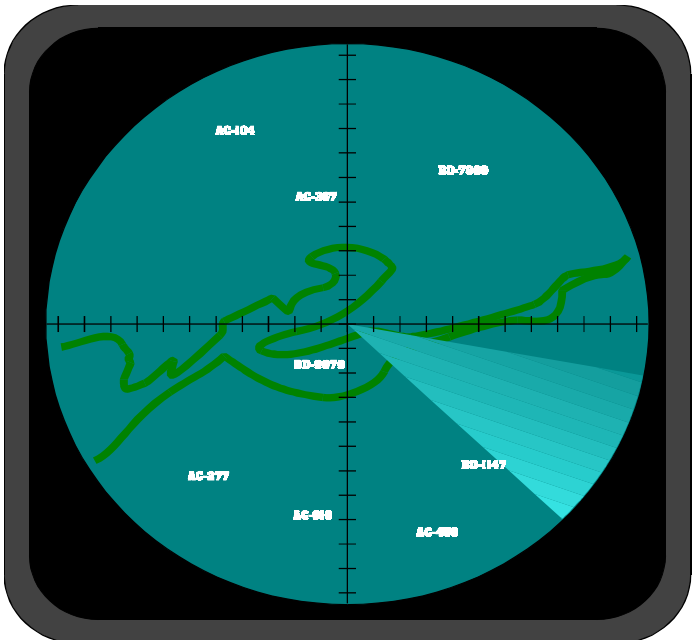
The QSM I.T. Project Office for Applications Development and Outsourcing



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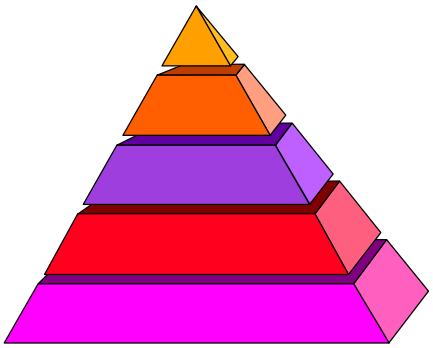


QSM Project Office

Introduction

Today many development and procurement organizations are challenged to implement a practical and effective management control system for software intensive systems.

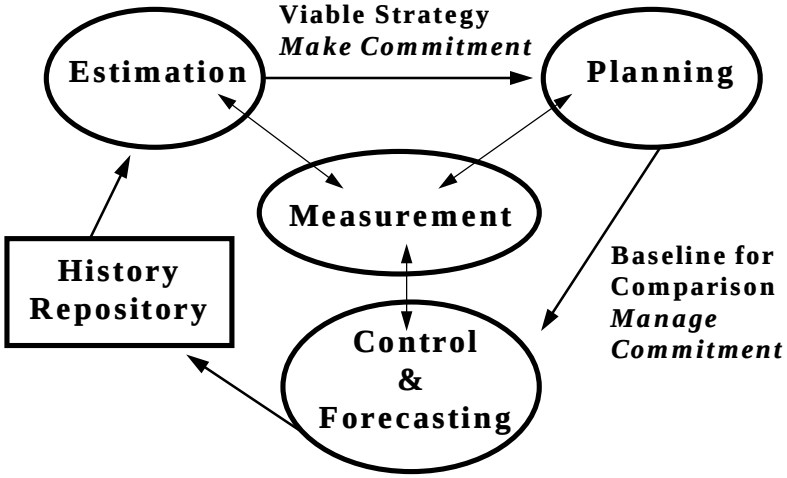
Howard Rubin cites that 90 percent of all metrics groups fail within 3 years of their inception. Having worked with many organizations building successful measurement programs we have learned how to implement a results oriented program that adds value to the organization. The keys to success are:

- Utilizing the appropriate core business metrics
- Getting the right people involved in the program
- Developing effective procedures
- Acquiring the right tools to support the work
- Creating the project office infrastructure
- Providing technology transfer

Project Office Objectives

The objective of the project office is to establish a system that can effectively perform the following tasks in support of project teams and commercial managers.

- Productivity and Quality Benchmarking
- Estimating and Risk Assessments
- Tracking and Adaptive Forecasting



Step 1 Understand Your Requirements and Work Processes

Initially QSM needs to have a clear understanding of the management control issues and current development processes of the organization. Typically we try to understand the following items:

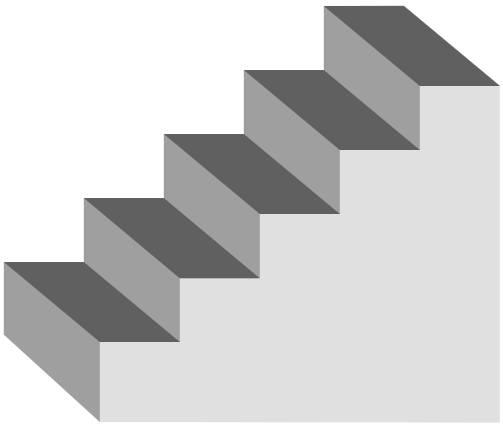
- Senior managers needs
- Project manager needs
- Current management controls
- Current software development tools and processes
- The current product line and customer - user profile
- Organizational goals for process improvement

With this information our consultants can assess what data are available, where it resides and how long it takes to recover it. We are then ready to start designing the nuts and bolts of the control office procedures.

Step 2 Tailor the Project Office Procedures

In this phase we tailor the detailed procedures and the work product deliverables for the project office. The procedures document where the data resides, how it is measured, how and when it is collected, how it is analyzed and how it is fed back to the decision makers in the organization.

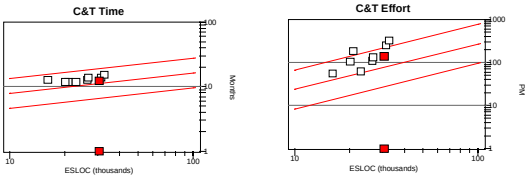
The data flow and work products are different for development and procurement organizations. Below is a basic description of the tasks performed for development and procurement organizations.



Developer Project Office

Development organizations are typically concerned with increasing their competitive position within their industry sector. They are interested in being first to market (or quick to respond to user requests) with highly competitive products and services. The Project Office functions that best address these goals are described in the following text.

Positioning vs QSM Industry Trendlines



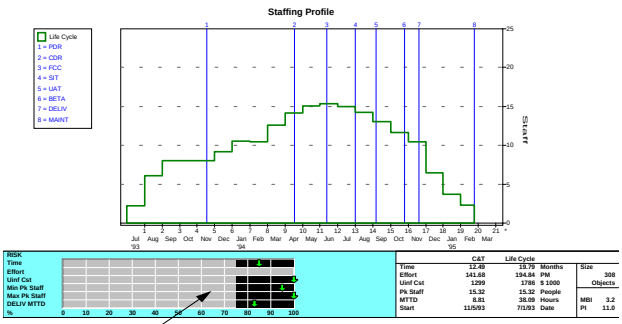
Productivity & Quality Benchmarks

The Project Office effort usually starts by establishing a benchmark. The benchmark consists of 10-20 projects that have been completed in the recent past. Basic core measures of time, effort, size and defects are positioned against QSM industry reference measures and trendlines derived from over 6300+ historic projects. The benchmark data are consolidated so that assumption ranges for productivity can be established to support the estimation process. Finally, goals for improvement are established. Annual assessments are then performed to update the estimation assumptions and quantity the benefits of organizational improvements.

Development Plans and Risk Assessment

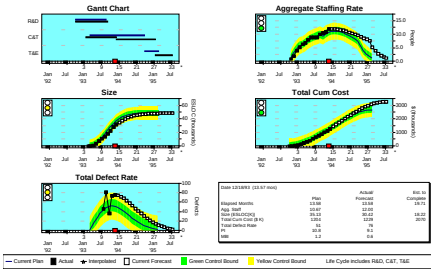
In the estimation and planning process the Project Office representatives work with developers, commercial managers, marketing representatives and customer representatives. Developers provide data on expected size, technical complexity, tooling and staff experience. The other players provide guidance on time, budget and quality goals. Estimates which often include several alternatives are developed. Historic data is used to show when expectations are out of line with what is achievable. Managers and customers are called on to decide which of the alternatives makes the most sense given the circumstances. A decision is made and a base line set of plans are created which progress can be measured against.

Development Estimate and Risk Profile



High Probability of not exceeding Management Goals

Baseline Comparison and Forecast to Complete



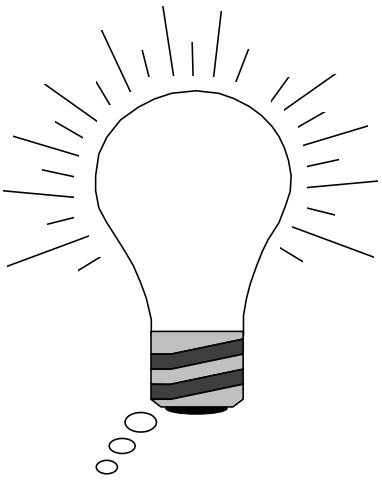
Monthly Tracking and Replanning Assessment

Acceptable variation bounds are established around the base line development plans. Green (acceptable variance from plan), yellow (potential risk to plan), and red (high risk to plan) zones are defined. Each month or week (depending on the size and importance of the project) data is reported to the Project Office. If the data is not reported, the project is set to a status of red, requiring it to be reviewed by the commercial managers of the business unit. Variance analysis is performed on the projects that do report data. Each project is assessed as red, yellow or green. The red and yellow projects are ones that are showing deviation from plan. They are reviewed in a management forum to assess alternative plans and or other viable management and technical initiatives to bring the projects back in alignment with expectations.

Process Improvement Return on Investment

At the completion of every project a post mortem analysis is performed. Productivity and quality measures are calculated. Savings are quantified (cost, schedule, and quality) and return on investment is calculated if investments were made prior to, or during the development.

Procurement Project Office



Procurement organizations are challenged to ensure that they can procure and field a working system for a fair price by a competent supplier. Without specific development experience this can become a difficult task. The procurement Project Office is design to ensure that development plans are viable and that runaway projects are avoided.

Request for Proposal Data Requirement Package

In the request for proposal, specific information is requested of each potential supplier. Historical data is requested for not fewer than 4 projects that are of a similar size and complexity. This information is used to quantify the suppliers productivity and quality position relative to the QSM reference trends. Additionally, each supplier is asked to quantify their bid. The quantified bid can then be assessed for consistency with the historical performance. The goal is to smoke out ”buyins”, where there is a very low probability that the system could be built for the time and effort that’s been quoted. Specific program tracking data is also defined in the RFP. This is to be reported monthly or weekly once the contract is awarded and work begins.

“Should Cost” Estimates and Risk Assessment

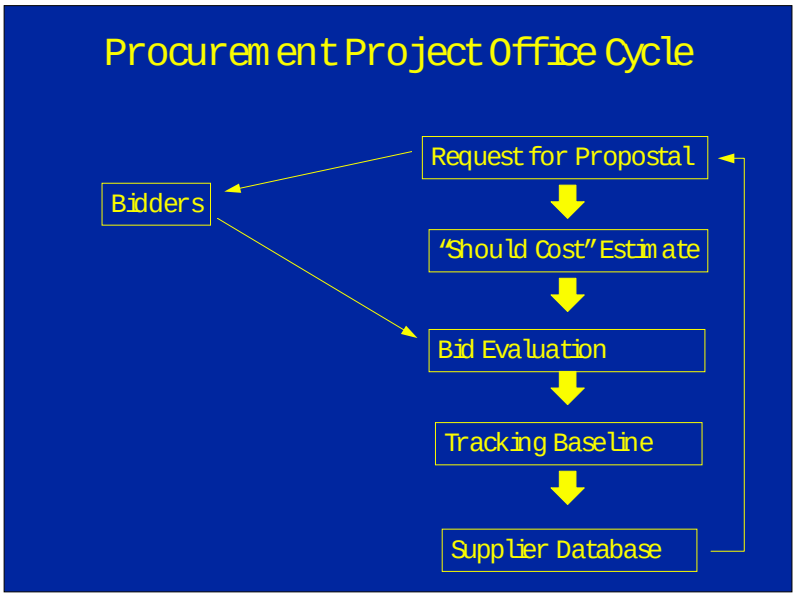
The “should cost” estimate is an independent analysis that is done by the contracting organization. The intent is to establish feasible contract parameters so that suppliers are not forced into a “no win” bidding situation. The “should cost” estimate should be broad enough that any competent supplier would be able to compete for this business. Part of the assessment is to identify risk areas so that contractors bids can be realistically assessed in the key risk domains.

Bidder Evaluation & Contract Baseline

When all of the proposals are returned, each bid is assessed against historical performance for consistency. Size estimates and known risk areas are evaluated for realism. The “best bid” is identified. This bid is determined to be viable and of good value to the procuring agency (not necessarily the “low bid”) The bid is established as the contract baseline from which future contract performance is monitored.

Time Based Tracking and Replanning Alternatives
Acceptable variation bounds are established around the base line development plans. Green (acceptable variance from plan), yellow (potential risk to plan) and red (high risk to plan) zones are defined. Each month or week (depending on the size and importance of the project) data is reported to the Project Office. Variance analysis is performed on the projects. Each project is assessed as red, yellow or green. The yellow and red projects are ones that are showing significant deviation from plan. They are reviewed in a management forum with the supplier to assess alternative plans and or other viable management and technical initiatives to bring the projects back in alignment with expectations.

Supplier database of historic projects
At the completion of each contracted development a post mortem analysis is performed. The data are stored in a measurement repository. Over time the procurement organization builds a comprehensive data base of supplier performance. The data base becomes a valuable tool to assist in "should cost" estimates when procuring future systems.



Step 3 Pilot Operation

Several projects are identified as being good candidates for the pilot operation of the Project Office. QSM consultants work along side the Project Office staff during the pilot. This ensures that the procedures are working as designed, and that skills and knowledge are transferred to the project office personnel. The pilot operation usually lasts 3 to 6 months.

QSM Consulting Participation

QSM consultants work with the Project Office during all stages of the design and implementation of the Project Office. After the pilot operation the Project Office should be fully operational without additional assistance from QSM. However, some of our clients prefer to augment their staff by hiring QSM to assist in the day to day operations of the Project Office.

Benefits of the Project Office

The goals of the Project Office are to develop a "best in class" measurement and project control program that is practical and effective. With your determination, a modest investment, and our software management expertise we can achieve that goal. These are a few of the benefits that you will realize with the implementation of the QSM Project Office:

- Satisfy many of the SEI level 2 &3 estimation and planning Key Process Areas
- Quantity risk and make informed decisions
- Ensure that project estimates are realistic
- Quantify the benefits of process improvements
- Compare and measure software development performance
- Manage the core metrics for all software development projects
- Build a reference data base of historically completed projects

These are a few comments from out customers:

- **“Superb at risk mitigation”**
- **“Leading edge technology”**
- **“The key value is in the QSM research and modeling”**
- **“Provides the ability to manage everyone's expectations”**
- **“Model takes major errors out of play”**
- **“Key tool for ISO-9000 certification”**
- **“Very flexible - allows for new processes with limited historical input”**
- **“Meets the need to properly evaluate outside contractors”**
- **“Great customer support”**
- **“QSM is not just management tools, it’s a management philosophy”**
- **“Cost is only a fraction of what can be saved by the application of these techniques “**

About the Company

QSM Associates, based in Pittsfield, Massachusetts, provides solutions in software estimation, project control and productivity measurement benchmarking, and outsource advisory. QSMA has been helping organizations quantify and improve the cycle time, cost, and quality of their software products for over 12 years.

We offer the SLIM-Estimate®, SLIM-Control® and SLIM-Metrics® tool suite and furnish consulting and training to help clients manage software application development, maintenance and outsourcing.

Our strategy for software lifecycle management is a **focus on bottom line management measures**. We provide measurement techniques that enable you to compete more effectively in the market place. We will help you **obtain vital insight into your software development process** quickly and easily.

QSMA and its strategic partners, which includes the Cutter Consortium (www.cutter.com), and Triad Consulting (www.triadcgi.com) are a team of high-energy people who share the vision and have the skills to work with all levels of management. We pride ourselves in our top-notch professional services. For additional information or questions:

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