Context Appropriate Performance Testing:

*From Simple to Rocket Science*

Created for:

A European conference on context-driven testing - for testers, by testers.

The core mission of Let’s Test is to help build an active community in Europe of software testers that either identify themselves with the context-driven school of software testing or are interested in learning more about it.

Let’s Test 2012

May 7 - 9
Runö Conference Centre
Åkersberga
Stockholm, Sweden

By:

Scott Barber
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PerfTestPlus, Inc.
“Let’s face the truth, performance testing *IS* rocket science.”

--Dawn Haynes

… but even rocket science involves *SOME* easy stuff.

--Addendum added by: Scott Barber
Context Appropriate Performance Testing: From Simple to Rocket Science

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Simple to Rocket Science
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Let’s Get Organized…

**Introductions:**

Who are you?

What do you do?

Performance experience?

Desired outcome?

**Team Formation:**
Let’s Start with an Exercise

As a team, come up with one answer each to:

What is “Performance”?
What is “Performance Testing”?
Who is responsible for Testing Performance?
How do you know if Performance is good or bad?

De-Brief & Discuss:

My Answers:
What is Performance?

System or application characteristics related to:

**Speed:**
- responsiveness
- user experience

**Scalability:**
- capacity
- load
- volume

**Stability**
- consistency
- reliability
- stress
What is Performance Testing?

What mom tells people:

I help people make websites go fast.

What I tell people:

I help and/or teach individuals and organizations to optimize software systems by balancing:

- Cost
- Time to market
- Capacity

while remaining focused on the quality of service to system users.
Who is Responsible?

Everyone
The Performance Lifecycle is:

Conception to Headstone

Not

Cradle to Grave
Good/bad, How Do You Know?

Heuristics & oracles

(But mostly, you don’t until it’s “too late”)

(Yet we can know if our Performance Testing is adding value via…)

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Performance Testing Objectives

What we actually hope to gain by testing performance

Are sometimes completely unrelated to stated requirements, goals, thresholds, or constraints

Should be the main drivers behind performance test design and planning

Usually indicate the performance-related priorities of project stakeholders

Will frequently override good/bad in “go-live” decisions
“With an order of magnitude fewer variables, performance testing could be a science, but for now, performance testing is at best a scientific art.”

—Scott Barber
Fact:

As an activity, performance testing is widely misunderstood, particularly by executives and managers.

This misunderstanding can lead to a variety of difficulties -- including outright project failure.
Fact:

Managers and executives *do not* need to understand the technical details of performance testing to make good decisions or effectively manage performance testing projects.

They *do* need to understand what performance testing is, what it is not and what value it adds.
Fact:

Users are **still** disappointed by web experiences during peak periods.

Consumers find performance issues unacceptable...

90% of users want websites to perform well during peak periods.

29% in 2009

37% in 2011

find poor performance issues unacceptable.
Fact:

...users are not getting the performance they want and are less tolerant...

- 61% of users had a poor experience on a retail site this holiday season.
- 65% of users had a poor experience conducting brokerage transaction during a peak period.
- 38% of users had a poor experience on a travel site during a peak period.
- 50% of users had a poor experience on a news or information site during a peak period.
- 10% of users in 2009 will not tolerate poor performance at peak times on retail sites.
- 22% of users in 2011 will not tolerate poor performance at peak times on retail sites.

...and take immediate action as a result...

- 86% of users are less likely to return to a web site after experiencing poor experience.
- 75% of users who experience poor performance during peak periods go to a competitor's site.
- 43% of users have a negative perception of the company and tell others about it.
Fact:

Poor Performance is Bad for Business

Abandonment Rate Compared to Page Load Time

Increasing load time by two seconds increases abandonment rate by 8%

Source: Gomez Real-User Monitoring
- 250+ customers
- 100,000,000+ page measurements
Fact:

One *does not need* to be a performance testing rock star to have a significant positive impact on performance…

…and thus *add significant business-value*…

…and quickly and simply.

Simple to Rocket Science
“There is no such thing as a ‘junior performance tester’…

but there are people who are new to performance testing."

--Scott Barber
So then, its hopeless?
Simple Item #1

Make Performance a:

Priority
Thoughts on Priority

Focusing on performance adds value and mitigates risk from “bar napkin to delete key”.

Get performance in the dev, test, & delivery plans.

Don’t let performance fall off the plate.

Be the advocate, even if it makes you “annoying”.

**Goals**: Soft Boundaries (User Satisfaction)

**Requirements**: Firm Boundaries (Business or Legal)

**Thresholds**: Hard Boundaries (Laws of Physics)

**Constraints**: Arbitrary Boundaries (Budget or Timeline)
Simple Item #2

Give Performance:

visibility
On Visibility

Acceptance criteria
Ask questions
Priority setting

Jessica’s Story
Ask lots of:

Questions
Thoughts on Questions

How is the performance today?

How will this [change] effect performance?

Go to dev, test, & management meetings – and ask those questions.

Advocate performance through questions.

Earning the “annoying” label for asking questions is ok, but becoming “annoying” via your response to their answers isn’t.
Research the

COMPETITION
How are “leaders” doing?

Keynote Systems
http://www.keynote.com/keynote_competitive_research/

Gomez Benchmarks
http://www.gomez.com/benchmarks/

WebMetrics
http://www.webmetrics.com/resources

The eService Index
http://www.vertain.com/?pesi

Others??
“Ok, that stuff is ‘simple’

and I can see the value,

but what about the *testing*?!
Am I Annoyed?
Thoughts on Annoyance

Why am I annoyed?
How annoyed am I?
Does this annoy me all the time, or just sometimes?
What impact is this likely to have on product value?
Advocate something better.

![Diagram showing comparison between actual and goal for most pages and searches, with smiley faces indicating levels of annoyance.]
Testing Item #2

Who else is annoyed?
More Thoughts on Annoyance

Who matters?

How do I get their feedback?

Are they annoyed with performance, or workflow, or, or, or...?

Advocate something better.
“I guess that counts as ‘testing’

and yes, there is value,

but what about testing *performance*?!
Determine:

How Fast?
If you don’t have speed targets, don’t fret...

*Trends are trendy!*
Speedy Speed Collection (and more)

**Visual Round Trip Analyzer**

[Image of Microsoft Visual Round Trip Analyzer]

**IBM Page Detailer**

[Image of IBM Page Detailer Basic]
Performance Testing Item #2

Make use of:

Performance Snapshots
On Taking Snapshots

http://www.webpagetest.org/
https://developers.google.com/pagespeed/
http://www.softwareqatest.com/qatweb1.html
Test the Front-End with $\text{SCORN}$
What is SCORN, anyway?

- **Size**: Media, HTML, styles & scripts – compress & minify.

- **Caching**: The end-user’s browser cache can be your best friend, or your worst nightmare, use it wisely.

- **Order**: Get the load order of your scripts and styles wrong, and you’ll lose your users every time – even though response time hasn’t changed!

- **Response Codes**: 3, 4, & 5xx series response codes on individual objects are bad things.

- **Number**: When it comes to performance, less is more (usually).
SCORN References


- **Yahoo! YSlow for Firebug**

- **Page Speed**


  [www.amazon.com/dp/0596529309](http://www.amazon.com/dp/0596529309)
Performance Testing Item #3

Proceed with caution, the following is only easy for hard-core GEEKs
Easy Stuff for Geeks

Firefox Performance Tester’s Pack

Web Site Test Tools and Site Management Tools
http://www.softwareqatest.com/qatweb1.html

Fiddler

Web Development Helper
http://projects.nikhilk.net/WebDevHelper
“Alright, that covers ‘performance testing’ and value, but you said something about *rocket science*?!
For each goal, determine what information will answer:

- Has this goal been achieved?
- To what degree?
- What needs to be done to achieve this goal?

Decide what data must be collected to provide that information.

Figure out how to collect that data.
All three have an average of 4.

Which has the “best” performance”?

How do you know?
“Only performance testing at the conclusion of system or functional testing is like ordering a diagnostic blood test after the patient is dead.”

--Scott Barber
### Which Transactions to Test

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequent</strong></td>
<td>Common activities (get from logs)</td>
</tr>
<tr>
<td><strong>Intensive</strong></td>
<td>e.g. Resource hogs (get from developers/admins)</td>
</tr>
<tr>
<td><strong>Business Critical</strong></td>
<td>Even if these activities are both rare and not risky</td>
</tr>
<tr>
<td><strong>Legal or Contract</strong></td>
<td>SLA’s, Contracts and other stuff that will get you sued</td>
</tr>
<tr>
<td><strong>Obvious</strong></td>
<td>What the users will see and are mostly likely to complain about. What is likely to earn you bad press</td>
</tr>
<tr>
<td><strong>Technically Risky</strong></td>
<td>New technologies, old technologies, places where it’s failed before, previously under-tested areas</td>
</tr>
<tr>
<td><strong>Stakeholder Mandate</strong></td>
<td>Don’t argue with the boss (too much)</td>
</tr>
</tbody>
</table>

*Don’t argue with the boss (too much)*
Which Transactions to Test

Start (100%)

Login (15%)

Check Order Status (10%)

Update Account (5%)

In Stock?

Yes (80%)

Cart (80%)

Login (60%)

Order (29%)

No (20%)

Search (85%)

33%

Exit (5%)

4%

11%

Exit (20%)

4%

11%

Logout

Exit

Logout
“Linear extrapolation of performance test results is, at best, black magic. Don’t do it (unless your name is Connie Smith, PhD. or Daniel Menasce, PhD.)”

--Scott Barber
Inspired by “ET”:

Edward Tufte, Ph.D., Professor Emeritus of political science, computer science and statistics, and graphic design at Yale.

According to ET:

Power Corrupts...
PowerPoint Corrupts Absolutely.
So, what is Performance Testing?

**In effect:**

Performance testing helps *stakeholders* make *decisions* regarding product *value* and project *risk*; Specifically *value* and *risk* related to *speed, scalability, and stability* attributes of a *system* and it’s *components* throughout the *product life-cycle*. 
Review & Questions

Did we learn anything?
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