# TESTSTORMING™ – A COLLABORATIVE TECHNIQUE FOR RAPID TEST DESIGN

**RANDALL W. RICE,**
**CTFL, CTFL-AT, CTAL**

**WWW.RICECONSULTING.COM**


RICECONSULTING

# THE NEED

- You are pressed for time to devise new tests for new or modified software.
- You have run short of ideas.
- You have limited perspective and knowledge.
- You have limited or inadequate specifications, documentation or other information.



RICE CONSULTING

# THE PROBLEM WITH TEST DESIGN

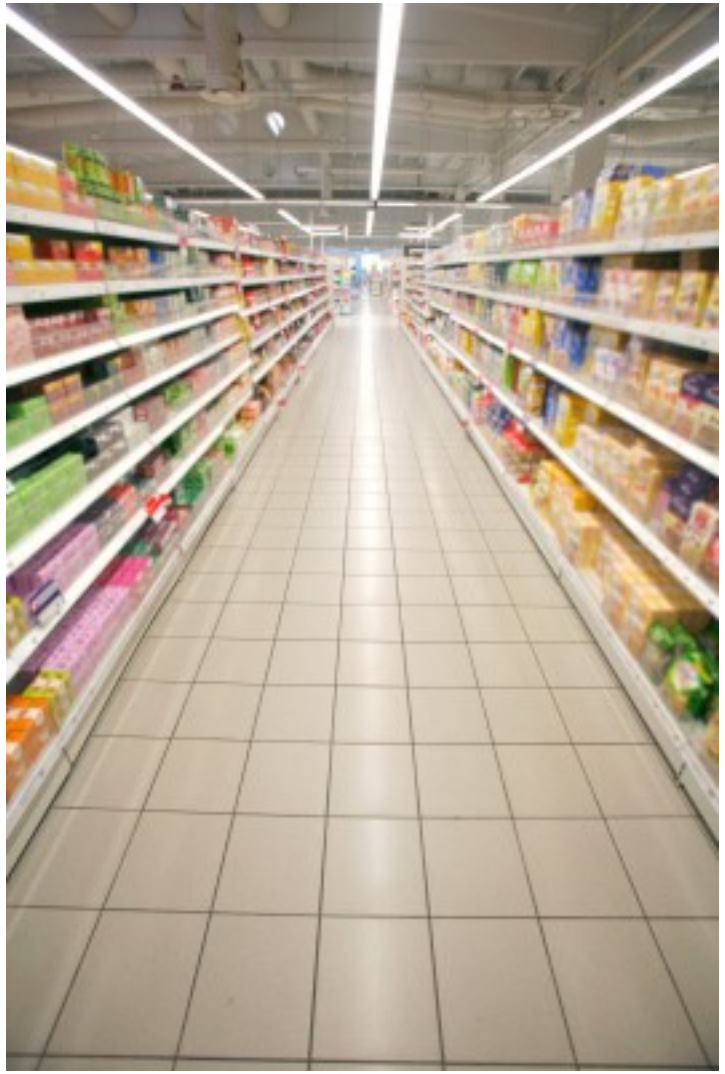
- **It is often:**
  - Performed by individuals working alone
  - Based on flawed specifications
  - Very nuanced
    - Not a simple translation from specs to test case
  - Lacking in rigor
  - Outdated by the next release

# BENEFITS OF COLLABORATION IN TEST DESIGN

- Shared problem solving ability
- Increased knowledge of the application to be tested
- Increased knowledge and experience in test design
- Higher levels of ownership in the test design activity
- Greater creativity in ways to create tests
- More objectivity in prioritizing tests
- Better communication about the project, the tests and the problems to be solved

**The problem isn't identifying enough test cases – they are everywhere you look.**

**The challenge is to identify the *right* test cases – the ones that add the most value to a test.**



RICE CONSULTING

# TESTSTORMING COMBINES THREE BASIC TECHNIQUES

- **Brainstorming – to generate a lot of ideas quickly, then refine them.**
- **Test design – to identify ideas and conditions that truly exercise the software to be tested.**
- **MindMapping – to provide a way to document ideas and associate them logically.**

# COMMON MISCONCEPTION

- **Don’t make the common mistake of thinking of brainstorming only as a group of people tossing about ideas.**
  - While that is how many people perceive brainstorming, there is actually a creative process behind the technique.

# OTHER USES

- **TestStorming can also be applied to:**
  - Risk identification and assessment
  - Root Cause Analysis
  - Test strategy development




RICE CONSULTING

# USEFUL CONTEXTS

- **While TestStorming can be used in just about any project context, agile teams seem to benefit most due to the need for collaboration and rapid test design.**
- **TestStorming is especially helpful in designing:**
  - Mobile application tests
  - Acceptance tests (non-specification based)
  - Risk-based tests
  - Technical tests, such as security or performance

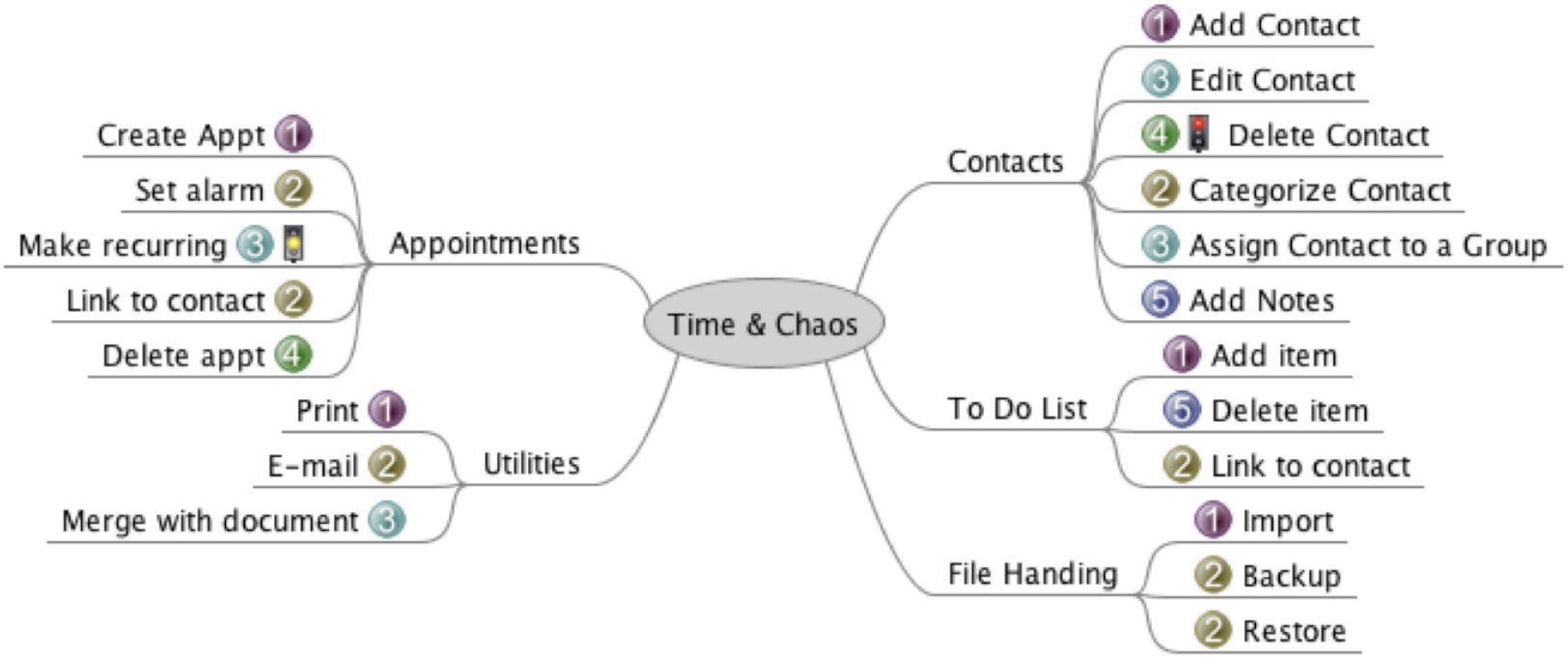
# WHAT IS REQUIRED?

- **A good facilitator**
  - Ideally, trained for this role
- **Knowledgeable and creative people who are not afraid to fail or look foolish**
- **The ability to collaborate with others**
- **A way to capture ideas**
- **A way to format ideas (such as a mind map)**

# MINDMAPPING

- **You can use a whiteboard.**
- **But…there are some great open source tools.**
  - Freemind - http://freemind.sourceforge.net/wiki/index.php/Download
  - Xmind - http://www.xmind.net/download/mac/
- **The concept is to branch off a major topic, then develop sub-topics.**
- **The advantage of tools is that they produce output that can be preserved, updated and distributed.**

# MINDMAP EXAMPLE






RICE CONSULTING

# THE FACILITATOR

- **This is the key role.**
- **Like in reviews, the facilitator does not inject themselves into the session.**
- **Their role is to keep the session on track and to keep the flow of ideas coming.**

# THE RECORDER

- **Someone needs to capture the ideas.**
- **The facilitator typically doesn't have the ability to both facilitate the sessior and record ideas accurately.**
- **The ideas often flow quickly, so the recorder needs to be able to keep up with the flow.**




RICE CONSULTING

# GROUND RULES

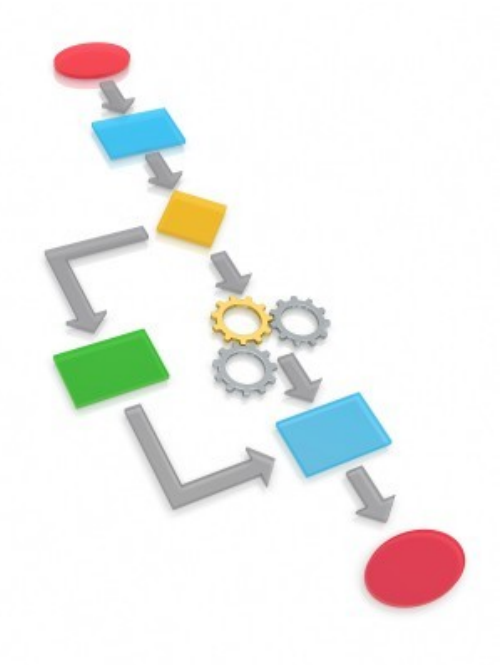
- **There are no "bad" ideas.**
  - No ideas are rejected at first.
- **Everyone contributes.**
- **No personal criticisms.**
- **The session is limited in time.**
  - No more than 2 hours.




RICE CONSULTING

# GETTING STARTED

- **This is “a” process, not the only process.**
- **It has served me well, but you may want to adapt it for your own purposes and culture.**



# THE PROCESS

**Step 1 – Decide on How to Capture Input**

**Step 2 – Define the Scope of the Session**

**Step 3 – Define the Focus of the Session**

**Step 4 – Assign a Leader**

**Step 5 – Invite the Participants**

**Step 6 – Conduct the Session**

**Step 7 – Filter, Refine and Combine Tests**

**Step 8 – Conclude the Session**

**Step 9 – Refine the Tests**

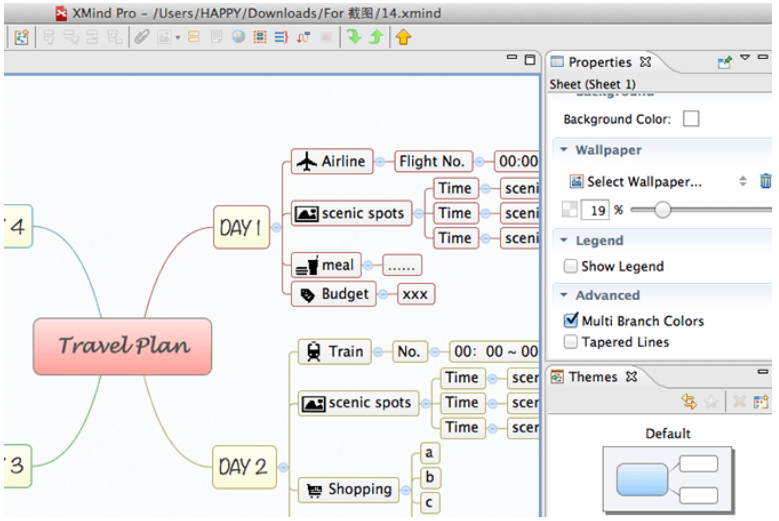
# AFTER THE SESSION

**Step 10 – Perform the Tests**

**Step 11 – Update the Tests as Needed**

# STEP 1 – DECIDE ON HOW TO CAPTURE INPUT

- **Tools**
  - Freemind
  - Xmind
  - Word
  - Spreadsheets
    - METS
- **Whiteboard**
- **Flipcharts**






RICE CONSULTING

# MINIMAL ESSENTIAL TEST STRATEGY (METS)

- **Developed by Greg Paskal**
  - www.gregpaskal.com
- **A way to quickly define features and functions to be tested by levels of criticality.**
- **Test time can be estimated along with potential defect severity.**
- **Also available as an iPhone app.**

# Physical Test Grid

| Category | Critical | High | Medium | Low |
|---|---|---|---|---|
| Display | Display completes loading | Loading completes in a reasonable amount of time | Display consistent between device brands and versions | Display loading time reasonable under load |
| | Graphics, text and other elements seem to be in correct locations | Display contains all navigational elements | Resolution is correct | |
| Graphics | Graphics loading completely | Graphics completed loading within consistent time frame | Consistently loading every time | Graphics load in low bandwidth conditions |
| | Scaling, cropping or image quality correct | Link associated with graphic is correct | Grapics cached on device correctly | |
| | Rollover graphics displaying correctly | Graphic rollover state providing correct transition illusion | Preloaders working correctly for quick image redraw | |
| | Graphical text within graphic is legible | Correctly spelled text within graphic | | |
| Forms | Menus are functional | Menu contains all desired options | Submitted form contains menu selection(s) | |
| | | Menu items are spelled correctly | | |
| | Buttons are functional | Submitted form contains button selection | | Button text is spelled correctly |
| | Checkboxes are functional | Selection of multiple checkboxes is possible | Submitted form contains checkbox selection(s) | |
| | | Checkbox text is spelled correctly | | |
| | Text fields and boxes are functional | Text field and boxes have correctly spelled default text | Text fields allow enough room for a typical data entry | |
| | | Submitted form contains text field and text box information | | |
| | Search box is functional | Search button submitting or resetting form correctly | | |
| | | | | |
| | Forms submitting correctly | Hitting Return/Enter submits form | | |
| | Form data being received | Data from submitted form validated and correct | | |
| | Form validation working correctly | Invalid data input not allowed | Error messages provide helpful guidance | Error messages contain no typos |

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Functional Test Grid** | | | | |
| 3 | **Category** | **Critical** | **High** | **Medium** | **Low** |
| 4 | **Accounts** | Creating an account possible | Can user change account details such as shipping address. | Can user delete an account? | |
| 5 | | Logging into an account possible. | Can user request forgotten login information? | Does account time out require re-login after specified inaction? | Is the user notified when why they must re-login? |
| 6 | **Shopping Cart** | Can an item be placed into the cart? | Can multiple items be put into shopping cart? | Do items consistently carry through purchase session? | Is tax being calculated correctly? |
| 7 | | Can an item be removed from the cart? | Does cart reflect removed item correctly | Are removed items affecting the subtotal, total or tax? | |
| 8 | | | Can more than one item be removed at a time? | | |
| 9 | **Product Catalog** | Can user get to online catalog? | Does online catalog reflect entire product line? | Can user sort catalog items buy price, size or color? | Does the catalog item reflect the product being sold? |
| 10 | **Trans-actional** | Can user place an order? | Can user back out of an order? | Does using the browser back button effect the order transaction? | Is the user notified when a transaction is complete? |
| 11 | | | Can user save an order for later? | When user comes back to saved order is it accurate in items in cart and pricing? | |
| 12 | **Search** | Can user search from home display? | Do the search results link correctly to the found content? | Is the found content logical to the original search? | Were search results sorted according to the business rules? |
| 13 | **Store Locator** | Is the locator functional from the home display? | Are the locator results correct according to business rules. | Is the address, phone number and store hours correct for the returned results? | |
| 14 | **File Down-loading** | Is the file accessible for downloading? | Does the download work correctly once on the customers computer? | Is the download easy to locate? | Are the file size(s) and operating system requirements correct? |
| 15 | **File Up-loading** | Can a customer upload a file? | Is the upload functionality providing an intact file on the business side once upload is complete? | Is the file correctly relatable back to the originating customer and/or order? | Are the upload instructions clear and understandable? |

# Physical Test Metrics

| Test | Category | Importance | Time Required | Potential Severity |
|---|---|---|---|---|
| Display completes loading | Display | Critical | 1 | 1 |
| Graphics, text and other elements are in correct locations | Display | Critical | 2 | 4 |
| Display loading completes in a reasonable time. | Display | High | 1 | 3 |
| Display has intuitive and logical flow. | Display | High | 2 | 4 |
| Display loading is consistent between device branks and versions | Display | Medium | 3 | 2 |
| Display has correct color contrast | Display | Medium | 1 | 4 |
| Dsiplay loading time reasonable under load. | Display | Low | 60 | 2 |
| Graphics loading completely | Graphics | Critical | 1 | 3 |
| No scaling, cropping or image quality problems | Graphics | Critical | 1 | 3 |
| Rollover graphics displaying correctly. | Graphics | Critical | 2 | 3 |

# STEP 2 – DEFINE THE SCOPE OF THE SESSION

- **This includes both the time to be spent in the session and the number of features to be addressed.**



RICE CONSULTING

# STEP 3 – DEFINE THE FOCUS OF THE SESSION

- Having a particular focus prevents the team from digressing into areas that may have limited value or importance in the test.
- For example, the focus of a TestStorming session might be the security aspects of a mobile device.
- In fact, the focus could be to design tests for the secure ordering process using a mobile device.

# STEP 4 – ASSIGN A FACILITATOR

- **Without a facilitator, the session can drift into non-productive discussions.**
- **Also, the facilitator may need to "prime the pump" of ideas by tossing out some initial suggestions.**
- **Sometimes, a session may stall.**
  - This requires the facilitator to inject some remarks or ideas to get more ideas.
- **The facilitator should be someone with subject matter knowledge and test knowledge.**
- **The facilitator should also know how to lead dynamic group discussions, mediate disputes and keep a session on track.**

# STEP 5 – INVITE THE PARTICIPANTS

- **The success of a TestStorming session depends on the quality of the people in the room. You want people who are:**
  - Creative thinkers
  - Critical thinkers
  - Knowledgeable about the context of how the application will be used
  - Knowledgeable about organizational goals for the application
  - Understanding of different types of users
  - Knowledgeable about test design (you want people who can think of strong tests)
  - Courteous to others in the session
  - Able to contribute ideas (otherwise, they are not really needed in the session)

# STEP 5 – INVITE THE PARTICIPANTS (2)

- **Another way to identify participants is by role, such as:**
  - Testers
  - Developers
  - Users

# STEP 6 – CONDUCT THE SESSION

- **Several things are discussed at the outset, including:**
  - The basis for test design, such as requirements, use cases, user stories, user experience, and the application itself
  - Known risks
  - Known issues
  - Past defect trends
  - The nature of the application and specific features to be tested
  - The context of how the application is used
  - The objective of the session

# GATHERING INPUT

- **Participants contribute their ideas for test design. This can be done in a variety of ways:**
  - Answering context-free questions, such as:
    - What are the most important things to be tested?
    - What are the least important things to be tested?
    - Where is the risk in the features to be tested?
    - Which unusual events could occur?
    - Which events would be most commonly performed by the average user?
  - Each person writing their “top 5” tests on index cards, from which the leader will use as input to the list of conditions to test.
  - Going around the room in a round-robin format, making suggestions about conditions to test.
    - This allows people to build on other people’s ideas.

# HOW WOULD THIS LOOK?

**And the process continues until the ideas stop flowing.**

# STEP 7 – FILTER, REFINE AND COMBINE TESTS

- **This is where the magic happens.**
- **After the team has contributed their ideas and it is apparent that the flow of input is slowing down, the leader asks the team to take a step back and look at the ideas put forth.**
- **From the test ideas suggested, the team organizes them into categories such as:**
  - Functions
  - Risks
  - User personas




RICE CONSULTING

# STEP 7 – FILTER, REFINE AND COMBINE TESTS (2)

- **During the categorization process, some tests may be eliminated, others may be combined and enhanced.**
- **One of my favorite test design methods is what I call "toggling" conditions.**
  - For example, if someone suggests testing a *new* customer placing an order, create a test condition for an *existing* customer placing an order.

# STEP 8 – CONCLUDE THE SESSION

- At the end of the session, the facilitator should recap the tests suggested.
- For the sake of time, a summary may be best instead of reading each and every condition, test or idea.
- If a whiteboard or flipchart is used to capture ideas, take pictures of it to e-mail to the team and others.
- If a tool is used, then the chart can be saved and distributed in either an editable format or in image format.

# STEP 9 – REFINE THE TESTS

- The purpose of the TestStorming session is to gather ideas for testing and to get those ideas to the point of use as strong, effective tests.
- The next steps occur after the session when test analysts take the great ideas and use them for robust test design.
- In some cases, the output from a TestStorming session might be a good set of test conditions.
- In other cases, the output may be good ideas of thing to test – much like you would have in a checklist or defect taxonomy.

# STEP 9 – REFINE THE TESTS (2)

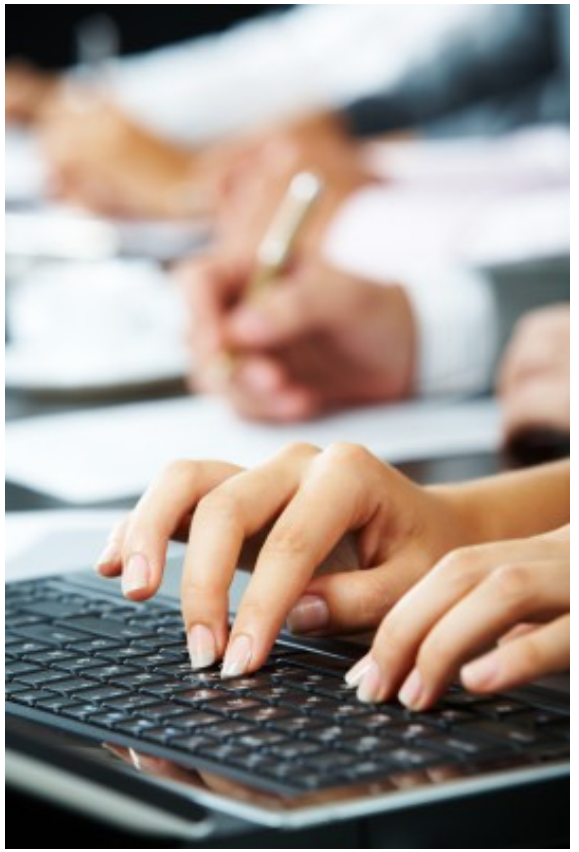
- **Regardless of the detail obtained from the session, the ideas and/or conditions will then need to be formed into executable test cases with expected results.**
  - Or, into the format used by your organization
  - In some situations, you may not know enough about the application to define expected results.
    - In that case, you will need to treat the TestStorming output as a place to start exploring the application.

# STEP 10 – PERFORM THE TESTS

- **Since the main objective is to collaborate on tests, the way we know whether they are effective tests is to actually perform them.**
- **The main determinant is not whether the tests pass or fail, but rather, do they exercise the application in a way that provides coverage, measures risk and goes beyond simple functional tests?**

# STEP 11 – UPDATE THE TESTS AS NEEDED

- After performing the tests, you will have a feel for whether or not to include the tests in future cycles.
- Perhaps you may decide to build upon certain tests.
- You may also see where some of the tests need to be modified to be more effective in finding failures.



# A REALLY COOL VARIATION

- Real-time TestStorming using the application.
- Have one person “driving” the application and project it onto a screen at the front of the room.
- Starting with a designated person, each person suggests a test, building on the previous person’s test.
- The tests are performed in an exploratory way and any defects, issues or questions are noted.

# SUMMARY

- There is power in collaboration and test design is an active that benefits greatly from group interaction.
- TestStorming is where test design meets brainstorming to define creative and effective tests.
- To be successful, you need a good facilitator, good participants and a way to capture the input from multiple people.
- Thankfully, there are some great free tools available.
- The rest is up to you to put your team's creativity to work!

# BIO - RANDALL W. RICE

- **Over 34 years experience in building and testing information systems in a variety of industries and technical environments**
- **ISTQB Certified Tester – Foundation level (CTFL), Foundation Level Agile Tester (CTFL-AT) and Advanced Level (CTAL) Full**
- **Director, American Software Testing Qualification Board (ASTQB) since 2006.**
- **Chairperson, 1995 - 2000 QAI's annual software testing conference**
- **Co-author with William E. Perry, *Surviving the Top Ten Challenges of Software Testing* and *Testing Dirty Systems***
- **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  73189**

**Ph: 405-691-8075**

**Fax: 405-691-1441**

**Web site: www.riceconsulting.com**

**e-mail: rrice@riceconsulting.com**