



Q/P MANAGEMENT
GROUP, INC.

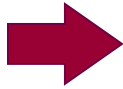
Industry Metrics for Outsourcing and Vendor Management

Scott Goldfarb
Q/P Management Group, Inc.
10 Bow Street
Stoneham, Massachusetts 02180
sgoldfarb@qpmg.com

Tel: (781) 438-2692
FAX (781) 438-5549
www.qpmg.com

Notes

Agenda



- Overview
- Metrics Classification and Definition
- Establishing and Measuring Improvements
- Summary

Notes

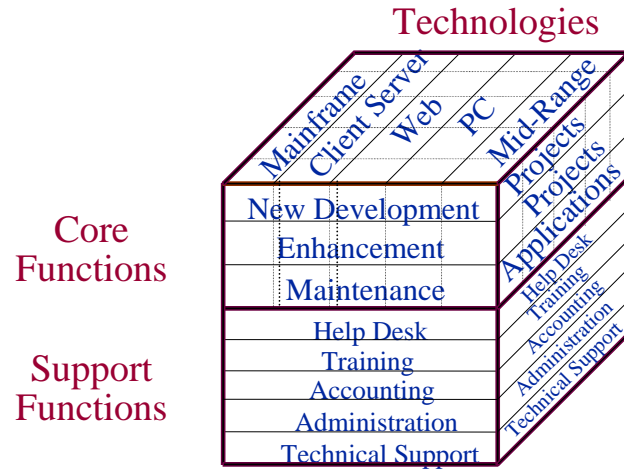
Metrics Need to be Aligned with Outsourcing Goals

- Cost Reduction
- Improve Productivity
- Reduce Time to Market
- Improve Quality
- Improve Software Engineering Processes
- Improve Internal Expertise
- Offshore Development
- Reduce Frustration

Notes

Metrics Should be Established for Each Outsourcing Opportunity

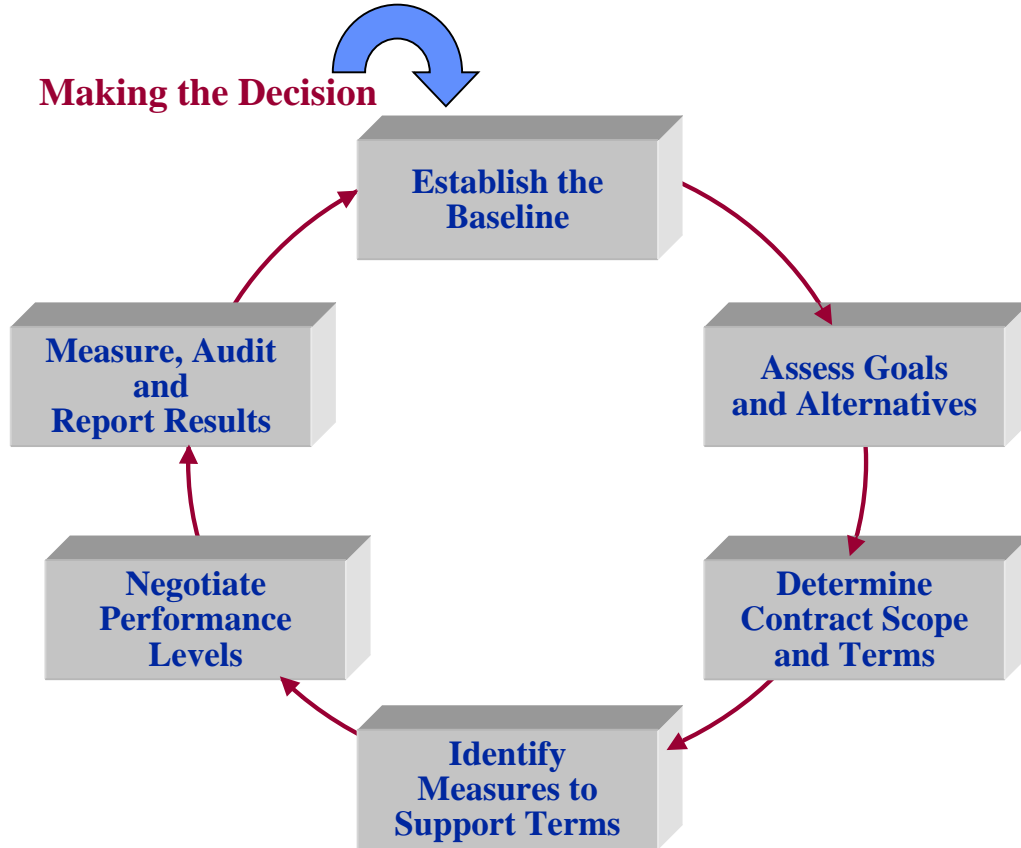
Classifying Outsourcing Options



Opportunities range from single projects to complete organizations

Notes

Best Practice is to Establish a Baseline to Determine Opportunities and Negotiate the Deal



Notes

Use of Metrics in Outsourcing

Metrics and payment options are numerous depending on the goals and contract terms

Pay by the Metric

- Payment is based on Function Points delivered
- \$700/ Function Point for example

Casual Management Interest

- Identify performance productivity improvement
- Does not impact regular payments

Tool to Manage Performance and Terms

- Provide incentives for achieving goals
- Assessing penalties for poor performance
- Benchmarking built into the agreement

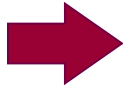
Notes

Industry Standard Metrics for Outsourcing

- An Industry Standard for Outsourcing Metrics established by a “standards organization” (such as ISO, IEEE and IFPUG) does not exist
- Common Industry Practices have been developed based on the work and experience of Sourcing Deal Makers, Measurement Consultants and Outsourcers
- The following Metrics are observed to be frequently used in outsourcing agreements, are reasonably well defined and can be compared to industry benchmarks

Notes

Agenda

- Overview
-  • Metrics Classification and Definition
- Establishing and Measuring Improvements
- Summary

Notes

Application Development and Maintenance (AD&M) Activities

AD&M activities are typically organized into three categories:

New Development

- Work activities that deliver brand new software applications

Enhancement

- Work activities that modify existing software applications based on user requirements. This may include adding new functionality, changing existing functionality, or deleting existing functionality

Maintenance

- Work activities required to maintain the system through repair of errors, optimization, software upgrades and preventative activities

Notes

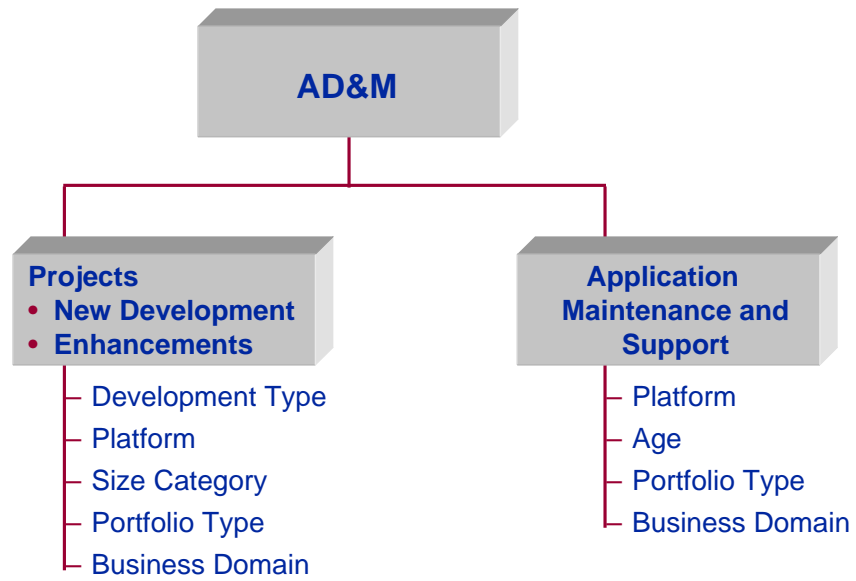
Other AD&M Activities

Activities that are often included in outsourcing deals but are more difficult to measure and are often pay as you go:

- Infrastructure Projects
- Help Desk
- Operations
- Production Support
- SME Support

Notes

Application Development and Maintenance



Notes

Measuring Portfolios and Business Domains

- Business Domains are occasionally accounted for independently for service and billing purposes
- Portfolios represent major categories of different software types that need to be measured independently
 - Business software (in-house)
 - COTS (installations)
 - Middleware
 - Reusable components
- Different portfolios and business domains may have different:
 - Productivity rates
 - Benchmark comparisons
 - Metrics

Notes

Productivity and Cost (Based on Productivity) is the Most Critical Outsourcing Measure

Productivity is defined as the ratio of the volume of output delivered to the resources consumed by the process. This ratio is often referred to as a “productivity rate” or “efficiency rate.”

A process is considered to have improved its productivity if it:

- Delivers more output without increasing the level of one or more categories of resources; or
- Delivers the same volume of output using a lower level of one or more categories of resources; or
- Both delivers more output, and consumes a lower level of one or more categories of resources

Notes

Productivity Metrics

New Development and Enhancement

- The number of Function Points developed in one hour
- Cost per each Function Point developed/enhanced
- The number of Function Points developed/enhanced for elapsed time period

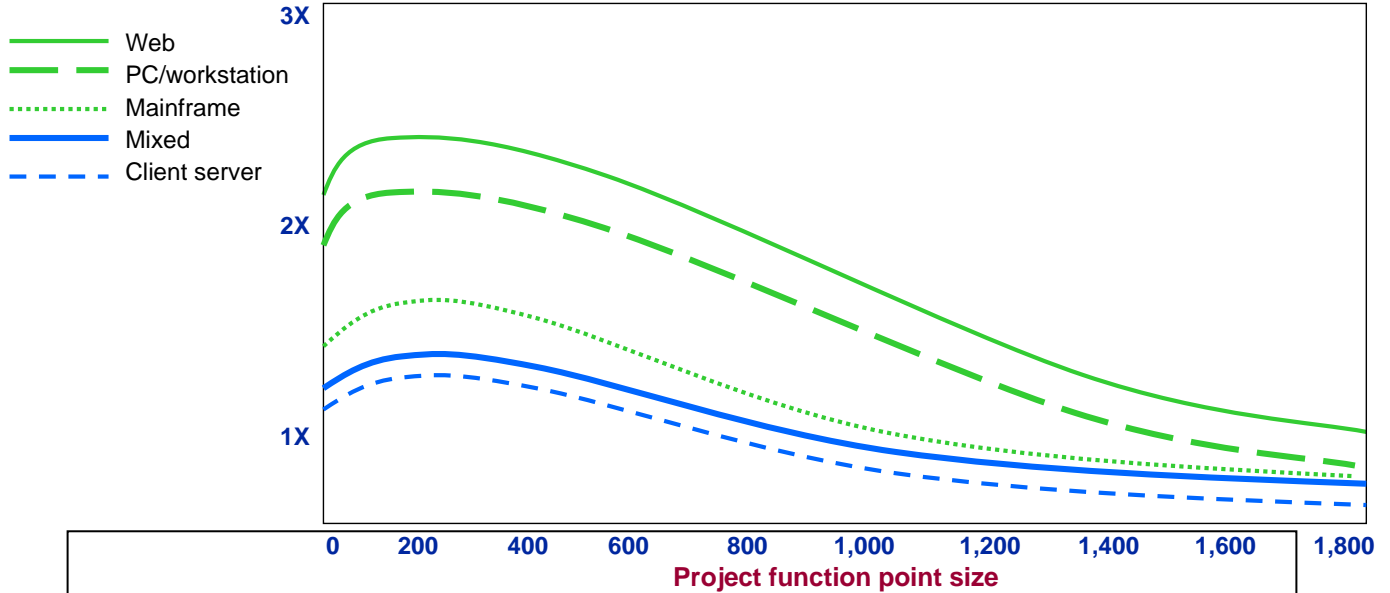
Maintenance

- The number of Function Points supported by one Full Time Equivalent (FTE) during a period
- Cost per each Function Point maintained

Notes

Productivity Varies by Development Type, Size and Platform

**Project Productivity
FP/Hour**



ILLUSTRATIVE

Project Size can account for a 3 times productivity variation

© Copyright 2008. Q/P Management Group, Inc.
All Rights Reserved.

15

Notes

Platform

Productivity varies by Platform type and should be carefully classified and measured

Platforms typically include:

- Mainframe/Midrange
- Client Server
- Web
- Standalone Personal Computer/Workstation
- Mixed

Optional platforms in special situations include:

- Data Warehouse
- Middleware
- Components
- System software
- Tools

Notes

Function Point Size Group

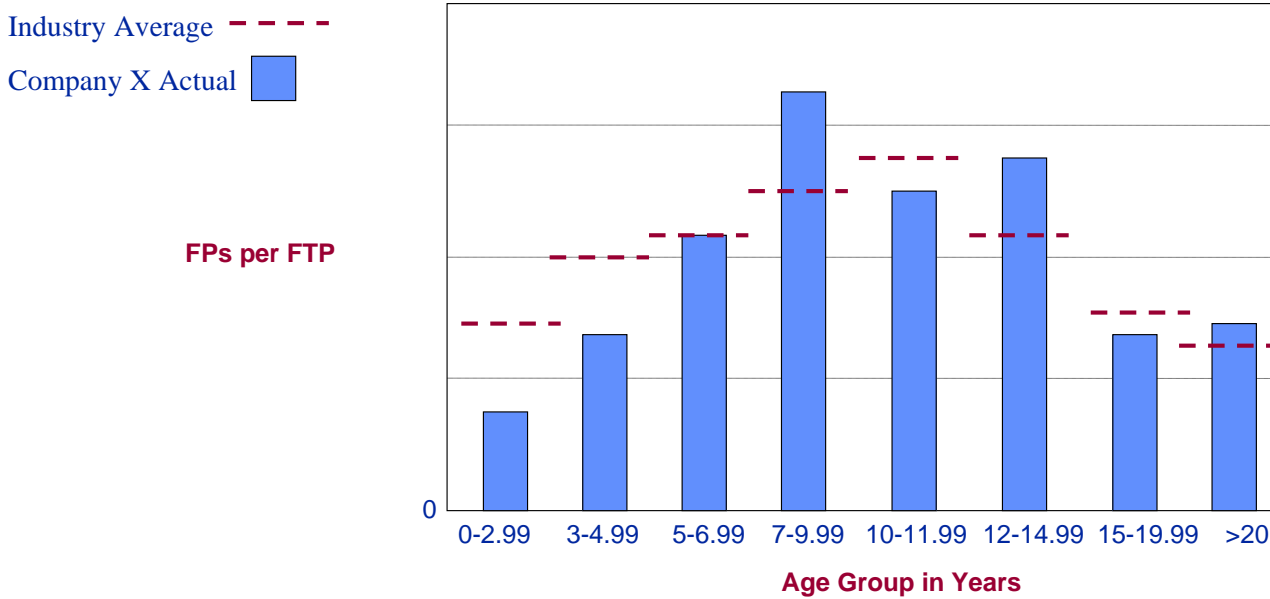
Productivity varies by size and requires size categories for proper measurement

Example Categories:

| | New Development Size Groups | Enhancement Size Groups |
|-------------------|--|------------------------------------|
| Small | 1 – 300 FPs | 1 – 50 FPs |
| Medium | 301 – 1,000 FPs | 51 – 500 FPs |
| Large | 1,001 – 4,000 FPs | 501 – 2,000 FPs |
| Very Large | Greater than 4,000 FPs | Greater than 2,000 FPs |

Notes

Maintenance Productivity is Highly Dependent on Application Age and Platform



Applications less than 5 years old and greater than 15 years old are the most costly to maintain

Notes

ADM Work Type: New Development and Enhancement

| Perspective | Productivity Rate | Example |
|--------------------------------------|---|---------------------------------------|
| Effort | The number of Function Points delivered per resources consumed | 5 FPs per person month |
| Cost | Cost per each Function Point developed/enhanced | \$1000/FP |
| Time-to-Delivery (schedule duration) | The number of days to deliver the developed/enhanced xx FPs for the size category | 100 Days for 100-200 FP size category |

Notes

ADM Work Type: Maintenance

| Perspective | Productivity Rate | Example |
|-------------|--|-------------|
| Effort | The number of Function Points supported by one Full Time Equivalent (FTE) during a period of time <i>Note: FTE needs to be defined in terms of productive hours per month</i> | 700 FPs/FTE |
| Cost | Cost per each Function Point developed/enhanced | \$100/FP |

Notes

Measuring Resources Consumed - Effort

For AD&M activities, labor effort consumed is a critical input that needs careful definition and accounting

- Roles included in time accounting for major categories of AD&M activities
- Specific activities included/excluded
- Definition of FTE
- Trends in time spent

Notes

Roles in ADM Activities

Include

- All non-overhead effort expended directly by the core development or maintenance team such as:
 - Project managers
 - Analysts
 - Programmers
 - Testers
- Shared resources who work directly on the project/application such as:
 - Database analyst
 - QA
 - Configuration management personnel

Notes

Roles in ADM Activities (Continued)

Exclude

- In general, roles that do not expend effort directly such as:
 - Users
 - Senior management
 - Administration
 - Operations personnel

Notes

Specific Activities Need to be Defined for New Development and Enhancement

Include

- Planning and management
- Requirements definition
- Design
- Coding
- Testing
- Performance tuning (specific to the project)
- Installation and training (through first implementation)

Notes

Specific Activities Need to be Defined for New Development and Enhancement (Continued)

Exclude

- Feasibility or business case studies
- Maintenance activities not associated with the project

Notes

Specific Activities Need to be Defined for Maintenance

Include

- Corrective maintenance
- Perfective
- Preventative maintenance
- Technical adaptive maintenance
- Cosmetic and data maintenance

Notes

Specific Activities Need to be Defined for Maintenance (Continued)

Exclude

- Effort that cannot be associated with a specific application such as operating system upgrades not specific to an application
- Work classified as New Development or Enhancement
- Operations and production support activities

Notes

Measuring Labor and Cost

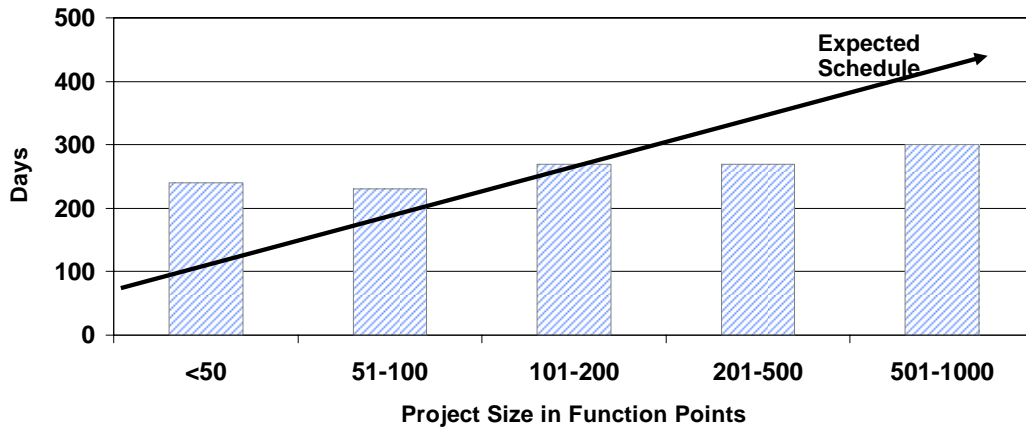
The cost of the outsourcing agreement is generally based on the annual or monthly FTP labor rate and needs to be carefully calculated and measured

- The labor rate needs to be carefully negotiated, measured and benchmarked
- The outsourcer will charge a price to develop and maintain applications within scope. That price will include labor costs, overhead costs, and profit
- Understanding the terms and conditions related to other contract cost is critical to the understanding of labor rates
 - Facility cost
 - Hardware/software costs
 - Desk top support
 - Telecommunications

Notes

Time to Market (Schedule Duration) is another Critical Measure

Schedule Duration by Project Size Category and Platform



Actual project schedules (days) should be compared against baselines, targets or benchmarks by size category and platform

Notes

Special Situations

The following situations require special consideration:

- Application decommissioning (retirement)
- Package implementation and installation of upgrades
- Cancelled projects
- Ad hoc reports
- Reusable software components
- Infrastructure support
- Changes to FP Counting Rules (CPM Version)

Notes

Quality Metrics

Quality typically takes on two perspectives

- Defects
- Customer satisfaction

Notes

Quality Defect Metrics

New Development and Enhancement Projects

- The number of defects per project Function Point discovered in the first 90 days after implementation
- 30 days, 60 days or 365 days are used but are less common
- All severity levels if possible

Applications

- The number of defects per application Function Point discovered per year
- Per quarter or per month are used but are less common
- All severity levels if possible

Notes

“Defect” Needs to be Well Defined

- A defect is defined as a problem or an error that, uncorrected, will produce unsatisfactory results
- Unsatisfactory results range from cosmetics to inoperable systems (typically all severity levels)

| Level | Definition |
|------------|---|
| Severity 1 | <u>Disastrous</u> – system cannot be used without corrective action being taken |
| Severity 2 | <u>Major</u> – system can be used with major functional restrictions |
| Severity 3 | <u>Minor</u> – system can be used with minor functional restrictions |
| Severity 4 | <u>Cosmetic</u> – system can be used with full functionality |

Notes

Quality Defect Metrics

The following items are collected for quality measurement

- **Work Type Category:** New Development, Enhancement or maintenance
- **Defects:** Number and severity (optional)
- **Size:** Function Points
- **Attributes:** Application age, platform

Notes

Constructing Defect Rates

| Defect Ratios | Example |
|--|----------------------------|
| The number of defects per Project Function Point (first 90 days in production) | .05 defects/Function Point |
| The number of defects per Application Function Points (annual) | 50 defects/1,000 FPs |

Notes

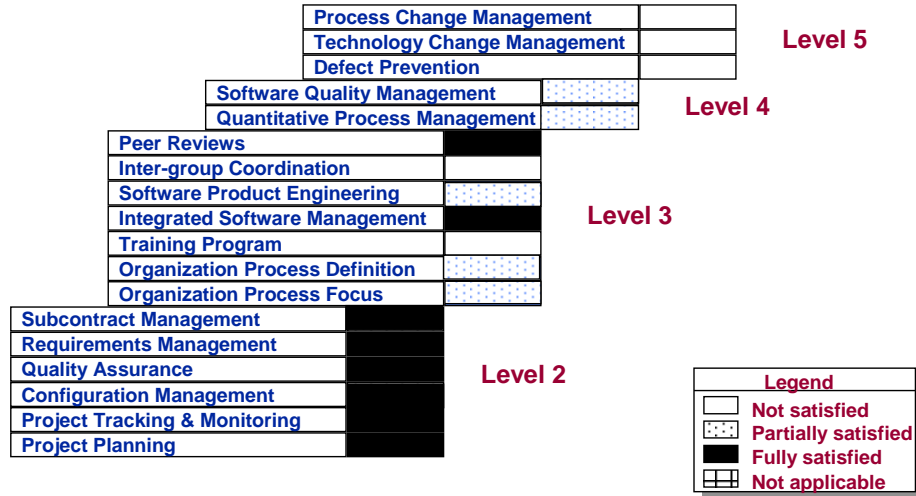
Customer Satisfaction Metrics

AD&M contracts often include one or more Customer Satisfaction service level agreements (SLAs).

- The contract requires the vendor to maintain a satisfaction level above a defined threshold
- Periodically the customer organization is asked to evaluate their level of satisfaction with one or more of the outsourced services
- There are challenges in measuring customer satisfaction
 - The Customer Satisfaction score is an opinion about opinions
 - Vendors do not always have control
 - Benchmarking is difficult
- Regardless of the challenges, Customer Satisfaction adds a missing perspective not captured by other quality and productivity measures

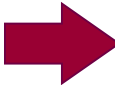
Notes

Outsourcing Agreements Often Include Requirements for Process Maturity



Notes

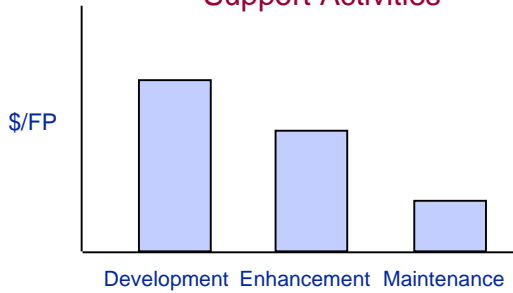
Agenda

- Overview
- Metrics Classification and Definition
-  • Establishing and Measuring Improvements
- Summary

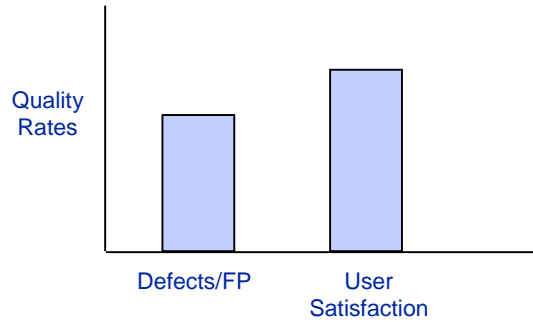
Notes

Summary Measures for Contract Negotiation and Performance Management

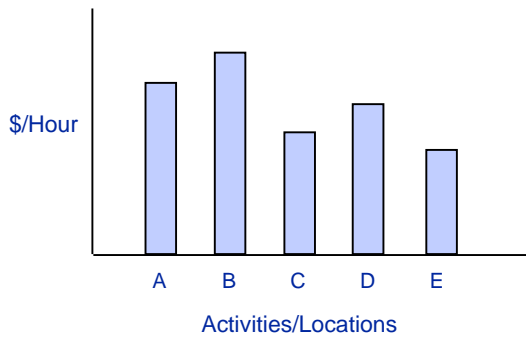
Software Development and Support Activities



Quality Thresholds

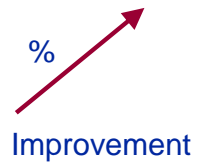


Labor Rates by Activity/Location



Performance Improvements and Incentives

- Processes
- Current Performance Rates
- Industry Averages and Best in Class



39

© Copyright 2008. Q/P Management Group, Inc. All Rights Reserved.

Notes

Improvements are Typically Based on Percent Increases or Decreases

| Pay by the Metric | Deliver & Maintain Fixed Output for a Fixed Annual Price | Metrics for Performance Management (Incentives, Penalties, Renegotiation) |
|---|---|---|
| <ul style="list-style-type: none"> • Pay \$n for each newly developed FP delivered • Pay \$n for each enhanced FP delivered • Pay \$n for each application FP maintained | <ul style="list-style-type: none"> • Deliver n FP's of newly developed software • Deliver n FP's of enhancements to existing software • Maintain the portfolio of n FP's • Adjustments & credits are used for growth in the portfolio or trade-off between work types | <ul style="list-style-type: none"> • n FP's per hour for new development • n FP's per hour for enhancements • n Cost per FP for new development • n Cost per FP for enhancements • Maintain n FP's per FTE • n Cost per FP maintained • n Defects per FP • Customer satisfaction rating |

Notes

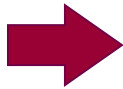
Baselines and Benchmarks are Useful Tools for Establishing Improvement Targets

- Future targets should be based on current performance
- Improvement targets should be realistically set and not be based on marketing promises
- The degree of improvement should consider
 - The current baseline versus industry benchmarks
 - The goals for outsourcing
 - The outsourcer capabilities
 - The level of process maturity
 - The degree of organizational change including offshoring
 - Industry trends
- Improvement percents generally range from 3% to 15%
- Some situations dictate improvement ranges from -10% to +30%

Notes

Agenda

- Overview
- Metrics Classification and Definition
- Establishing and Measuring Improvements
- Summary



Notes

Summary of Outsourcing Metrics

The following summarizes common measures used in Outsourcing

Work Type

- New Development or Enhancement
- Maintenance

Resources Consumed

- Cost
- Effort
- Elapsed time

Quality

- Defects
- Customer survey

Output

- Function points

Notes

Detailed Definitions and Guidelines are Needed

Carefully define and document the metrics used and the standards for accounting

- Define each metric in detail
 - Description
 - Calculation
 - How collected
 - How used and reported
- Establish details for resource accounting
 - Roles and activities to be included/excluded
 - Cost items to be included/excluded
 - Definition for resources and calculations (FTE, productive month, etc.)
- Base measurement analysis on the factors that impact productivity and quality (platform, size, age, etc.)
- Establish appropriate service level and improvement targets
 - Based on baseline and benchmark data
 - Establish reasonable targets

Notes

Cost/FP or FP/Effort Matrices

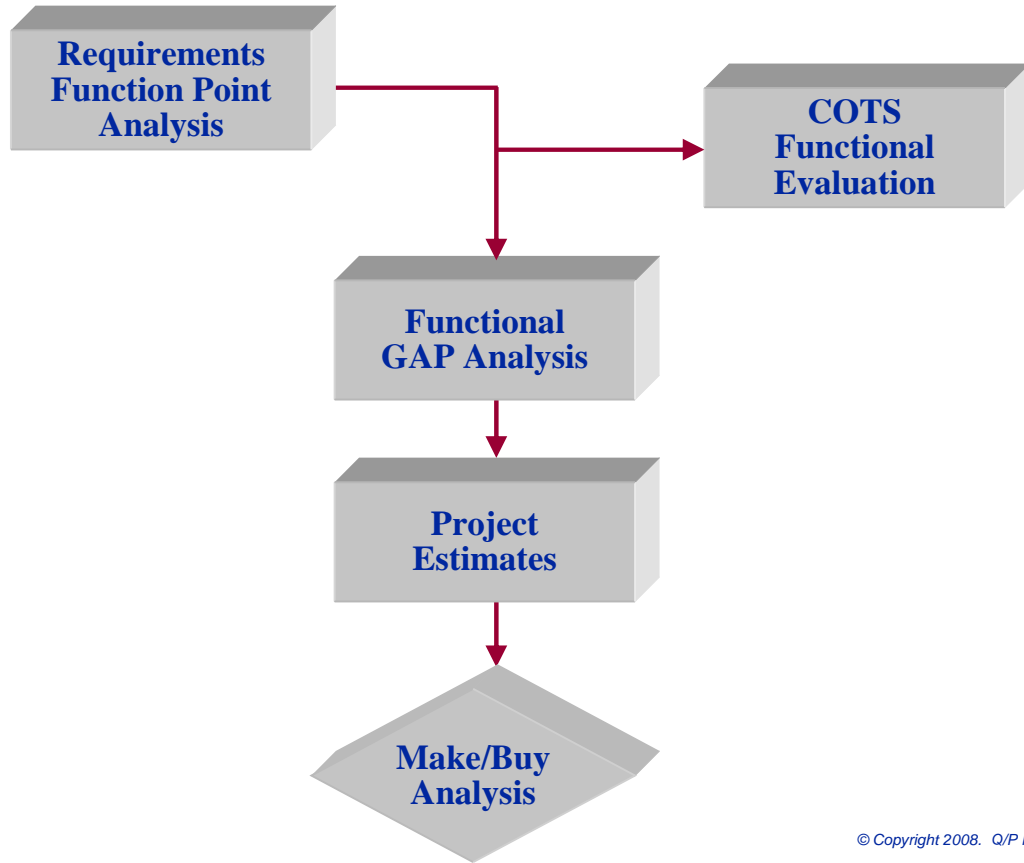
Matrices are often established by project size and platform

| Project Size (FP) | Platform | | |
|-------------------|----------|-----------|---------------|
| | Web | Mainframe | Client Server |
| 1 – 300 | 19 | 12 | 10 |
| 300 – 1,000 | 28 | 21 | 17 |
| > 1,000 | 22 | 19 | 13 |

- Matrices can be used to set price or performance target

Notes

Evaluating COTS with Function Fit Analysis



Notes

Benefits of COTS Function Fit Analysis

- Documents functional requirements in terms understandable to users and technicians
- Identifies the functional gap of the COTS products
- Quantifies development effort of COTS usage
- Provides information to the COTS vs. Development decision making process

Example:

Navy – 2 COTS, both low fit

- 95% new development, 3% enhancement, 2% “use as is out of box”
- Chose to customize

Notes

Future Trends

- Price Models
 - Based on historical data and agreed criteria
 - Price is established by entering information into the model
- Independent Benchmarking
 - Requires a credible source of benchmark information and predefined process mutually agreed upon
 - Similar delivered projects are identified, industry average or “best in class” price is established
- Service provider and customer accepts Price Model or Benchmark price terms

Notes

Cost per Function Point Contracting

- Can be based on Baseline, Benchmark or combination
- Often based on productivity rate and negotiated labor rate
- Cost per FP can either set the price (fixed price or forward pricing) or as performance target
- When used as performance target, penalties and incentives are established
- Incentives can be “split the benefits”
- Penalties can be refunds or cost reductions
- “At Risk” amount can be 10% of total revenues

Notes

Example – Transformation Project via COTS

1. Understand requirements
 - Old system
 - New functions
2. Perform function fit analysis
3. Function point count COTS enhancement
4. Establish price per function point for enhancement(s) based on baseline or benchmark
 - Use for contract price
 - Use to evaluate bids

Notes

Example – Maintain and Enhance Existing Application(s)

1. Understand size and age
2. Baseline current
 - Maintenance baseline
 - Enhancement baseline
3. Establish current cost per function point
 - Maintenance
 - Enhancement projects
4. Establish price per function point for maintenance and enhancements
5. Establish performance targets and/or cost reductions

Notes

Other Considerations for Contracting

- Time and material activities versus FP priced work
- Insource/Outsource options and flexibility
- Termination clauses
- Impact of offshoring
- Other non-development costs

Notes