

Bug Hunter: A Productivity Game for Software Testing

Windows Defect Prevention Team

Robert Musson

Ross Smith

Overview

- Philosophy
- Purpose
 - “Games at Work” – Serious Games Taxonomy
- Design Steps
- Issues and Solutions
- Bug Hunter Game Details

Game Philosophy

- Let everyone win
 - allow users to customize the game to their strengths
- Simple prizes
 - provide enough incentive to play but not enough incentive to cheat
- Align the game to the job
 - get people to focus on core elements of their jobs
- Simple games
 - simple interfaces using existing tools

Game Purpose

- Motivate Behavior
 - communicate organizational goals
 - allows tweaking goals over a short time period
- Facilitate Education
 - understand standard metrics
 - learn relationships between metrics
 - understand how to use the metrics to increase quality
- Team Working
 - build team spirit
 - foster healthy competition
 - entertainment

Game Design

- Set the goals
 - determine the desired outcome
 - determine the organizational side effects
- Set the rules
 - set the duration, prizes, etc.
 - determine how people will 'cheat'
- Determine organizational impact
 - will the game achieve the desired outcome?
 - what are the benefits?



Game Issues

- Competing priorities between groups
 - unhealthy competition
 - side-effect behaviors
- Multiple goals
 - can cause conflicting organizational messages
- Conflicts between players and non-players
 - can result in cooperation issues
 - DYFJ syndrome

Fairness

Issue Solutions

- No games
- Multiple games
- Multiple objective games
- Multiple winners
- Prize lotteries
- Ignore competing elements
- Teams (virtual or organizational)
- Personalized challenges

Fairness

Bug Hunter Design

- Goal
 - invest test effort to maximize quality
 - gather metrics on the test activities for future use
- Rules
 - enter information after discovering a bug
 - vote on bug location and resolution
 - predict root cause
 - determine root cause
 - propose preventions
 - vote on preventions

Game Flow

- Bug is detected
 - bug information is entered
 - points give for quality of information and detection method
- Crowd predicts resolution of the bug
 - location
 - resolution type
 - root cause
- Bug is resolved
 - root cause is entered
 - propose preventions
 - vote on preventions

Bug Detection

- Testers use traditional techniques
 - automated test
 - reviews
 - ad hoc testing
 - beta testing
 - etc.
- Testers have variety of tools for gathering metrics
 - code churn
 - feature completion information
 - code coverage
 - historical defect rates
 - code analysis
 - etc.
- Testers can use the tools to predict problem areas

Bug Hunter Attributes

- Multiple element game
 - many different behaviors are rewarded
- Multiple winners
 - latte coupons
 - small prize booklets (\$25 or less)
 - prize lottery for bigger prizes (Zune, Xbox)
 - accolades
 - expert, hero, legendary ratings for game players
- DYFJ game
 - find the bug
 - report the data
- Ignores most cheat behaviors
 - cheating requires too much effort for player to sustain
 - e.g., misreporting manual test bug as found in code review
 - requires the line(s) of code where the bug was found
 - using other quality techniques are not cost effective to the player

Bug Hunter Benefits

- Communicates short term goals by tweaking the points awarded
 - finding bugs versus preventing defects
 - using various activities to find categories of bugs
- Educates testers in relationships between data
 - defect discovery rates versus code churn
 - discovery techniques versus defect types
 - symptom versus resolution
- Educates testers in data usage
 - new vs. modified code defect rates
 - developer quality

Pair-wise Voting Demo

- Used to vote on various game elements
 - quality investment areas
 - defect prevention techniques
 - bug location
 - bug resolution
 - bug severity
 - fix priority
- Uses:
 - Wisdom of Crowds (James Surowiecki)
 - Thin-Slicing (Malcolm Gladwell)

<http://www.defectprevention.org/Pairs.aspx>

Blink Voting

Which magazine cover is more **SIGNIFICANT**?

3 seconds left



TIME
(April 8, 1966)



Newsweek
(November 20, 2000)



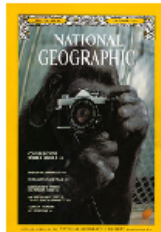
Esquire
(May 1969)

Stack Rankings

Include: Clever
 Controversial
 Humorous
 Newsworthy
 Significant

[Vote on these items](#)

Stats are from **6** people across **158** comparisons



#1: National Geographic (October 1978) (83.3% overall win/loss ratio - 10 of 12)



#2: The New Yorker (September 24, 2001) (77.8% overall win/loss ratio - 7 of 9)



#3: George (Oct/Nov 1995) (66.7% overall win/loss ratio - 6 of 9)



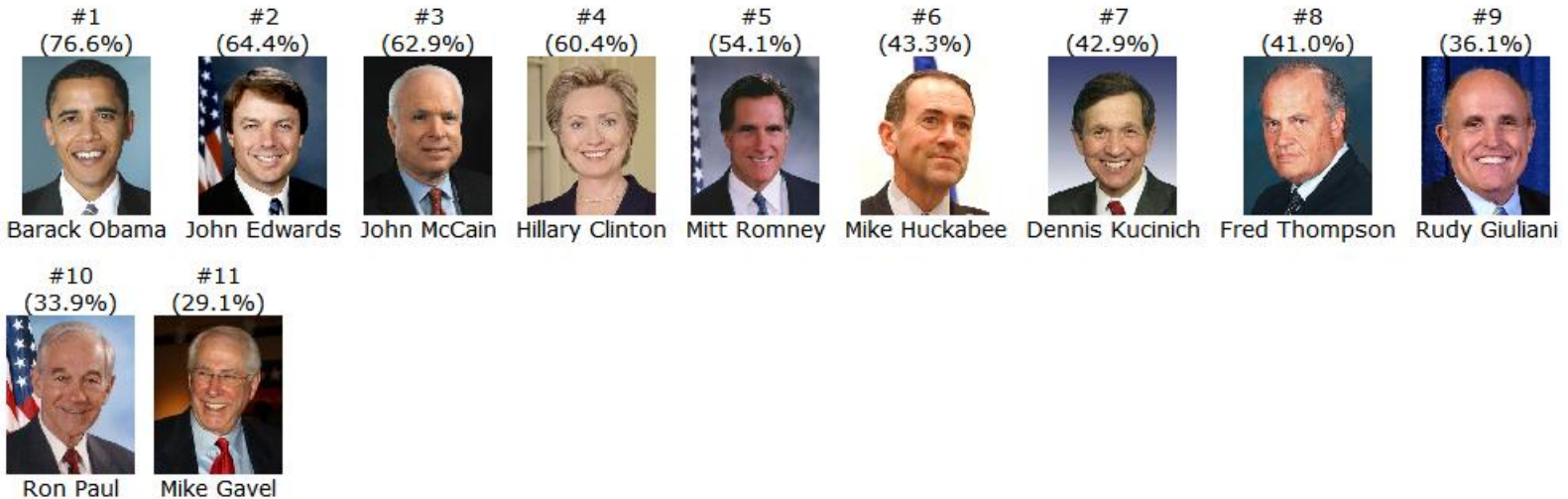
Wisdom of Crowds

Defect Prevention

[Home](#) [The Book](#) [Participate](#) [Recommendations](#) [About](#)

[Vote on these items](#)

Stats are from **55** people across **2898** comparisons.



Questions?

- Contact Info:
 - rmusson@microsoft.com
 - ross@microsoft.com

Demo is available at <http://www.defectprevention.org/>