Performance Modeling

Presented By:

The David Consulting Group, Inc.

Achieving Software Excellence

www.davidconsultinggroup.com
About Performance Modeling

- Develop parametric models that utilize historical data points for purposes of analyzing the impact of selected process improvements
- Provide a knowledge base for improved decision making
- Identify areas of high impact (e.g., productivity and quality)
- Create an atmosphere of measuring performance
- Opportunity for comparison to industry best practices
Industry Data Reveals Best Practices

Research

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Software Size</td>
<td>Skill Levels</td>
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<tr>
<td>Level of Effort</td>
<td>Automation</td>
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<tr>
<td>Time to Market</td>
<td>Process</td>
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<tr>
<td>Delivered Defects</td>
<td>Management</td>
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<td>Removal Rates</td>
<td>User Involvement</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
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</table>

Analysis

PERFORMANCE LEVELS

PROFILES

Results

- Correlate Performance Levels to Characteristics
- Substantiate Impact of Characteristics
- Identify Best Practices
## DCG Data Base

### Characteristics
- Project Type
- Platform
- Data Base
- Method
- Language

### Complexity Variables
- Logical Algorithms
- Mathematical Algorithms
- Data Relationships
- Functional Size
- Reuse
- Code Structure
- Performance
- Memory
- Security
- Warranty

### Metrics
- Size
- Cost
- Effort
- Duration
- Defects

### Attributes
- Management
- Definition
- Design
- Build
- Test
- Environment
- Process
- Skill Levels
- Quality Practices
- Measures
Quantitative & Qualitative Performance Evaluation

Collection

COLLECT QUANTITATIVE DATA
- Size
- Effort
- Duration
- Cost
- Quality

COLLECT QUALITATIVE DATA
- Process
- Methods
- Skills
- Tools
- Management

Analysis

Measured Performance

Baseline Performance

Results

Opportunities For Improvement

Action

Best Practices

Opportunities For Improvement

Best Practices
Quantitative Performance Evaluation

Quantitative Assessment
- Perform functional sizing on all selected projects.
- Collect data on project level of effort, cost, duration and quality.
- Calculate productivity rates for each project, including functional size delivered per staff month, cost per functional size, time to market, and defects delivered.

Results

<table>
<thead>
<tr>
<th>Baseline Productivity</th>
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<tbody>
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<td>Baseline Project Size</td>
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<td>Baseline Defects/FP</td>
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Qualitative Performance Evaluation

Qualitative Assessment
- Conduct Interviews with members of each project team.
- Collect Project Profile information.
- Develop Performance Profiles to display strengths and weaknesses among the selected projects.

Results

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# Modeled Improvements

### Average Project Size

- Baseline: 133
- Productivity: 24.8

### Average Time-To-Market (Months)

- Baseline: 6.9
- Productivity: 3.5

### Average Cost/FP

- Baseline: $939
- Productivity: $467

### Delivered Defects/FP

- Baseline: 0.0301
- Productivity: 0.0075

## Performance Improvements:
- Productivity ~ +131%
- Time to Market ~ -49%
- Defect Ratio ~ -75%

## Process Improvements:
- Code Reviews and Inspections
- Requirements Management
- Defect Tracking Configuration Management

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## Process Improvements:

### Baseline

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Contact Information

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