

# Conventional & Unconventional Dimensions of Metrics in an Outsourced Engagement

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***L&T Infotech***

- Company Overview
- Software Testing Trends
- Test Outsourcing
- Common IV&V Services and Solutions
- Customer Expectations
- Conventional Measures & Metrics
- Unconventional Measures & Metrics

## Larsen & Toubro Limited



- ▶ Established in **1938**, European roots
- ▶ **Technology focused** diversified business portfolio
- ▶ Revenues: **\$5 billion**
- ▶ **35,000+** employees world-wide
  - 40 factories, 30 offices
- ▶ **150+** International Collaborations & JVs
- ▶ **Forbes 2000** Company

## Larsen & Toubro Infotech

- ▶ Global IT services company
- ▶ 15 International Offices
- ▶ 14+ yrs of international experience
- ▶ **NASSCOM - Top 9** Indian IT Exporters
- ▶ Strong Insurance domain experience
- ▶ **18** out of Fortune 100 clients
- ▶ **8000+** IT Professionals

### Corporate Certifications

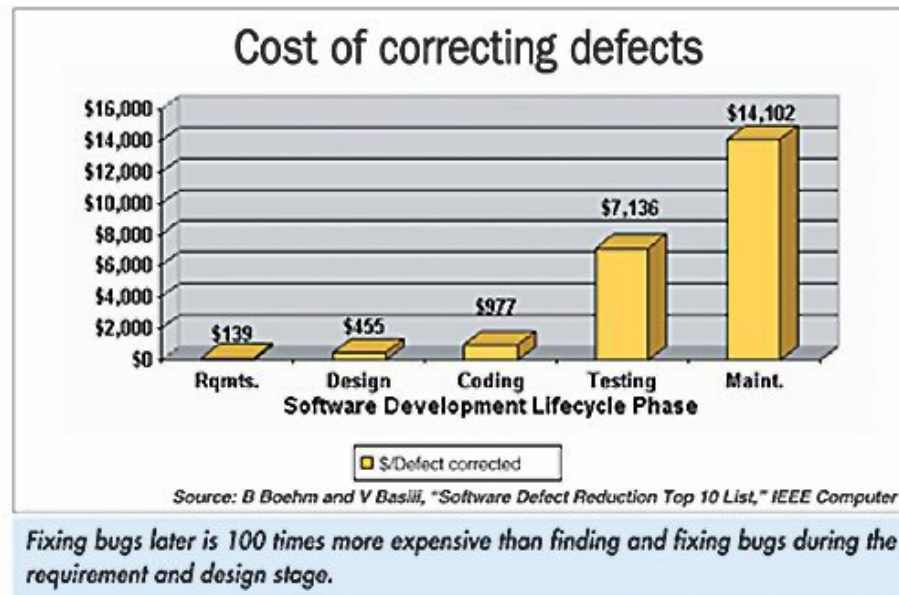


## Independent Verification and Validation (IV &V)

- ✓ Increasing trend of an **independent** testing provider, akin to..  
**FOX TAKING CARE OF THE HEN** - Forrester

## Testing Trends

- ✓ 'V Model', 'W' Model, Agile Testing
- ✓ Risk Based Testing, Test Driven Design
- ✓ Focus on early defect detection
- ✓ V &V of development life cycle



## Key Facts

- ✓ Software bugs cost \$59.5 billion to the US economy- US Department of Commerce
- ✓ 45-50 % getting outsourced - Gartner
- ✓ Testing services growth rate - more than 50 %
- ✓ Offshore outsourced testing business in India ~ \$1 billion by end of 2007 - [META Group study](#)

## Frequently Outsourced

- ✓ Functional, ETL, DW, Backend
- ✓ Test Automation, SOA
- ✓ Performance, Load, Penetration (Security)
- ✓ Product, Package Implementation
- ✓ Test & Process Consultancy

## Frequently Not Outsourced

- ✓ UAT Testing
- ✓ White Box Testing
- ✓ Business Process Testing
- ✓ Risk based Testing
- ✓ Test Driven Design

## Services

- ✓ Functional
- ✓ Non-Functional
- ✓ Product
- ✓ Testing Process Consultancy

## Solutions

- ✓ Automation Frameworks
- ✓ Test Harness
- ✓ Test Beds
- ✓ Metrics



## Customer

### Senior Mgmt

- ✓ Cost Reduction
- ✓ ROI
- ✓ IT-Business Alignment
- ✓ Thought Partnership

### Middle Mgmt

- ✓ IQR
- ✓ Cost of Quality
- ✓ Optimization
- ✓ Engagement Benefit

### Product/Project Mgmt

- ✓ Quality Process
- ✓ Tools
- ✓ Domain Savvy

## Vendor

- ✓ Growth Opportunities
- ✓ Outsourcing Maturity
  - ✓ Quality Process Compliance
  - ✓ Testing Process Compliance

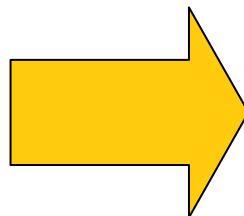


## Common SDLC Metrics

- ✓ Project Effort
- ✓ Project Cost
- ✓ Project Risk
- ✓ Project Schedule
- ✓ Project Productivity
- ✓ Defect related Metrics

## Testing Measures

- ✓ Test Process Efficiency
- ✓ Test Productivity
- ✓ Cost of Testing
- ✓ Test Coverage
- ✓ Test Effectiveness



Quality of Software

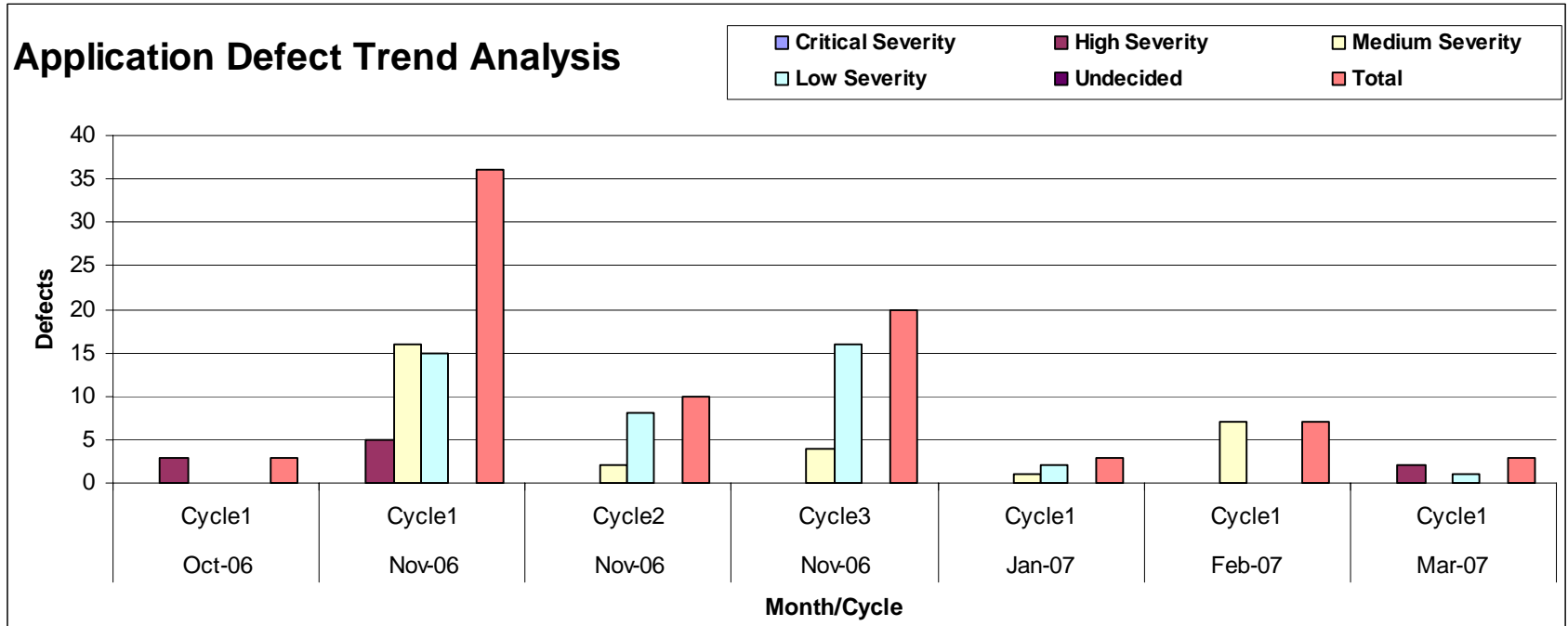
## Common Measurement Frameworks

- ✓ Goal/Question/Metric Paradigm
- ✓ Quality Function Deployment
- ✓ Software Quality Metrics

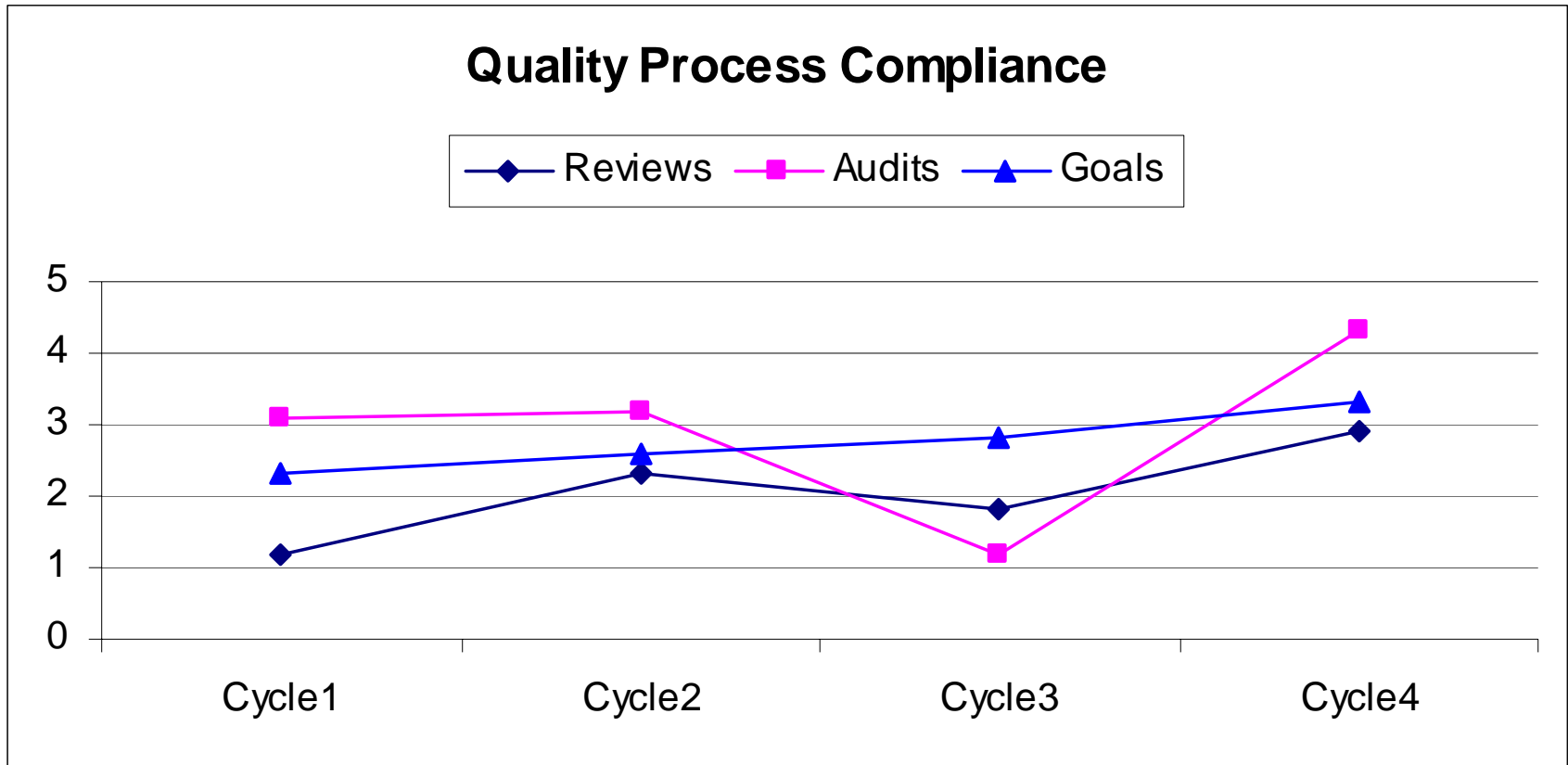
## Testing Measures & Metrics

Measure	Metrics
Test Process Efficiency	<ul style="list-style-type: none"> <li>• Process Compliance</li> <li>• Resource Allocation and Utilization</li> </ul>
Test Productivity	<ul style="list-style-type: none"> <li>• Schedule Variance</li> <li>• Effort Variance</li> </ul>
Cost of Testing	<ul style="list-style-type: none"> <li>• Direct Cost</li> <li>• Indirect Cost</li> </ul>
Test Coverage	<ul style="list-style-type: none"> <li>• Requirement Coverage</li> <li>• Code Coverage</li> </ul>
Test Effectiveness	<ul style="list-style-type: none"> <li>• Residual Defect Density</li> <li>• Defect Distribution (Severity)</li> <li>• Defect Rejection</li> </ul>
Test Transformation	<ul style="list-style-type: none"> <li>• Automation Ratio</li> <li>• Onsite-Offshore Ratio</li> </ul>

## Defect Trend Metrics



Quality Process Compliance



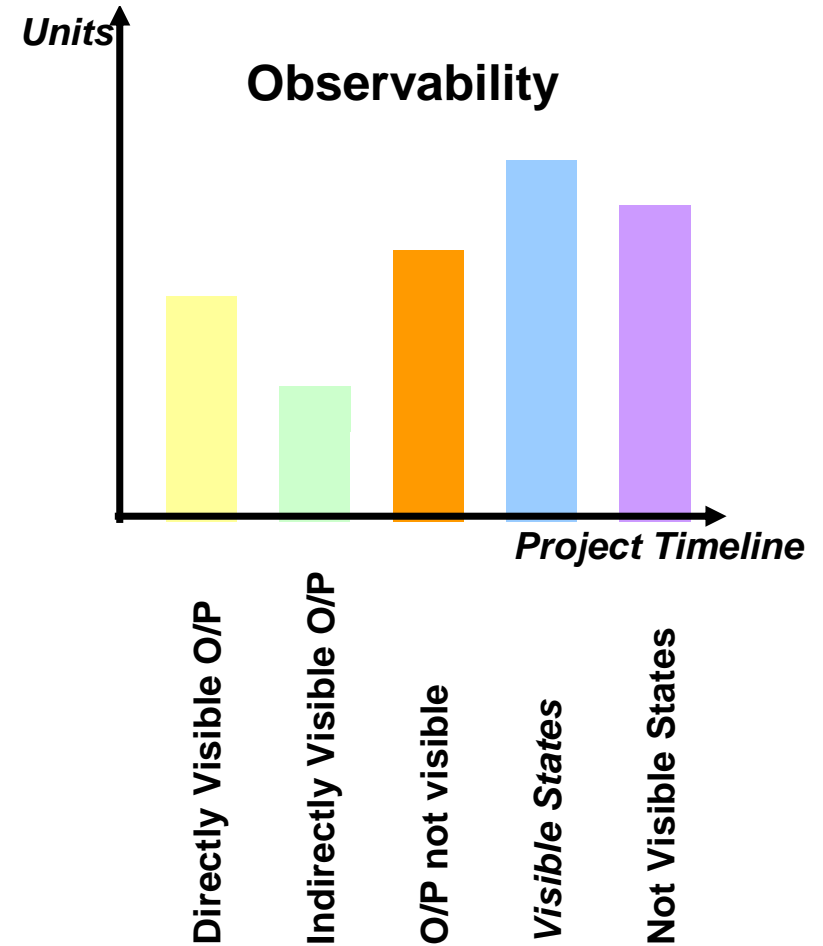
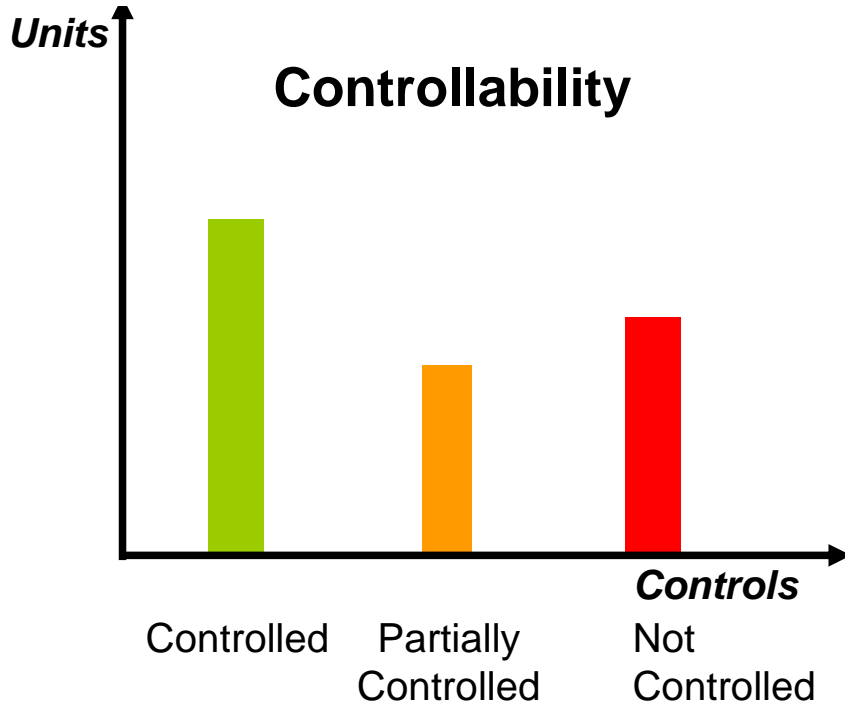
## Do we Measure?

- ✓ Testability of Software
- ✓ Quality of Test cases
- ✓ Testing ROI
- ✓ Reliability
- ✓ Domain Knowledge
- ✓ User Satisfaction
- ✓ IT-Business alignment
- ✓ Business process optimization level
- ✓ Business process fragmentation across applications

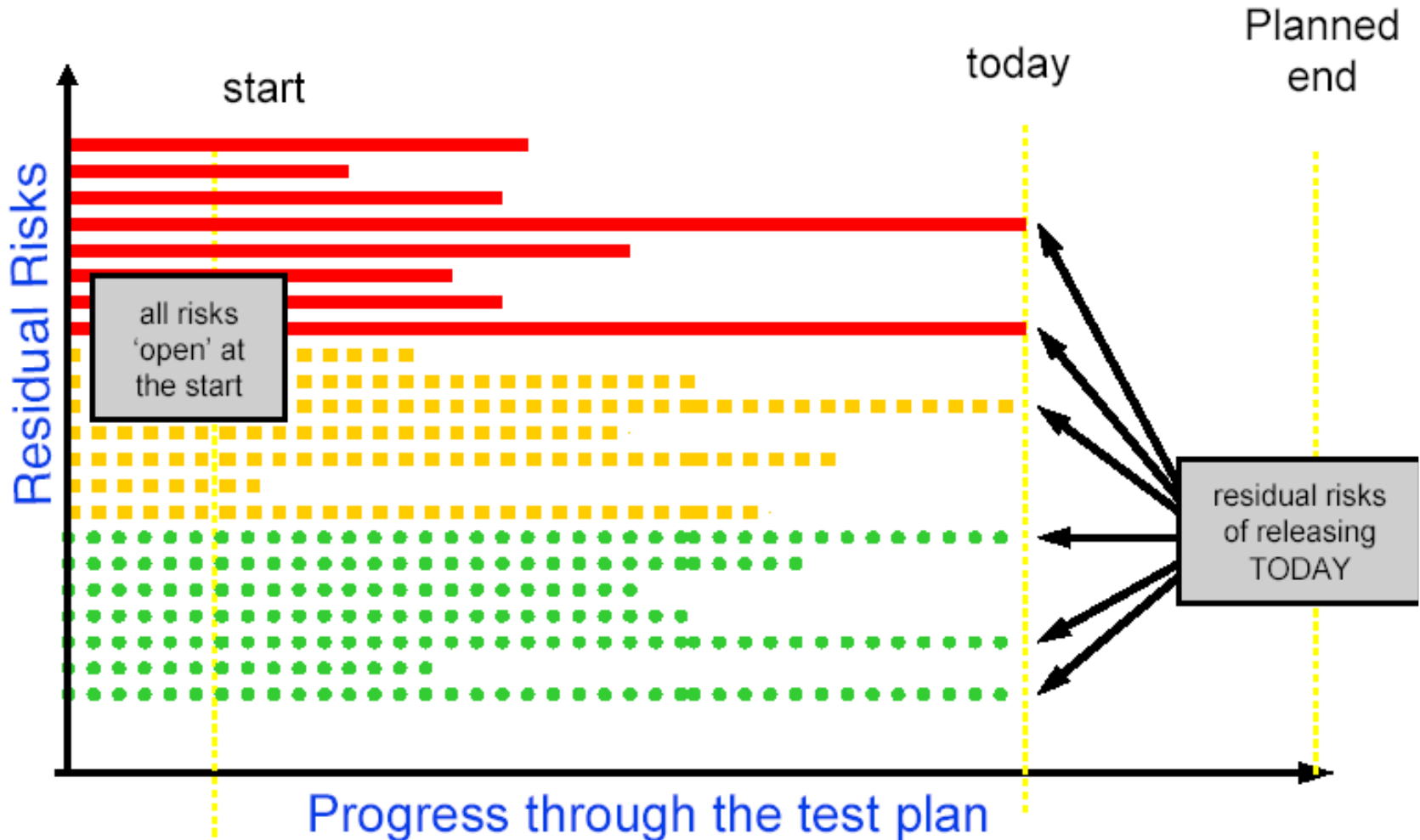
## Unconventional Measures &amp; Metrics




Measure	Metrics
Testability of Software	<ul style="list-style-type: none"><li>• Controllability</li><li>• Observability</li></ul>
Quality of Test cases	<ul style="list-style-type: none"><li>• Test case Impact</li><li>• Test case Reusability</li><li>• Test case Conformity</li></ul>
Engagement Efficiency	<ul style="list-style-type: none"><li>• Engagement Cost Benefit</li></ul>
User Satisfaction	<ul style="list-style-type: none"><li>• User Satisfaction Survey</li></ul>
Domain Knowledge	<ul style="list-style-type: none"><li>• Domain Certification</li></ul>
Business Impact	<ul style="list-style-type: none"><li>• Risk based Testing</li><li>• Test Driven Development</li></ul>

## Testability Metrics



## Risk Based Testing Metrics



-  Measuring the Effectiveness of Test, by Harry M. Sneed
-  Heuristics of Software Testability, by James Bach
-  Risk based Testing, by Hans Schaefer

This presentation contains contributions from my following colleagues in terms of their thoughts, experience, expertise and time.



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Thank You