HOW TO TEST WITHOUT DEFINED REQUIREMENTS

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HOUSEKEEPING

- **I plan to keep this session as close to 30 minutes as possible.**
- **The recording will be posted shortly and will also be on my YouTube channel**
  - http://www.youtube.com/user/rrice2000
- **Slides will be at http://randallrice.blogspot.com and www.slideshare.com**
- **If you want to know when the next webinar will be available for registration, just join my newsletter list or like my Facebook page**
  - www.riceconsulting.com

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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), Advanced Level (CTAL) Full

- Director, 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* and *Testing Dirty Systems*

- Principal Consultant and Trainer, Rice Consulting Services, Inc.

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I AM MAKING A BOLD PROMISE

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THE PROBLEM

- **Many people talk about requirements-based testing, but…**
  - They admit to not having very good requirements
    - (In fact, it's the #3 testing challenge in my top ten challenges list)
  - Requirements have flaws
    - I've never seen a perfect one
    - That's why we have validation
  - Major methodologies try to get by without them
  - Developers don't have time to gather and write them
  - Many companies don't have Business Analysts
  - Users don't like to commit to them

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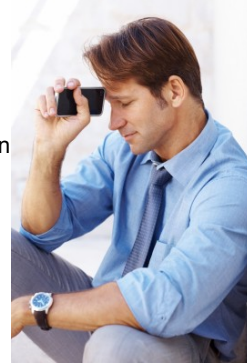
INTERESTING QUESTION

- **If we don't have requirements in writing, do we still have requirements?**
  - From the customer standpoint, yes
  - From the vendor standpoint, if it's not a requirement in writing, I may feel not obligated to deliver it.
- **I'm still a fan of requirements.**

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Doesn't agile solve these issues?

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NOT REALLY

- **If you don't know what you are building or testing, no method will be successful.**

- **User stories and use cases are fine, but they are no substitute for good requirements.**
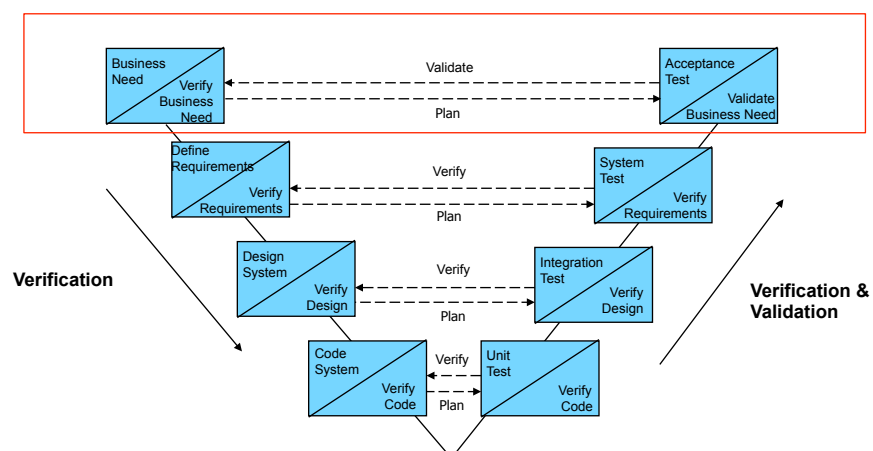

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THEN THERE ARE OTHER REASONS

- **Testing COTS (Commercial Off-the-shelf) software.**
- **User acceptance testing that is true validation, not based on requirements.**

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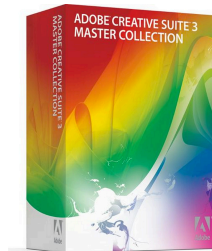
THE V-DIAGRAM AS I TEACH IT

Verification

Verification & Validation

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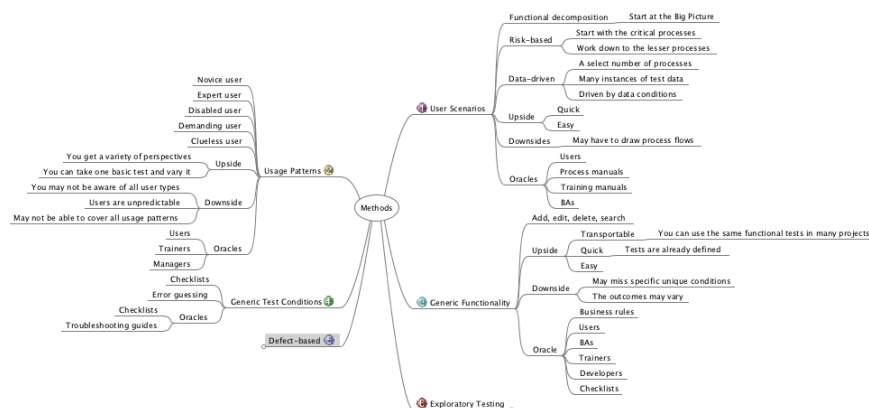# 6 WAYS TO TEST WITHOUT DEFINED SPECIFICATIONS

- **User scenarios**
- **Usage patterns**
- **Generic test conditions**
  - AKA, error guessing
- **Generic functionality**
- **Defect-based**
- **Exploratory testing**

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Methods

User Scenarios
- Functional decomposition — Start at the Big Picture
- Risk-based
  - Start with the critical processes
  - Work down to the lesser processes
  - A select number of processes
- Data-driven
  - Many instances of test data
  - Driven by data conditions
- Upside
  - Quick
  - Easy
- Downsides — May have to draw process flows
- Oracles
  - Users
  - Process manuals
  - Training manuals
  - BAs

Usage Patterns
- Novice user
- Expert user
- Disabled user
- Demanding user
- Clueless user
- Upside
  - You get a variety of perspectives
  - You can take one basic test and vary it
- Downside
  - You may not be aware of all user types
  - Users are unpredictable
  - May not be able to cover all usage patterns

Generic Test Conditions
- Oracles
  - Users
  - Trainers
  - Managers
  - Checklists
  - Error guessing
- Oracles
  - Checklists
  - Troubleshooting guides

Generic Functionality
- Add, edit, delete, search
- Transportable — You can use the same functional tests in many projects
- Upside
  - Quick — Tests are already defined
  - Easy
- Downside
  - May miss specific unique conditions
  - The outcomes may vary
- Business rules
- Oracle
  - Users
  - BAs
  - Trainers
  - Developers
  - Checklists

Defect-based

Exploratory Testing

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WHAT IS A TEST ORACLE?

- **A way to know whether a test has passed or failed.**
- **One way an oracle is applied is to compare the output(s) of the system under test, for a given test case input, to the outputs that the oracle determines that product should have.**
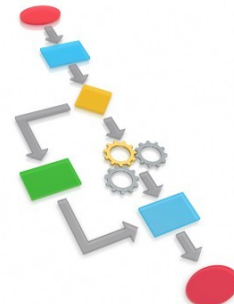

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#1 – USER SCENARIOS

- **If you understand user processes, business process flow, etc., you can cover many tests quickly.**
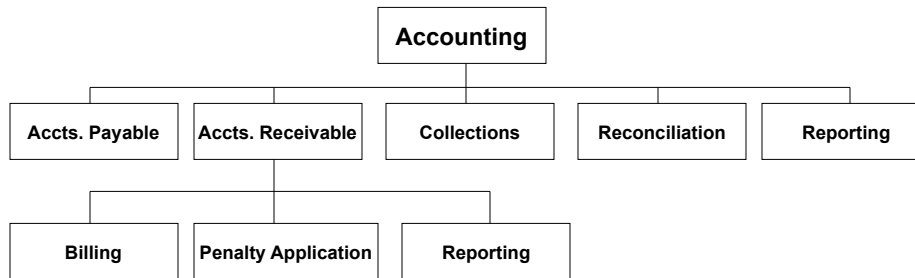- **Start at the top and decompose down**

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TASK 1 – SEGMENTING INTO SUB-PROCESSES

Accounting

- Accts. Payable
- Accts. Receivable
- Collections
- Reconciliation
- Reporting

Accts. Receivable:
- Billing
- Penalty Application
- Reporting

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ACCOUNTS RECEIVABLE – PENALTY APPLICATION

Run Aging Report → Run Past Due Invoices → Any Accts Past Due? → Yes → Review Invoices

Invoices OK? → Yes → Any Past Due > 90? → No → Any Special Holds? → No → Place in Envelopes → Send to Mailroom → End

Invoices OK? → No → Fix Problems

Any Past Due > 90? → Yes → Send to Collections

Any Special Holds? → Yes → Hold for 5 Business Days

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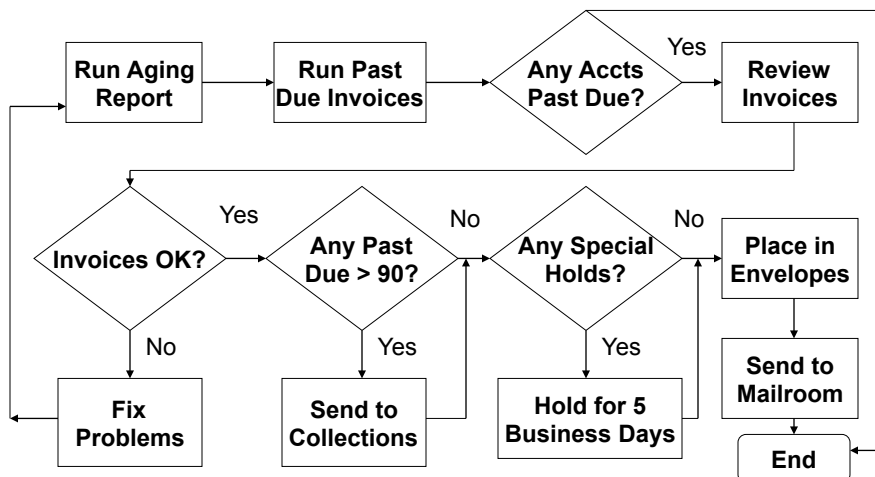
TASK 2 – IDENTIFY PATHS
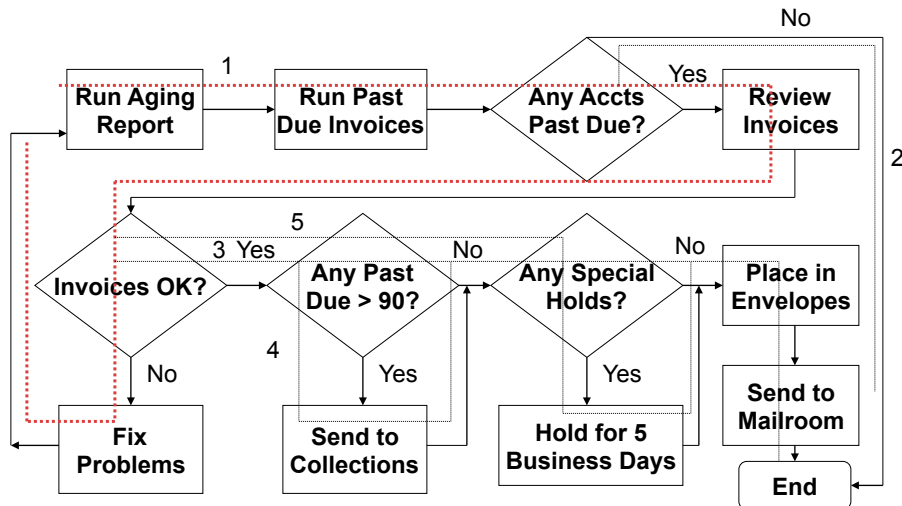
DATA-DRIVEN TEST CONDITIONS - EXAMPLE
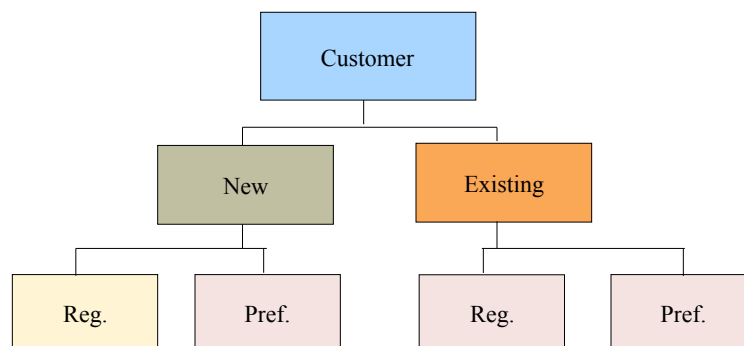
USER PROCESS ORACLES

- **Users**
- **Trainers**
- **BAs**
- **Managers**
- **Process guides**
- **Training manuals**

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#2 – USAGE PROFILES

- **Based on user personas and types**
  - Novice user
  - Expert user
  - Clueless user
  - Disabled user
  - Demanding user
- **A good way to get a variety of perspectives**
  - You can take a basic test and modify it for a user persona
  - But you may not have time to test all personas
  - You may not be aware of all user types

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USER PROFILE ORACLES

- **Users**
- **Trainers**
- **Managers**

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#3 - GENERIC FUNCTIONALITY

- **Common Functions**
  - Add
  - Edit
  - Delete
  - Search
- **Transportable tests**
- **You may miss some very specific functions**

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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.**

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PHYSICAL ITEMS

- **"Items" to be tested that can be "touched".**
  - Examples: Buttons, web pages, etc.
- **These enable functionality, but are not the functions.**
- **These have attributes at various levels of criticality:**
  - Example: Images
    - Critical: Image is present
    - High: Image is correct
    - Med: Image loads quickly (size)
    - Low: Image is clear

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Testing Without Defined Requirements

	METS Minimal Essential Testing Strategy	Physical Test Grid		
Category	**Critical**	**High**	**Medium**	**Low**
Pages	Page completes loading	Loading completes in a reasonable amount of time	Page loading consistent between browser versions	Page loading time reasonable under load
	Graphics, text and other elements seem to be in correct locations	Page has logical flow	Color contrast issues	
Graphics	Graphics loading completely	Graphics completed loading within same time frame	Consistently loading every time	
	Scaling, cropping or image quality problems	Highly artifact (distorted) image quality	Unpredictable color rendering at various bit depths	Non-browser safe color pallet used
	Rollover graphics displaying correctly	Graphic rollover state providing correct transition illusion	Preloaders working correctly for quick screen redraw	
	Graphical text within graphic is legible	Correctly spelled text within graphic		
Forms	Dropdown menus are functional	Dropdown menu contains all desired options	Submitted form contains dropdown menu selection(s)	
		Dropdown items are spelled correctly		
	Radio Buttons are functional	Radio button effect, turning off related radio buttons is working	Submitted form contains radio button selection	
		Radio buttons are 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	

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PHYSICAL TEST METRICS

- **Shows for each item:**
  - Estimated time required for testing
  - Estimated impact severity

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Testing Without Defined Requirements

	A	B	C	D	E
1	**METS** Minimal Essential Testing Strategy	**Physical Test Metrics**			
3	Test	Category	Importance	Time Required	Potential Severity
4	Page completes loading	Pages	Critical	1	1
5	Graphics, text and other elements are in correct locations	Pages	Critical	2	4
6	Page loading completes in a reasonable time.	Pages	High	1	3
7	Page has intuitive and logical flow.	Pages	High	2	4
8	Page loading is consistent between browser versions	Pages	Medium	3	2
9	Page has color contrast problems.	Pages	Medium	1	4
10	Page loading time reasonable under load.	Pages	Low	60	2
11	Graphics loading completely	Graphics	Critical	1	3
12	Scaling, cropping or image quality problems	Graphics	Critical	1	3
13	Rollover graphics displaying correctly.	Graphics	Critical	2	3

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FUNCTIONS

- **"Actions" to be tested.**
  - Examples: Create, cancel, query, etc.
- **These are things the application can "do."**
- **Example: Shopping cart functions**
  - Critical: Can an item be placed into the cart?
  - High: Can multiple items be put into shopping cart?
  - Medium: Do items consistently carry through purchase session?
  - Low: Are related products shown?

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Testing Without Defined Requirements

	A	B	C	D	E
1	**METS** Minimal Essential Testing Strategy	**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 page?	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?

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METRICS

- **Based on estimated test time and assessed potential impact severity.**
- **Items are assessed by:**
  - Direct testing
    - Test pertaining to the obvious change or fix.
  - Related testing
    - Test pertaining to areas that may be impacted by the changes made.
  - Regression testing
    - Test you would run on the application regardless of what has changed.

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Testing Without Defined Requirements

METS FUNCTIONAL TEST METRICS

	A	B	C	D	E	F G	H	I	J K	L	M
1	**METS** Minimal Essential Testing Strategy			**Functional Test Metrics**							
3	**Test**	**Category**	**Importance**	**Time Required**	**Potential Severity**	**Direct Testing**	**Related Testing**	**Regression Testing**	**D**	**R**	**B**
4	Creating an account possible	Accounts	Critical	5	1	x			5		
5	Logging into an account possible.	Accounts	Critical	1	1		x			1	
6	Can user change account details such as shipping address.	Accounts	High	5	3		x			5	
7	Can user request forgotten login information?	Accounts	High	5	3		x			5	
8	Can user delete an account?	Accounts	Medium	3	3			x			3
9	Does account time out require re-login after specified inaction?	Accounts	Medium	10	3		x			10	
10	Is the user notified when why they must re-login?	Accounts	Low	10	4		x			10	
11	Can an item be placed into the cart?	Shopping Cart	Critical	1	1			x			1
12	Can an item be removed from the cart?	Shopping Cart	Critical	2	2	x			2		
13	Can multiple items be put into shopping cart?	Shopping Cart	High	2	2						
14	Does cart reflect removed item correctly	Shopping Cart	High	3	2						
15	Can more than one item be removed at a time?	Shopping Cart	High	3	4						
16	Do items consistently carry through purchase session?	Shopping Cart	Medium	10	1						

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GENERIC FUNCTION ORACLES

- **Users**
- **Trainers**
- **Developers**
- **Business rules**
- **Checklists**

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#4 - GENERIC TEST CONDITIONS

- **Checklists**
- **Error guessing**
- **Transportable tests**
- **You may miss some very specific functions**

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ERROR CONDITIONS TESTING CHECKLIST

#	Item	Yes	No	N/A	Comments
1.	Functional error conditions				

- Rejection of invalid data formats
- Rejection of invalid data ranges
- Rejection of invalid data types
  - Alphabetic data in numeric fields
  - Blanks in a numeric field
  - All blank condition in a numeric field
  - Numeric values in an alphabetic field
  - Blanks in an alphabetic field
- Rejection of invalid signed data
  - Negative values in a positive field
  - Positive values in a negative field
  - Negative balances in a financial account
- Rejection of invalid data codes
- Rejection of invalid data relationships
- Rejection of invalid dates
- Rejection of invalid sequences
- Rejection of invalid transactions due to:
  - Incorrect/Invalid value
  - Incorrect/Invalid customer
  - Incorrect/Invalid product
  - Incorrect/Invalid transaction type
  - Incorrect/Invalid price

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Testing Without Defined Requirements

Unit Test Checklist

Project Name/Version: _____

Module Name: _____

File Name(s): _____

Check List	Yes	No	N/A
SCREEN INTERFACE:			
Are all field labels/numbers present and spelled/identified correctly?			
Do List Boxes/Drop-Down Lists contain all required inputs?			
Is field long enough to display entire data element?			
Have all required options been incorporated in the radio buttons?			
Is cursor navigation between fields correct?			
Does field prevent entries beyond maximum length?			
Does field initialize with correct information when entering the screen?			
Can screen be accessed correctly (by menu, icon, list, button etc.)?			
Can screen be used in all modes (Add/Delete/Change/Display/View)?			
Do data filters work correctly?			
Does cancel/escape take you back to the previous screen or menu?			
Does each defined function key work as expected?			
Does the system ignore function keys not defined?			
Are function keys consistent?			

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GENERIC TEST ORACLES

- **Users**
- **Trainers**
- **Developers**
- **Business rules**
- **Checklists**
- **Troubleshooting guides**

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#5 – DEFECT-BASED

- **Uses data from past defects to look for defects in new applications, or updates to existing applications.**
- **This is a great way to gain value from defects.**
- **You need to have good processes in place to capture defect data.**
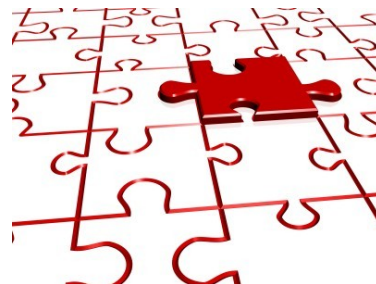- **Sampling is helpful.**

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DEFECT-BASED ORACLES

- **Developers**
- **Users**
- **Past defect reports and resolution**

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#6 – EXPLORATORY TESTING

- **Testing and learning at the same time.**
- **No pre-defined cases or scripts.**
- **May be free-form or session-based**
- **Tends to be quick**
- **A lot depends on the tester's ability to think critically and notice odd behavior.**

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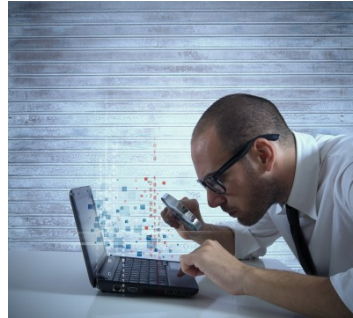
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EXPLORATORY TESTING ORACLES

- **BAs**
- **Users**
- **Other testers**
- **Developers**

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OTHER RESOURCES

- **The article "How to Test Without Defined Requirements" at http://riceconsulting.com/home/index.php/General-Testing/testing-without-defined-requirements.html**
- **Free graphing tools**
  - Yed - http://www.yworks.com
  - Gliffy - http://www.gliffy.com
  - FreeMind - http://freemind.sourceforge.net/wiki/index.php/Main_Page
  - Xmind - http://www.xmind.net/
  - CTE-XL - http://www.berner-mattner.com
- **Checklists and Functional definition**
  - Checklists - http://www.riceconsulting.com/public_pdf/ERROR_CONDITIONS_TESTING_CHECKLIST.docx
  - METS spreadsheets - http://www.riceconsulting.com/public_pdf/METS_Worksheets.xls
    - Or http://www.gregpaskal.com
  - MindMap - http://www.riceconsulting.com/public_pdf/Methods.pdf
    - http://www.riceconsulting.com/public_pdf/Methods.mm

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QUESTIONS? CONTACT ME!

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