No Test Cases Required:
Powerful, Credible, Accountable Testing that Finds Important Bugs Quickly

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"We're making a product!"
"We need you to start testing it right now!"

What do you do?

Testing in two easy steps!

1. Prepare test cases.
2. Execute test cases.

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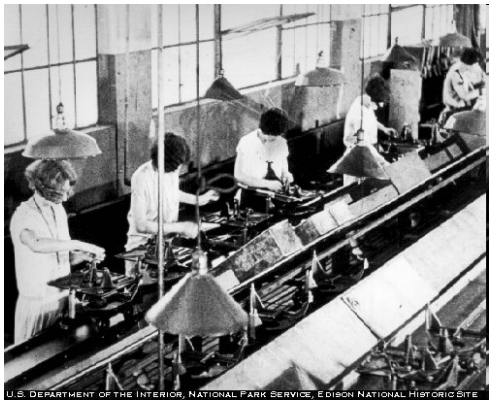
Maybe it's more like this…

1. Read the specification.
2. Identify specific items to be checked.
3. Prepare test cases.
4. Execute test cases.



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Or maybe it's more like this…

1. Read the spec.

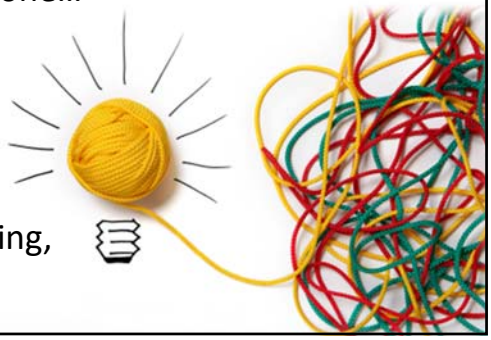
1.1. OMG there is no spec!

1.2 Oh wait, there is a spec! I'll just read it.

1.2.1 OMG the spec is old and confusing and maybe WRONG…

1.3 Maybe I should ask someone…

1.3.1. OMG nobody seems to know how this thing is supposed to work!



1.3.2. Wait… is there something, *anything* I can test?

Yes! You CAN test…

- …the product
- …a mockup of the product
- …some document describing the product
- …a diagram that models the product
- …a product *like* this product
- …somebody's ideas about the product

Testing is the process of evaluating a product
by learning about it
through exploration and experimentation.
To do that, you need models of the product.

Here's the good news…

Testing isn't really about test cases.

What is a test case?

There are many definitions:

- "a set of conditions under which a tester will determine whether an application, software system, or one of its features is working as it was originally established for it to do." (*Wikipedia*)

BUT… we will learn A LOT after we "originally establish" what a product should do.

Plus… we can't prove that a product works.

We can only SHOW that it CAN work.

What is a test case?

- "In order to fully test that all the requirements of an application are met, there must be at least two test cases for each requirement: one positive test and one negative test." (*Wikipedia*)

Notice the slip from "test case" into "test". PLUS... in each requirement, apparently only one thing can go wrong!

What is a test case?

There are many definitions:

- "A set of input values, execution preconditions, expected results and execution postconditions, developed for a particular objective or test condition, such as to exercise a particular program path or to verify compliance with a specific requirement." (*ISTQB Glossary*)

If only they had said "or"!
If only they had included "activity!" Because...

What is a test?

"A set of one or more test cases."

(*ISTQB Glossary*)

DOH!

What is a test case?

In Rapid Software Testing, we say a test case is

"A set of some instructions or some data for testing some part of some product in some way"

A TEST CASE says **something explicit** about **some conditions** of the test.

But a TEST is not just the explicit stuff. A test is full of **tacit knowledge** and **tacit activity** and **learning**.

We say all that to help clarify what is special and important about testing.

A test case is not a test

BesterTester 2.xls [Compatibility Mode] - Microsoft Excel

	A	B	C	E	H	I
6	Sr. No.	Use Case ID	Test Case ID	Test Objectives	Test Steps	Expected Behavior
9	1		ST1.1	To test for appearance of "Cart Credit Report" Link in MyAccount Logged In page for Users for whom privilege flag is enabled in BV_USER_PROFILE table	User logs in to MyCarts.com site and navigates to MyAccount Home page	"Cart Credit Report" Link should appear in MyAcc Logged In page only for Users for whom privilege fl enabled in BV_USER_PROFILE table
10	2		ST1.2	To test redirection from MyAccount page to Cart Credit Reports	Privileged user clicks on 'Cart Credit Reports' link	User should be redirected to 'Cart Credit Reports' p
11						
12	**Accounts Tab in MyCarts Combined Activity Report**					
13	3		ST2.1	To test sorting of transactions by Account	User clicks on Account Header	Transactions should be sorted by Account in desce order
14	4		ST2.2	To test sorting of transactions by Account	User clicks on Account Header	Transactions should be sorted by Account in ascen order
15	11		ST2.3	To test appearance of total number of all carts and total sum of Account balances	User clicks on Accounts Tab	Total number of all carts and total sum of Account b should appear
16						
17	**Transaction History Tab in MyCarts Combined Activity Report**					
18	12		ST3.0	To test whether transactions are displayed	User clicks on Transaction History Link	Transactions should be displayed when successful response obtained. In case of error in response for record in the resultset, none of the captured data is displayed. Instead appropriate error message is di
19	13		ST3.1	To test whether friendly message is displayed while data is being retrieved for any report	User click on 'Cart Credit Report' link in MyAccount page and is redirected to MyCarts Combined Report page or User selects any input parameter and clicks Filter	For first load of MyCarts Combined Activity Report for every subsequent report selected, while data is retrieved, a friendly message should be displayed
	14		ST3.2	To test whether page has left navigation and whether standard MyCarts.com top navigation	User click on 'Cart Credit Report' link in MyAccount page and is redirected to MyCarts	Page with standard MYCARTS.COM top navigatio with no left navigation should be displayed for each

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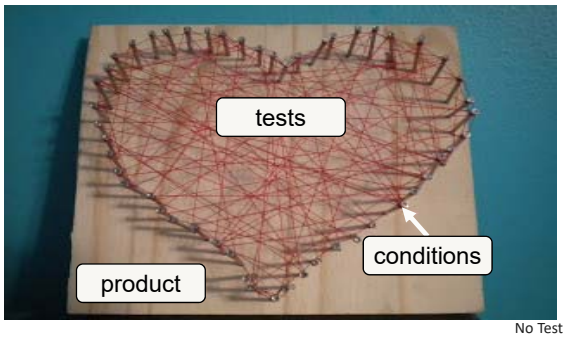
	F	G	H
	Expected Behavior	**Actual Behavior**	**Post-Cor**
ite and page	"Cart Credit Report" Link should appear in MyAccount Logged In page only for Users for whom privilege flag is enabled in BV_USER_PROFILE table		
Credit	User should be redirected to 'Cart Credit Reports' page		
r	Transactions should be sorted by Account in descending order	same as expected behavior	
r	Transactions should be sorted by Account in ascending order	same as expected behavior	
	Total number of all carts and total sum of Account balances should appear	same as Expected Behavior	
tory Link	Transactions should be displayed when successful response obtained. In case of error in response for any record in the resultset, none of the captured data is displayed. Instead appropriate error message is	same as expected behavior	

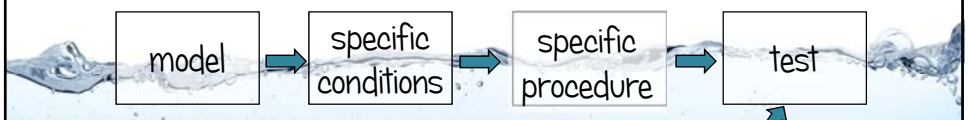
Test Conditions

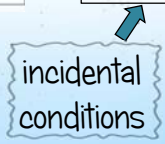
A test condition is something that could be examined in a test, or that could influence the outcome of a test.



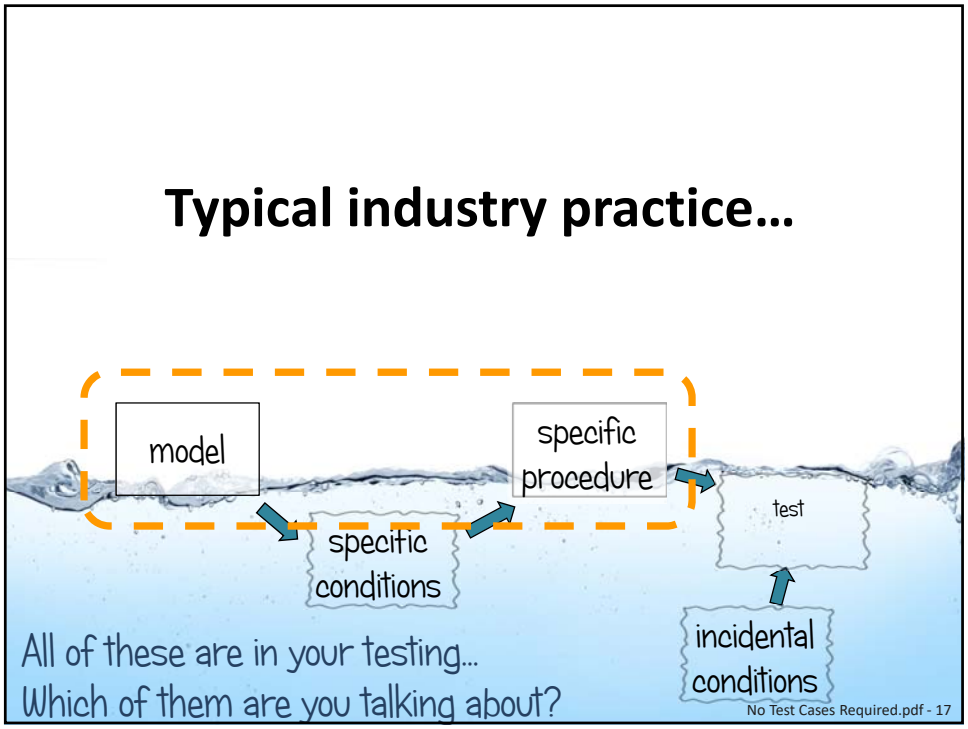
Test Conditions

A test condition is something that could be examined in a test, or that could influence the outcome of a test.





All of these are in your testing...
Which of them are you talking about?


Typical industry practice…
model
specific procedure
test
specific conditions
incidental conditions
All of these are in your testing…
Which of them are you talking about?
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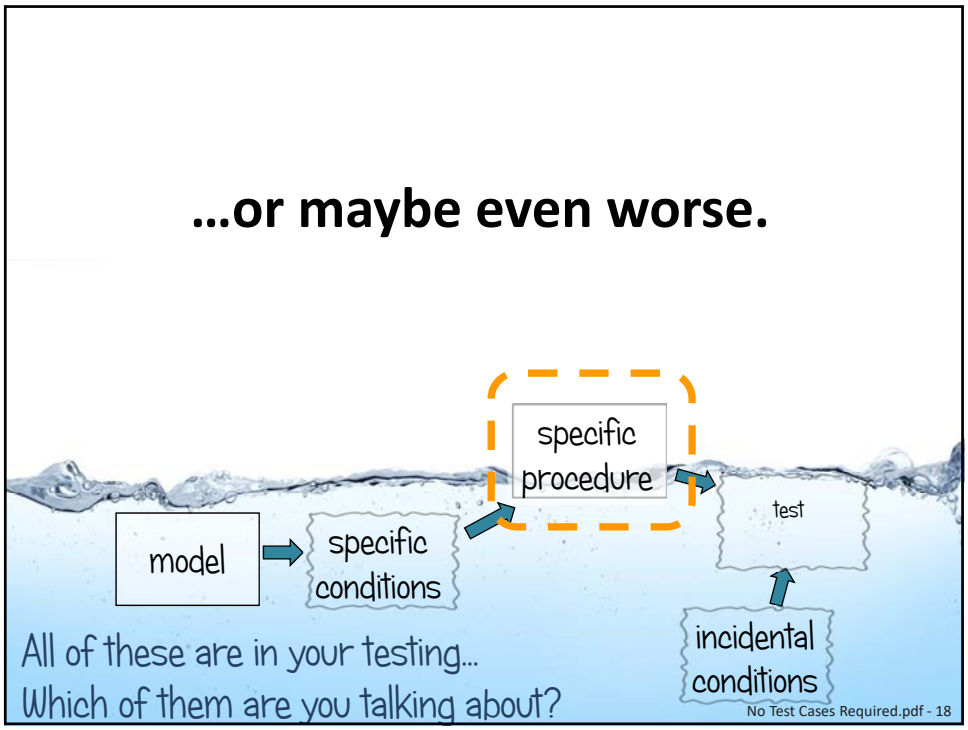
…or maybe even worse.
specific procedure
test
model
specific conditions
incidental conditions
All of these are in your testing…
Which of them are you talking about?
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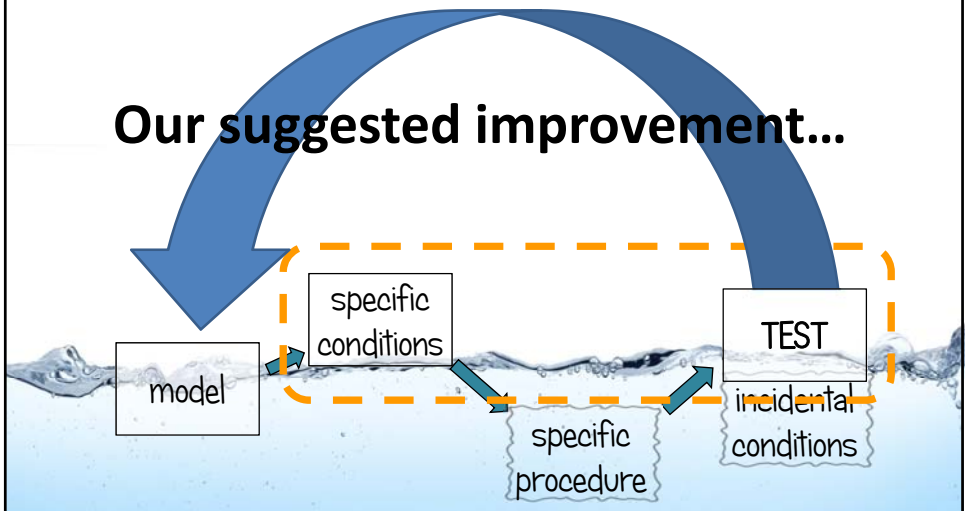
Our suggested improvement…

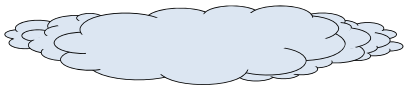


All of these are in your testing…
Which of them are you talking about?

A Key Problem for Test Managers

Engineering is an exploratory process that relies on skill, knowledge, and motivation. Lots of important and deep work happens without pre-existing instructions…

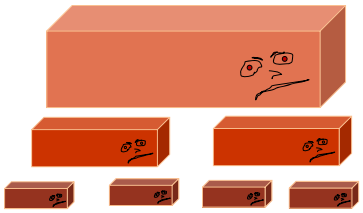
Like a…



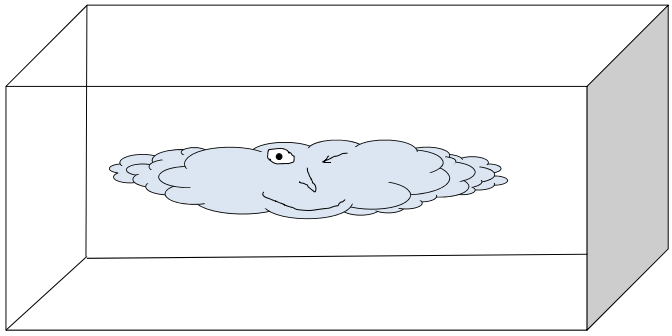
…mysterious cloud!

But managers often think in terms of discrete tasks and outcomes…

Like…



…bricks?



Solution: Put the cloud into a fake brick.

Three Forms of Test Management

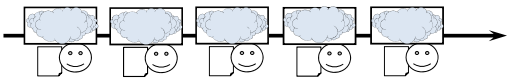
- **People-based:** Account for the people who test.
  "Jerry tests the back-end. Michael tests the front-end."
- **Artifact-based:** Account for tangible work products.
  "Here's the 217 test cases we created."
- **Activity-based:** Account for the things that testers do.
  "Here are the test activities that comprise our strategy. We did 17 test sessions this week, so far. Mostly, scenario testing."

Two kinds of activity-based management:
thread or **session**

Session-Based Test Management

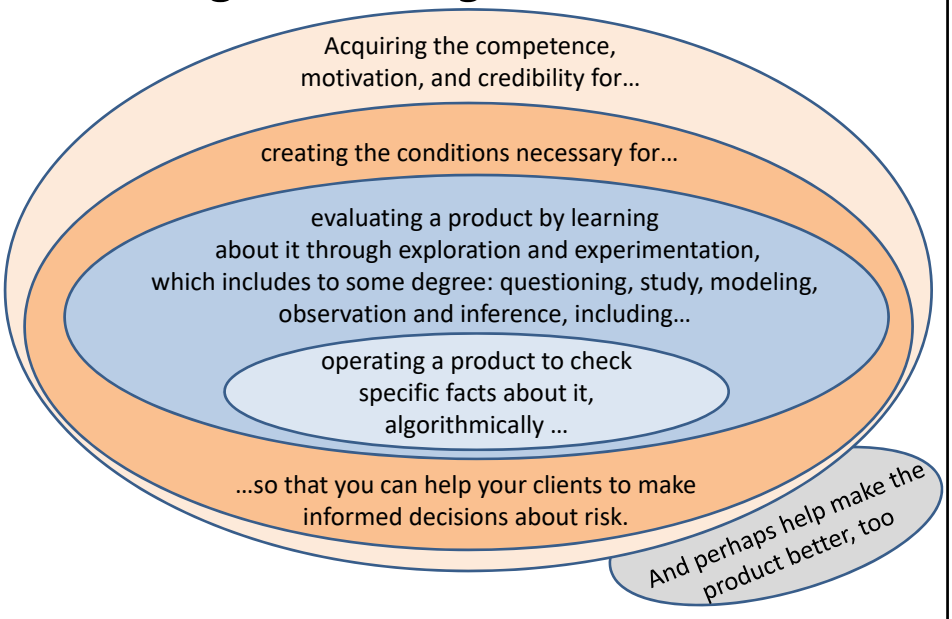
- Time Box
  - Typically 90-minutes (+/- 45)
- Charter
  - A clear, concise mission for a test session
- Reviewable Results
  - a session sheet—a test report that can be scanned, parsed and compiled by a tool
- Debriefing
  - a conversation between tester and manager or test lead

vs.



See http://www.satisfice.com/sbtm.

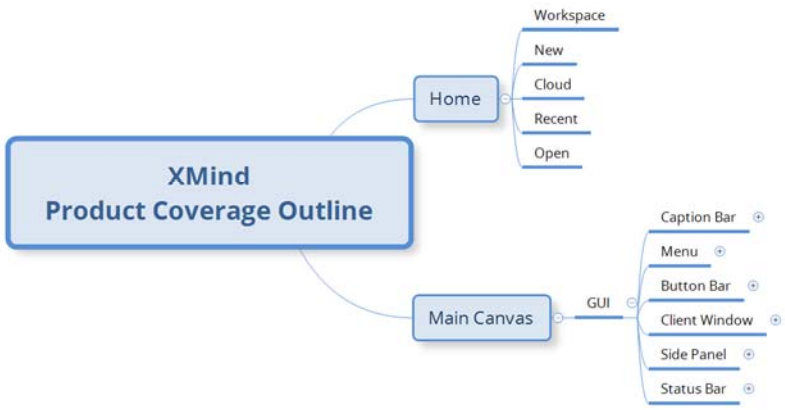
Testing Is *Learning About a Product*

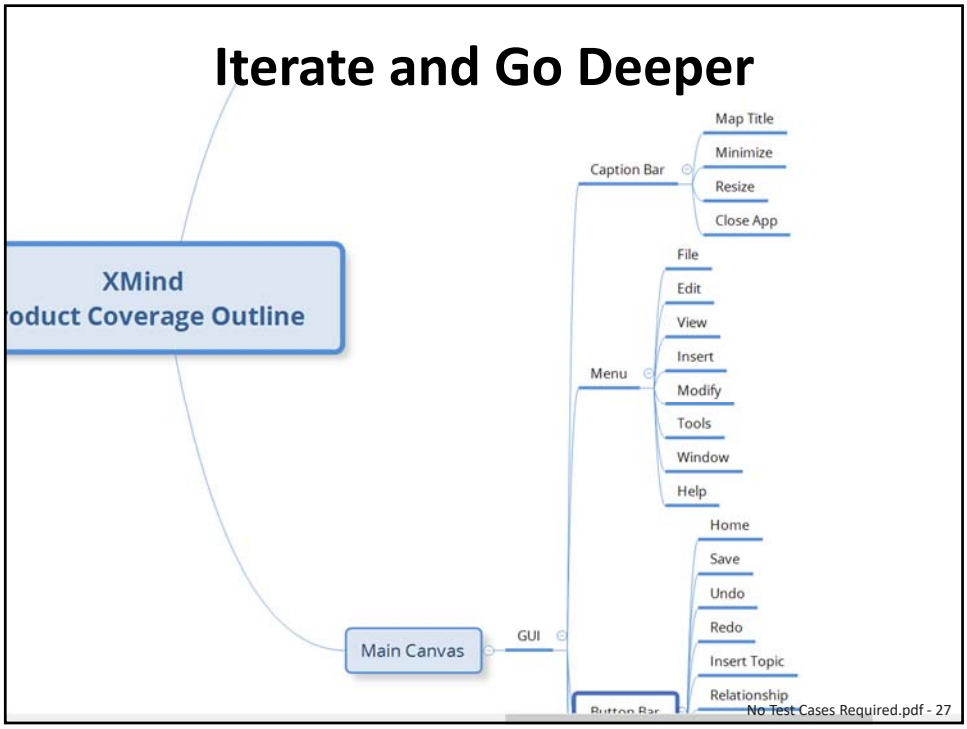


Start with *Learning-Focused* Charters

- …for Intake Sessions (Goal: negotiate mission)
  - "Interview the project manager. Ask about particular concerns or risks."
  - "Read through all new use cases, and discuss with developers."
- …for Survey Sessions (Goal: learn product)
  - "Familiarize yourself with the product by performing a UI tour. Create a Product Coverage Outline."
- …for Setup Sessions (Goal: create testing infrastructure)
  - "Develop a library of mindmaps for each major feature area. Use SFDIPOT as a checklist for coverage analysis."
  - "Identify and list all the error messages in the product."
  - "Develop a scenario playbook with SMEs and other testers."
  - "Review use cases, and for each, add several ways in which the user could accidentally or maliciously misuse the feature."

Learn the Product by Touring




Iterate and Go Deeper
XMind
oduct Coverage Outline
Main Canvas
GUI
Caption Bar
Map Title
Minimize
Resize
Close App
Menu
File
Edit
View
Insert
Modify
Tools
Window
Help
Home
Save
Undo
Redo
Insert Topic
Relationship
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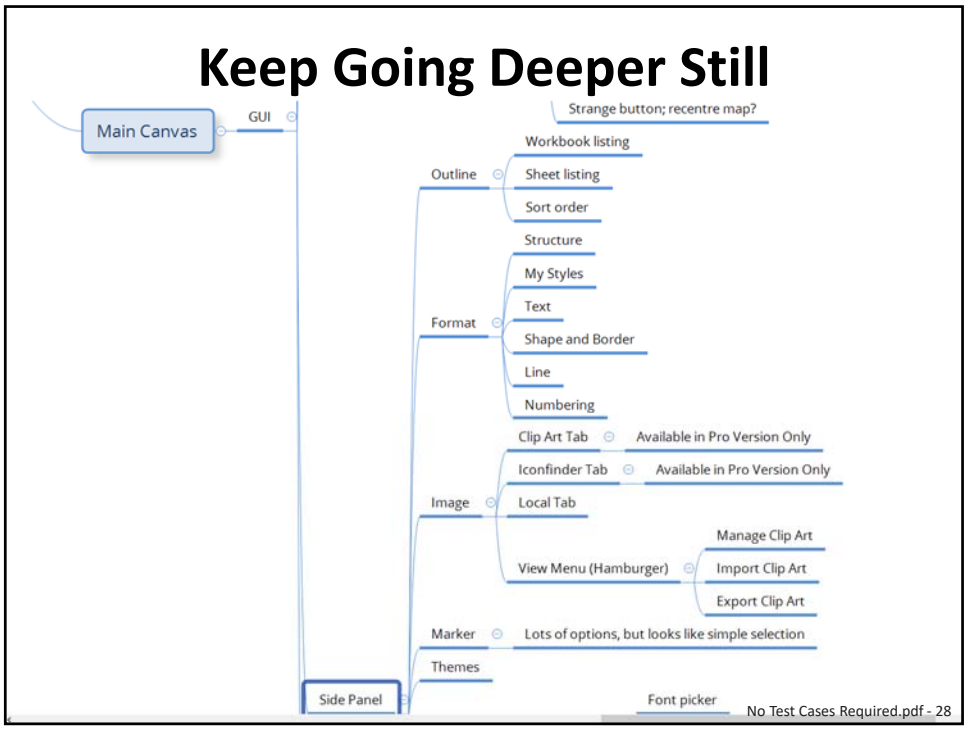
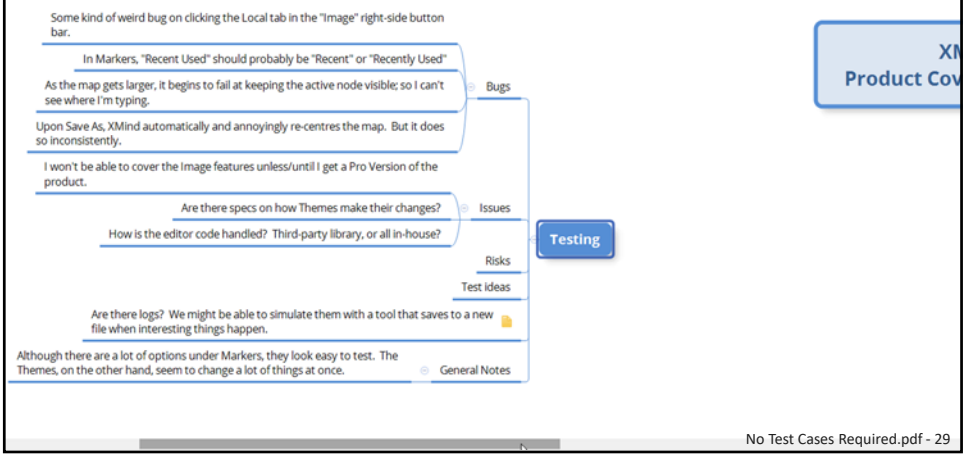

Keep Going Deeper Still
Main Canvas
GUI
Side Panel
Strange button; recentre map?
Outline
Workbook listing
Sheet listing
Sort order
Format
Structure
My Styles
Text
Shape and Border
Line
Numbering
Image
Clip Art Tab
Available in Pro Version Only
Iconfinder Tab
Available in Pro Version Only
Local Tab
View Menu (Hamburger)
Manage Clip Art
Import Clip Art
Export Clip Art
Marker
Lots of options, but looks like simple selection
Themes
Font picker
No Test Cases Required.pdf - 28

Keep Test Notes as You Go



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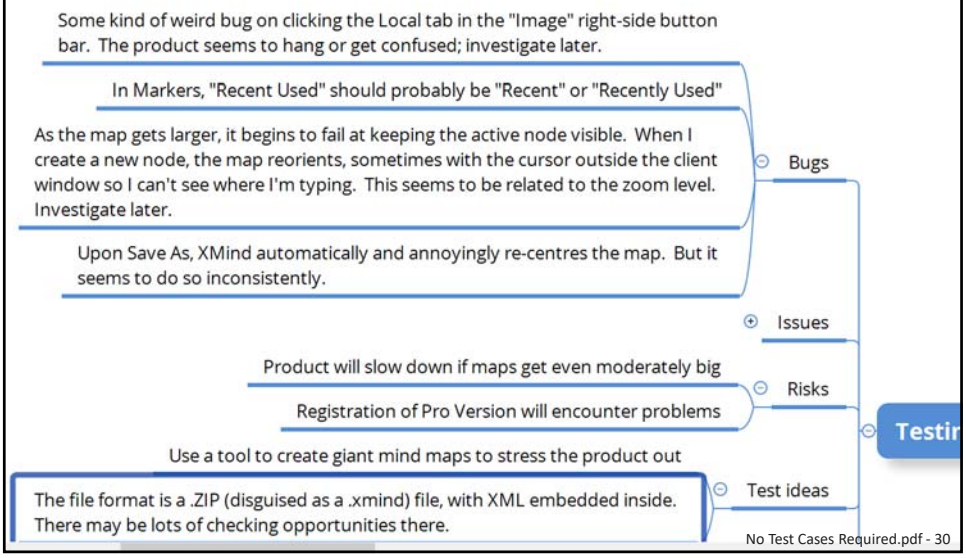
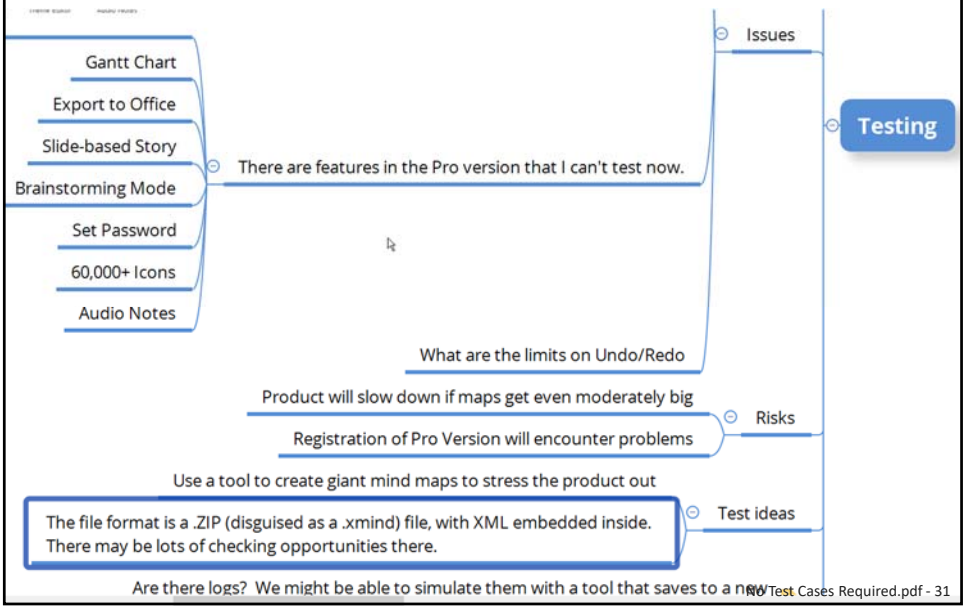
Discover Bugs While Learning!



No Test Cases Required.pdf - 30

Note Issues While Learning!



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Feed *Learning* into…

- Analysis Sessions (Goal: get deep coverage ideas)
  - "Identify primary components and interactions with external applications."
  - "Survey the OWASP Top 10 Security Risks page."
  - "Perform comparative analysis on four major competitors."
  - "Brainstorm a risk list for botched conversion of legacy data."
  - "Prepare a preliminary finite-state model using StateMaker."
  - "Review platform dependencies to identify performance bottlenecks and resource contention."
  - "Create tools to generate data of arbitrary size and complexity."
  - "Review customer support logs for common problems and patterns of misuse."

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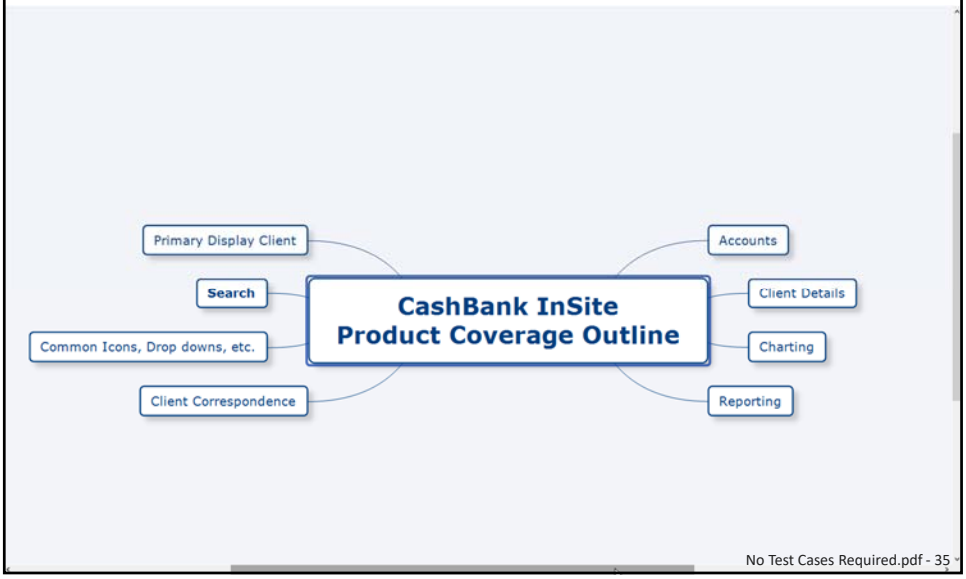
This isn't about testing XMind!

Want to start from a requirement, design, or specification document?

No problem!

Attend that Feature Meeting



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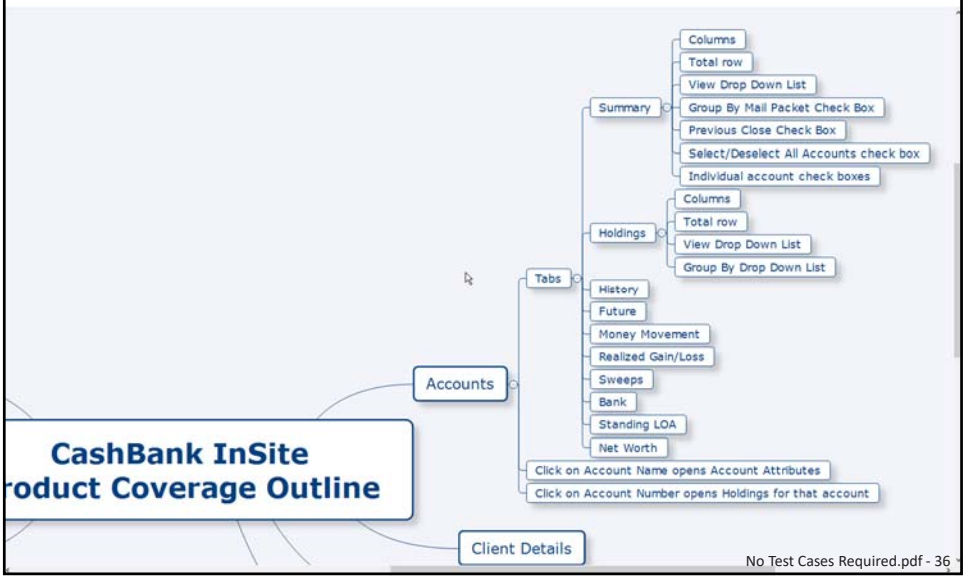
Study the Specs



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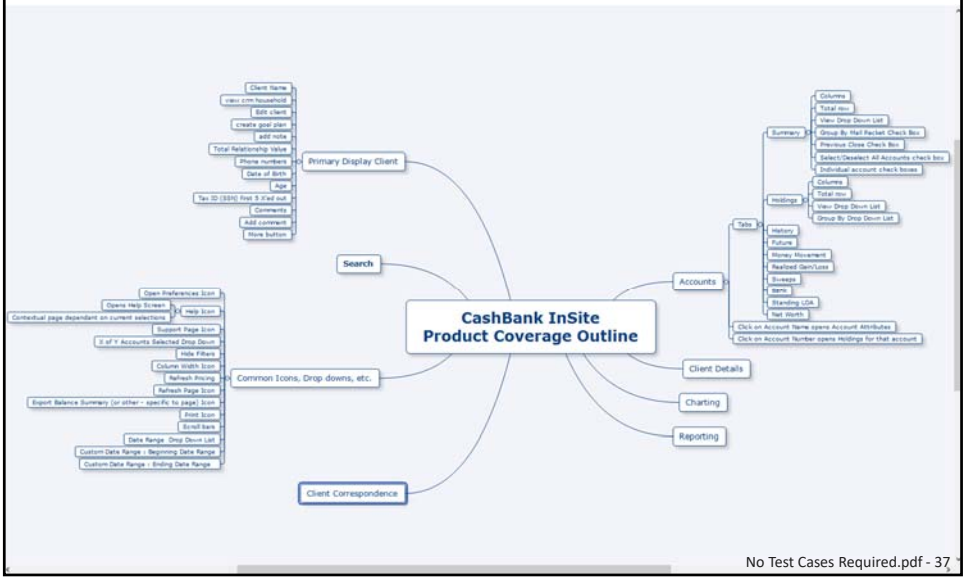
Model the Test Space



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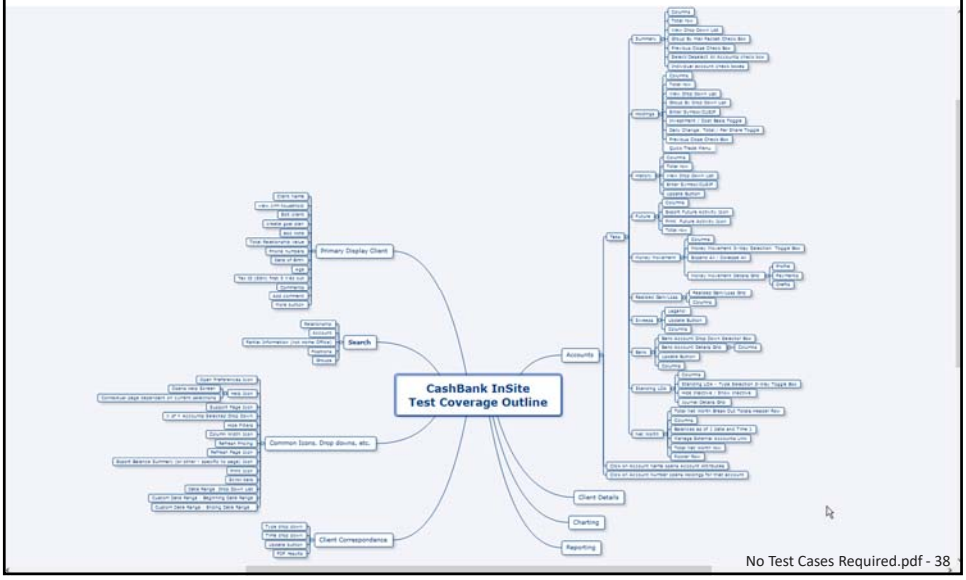
Now Bring in the Client!



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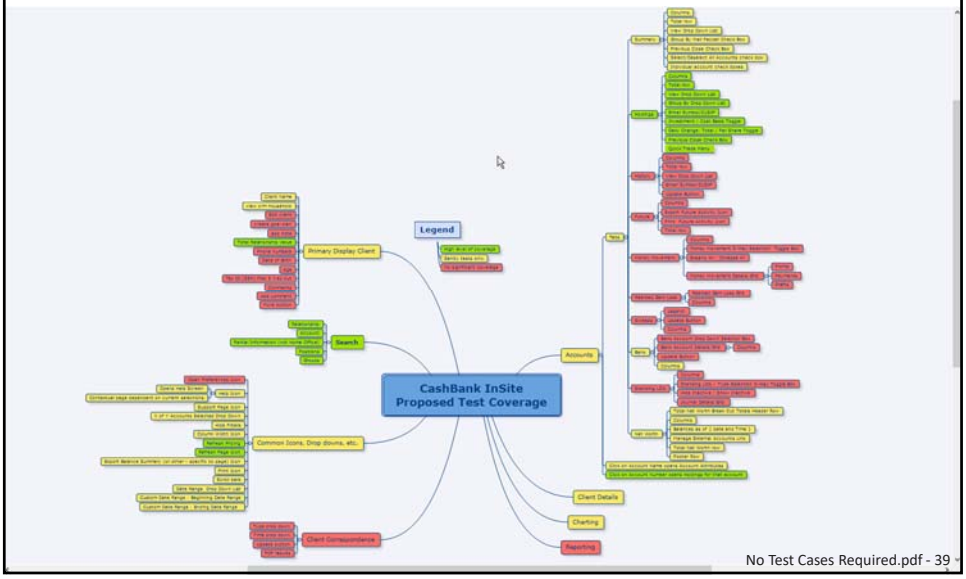
Negotiate Coverage



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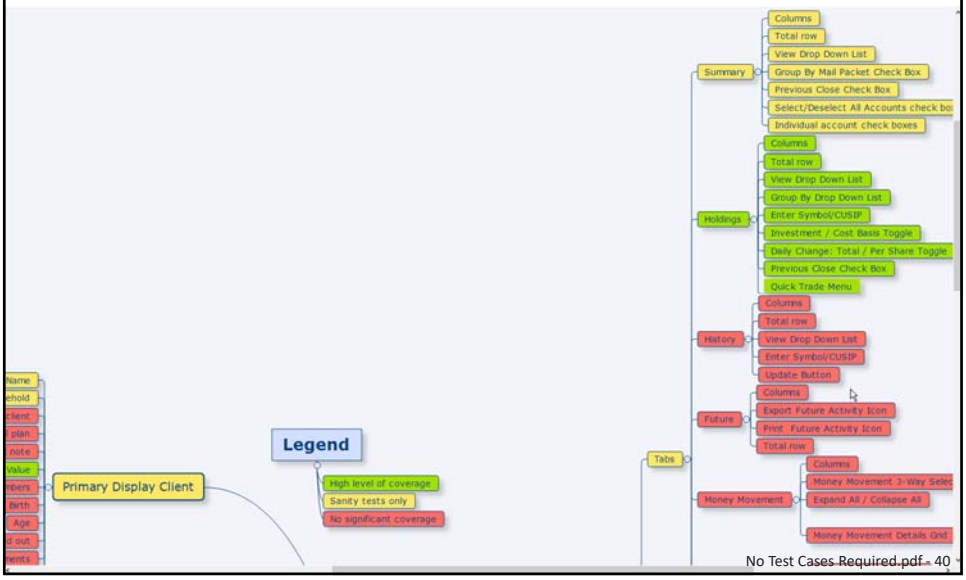
Focus on the Risky Stuff



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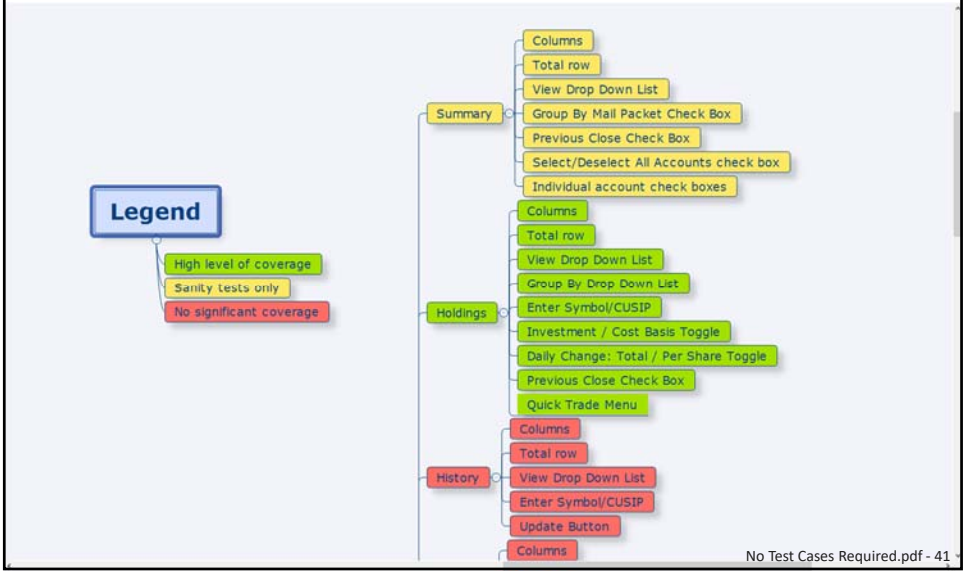
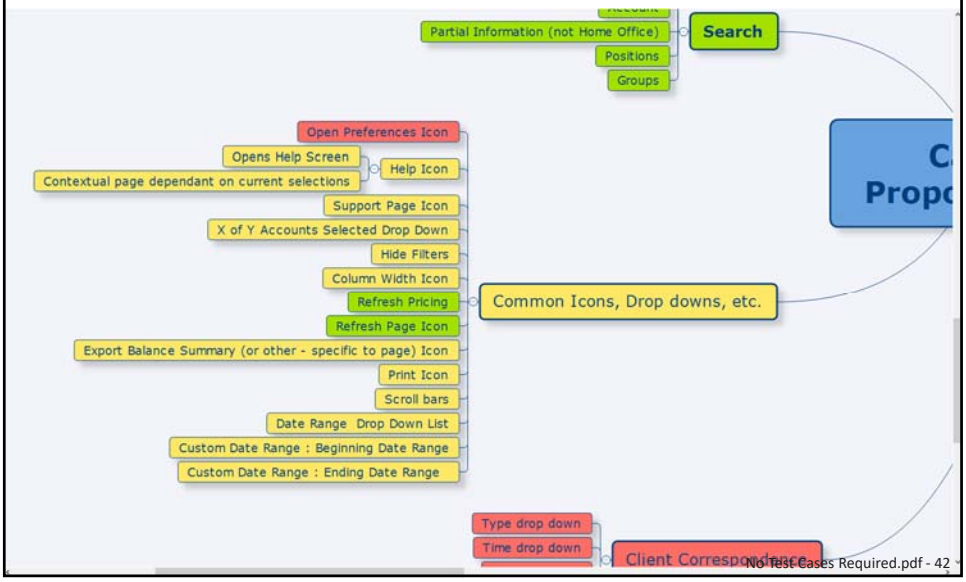
Feature Area Coverage



Interface Coverage



More Comprehensive Ideas

- …for Deep Coverage Sessions (Goal: find the right bugs)

  "Perform scenario testing based on the scenario playbook."

  "Run state-machine-based tours to achieve double-transition state coverage. Look for programmed check possibilities."

  "Perform steeplechase boundary testing on major data items."

  "Help developers to set up automated checks for the continuous integration pipeline."

  "Generate each identified error message in the product. Look for mismanaged state and error recovery problems."

  "Develop scripts (working below the GUI) to run transactions continuously and graph the results. Make sure many transactions (15%? like production logs?) include invalid data that should be handled and rejected."

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(Optional) Formalize Some Charters

PROCHAIN ENTERPRISE **SCENARIO TEST CHARTER**

UP2: "Check status and perform buffer update"

Theme	You are a project manager. You need to update your project to prepare your weekly report on project status.
Setup	- Log in with a user account set up with project manager rights. - Buffer consumption for one of the projects should ideally be in the yellow or red. - At least some of the projects should have multiple project buffers.
Activities	❑ View the Standard Projects Status Chart (or custom chart), filter on a set of projects (and turn on name labels). Start a second session in a window next to the first one (log in as the same user), and filter for the same project set. Now you have two project status charts that you can compare. ❑ Pick one project as "yours". Now, compare status history of your project to others. Explore the other project details in any way necessary to account for the *differences* in status. ❑ View all impact chains for your project, and for some of those tasks: - view task details - view task links - view task load chart ❑ If other testers are making task updates during your test session, review those changes and modify some of them, yourself. Otherwise, make at least a few updates of your own. ❑ Advance the clock by a few days, update buffers on your project and view again the status chart and impact chains, then advance the clock again by another few days.

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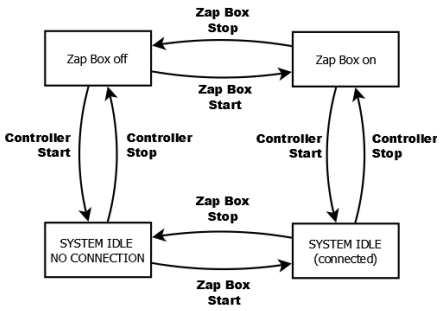
Is This Good Formal Testing?

9.8.1 To verify Power Accuracy

9.8.1.1 Connect the components according to the General Setup document.
9.8.1.2 Power on and connect test jig (instead of electrodes)
9.8.1.3 Power on the Zapper Box.
9.8.1.4 Power on the Control Box.
9.8.1.5 Set default settings of temperature and power for the Zapper Box.
9.8.1.6 Set test jig load to nominal value
9.8.1.7 Select nominal duration and nominal power setting
9.8.1.8 Press the Start button
9.8.1.9 Verify Zapper reports the power setting value ±10% on display.

Assumed State Model for Powering on the System

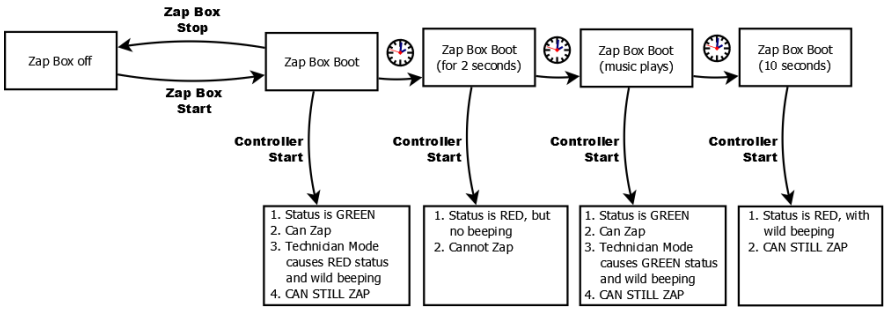
Zapper State Model



- There was nothing in the spec about which box to turn on first. We assumed it didn't matter.
- In the FIRST MINUTE of an exploratory sanity check. We discovered that it mattered a LOT.

Actual…

Zapper State Model



Prefer Steering to Scripting

3.2.2 Fields and Screens

3.2.2.1 Start the Zapper Box and the Control Box. (Vary the order and timing, retain the log files, and note any inconsistent or unexpected behaviour.)

3.2.2.2 Visually inspect the displays and **VERIFY** conformance to the requirements and for the presence of any behaviour or attribute that could impair the performance or safety of the product in any material way.

3.2.2.3 With the system settings at default values change the contents of every user-editable field through the range of all possible values for that field. (e.g. Use the knob to change the session duration from 1 to 300 seconds.) Visually **VERIFY** that appropriate values appear and that everything that happens on the screen appears normal and acceptable.

3.2.2.4 Repeat 3.2.2.3 with system settings changed to their most extreme possible values.

3.2.2.5 Select at least one field and use the on-screen keyboard, knob, and external keyboard respectively to edit that field.

**After we've learned and tested,
we can decide on formal test cases
IF and HOW and WHEN
they suit our purposes.**

Sometimes Extremely Specific Test Design Matters

3.5.2.3 From the power meter log file, extract the data for the measured electrode. This sample should comprise the entire power session, including cooldown, as well as the stable power period with at least 50 measurements (10 seconds of stable period data).

3.5.2.4 From the session log file, extract the corresponding data for the stable power period of the measured electrode.

3.5.2.5 Calculate the deviation by subtracting the reported power for the measured electrode from the corresponding power meter reading (use interpolation to synchronize the time stamp of the power meter and generation logs).

3.5.2.6 Calculate the mean of the power sample X (bar) and its standard deviation (s).

3.5.2.7 Find the 99% confidence and 99% two-sided tolerance interval k for the sample. (Use Table 5 of SOP-QAD-10, or use the equation below for large samples.)

3.5.2.8 The equation for calculating the tolerance interval k is:

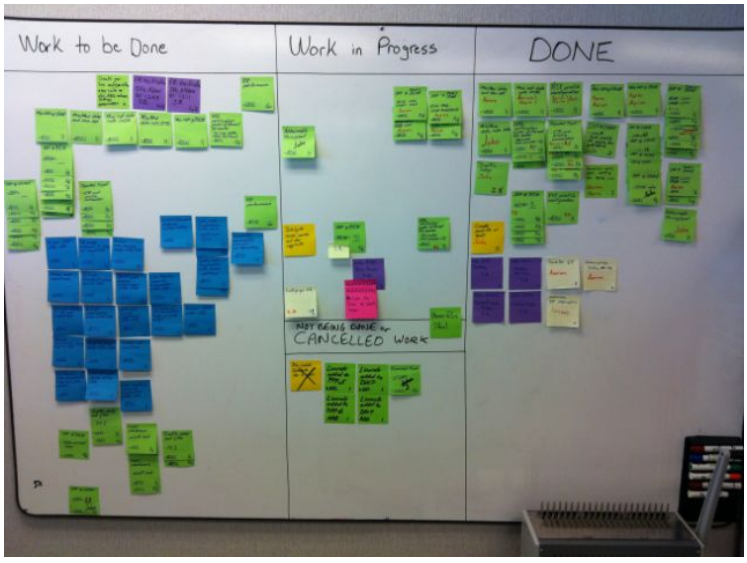
$$k = \sqrt{\frac{(N-1)\left(1+\frac{1}{N}\right)Z^2_{(1-p)/2}}{\chi^2_{\gamma,N-1}}}$$

where $\chi^2_{\gamma,N-1}$ is the critical value of the chi-square distribution with degrees of freedom, N-1, that is exceeded with probability γ and $Z_{(1-p)/2}$ is the critical value of the normal distribution which is exceeded with probability $(1-p)/2$. (See NIST Engineering Statistics Handbook.)

Yes, testing like this requires skill.

No Test Cases Required.pdf - 56

One Way to Visualize Progress: Summarize the Charters



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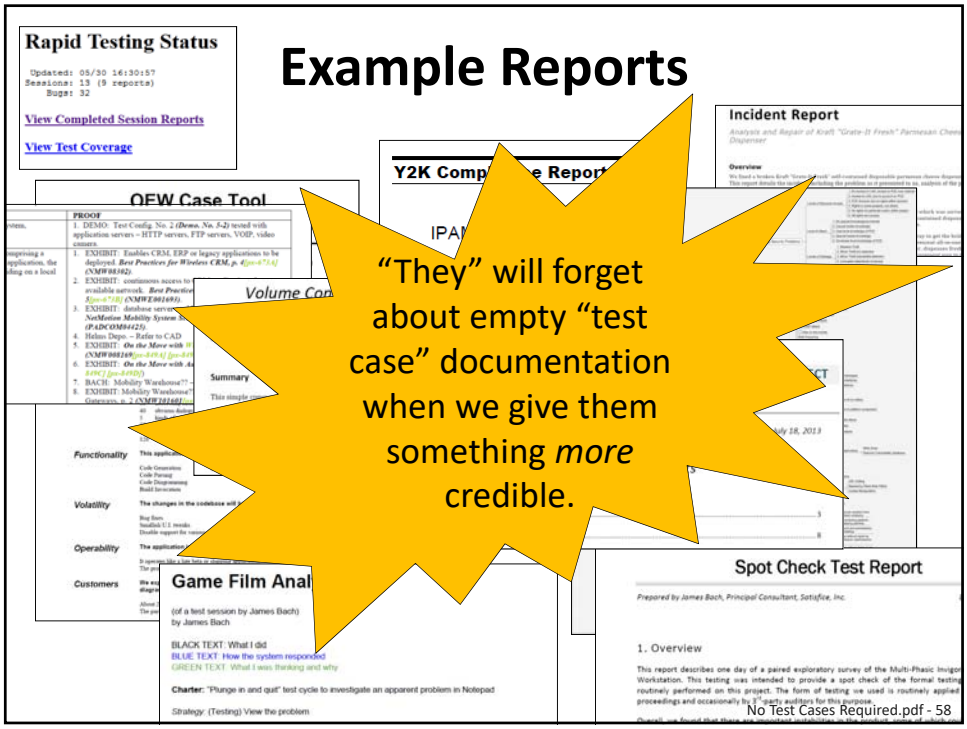
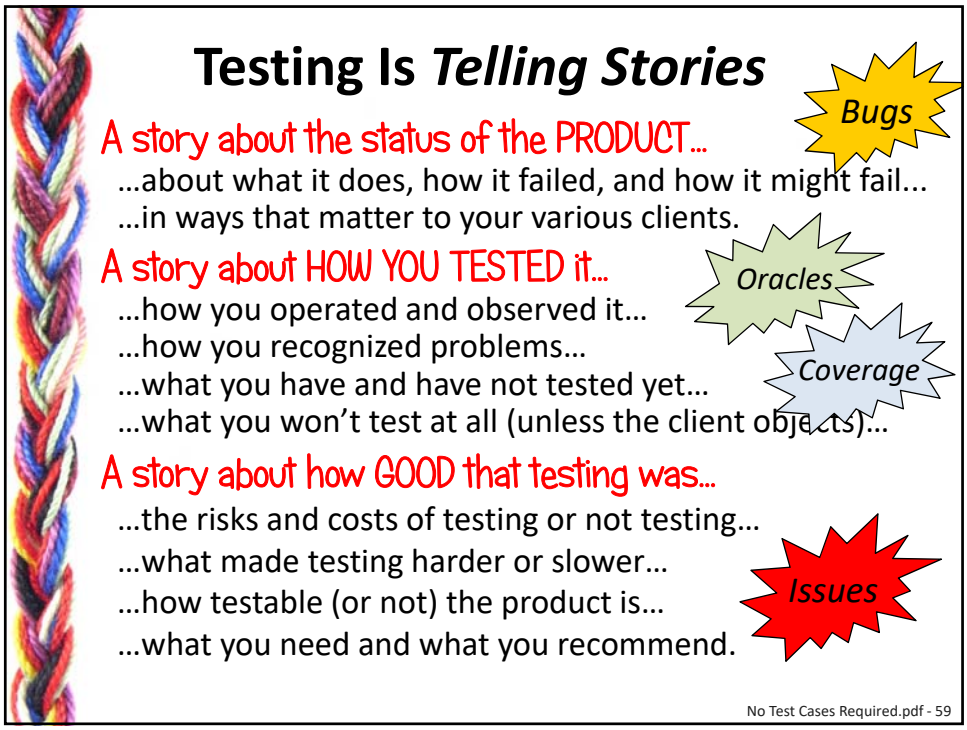

Example Reports
Rapid Testing Status
Updated: 05/30 16:30:57
Sessions: 13 (9 reports)
Bugs: 32
View Completed Session Reports
View Test Coverage
Incident Report
QEW Case Tool
Y2K Comp e Report
IPA
Volume Con
Summary
Functionality
Volatility
Operability
Customers
Game Film Anal
(of a test session by James Bach)
by James Bach
BLACK TEXT: What I did
BLUE TEXT: How the system responded
GREEN TEXT: What I was thinking and why
Charter: "Plunge in and quit" test cycle to investigate an apparent problem in Notepad
Strategy: (Testing) View the problem
Spot Check Test Report
Prepared by James Bach, Principal Consultant, Satisfice, Inc.
1. Overview
"They" will forget about empty "test case" documentation when we give them something *more* credible.
No Test Cases Required.pdf - 58


Testing Is *Telling Stories*
Bugs
A story about the status of the PRODUCT...
...about what it does, how it failed, and how it might fail...
...in ways that matter to your various clients.
A story about HOW YOU TESTED it...
Oracles
...how you operated and observed it...
...how you recognized problems...
Coverage
...what you have and have not tested yet...
...what you won't test at all (unless the client objects)...
A story about how GOOD that testing was...
...the risks and costs of testing or not testing...
...what made testing harder or slower...
Issues
...how testable (or not) the product is...
...what you need and what you recommend.
No Test Cases Required.pdf - 59

What do managers and developers really want from testers?

Test cases?

Counts of test cases?

Pass/fail rates?

Trust?

When will the testing be done?

What do managers and developers really want from testers?

An answer to this question:

Are there problems

that threaten

the on-time successful

completion of the project?

Skilled, Observant Tester + Oracles = No Need for Silly Test Documentation!

These two paragraphs replaced 50 pages of overly formal and unhelpful procedural instructions for testing a Class 3 medical device.

3 Test Procedures

3.1 General testing protocol.

In the test descriptions that follow, the word “verify" is used to highlight *specific items that must be checked*. In addition to those items a tester shall, at all times, be alert for *any* unexplained or erroneous behavior of the product. The tester shall bear in mind that, regardless of any specific requirements for any specific test, there is the overarching general requirement that the product shall not pose an unacceptable risk of harm to the patient, including an unacceptable risk using reasonably foreseeable misuse.

3.2 Test personnel requirements

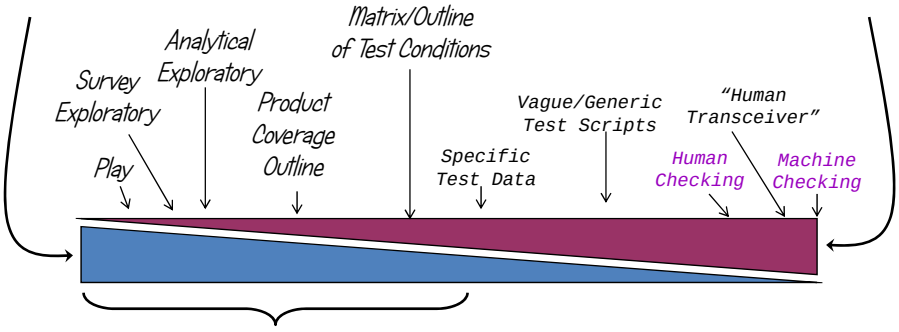
The tester shall be thoroughly familiar with the generator and workstation FRS, as well as with the working principles of the devices themselves. The tester shall also know the working principles of the power test jig and associated software, including how to configure and calibrate it and how to recognize if it is not working correctly. The tester shall have sufficient skill in data analysis and measurement theory to make sense of statistical test results. The tester shall be sufficiently familiar with test design to complement this protocol with exploratory testing, in the event that anomalies appear that require investigation. The tester shall know how to keep test records to credible, professional standard.

The Testing Formality Continuum

Developing Formal Scripting from Exploration

INFORMAL
Not done in any specific way.

FORMAL
Done in a specific way.



When I say “exploratory testing” and don’t qualify it,
I mean anything on the informal side of this continuum.