low market shares and low market growth rates. The option for many companies is to phase these relationships out if the efforts required to keep them alive is higher. An account may not have great potential for growth, as other players are already dominant. Some of the Q1 accounts might directly fall to Q4 where marketing strategies fail to penetrate the established players. Some of the Q3 accounts might also go to Q4 as a part of de-risking activity from the customer's or even the vendors side.

The metrics baseline limits for the projects executed for these customers should be stringent such that the damages are shared with the customers. For example: The CSS rating could be 3.8 to 4.2, Budget variance could be +/-5% and schedule variance could be +/-10%. Activities should be aimed at ensuring that the metrics baseline remains at the same level if not improving. Efficiency metrics should show improvement and Profitability should be on priority.

## **5. Conclusion**

Metrics can be effectively used to direct project management efforts that will benefit the organizations interest as well. It doesn't serve the purpose of setting quantitative limits unless the strategic fit of the relation is considered. Moreover, the project teams will have better insights on the expectations during execution phase. The APM matrix can help software organizations to categorize projects and design their specification limits.

The APM can also be used to monitor the movement of their relationship from one quadrant to another. Moreover, APM can be used as a tool to direct top management efforts to push relations to the desired quadrant.

## **6. References**

- [1] Mills E., *Software Metrics*, Carnegie Mellon University, <http://www.sei.cmu.edu/publications/documents/cms/cm.012.html>
- [2] Kan Stephen, *Metrics and Models in Software Quality Engineering*, Addison-Wesley, Massachusetts, September 1999.