

# Test Oracles & FEW HICCUPS

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with the help of Karina Ariete!

June 15, 2019

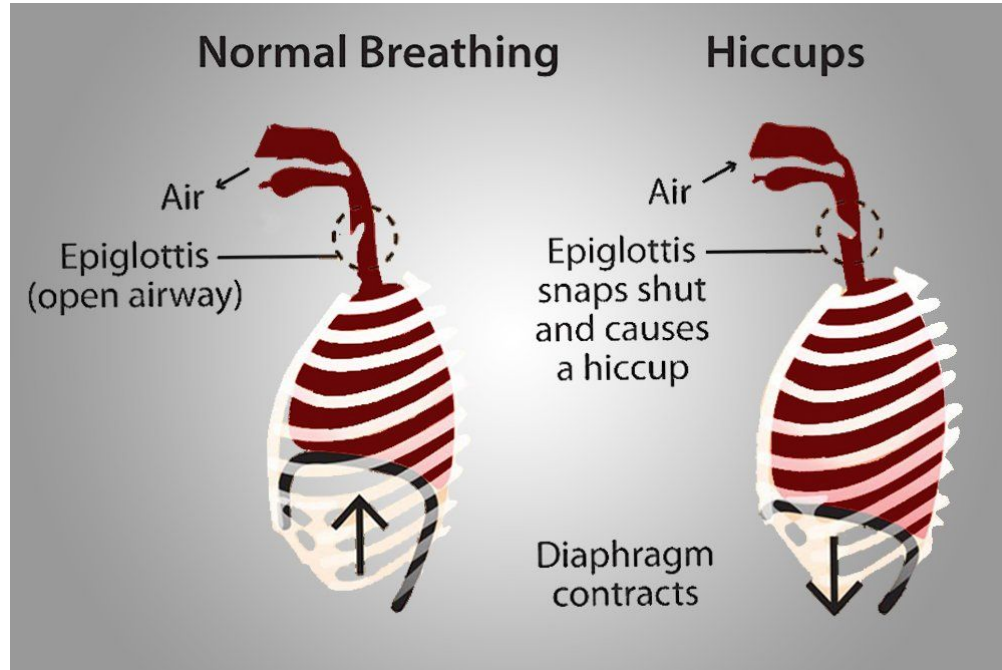
# What this talk is about

- Oracles according to context-driven testing
- Updated version of James Bach's *Testing Without A Map*

What this talk is not

ORACLE®

# What this talk is not



Enterprise Manager 11g

Control

Instance: [orcl.idc.oracle.com](http://orcl.idc.oracle.com)

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[SQL Performance Analyzer](#)

question time:

what do testers and emergency room  
doctors have in common?

# similarities: emergency room doctor and a tester

## emergency room doctor

- trained to recognize severity of injury of patients coming in
- triages every case that comes in through the door
- presents options to patients needing surgery and the risks associated with the option
- prescribe care plans, oversee patient recovery, request required medical tests

## tester/QA/QE

- trained to recognize problems in the product
- triages every issue that is escalated from stakeholders; determines issues that should be a priority
- identifies risk associated with not performing fixes
- test new releases, perform regression tests, increase test coverage on the product

so what are oracles?

oracles are indicators that there is something wrong with the product\*.

\*usually driven by emotion

# Your product may trigger emotions like:



anger



annoyance



confusion



doubt



satisfaction



so what are oracles?

oracles are indicators that there is something wrong with the product.

and like heuristics, oracles are fallible.

# Oracle Heuristics

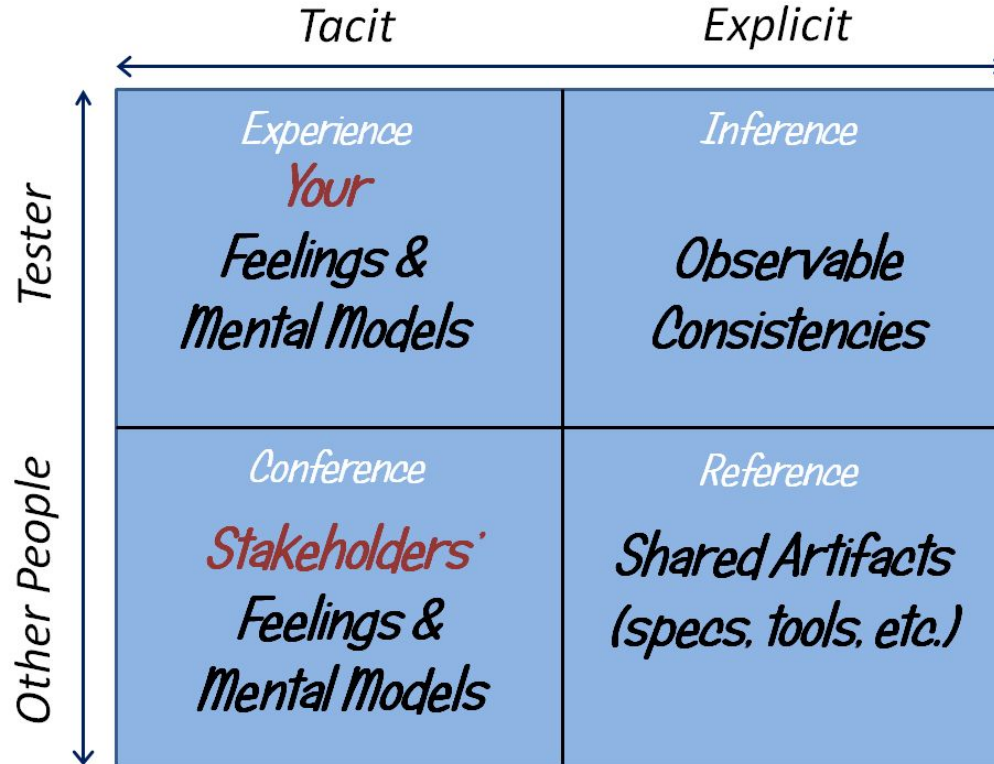
- Familiarity
  - Explainability
  - World
  - History
  - Image
  - Comparable Products
  - Claims
  - User's Desires
  - Product
  - Purpose
  - Statutes
- 
- Consistency

# Familiarity

*“We expect the system to be **inconsistent** with patterns of familiar problems.”*

**Newbie testers or testers without prior knowledge of domain whose product they are testing tend to test familiar problems, and that prevents discoverability of new bugs. It should be familiar to the testers on what domain they're serving in.**

# Explainability



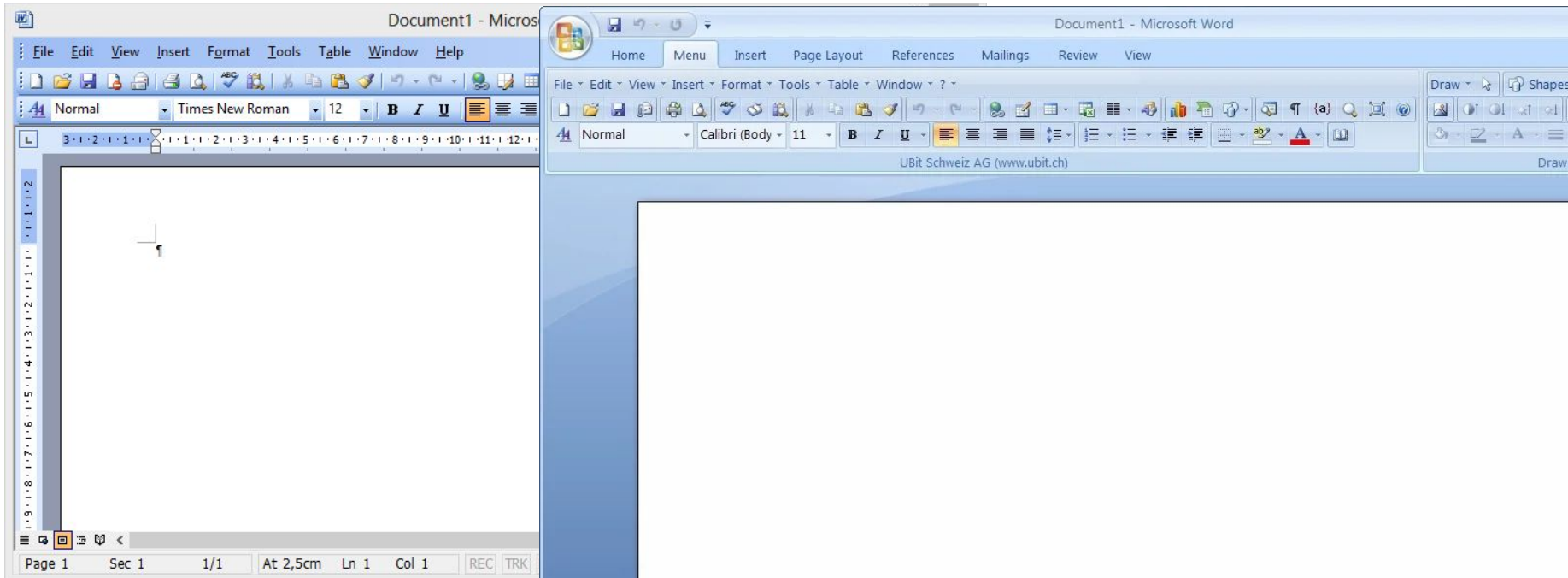
# World

*“We expect the product to be consistent with things that we know about or can observe in the world.”*

**This heuristic can fail when our knowledge of the world is wrong; when we're misinformed or mis-remembering. It can also fail when the product reveals something that we hadn't previously known about the world.**

# History

If a product is inconsistent with previous versions of itself, we suspect that there might be a problem.



# Image

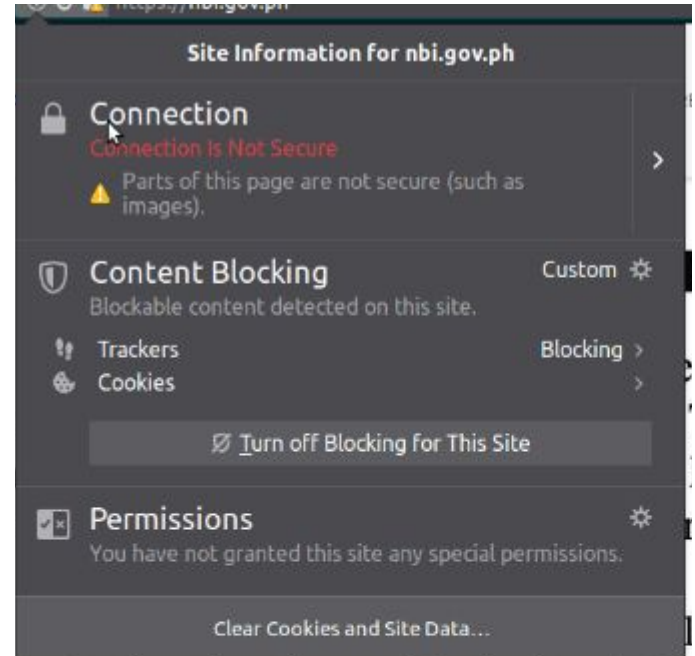
If a product is inconsistent with an image that the company wants to project, we suspect a problem.

Nbi

<https://nbi.gov.ph/> ▼

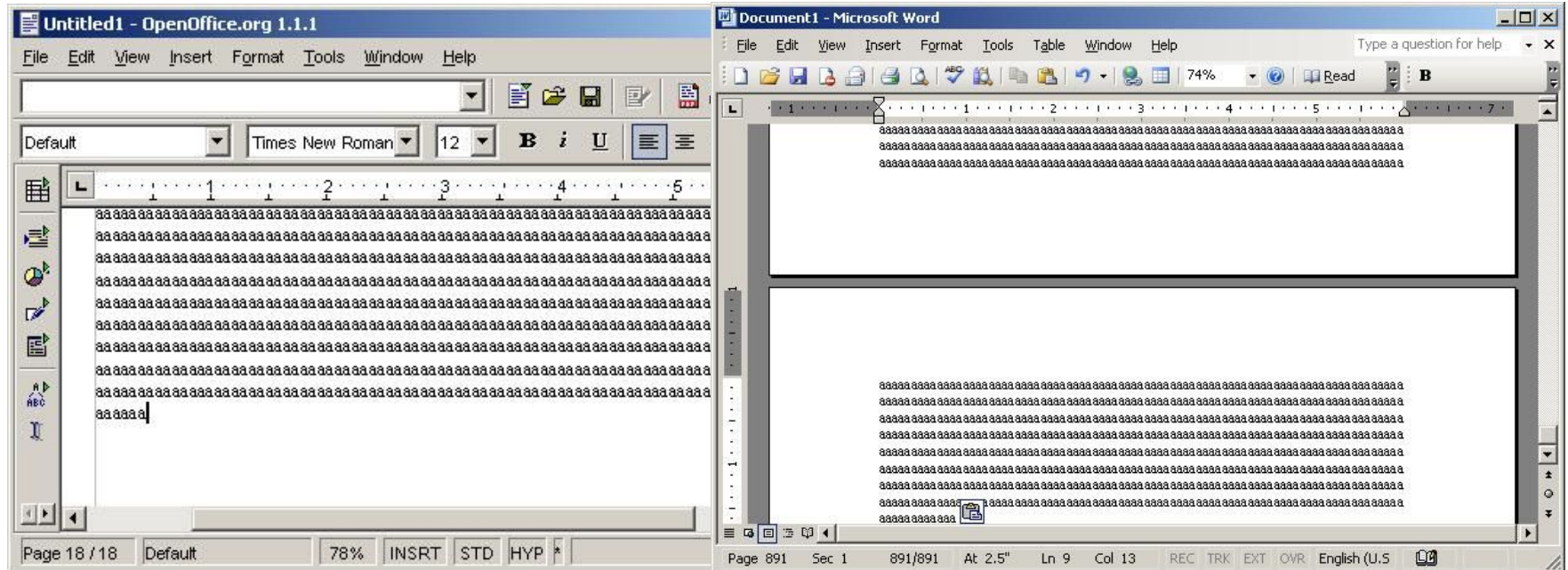
No information is available for this page.

[Learn why](#)



# Comparable Products

When a product seems inconsistent with a comparable product, we suspect that there might be a problem.





# Claims

When a product is inconsistent with claims that important people make about it, we suspect a problem.

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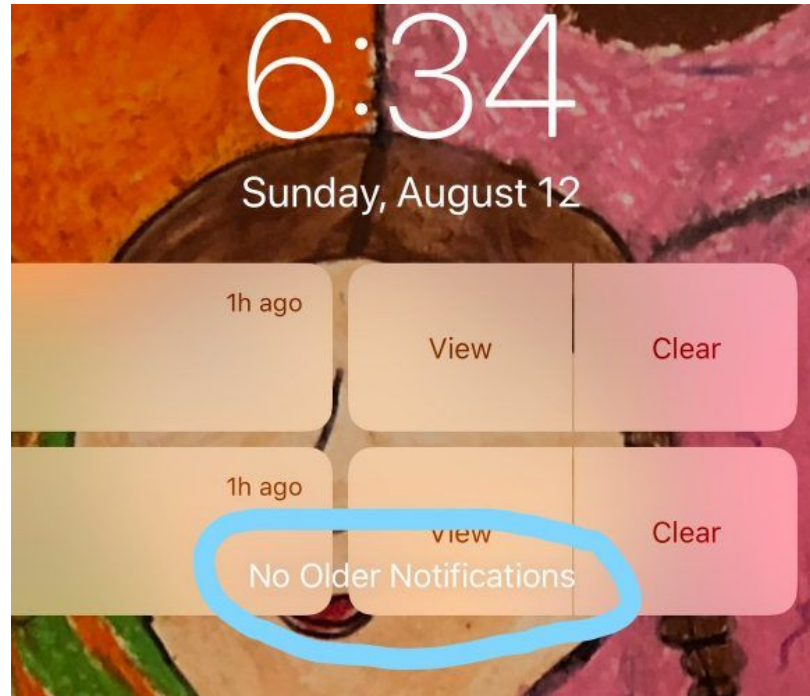
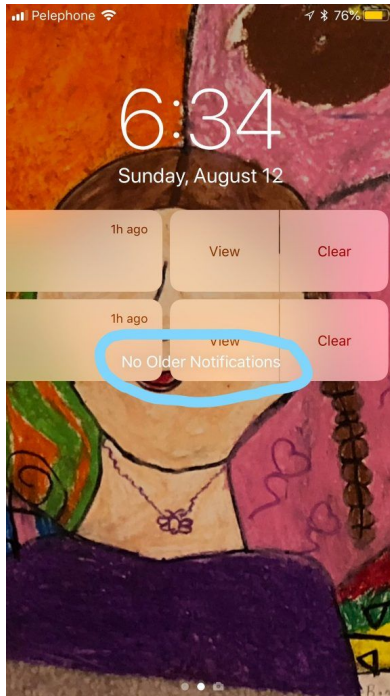
US AIR FORCE · Published March 25, 2015 · Last Update May 3, 2016

## **Software glitch causes F-35 to incorrectly detect targets in formation**

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# User Expectations

When a product is inconsistent with expectations that a reasonable user might have, we suspect a problem.



# Purpose

When a product is inconsistent with its designers' explicit or implicit purposes, we suspect a problem.

**Two bags for the price of none\* included.**

That's Transfarency.®

\*First and second checked bags. Weight and size

BAG FEE \* \$0.00

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YOU PAY TODAY **\$212.96**

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**TOTAL AFTER STATEMENT CREDIT \$12.96**

# Product

When a product is inconsistent internally—as when it contradicts itself—we suspect a problem.

The screenshot shows a web browser window with the address bar displaying "The Gap Inc.". The browser tabs include "Facebook", "Shop Banana Republic for Contemporary Clothing for Women...", and "Offer : Target Cartwheel". The website's navigation bar features the "GAP", "OLD NAVY", and "BANANA REPUBLIC" logos, along with "ATHLETA". A message states "FREE SHIPPING ON ORDERS OF \$50 OR MORE" with a link to "DETAILS". On the right, there is a user account section for "Morgan's Account" with a "Redeem your rewards! \$50" option, and icons for a heart and a shopping bag.

The main promotional banner is red and contains the following text:

**UP TO 40% OFF** ALL DENIM & PANTS, FEATURING: **TRAVELER PANT \$69 & SLOAN PANT \$59.**

**CARDMEMBERS ONLY:** EARN **\$25 BONUS** REWARD WHEN YOU SPEND \$100+ WITH YOUR GAP INC. CREDIT CARD

DISCOUNT AUTOMATICALLY APPLIED AT CHECKOUT [EXCLUSIONS APPLY](#)

**UP TO 40% OFF** ALL DENIM & PANTS, FEATURING: **TRAVELER PANT \$69 & SLOAN PANT \$59.**

NO CODE NEEDED [EXCLUSIONS APPLY](#)

The footer of the page displays the "BANANA REPUBLIC" logo, and navigation links for "FIND A STORE", "CREDIT CARD", and "GIFT CARD". A search bar is also visible.

# Statutes and Standards

When a product is inconsistent with laws or widely accepted standards, we suspect a problem.

## Computer problems hit CSA payouts

Thousands of children have been left short of problems pound compensation to speed up

Since the Child Support Agency system was introduced, one third of the claims for child maintenance have not been processed.

Liberal Democrats have obtained the

The government

# EDS admits CSA bungle

EDS admits CSA bungle image

*18 November 2004* A £456 million computer system developed for the UK government's Child Support Agency (CSA) was "badly designed, badly tested and badly implemented", according to an internal memo written by the company that built the system.

# Closing thoughts...

- FEW HICCUPS is not an exhaustive list of oracles out there
- You can derive and create your own oracles as you see fit
- “Multiple oracles may increase our confidence, but even combinations of oracles are fallible.”
- “No single oracle can tell us whether a program or feature is working correctly at all times and in all circumstances.”
- “ Recognizing a different problem usually requires a different oracle.”



**Any questions?**

