Software Test & Performance Conference 2005

Effective Load Testing

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Agenda

- **<u>Introduction</u>**

- **Points to ponder**

Introduction

- **Load testing as an emerging discipline**

  - **Only way to ensure performance**

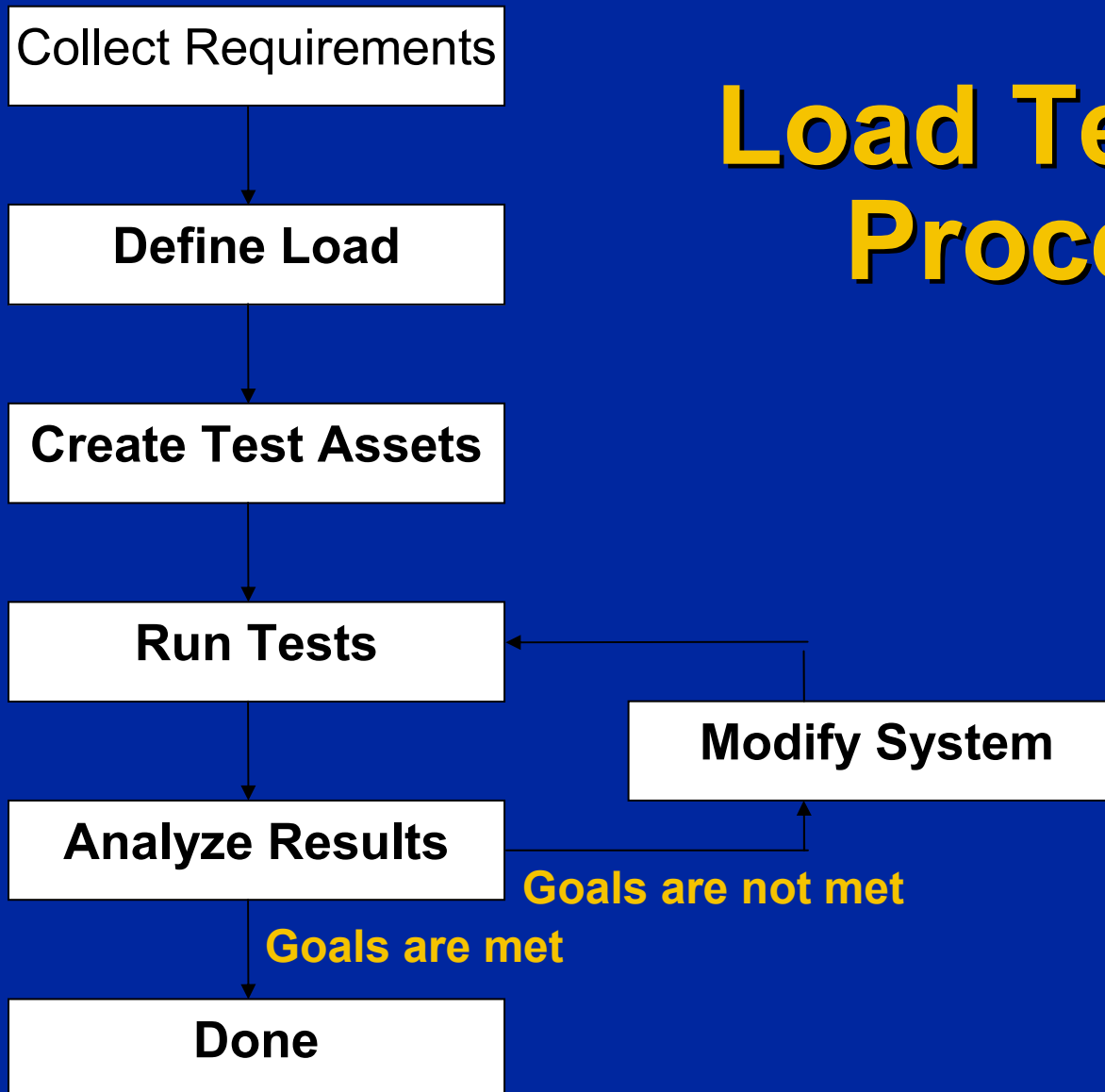 - **Based on performance analysis and functional testing**

Goal

- **To contrast load and functional testing**

- **To highlight points to ponder in load testing**

Terminology

- **Multi-user load on the system**

    – **Load testing**

    – **Performance testing**

    – **Stress testing**

    – **Scalability testing**

    – **Volume testing**

    – **Reliability testing**

Load Testing Process

Collect Requirements

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Define Load

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Create Test Assets

↓

Run Tests

↓

Analyze Results → **Modify System**

Goals are not met

Goals are met

↓

Done

All Stages of Software Life Cycle

- **Technology evaluation**

- **Prototypes / POC**

- **Component / unit**

- **Pre-release / release**

- **Benchmarking**

- **Before going live**

- **Performance issues in production**

Agenda

- **Introduction**

- **<u>Points to ponder</u>**

What to Test

- Can't be comprehensive

- Comes from the business side

- Typical scenarios

- Classes of users

- Risk

- Component coverage

Performance Requirements

- **Response times**

  – **Aggregate values**

- **Throughput**

- **Number of users and think time**

  – **Indirect way to define throughput**

  – **Named, active, concurrent users**

- **Resource utilization**

Workload Implementation

- **Manual**

- **Test harness**

- **Load testing tool**
  - **Recording/playback**
  - **Programming**

Workload Verification

- **Direct**

  - **Analyzing server response**

- **Indirect**

  - **Logs**

  - **Data**

  - **Monitoring**

The Effect of Data

- **Size and structure**

- **Caching / concurrency**

- **Adding new data**

Exploring the System

- **Explore a new system**

- **Run all scenarios manually**

- **Iterative approach**
  - **Run scripts as soon as they are ready**

- **Monitor all components**

Unspecified Requirements

- **Tuning**

- **Diagnostics**

- **Capacity planning**

Time Considerations

- **Steady mode**

- **Reliability**

- **Tuning and diagnostics**

- **Real / intensive users**

- **Throughput / connections**
  - Different tuning

Process

- Problem can block further testing

- Full setup can be required to reproduce

- Diagnosis is a collaborative process

Systematic Approach to Changes

- **Tuning / Diagnostics**

- **One factor at a time**

- **Systematic approach**

- **Log all changes**

Analyzing Results

- **Far more than passed/failed**

- **Response times, throughput, number of users**

- **Resource utilization**

- **Logs / diagnostics**

- **Variances between runs**

Summary

- **A complex activity involving testing, performance analysis, administration, development, and business processes**

- **Don't apply functional testing practices blindly**

- **A load testing tool is one point on one slide**

- **Excellence requires time**

Questions?

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To learn more check my collection of performance-related links and documents at www.alexanderpodelko.com