

Getting Serious About Emotions in Testing

Michael Bolton
DevelopSense

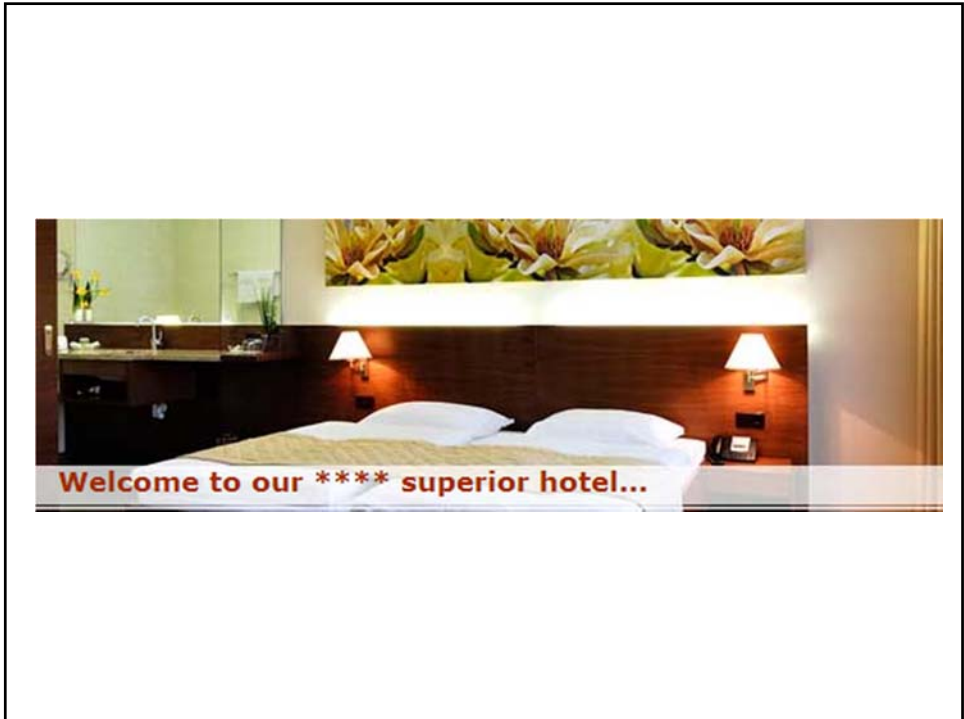
<http://www.developsense.com>
@michaelbolton

Special acknowledgements to Cem Kaner, James Bach, and Jerry Weinberg

Marital Bliss 101

I love my wife
and thanks to AutoCorrect,
I know she Kievs me too.





Flight Itinerary

Flight	From	To	Stops	Aircraft	Fare Type
AC597	Toronto, Pearson Int'l (YYZ) Sat 16-Oct 2010 13:10 - Terminal 1	Las Vegas, Mccarran Int'l (LAS) Sat 16-Oct 2010 14:54 - Terminal 2	1	319	Tango Plus W
ⓘ AC597: This flight includes a stop in null.					
AC5233*	Las Vegas, Mccarran Int'l (LAS) Tue 19-Oct 2010 19:15 - Terminal 1	San Francisco, San Francisco Int'l (SFO) Tue 19-Oct 2010	0	320	Tango Plus L

aircanada.com

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aircanada.com

High-Speed Internet Access - Guest-Tek Ltd. - Mozilla Firefox

https://login.globalsuite.net/globalnet/ProcessPackage?room=615

Guestek freedom of reach

HYATT
HYATT REGENCY CAMBRIDGE

OneView internet

OneView Internet™ Login

Room 615 Welcome

* Required Information

First Name: -
Michael

Last Name: -
Botton

Company Name:

\$9.95 for 1 day
 \$5.95 for 1 hour
 \$19.95 for 2 days

Charges plus taxes will be billed to your room.

Submit Cancel

Done login.globalsuite.net 1 Error

Hyatt Regency, 2008

If you can't do math, it's a nickel extra.

Last Name: *

Bolton

Company Name:

\$9.95 for 1 day

\$5.95 for 1 hour

\$19.95 for 2 days

Charges plus taxes will be billed to your room.

Hyatt Regency, 2008



Hi Michaelbolton,

We received a password reset request from:

Location:

At:

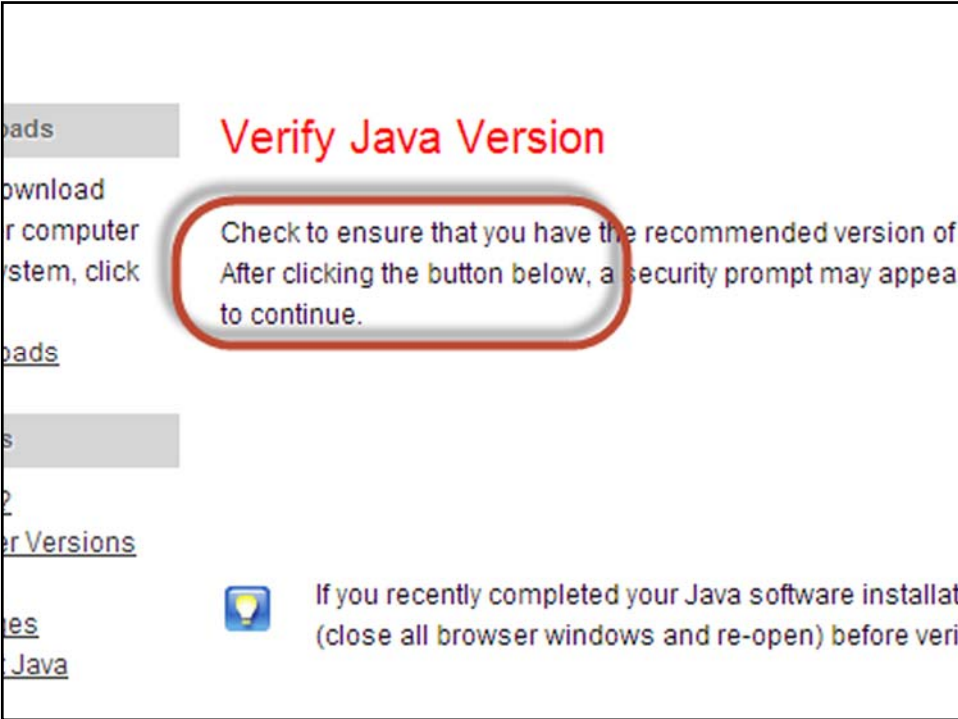
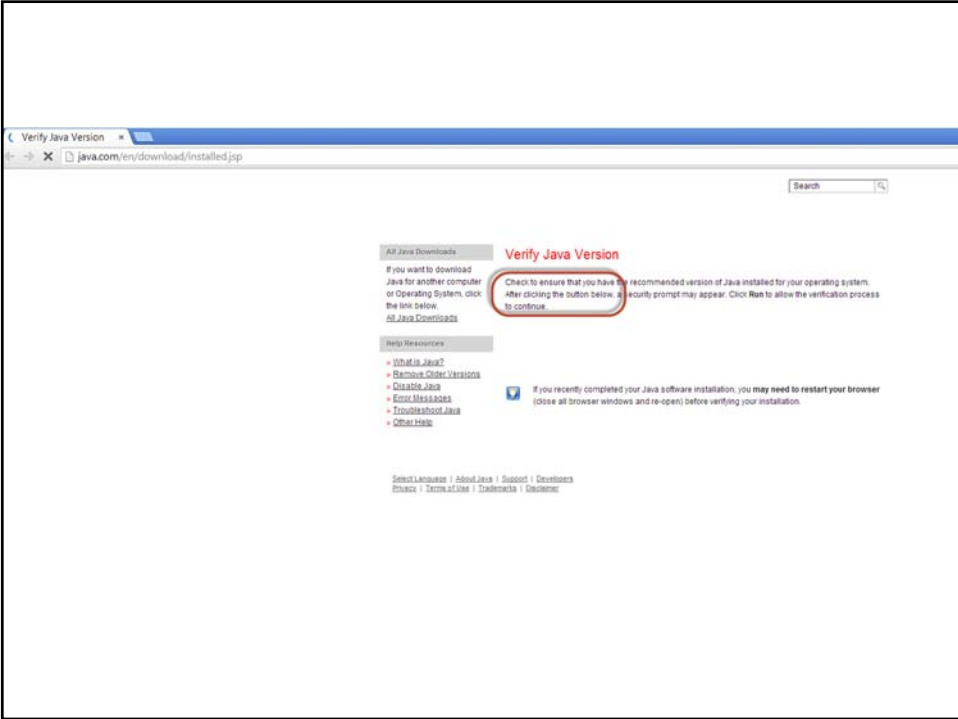
IP Address:

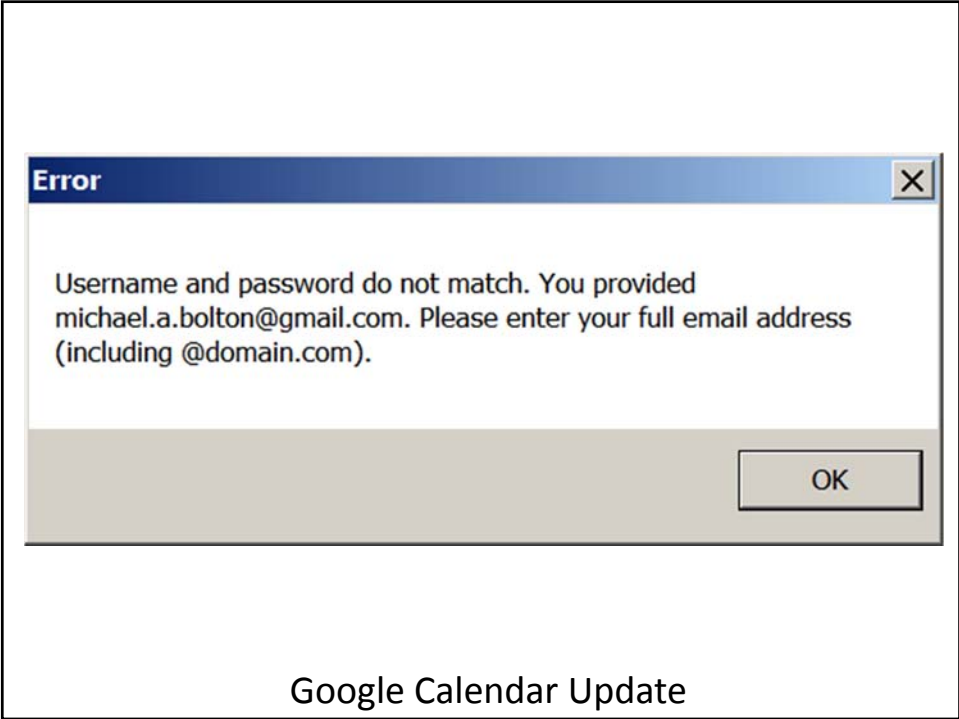
If this wasn't you, please disregard this email.

If this was you:

Please click on the button below or copy and paste the URL into your browser:

[Reset Password](#)





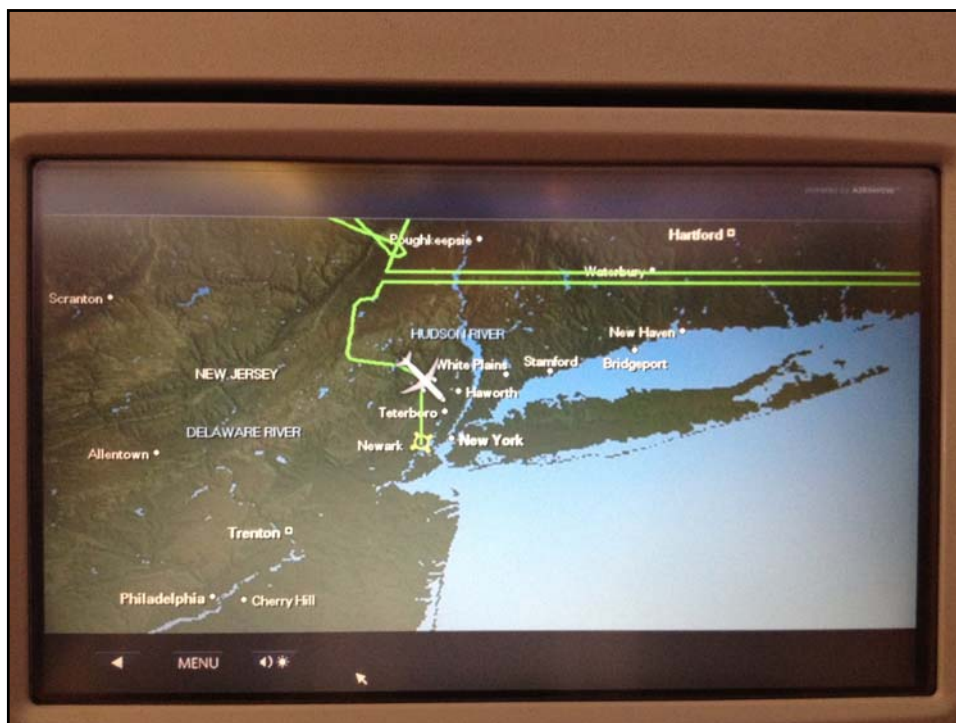
http://www...p/_92P1102

Our Apologies...

The document you are looking for is not found.
Possible reason could be missing data.

[Back](#)

DON T KNOW WHO THIS WAS



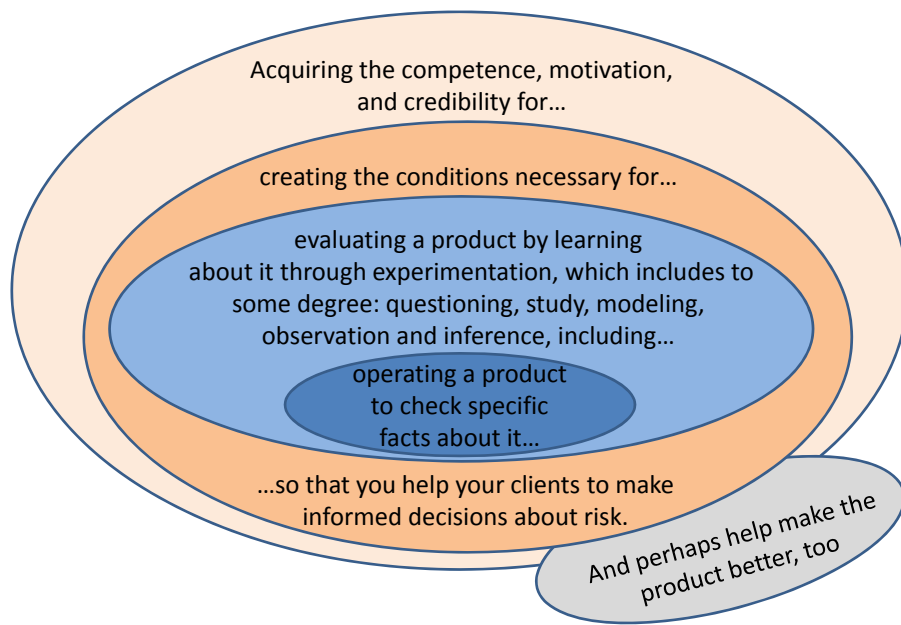
An Important Theme

Feelings are the first part of the answer we get to the fundamental question of testing:

Is there a problem here?



Testing is...



Tools Can Do FAR More Than Checking

- Test generation (data and script generators)
- System configuration (setup; rapid changes)
- Test execution (harnesses and test scripts)
- Logging (action capture, video capture)
- Probes (identifying internal states)
- Monitoring (coverage analysis, profiling)
- Visualization (blink testing, highlighting)
- Test management (but keep tools lightweight)
- and yes, oracles (automated checking)

Testing CANNOT Be Encoded

“Test Cases Are Not Testing:
Toward a Culture of Test Performance”
James Bach & Aaron Hodder

<http://www.testingcircus.com/documents/TestingTrapeze-2014-February.pdf>

Why Testing Cannot Be Encoded Harry Collins on Software Testing

“Computers and their software are two things. As collections of interacting cogs they must be ‘checked’ to make sure there are no missing teeth and the wheels spin together nicely. Machines are also ‘social prostheses’, fitting into social life where a human once fitted. It is a characteristic of medical prostheses, like replacement hearts, that they do not do exactly the same job as the thing they replace; the surrounding body compensates.

Why Testing Cannot Be Encoded Harry Collins on Software Testing

“Contemporary computers cannot do just the same thing as humans because they do not fit into society as humans do, so the surrounding society must compensate for the way the computer fails to reproduce what it replaces. This means that a complex judgment is needed to test whether software fits well enough for the surrounding humans to happily ‘repair’ the differences between humans and machines. This is much more than a matter of deciding whether the cogs spin right.”

Abstract, “Machines as Social Prostheses”, EuroSTAR 2013

How Do People React to Software?



Impatience



Frustration



Amusement



Surprise



Confusion



Annoyance

What Might Feelings Tell Us?

Impatience	⇒ a threat to performance?
Frustration	⇒ a threat to capability?
Fear	⇒ a threat to security?
Surprise	⇒ a threat to reliability?
Confusion	⇒ a threat to usability? to testability?
Annoyance	⇒ a threat to charisma?
Boredom	⇒ an insignificant test?
Tiredness	⇒ time for a break?
Anxiety	⇒ a need for a particular skill?
Curiosity	⇒ a pointer to useful investigation?

Bugs!

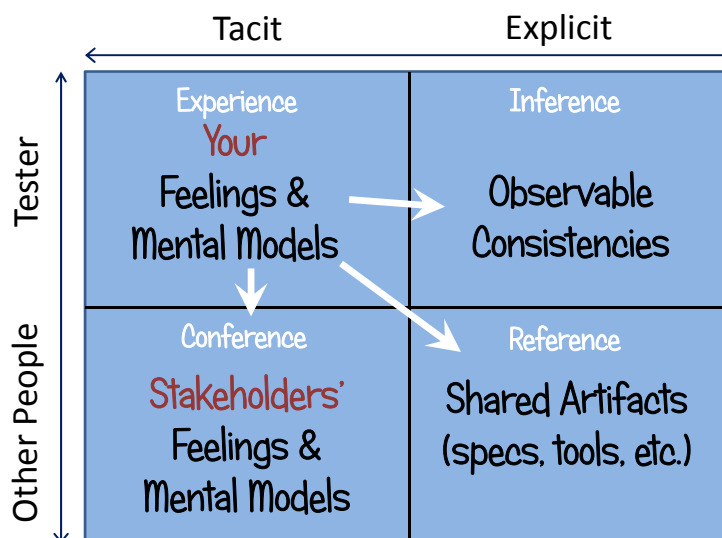
Issues!

Feelings as Heuristic Triggers for Oracles

- An emotional reaction or a feeling is a trigger to attention and learning.
- Without emotion, we don't reason well.
 - See Damasio, *The Feeling of What Happens*
- When you find yourself mildly concerned about something, someone else could be *very* concerned about it.
- Observe emotions to help overcome your biases, to evaluate significance, and to calibrate responses.

Emotions and feelings are signals.
Look into what they're signalling.

Oracles from the Inside Out



General Examples of Oracles

things that suggest “problem” or “no problem”

- A person whose opinion matters. People
- An opinion held by a person who matters.
- A disagreement among people who matter.
- A reference document with useful information.
- A known good example output. Mechanisms
- A known bad example output.
- A process or tool by which the output is checked.
- A process or tool that helps a tester identify patterns.
- A feeling like confusion or annoyance. Feelings
- *A desirable consistency between related things.*

Principles

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Consistency (“this agrees with that”)

an important theme in oracle principles

- **Familiarity:** The system *is not consistent* with the pattern of any familiar problem.
- **Explainability:** The system *is consistent* with our ability to describe it clearly.
- **World:** The system *is consistent* with things that we recognize in the world.
- **History:** The present version of the system *is consistent* with past versions of it.
- **Image:** The system *is consistent* with an image that the organization wants to project.
- **Comparable Products:** The system *is consistent* with comparable systems.
- **Claims:** The system *is consistent* with what important people say it’s supposed to be.
- **Users’ Expectations:** The system *is consistent* with what users want.
- **Product:** Each element of the system *is consistent* with comparable elements in the same system.
- **Purpose:** The system *is consistent* with its purposes, both explicit and implicit.
- **Standards and Statutes:** The system *is consistent* with applicable laws, or relevant implicit or explicit standards.

Consistency heuristics rely on the quality of your models of the product and its context.

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Oracle Cost and Value

Be Aware of Your Choices

- Some oracles are more *authoritative*
 - but less predictable
- Some oracles are more *consistent*
 - but maybe not up to date
- Some oracles are more *immediate*
 - but less reliable
- Some oracles are more *precise*
 - but less accurate
- Some oracles are more *accurate*
 - but less precise
- Some oracles are more *available*
 - but less authoritative
- Some oracles are *easier to interpret*
 - but more narrowly focused

Confusion

Confusion is a sign that there's something **confusing** going on.

If you're confused, is there are a possibility that the programmers might be confused too?

Affective Priming

Preparing Your Emotional Mindset

- developing self-confidence
- pushing aside feelings of intimidation
- building tolerance for mistakes
- allowing tolerance for confusion
- inoculating yourself against stress
- embracing and celebrating the new
- avoiding learned helplessness
- managing reactions and responses
- recognizing emotional oracles

A Computer Program

**A set of instructions
for a computer.**

*See the Association for Software Testing's
Black Box Software Testing Foundations course, Cem Kaner & James Bach*

A House



A set of building materials,
arranged in the
"House" design pattern.

A House



Something for *people* to live in.