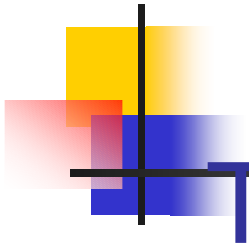


# Taking a Deeper Dive Into Dashboards

Randall W. Rice, CTAL

www.riceconsulting.com

**StarEast 2010**





RICE CONSULTING

# What This Session is About

- Last year at StarEast, I gave a keynote presentation about Software Testing Dashboards and what it means to be an information provider.
  - It got a lot of good feedback
  - However, many people couldn't make it last year
  - And…I've had an opportunity to try some new things since then.
- This session is a deeper examination of how to apply dashboards in software testing.

# Since Last Year

- I spent several months on a project primarily building a software testing dashboard.
- I have learned some interesting things, including:
  - Resources for free examples
  - Tools to help build dashboards
  - The human issues

# Becoming an Information Provider

- Traditionally, testers have been “problem finders”.
- The more positive and value-added view is to be an information provider.

# What's In This For You?

- An affordable and easy way to:
  - Build your credibility
  - Promote a positive view of testing
  - Help guide your testing projects
  - Be helpful to project management
  - Add value to projects
  - Start improving processes and methods
  - Be seen as more than a commodity

# The Main Objective of Testing Dashboards

- To provide simple, meaningful and reliable information in one place to help guide the testing effort and convey that information to our clients.




RICE CONSULTING

# Where Are You?

a) We have a great set of dashboards that help us make decisions

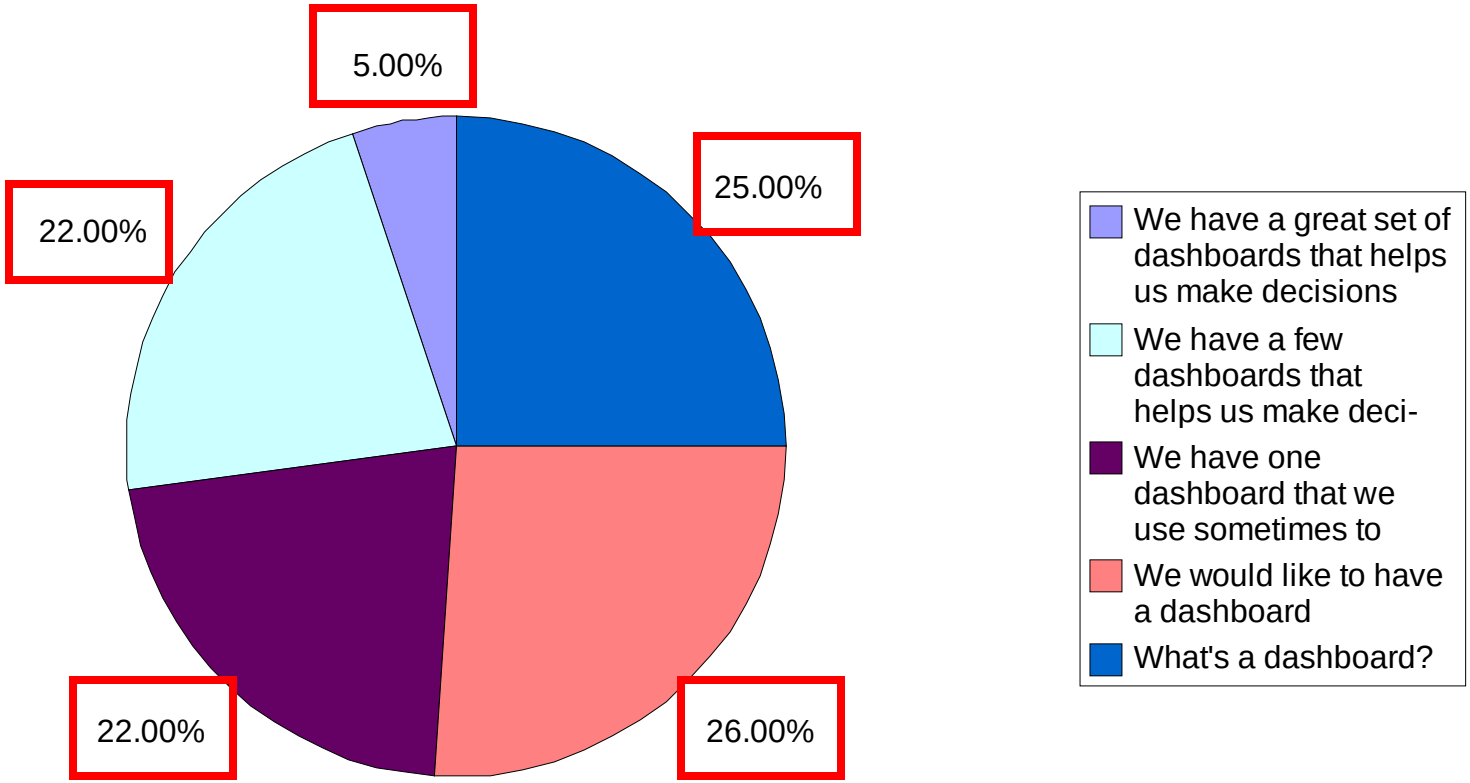
b) We have one or two dashboards that help us make decisions

c) We have one dashboard that helps us make decisions sometimes

d) We would like to have a dashboard but don't know where to start

e) What's a dashboard?

# Results From an SQE Webinar Survey






RICE CONSULTING

# A Testing Project is Somewhat Like Driving a Car

- You need to know your:
  - Destination
  - Current location
  - Orientation (Direction)
  - Trip progress
  - Speed
  - Resource levels (gas, oil, etc.)
  - Engine operation (temp, charge, etc.)

# The Goal

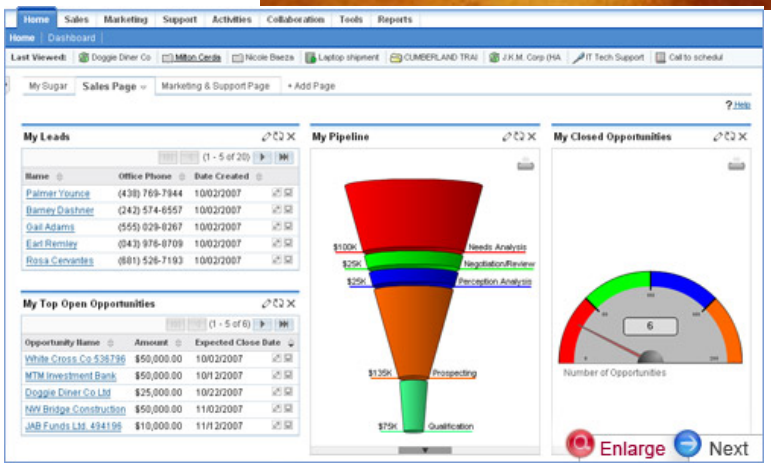
- Arrive at the desired destination safely
- Stay on the road
- Make good progress
- Don’t get lost
- Don’t run out of fuel
- Only one driver at a time

# Key Components

- An effective testing strategy
  - Defines the test objectives, scope and approach early in the project.
- A workable test plan
  - Defines scope, resources, schedules, risks, contingencies, etc.
- A dashboard
  - Monitors defect levels, test progress, resource levels.

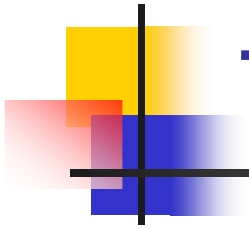
# Information Dashboards are Used in...

- Software Projects
- Finance
- Sales
- Government
- Many other applications






RICE CONSULTING

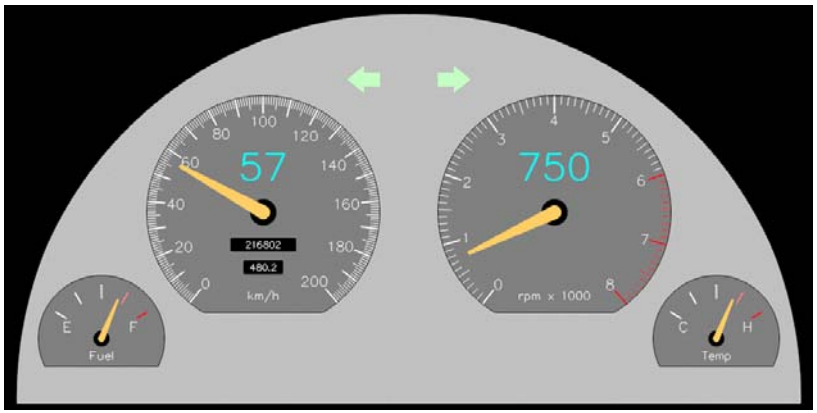


# The Testing Dashboard

- Dashboards are not new
  - They have been a common topic in articles and at conferences for several years.
- At the same time, testers often struggle with how to convey accurate and timely information to management.
- So...let's explore dashboards and look at some examples.
- Then, we'll look at the issues behind test measurement and reporting.

# Example: Your Car's Dashboard

- Car dashboards tell you current:
  - Trip progress (speedometer and odometer)
  - Resources (fuel)
  - Car status (temp, oil pressure, charging, engine performance)
  - Warnings (seat belt, open doors)






RICE CONSULTING

# Dashboard Principles

- The number of indicators are relative to the vehicle type
  - Car vs. Tractor-trailer
  - Car vs. Small plane
  - Small plane vs. F22A Fighter
  - F22 Fighter vs. 747 Jet
- The information is almost instantaneous.
- The information is conveyed by sensors.

# The Basis of Dashboards – Metrics and Measurements

- Your dashboards will contain a few meaningful and appropriate metrics and measurements.
- The key is to pick the right ones and show them in clear ways.

# What Makes a Good Metric?

- Simple
  - Can be easily measured and understood
- Can be automated
  - So we don't have to take readings manually
  - Also, people don't get the chance to manipulate the numbers
- Meaningful
  - We can gain useful information to make decisions

# What is a Testing Dashboard?

- A testing dashboard, just like a car's dashboard, is a set of indicators that show the current status of testing.
- Dashboards can be seen from various perspectives:
  - Project
  - Testing status
  - Ongoing system maintenance

# Why Have a Testing Dashboard?

- For fast and easy reporting test results to management
- To have all of your testing information in one place
- To help guide the testing effort
- To help make good decisions
- To build project learning
  - Better estimates in the future
- To build the credibility and visibility of testing

# What is Required for a Dashboard?

- Accurate and meaningful measurements and metrics
  - Plus...a clear understanding of what the metrics mean.
- A culture of trust and openness
- Non-intrusive ways to measure
  - Ideally, the measures should come from activities already being tracked.
    - Defect tracking systems
    - Project management software

# What is Required for a Dashboard? (2)

- A way to display the information in ways that are:
  - Understandable
  - Easy to Build and Maintain
  - Accessible
  - Integrated with tools
    - Issue tracking
    - Test management
    - Project management

# What is Shown on a Typical Testing Dashboard?

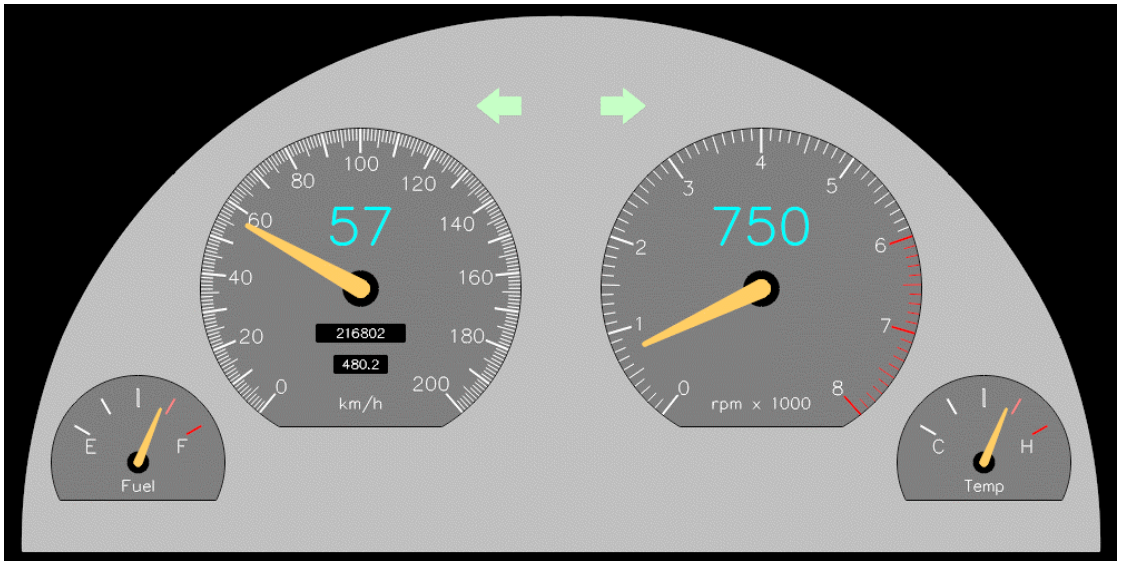
- Test Coverage
  - Requirements
  - Functional
  - Test case
  - Code
- Test Status
  - Testing
  - Defect resolution
  - Readiness for deployment
  - Pass/Fail
- Progress
  - Based on test goals and objectives
  - Blockages
- Risk
  - Technical
  - Business
  - Project
- Defects
  - Categories
  - Trends
  - Detection Percentage
  - Resolution Status
- Testware
  - Completion %
  - Automation %
- Resources

# What Should You Show?

- Ask your customers!
  - What information do they value?
  - How do they need it shown?
  - When do they need it?
  - How timely must it be?
- However, just like in obtaining user requirements, people often don't know what they want or need until they actually see it.
  - Start with a prototype

# Things to Consider When Designing Dashboard Items

- Purpose of the Dashboard
- Chart or Graphic Types
- Colors
- Positions
- Brightness
- Orientation
- Sizes
- Shapes

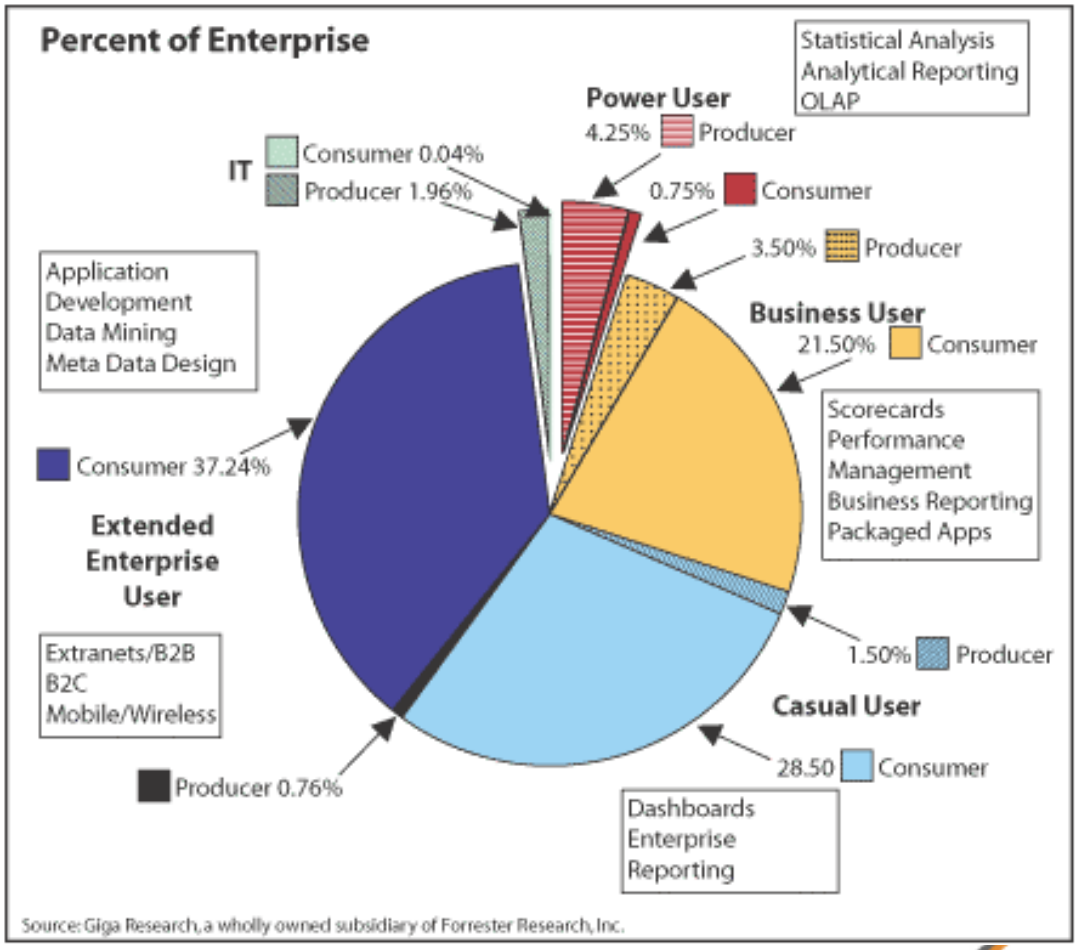


# The Types of Information

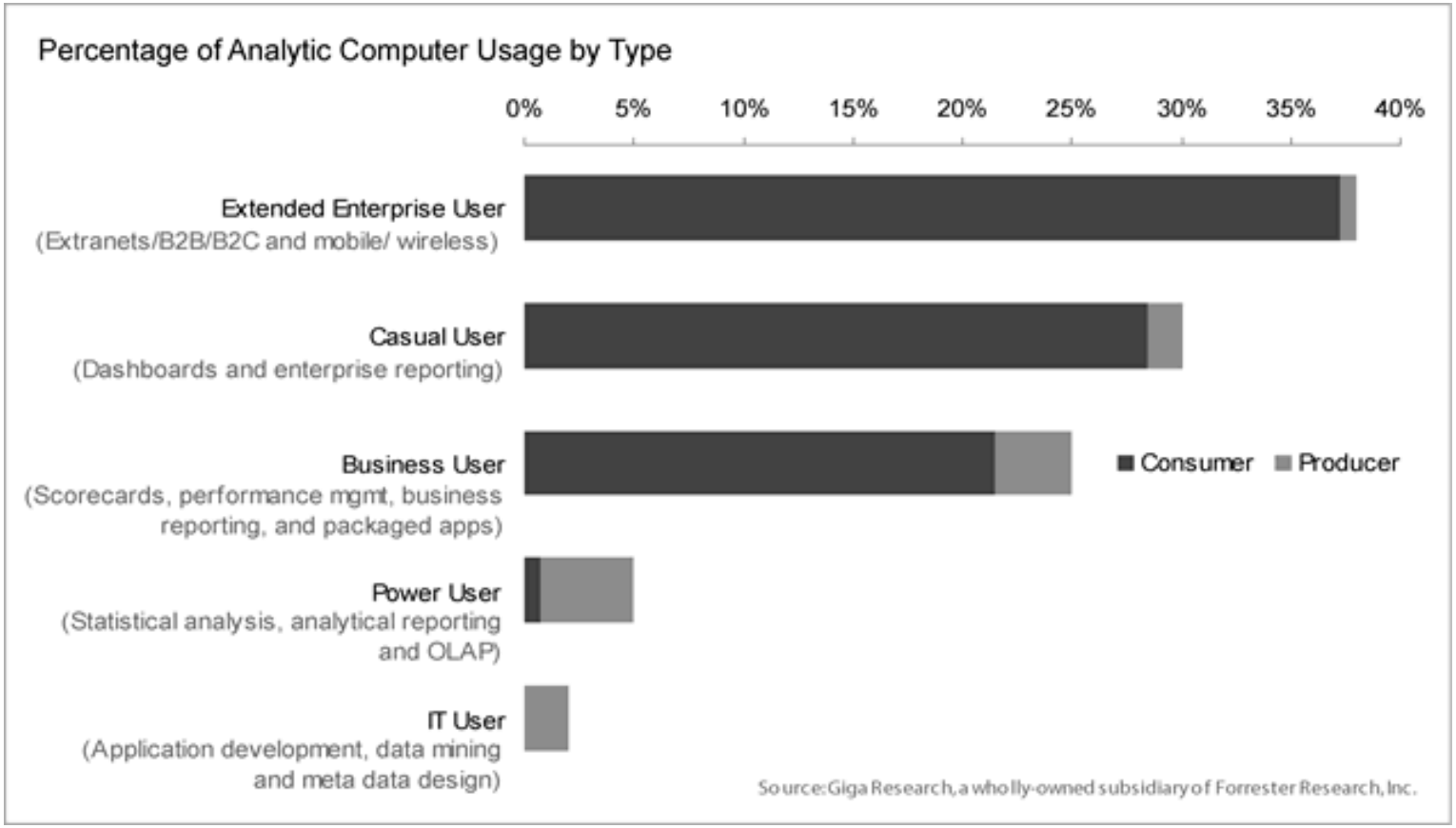
- Progress
  - Meters are good
- Stages of effort
  - Bar charts are good
- Benchmarks
  - Bar charts, Line charts
  - Meters (except to show historical comparisons)
- Trends
  - Line charts, Bar charts
- Levels
  - Dials

# Some Examples

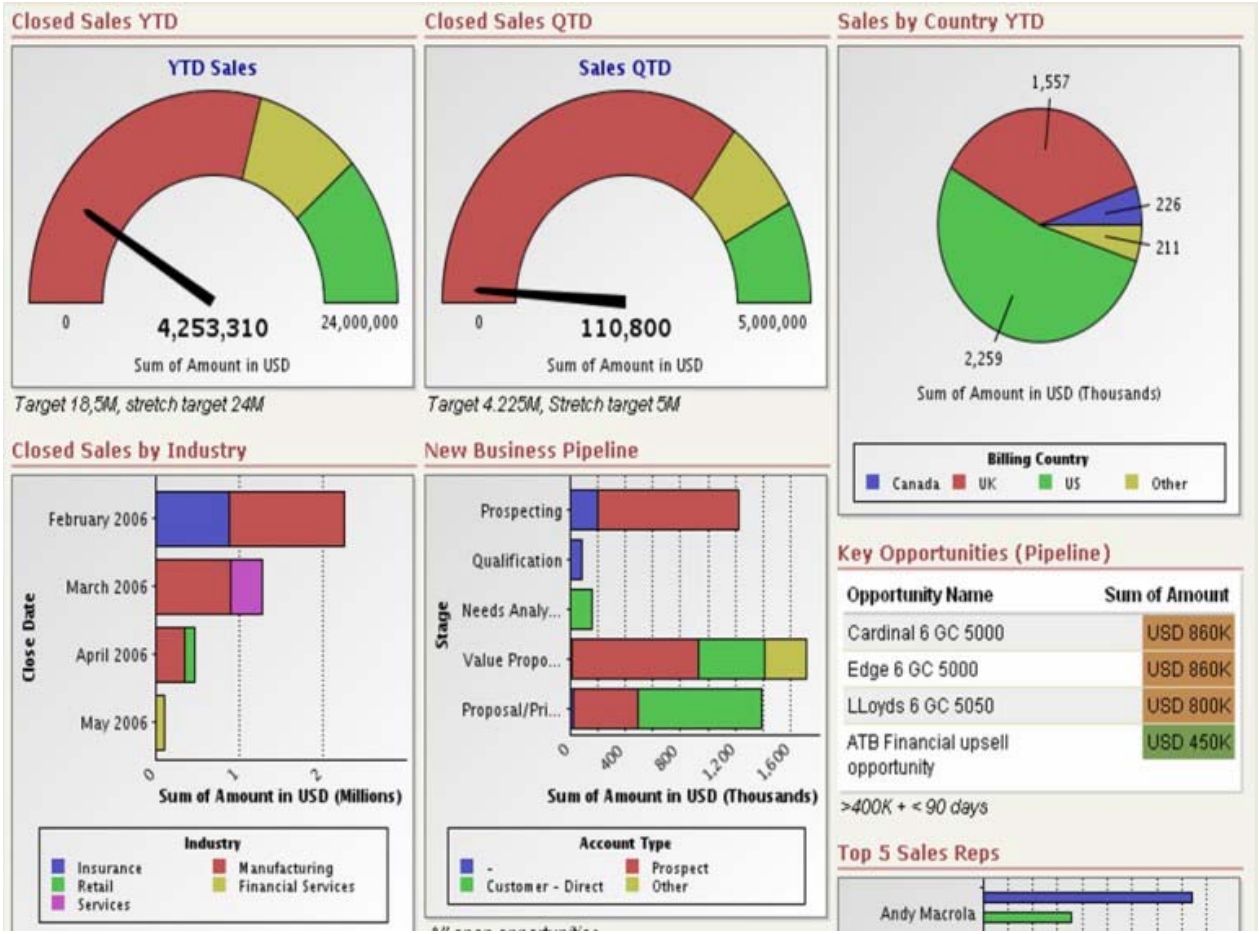
# First, the "Not So Good"



# Better


Percentage of Analytic Computer Usage by Type
0%
5%
10%
15%
20%
25%
30%
35%
40%
Extended Enterprise User
(Extranets/B2B/B2C and mobile/ wireless)
Casual User
(Dashboards and enterprise reporting)
Business User
(Scorecards, performance mgmt, business reporting, and packaged apps)
Power User
(Statistical analysis, analytical reporting and OLAP)
IT User
(Application development, data mining and meta data design)
Consumer
Producer
Source: Giga Research, a wholly-owned subsidiary of Forrester Research, Inc.

# Other Examples






RICE CONSULTING




RICE CONSULTING

# Part 1 – Open for Business

# Economic Vitality Dashboard

| Description | Lead | CY 2005 | CY 2006 | CY 2007 | CY 2008 | | Target | Status | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **1.** Number of net **new non-farm jobs** created in Washington since Jan. 2005 | ESD | 79,000 | 144,800 | 213,900 | | | 250,000 by Dec 08 | ● | Data cumulative from Jan 05 |
| | | **FY 2007 1st QTR** | **FY 2007 2nd QTR** | **FY 2007 3rd QTR** | **FY 2007 4th QTR** | **FY 08 1st QTR** | **FY 2008 Target** | **FY 08 Status** | |
| **2.** Percent and number of **job seekers** who get a job within three months of the quarter when they receive service | ESD | 56%<br>24,975 | 45%<br>21,396 | 44%<br>21,471 | Data by Jan 08 | | 60% | ◆ | See Slide 17 for more information |
| **3.** Percentage and number of **job openings** filled for employers through WorkSource | ESD | 33%<br>9,455 | 34%<br>6,909 | 37%<br>4,130 | 37%<br>6,766 | | 32% | ● | Status based on data from FY 07 |
| **4.** Rate of increase in **workers' compensation medical costs** | L&I | 5.7% | 5.5% | 5.1% | 5.2% | 5% | Maximum 6%/year | ● | |
| | | **FY 2004** | **FY 2005** | **FY 2006** | **FY 2007** | **FY 08 1st QTR** | **FY 2008 Target** | **FY 08 Status** | |
| **5. Lost time claims** per 1,000 workers in high-hazard industries (construction, manufacturing, natural resources, transportation and warehousing | L&I | 36 | 33 | 32 | 27 (Data not complete) | | 5% reduction in all industries | ▲ | Based on 3 or more days lost work time – Data refreshes annually |
| **6. Export sales reported by CTED** clients during prior fiscal year | CTED | | $60.1 million | $23.4 million | $41.8 million | $9.6 million | $35 million | ● | Quarterly target is $8.75 million |
| **7. Export sales reported by WSDA** clients during prior fiscal year | WSDA | | $59.6 million | $49 million | $62.5 million | | $45 million | ● | Initial FY 08 data available Jan 08 |

● Meets/exceeds target ▲ Within 10% of target OR area of concern ◆ More than 10% below target △ Data not available

# Sample Project Quality Dashboard

## Post-Implementation Defects By System

Edit Data


## Top Eight Outstanding Risks

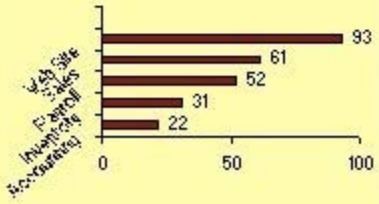
Edit Data

| | Risk, System | Risk Level |
|---|---|---|
| 1 | User Training, Accounting | 4 |
| 2 | Usability, Web Site | 4 |
| 3 | Security, Web Site | 4 |
| 4 | User Involvement, Inventory | 4 |
| 5 | Lack of Resources, HR | 3 |
| 6 | Inadequate User Requirements, Sales | 3 |
| 7 | Insufficient test schedule, Finance | 3 |
| 8 | Vendor dispute, CRM | 3 |

Data Current As Of: 2/19/2009 20:59

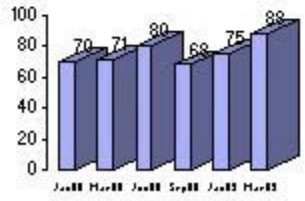
Refresh

## Test Completion % by



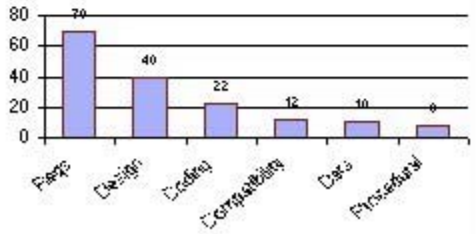

Edit Data

## DDP History



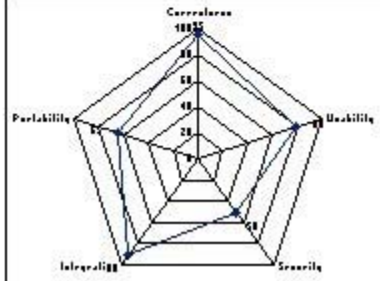

Edit Data

## Defect Types




Edit Data

## Quality Attribute Levels





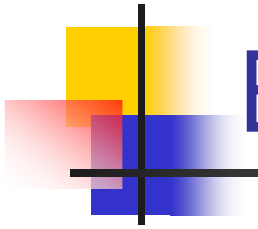
RICE CONSULTING

# Dashboards and Usability

- Good dashboards are as much about design as they are about data.

# Some Ways to Structure Testing Dashboards

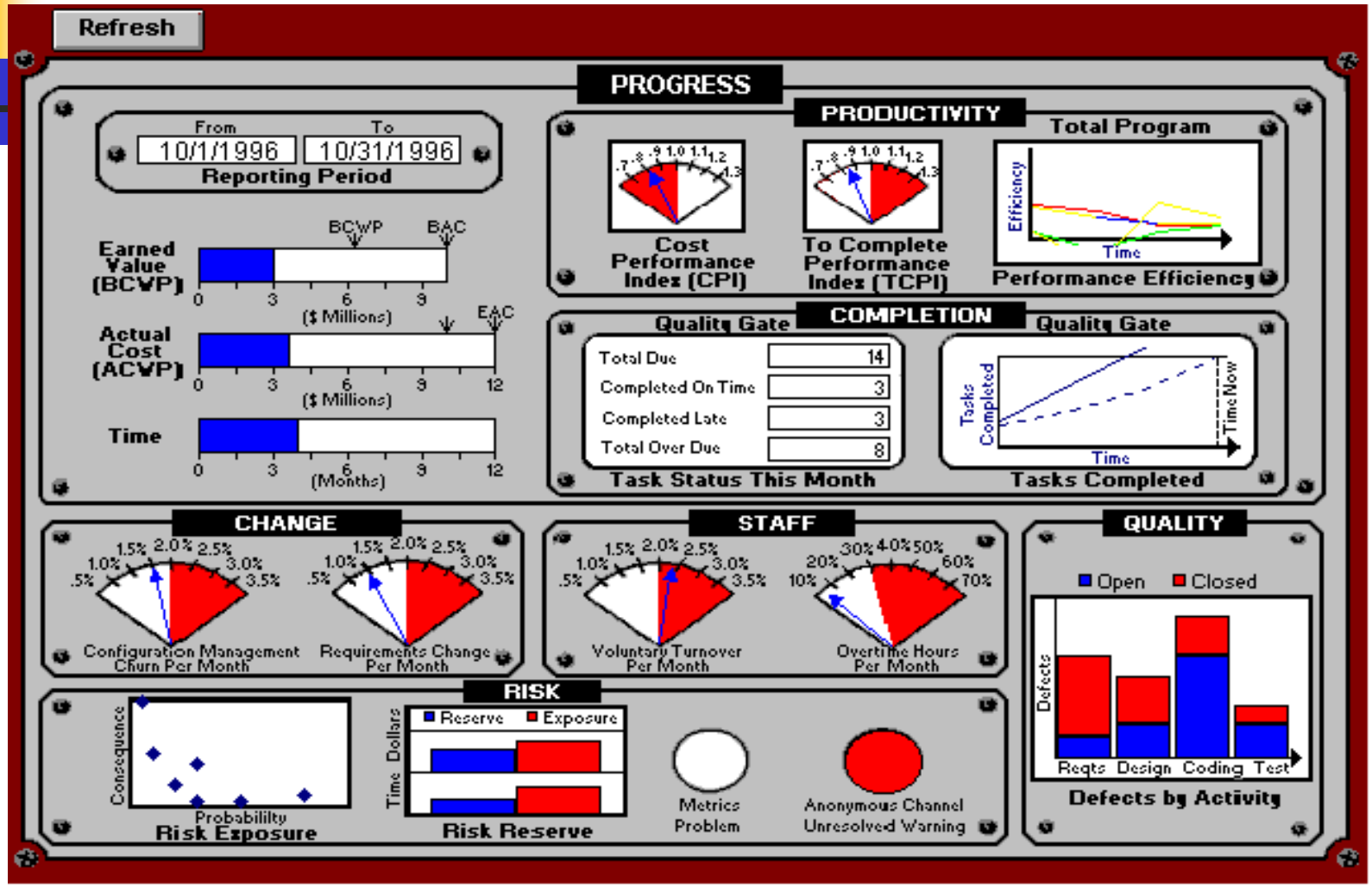
- Overall Software Quality Levels
- Software Test Center Performance
- Project Quality Levels
- Test Effectiveness
  - Overall
  - By phase
  - By type
- Testing Projects
  - Progress
  - Defect levels
  - Functional quality levels



# Expanding the View

- Project Dashboards
  - Have the same characteristics, but more points of measurement.
  - Contain testing measures.
  - Guide the entire project, not just testing.

# Sample Project Dashboard






Source: U.S. Navy - sepo.spawar.navy.mil/Metrics.ppt

# Methods for Creating Dashboards

- Low-tech (whiteboards)
- Excel Spreadsheets
- Proprietary tools
  - e.g, Xcelsius

# Demos

# What Would it Mean...

- To your project managers to have access to this type of information at any point in time?
- To the senior management in your company to see overall software quality information?
- To your career to be seen as the keeper of this kind of information?

# Words of Warning

- Too many items on a dashboard can be distracting and confusing.
  - Unless you are flying a plane!
- Metrics can be abused.
  - If people don't understand human behavior, more harm than good can result.
- Stuff happens.
  - Things not shown on your dashboard can derail your test.

# Words of Warning (2)

- With dashboards, everyone can see the same information at the same time.
  - This may be an issue if you don't want to show someone information until you have had a chance to see it first.
- Manual input to the dashboard gets overwhelming.
  - You want to automate the data capture as much as possible.
- Dashboards may be too general for some managers.

# Keeping the Process Working

- The dashboard tells you about vehicle (process) malfunctions.
  - In testing, the process is the engine.
    - The process might not be documented.
    - How you perform the process determines whether or not you reach the intended destination.

# Other Concerns

- Where do I find the time to create dashboards?
  - This is not an extra task, it's part of the job of test management!
- Do I need tools?
  - No. While there are some nice dashboard tools, all you need is a spreadsheet application.

# Final Thoughts

- A key purpose of testing is to provide meaningful information to management to make informed decisions.
- This is a positive value-added view of testing.
- Dashboards are one more tool to help you guide your testing project, but they don't drive the car!

# Final Thoughts (2)

- Good dashboards have:
  - Good design
  - Current information
  - The right metrics for your situation
    - They should reflect the job at hand
    - They should be understandable
  - Meaning and value for the readers
  - Interpretation and guidance
    - Annotations are helpful

# Resources

- http://www.perceptualedge.com
  - Steven Few's Website
- http://dashboardspy.com
- Dashboards by Example
  - http://www.enterprise-dashboard.com
- Datapig Technologies
  - http://datapigtechnologies.com
  - A great source for Xcelsius videos
- Book - *How to Lie With Statistics*
  - By Darrell Huff

# Bio - Randall W. Rice

- Over 30 years experience in building and testing information systems in a variety of industries and technical environments
- Certified Software Quality Analyst
- Certified Software Tester
- ASTQB Certified Tester – Foundation level, Advanced level (Test Mgr.)
- Treasurer of the American Software Testing Qualification Board (ASTQB)
- Chairperson, 1995 - 2000 QAI's annual software testing conference
- Co-author with William E.Perry, *Surviving the Top Ten Challenges of Software Testing*
- Principal Consultant and Trainer, Rice Consulting Services, Inc.

# Contact Information

Randall W. Rice, CTAL

Rice Consulting Services, Inc.

P.O. Box 892003

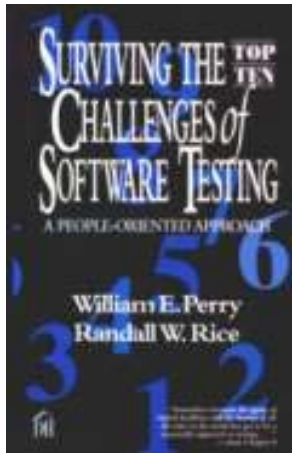
Oklahoma City, OK  73170

Ph: 405-691-8075

Fax: 405-691-1441

Web site: www.riceconsulting.com

e-mail: rrice@riceconsulting.com






RICE CONSULTING