HEXAWISE

MORE COVERAGE. FEWER TESTS.

3-minute introduction to Hexawise

Hexawise is a new test design tool. It is available through a SaaS (software as a service) model.

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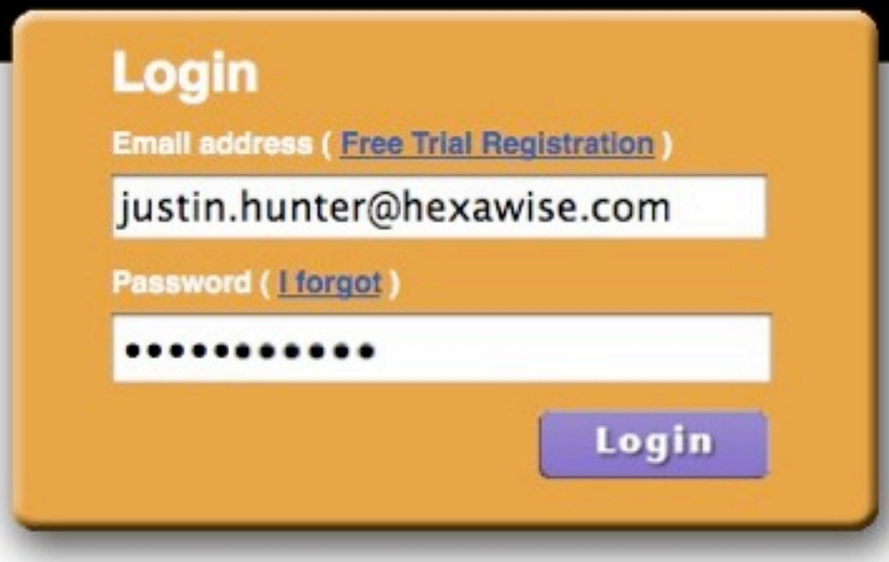
MORE COVERAGE. FEWER TESTS.

MORE EFFICIENT TESTING

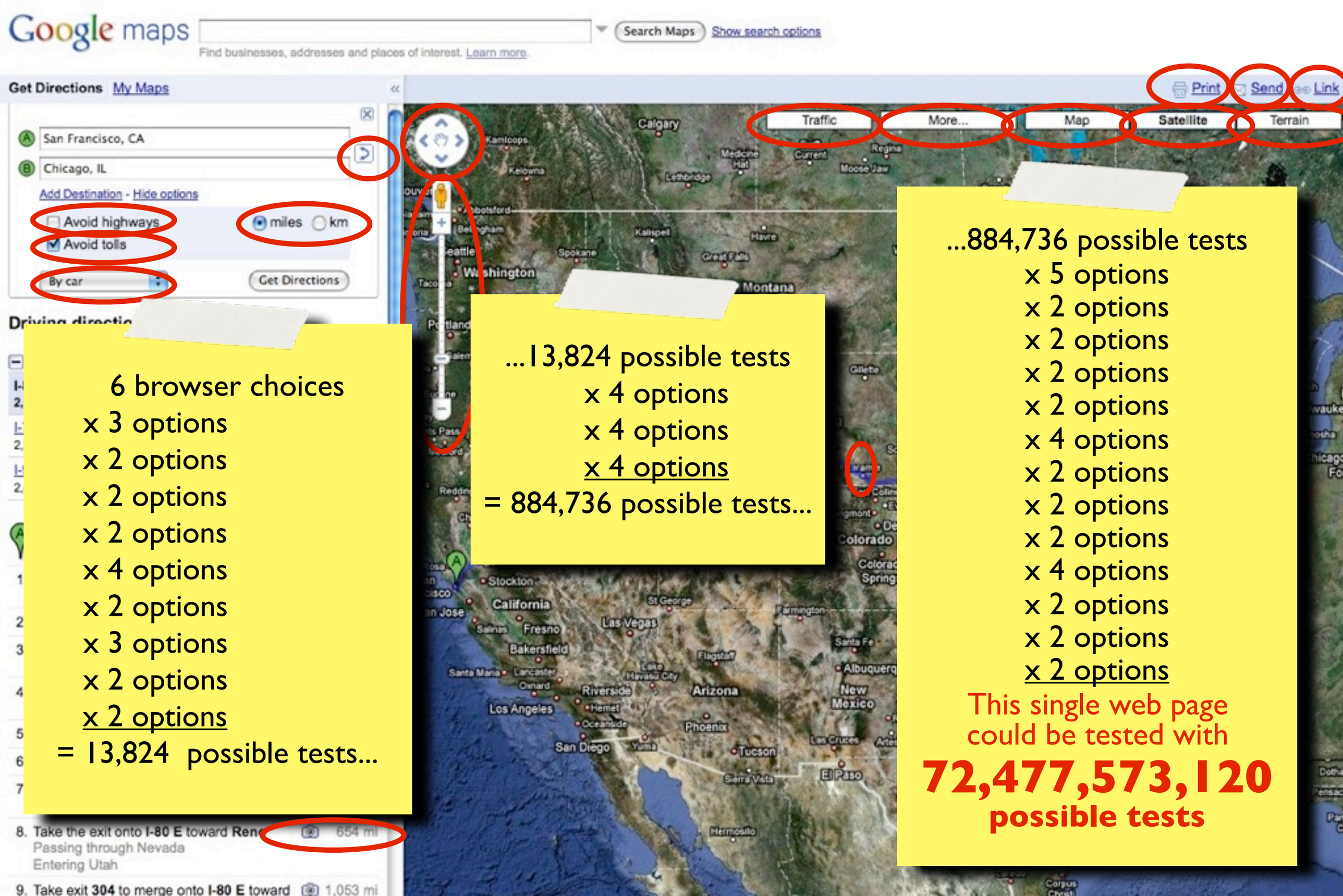
Use Hexawise to design better tests. It maximizes test coverage with the minimum number of test cases. Find twice as many errors per tester hour.

BETTER TEST PLANS

Manually-designed software test plans often omit combinations of functions and configurations that should be tested. Hexawise finds the gaps to ensure all important combinations get tested.



It solves this constant problem: “There are way too many options to test every one. What should we test?”



6 browser choices
x 3 options
x 2 options
x 2 options
x 2 options
x 4 options
x 2 options
x 3 options
x 2 options
x 2 options
= 13,824 possible tests...

...13,824 possible tests
x 4 options
x 4 options
= 884,736 possible tests...

...884,736 possible tests
x 5 options
x 2 options
x 2 options
x 2 options
x 2 options
x 4 options
x 2 options
x 2 options
x 2 options
x 4 options
x 2 options
x 2 options
x 2 options
This single web page could be tested with
72,477,573,120
possible tests

First, users input details of an application to be tested...

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Define Inputs | Create Tests | Analyze Coverage

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Test Plans

Create New Test Plan

Your Test Plans

Blue Advantage Quote
Blue Advantage Quote Illustrative Example
Challenge 5
Collections HNW Insurance
Collections HNW Insurance Illustrative Example

Invalid Pairs

Invalid pairs are two parameter values that can never be tested together.

Examples:
Internet Explorer 8 on Mac OS X
Jumbo Mortgage less than $100,000

To create an invalid pair, click the icon on the first parameter value and then click on the second parameter

Hints

» Avoid long lists of parameter values where possible.

» Do not use expected results as inputs.

» Think about the system's business rules: choose conditions to trigger them.

» Consider equivalence classes and boundary values.

» Add the same value twice if needed to get a realistic weighting.

New Parameter

Parameter Name

Values (each value on a new line)

Add (Ctl-Enter)

Copy of Google Maps Export

Browser (6)	IE6	IE7	IE8	Safari	Chrome	Opera
Mode of Transport (3)	Car	Public Trans...	Walk			
Cross State Lines? (2)	Y	N				
Avoid Highways (2)	Y	N				
Avoid Toll Roads (2)	Y	N				
Length of Trip? (4)	<1	1 - 10	>10 - 100	>100		
Miles of KM (2)	Miles	KM				
Number of stops in trip (3)	1	2	3			
Show Reverse Directions (2)	Y	N				
Zoom In (2)	Y	N				
Zoom Out (2)	Y	N				

Feedback

Next, users create tests that will cover interactions of every valid pair of values in as few tests as possible.

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Combinations

2-way interactions

2-way interactions mean every possible pair of values from different parameters are tested at least once (unless the pair was marked invalid)

Total possible: **72,477,573,120 combinations**

Hexawise Complete Coverage in just: **35 combinations**

Hexawise Savings: **99.999%**

(1) Browser = "Opera" tested with (2) View = "Satellite?" ***Covered.***
(1) Mode of Transport = "Walk" tested with (2) Show Photos = "Y"? ***Covered.***
(1) Avoid Toll Roads = "Y" tested with (2) Show Traffic = "Y (Live)"? ***Covered.***

(1) Browser = IE6 tested with (2) Distance in = KM and (3) Zoom in = "Y"?
That is a 3-way interaction. It might not be covered in these 35 tests. See next page.

Copy of Google Maps (2-way interactions) Export

	Browser	Mode of Transport	Cross State Lines?	Avoid Highways	Avoid Toll Roads	Length of Trip?	Miles of KM	Number of stops in trip	Show Reverse Directions	Zoom In	Zoom Out	Show Traffic	More - Photos	More - Wikepedia	Mo We
1	IE6	Car	Y	Y	Y	<1	Miles	1	Y	Y	Y	N	Y	Y	Y
2	IE6	Public Transport	N	N	N	1 - 10	KM	2	N	N	N	Y (Live)	N	N	N
3	IE6	Walk	Y	N	Y	>10 - 100	KM	3	Y	N	Y	Y (Future Date at Rush Hour)	N	Y	N
4	IE6	Car	N	Y	N	>100	Miles	2	N	Y	N	Y (Future Date at Non-Rush Hour)	Y	N	Y
5	IE6	Public Transport	N	Y	Y	<1	Miles	3	N	N	Y	Y (Future Date at Weekend)	Y	N	N

It also creates more thorough tests for all combinations involving 3 values, as below, or 4, 5 or even 6 values.

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Combinations

3-way interactions

3-way interactions mean every possible triple of values from different parameters are tested at least once (unless part of that possible triple was marked as an invalid pair)

Total possible: **72,477,573,120 combinations**

Hexawise Complete Coverage in just: **184 combinations**

Hexawise Savings: **99.999%**

*(1) Browser = IE6 tested with (2) Distance in = KM and (3) Zoom in = "Y"? **Covered.***
Any 3 valid values you can imagine? Yes, at least 1 of the 184 tests will cover all 3 together.
If even higher quality is desired, all possible 4, 5, or 6-way interactions could be tested for.

Copy of Google Maps (3-way interactions) Export

	Browser	Mode of Transport	Cross State Lines?	Avoid Highways	Avoid Toll Roads	Length of Trip?	Miles of KM	Number of stops in trip	Show Reverse Directions	Zoom In	Zoom Out	Show Traffic	More - Photos	More - Wikepedia	M W
1	IE6	Car	Y	Y	Y	<1	Miles	1	Y	Y	Y	N	Y	Y	Y
2	IE6	Public Transport	N	N	N	1 - 10	KM	2	N	N	N	N	N	N	N
3	IE6	Walk	Y	N	Y	>10 - 100	KM	3	Y	N	Y	N	N	Y	N
4	IE6	Car	N	Y	N	>100	Miles	2	N	Y	N	N	Y	N	Y
5	IE6	Public Transport	N	Y	Y	<1	KM	3	N	Y	Y	Y (Live)	N	N	Y
6	IE6	Walk	N	Y	N	1 - 10	Miles	1	Y	N	N	Y (Live)	Y	Y	N

One of the advantages of this approach is that it creates objective coverage data...

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Analysis

2-way interactions

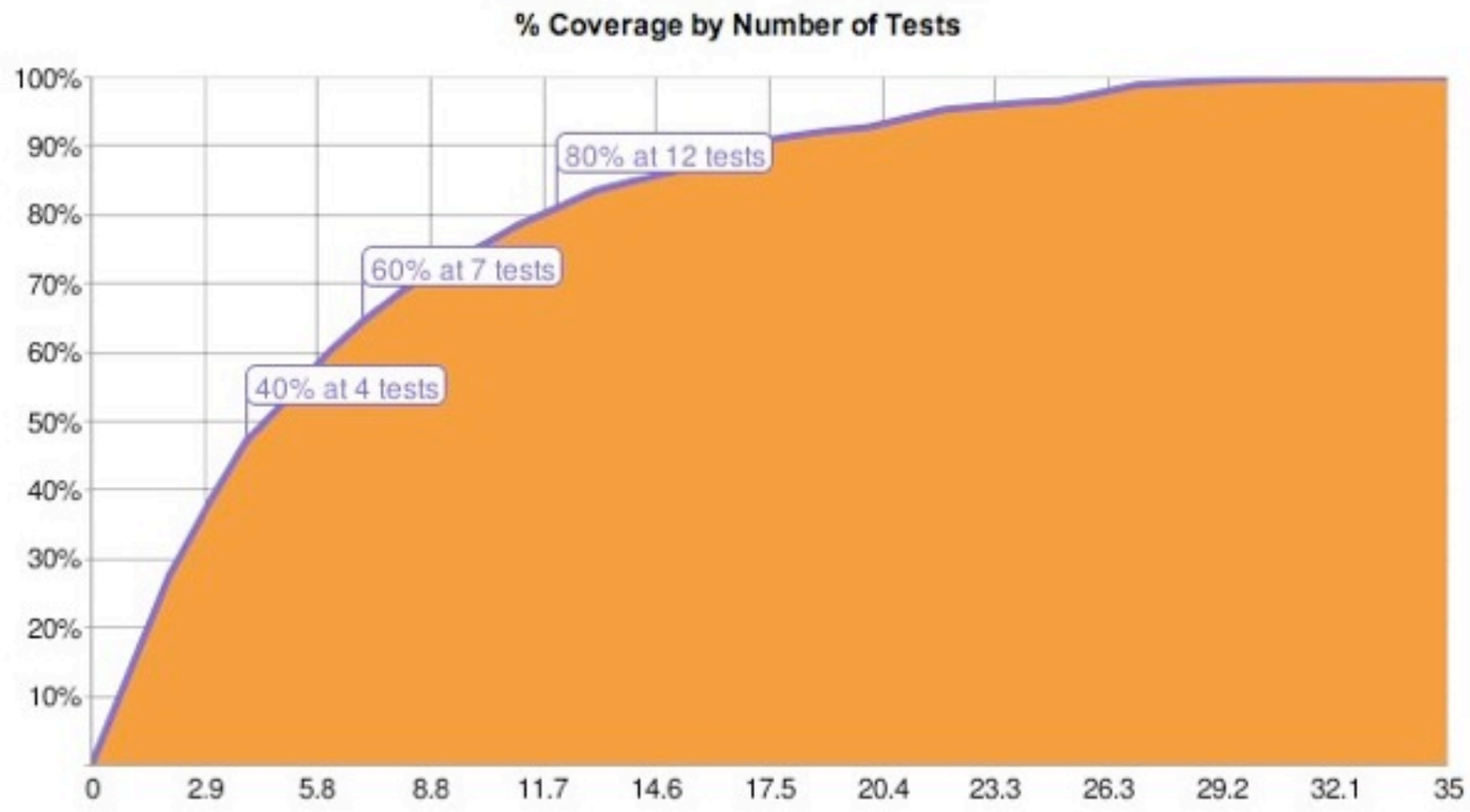
2-way interactions mean every possible pair of values from different parameters are tested at least once (unless the pair was marked invalid)

Total possible: **72,477,573,120 tests**

Hexawise Complete Coverage in just: **35 tests**

Hexawise Savings: **99.999%**

Coverage Analysis for Google Maps Illustrative Ex... (2-way interactions)



... which is useful in determining “How much testing is enough?” and “When is it appropriate to stop testing?”

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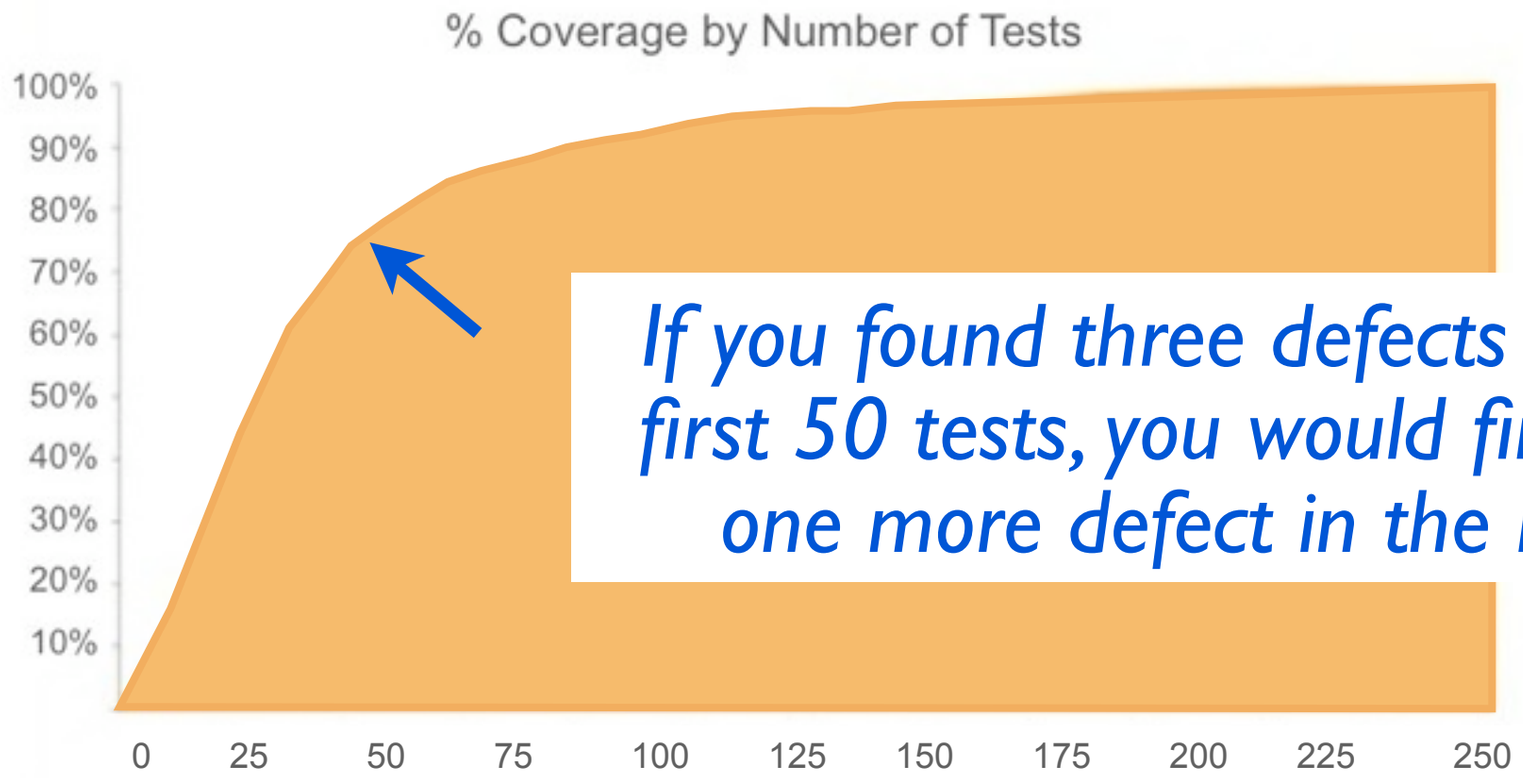
Analyze

How to Read a Coverage Chart for A Solution with 3-way Coverage

After the 250th test has been executed, all possible 3-way combinations of parameter values will have been executed. An example of a 3-way combination of parameter values would be (i) "Type of Policy = Individual" & (ii) "Insurance Type = Watercraft" & (iii) "Deductible = $5,000." After the 100th test, slightly more than 90% of the possible 3-way combinations will have been executed. You will notice that there is a significant decreasing marginal return here. The number of new "triples" that are covered in the first 100 tests is far higher than the number of new triples covered in the last 100 tests. You can use this information to make cost/benefit calculations; in this situation, it might well make sense to execute only the first 100 tests.



If you found three defects in this test plan’s first 50 tests, you would find approximately one more defect in the next 200 tests.

The following benefits have been consistently delivered when teams have used Hexawise:

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Test Design Time

Faster by at least 30%

Test Execution Time

Faster by at least 25%

Bug Fixing Costs

Lower by at least 20%

These benefits numbers are backed by objective data. We could help you confirm them within a couple weeks.

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Average Efficiency and Quality Improvements found in 10 Recent Projects:
2-way Test Cases vs. Manual Test Case Selection Methods

Signup instructions for free trial and contact information:

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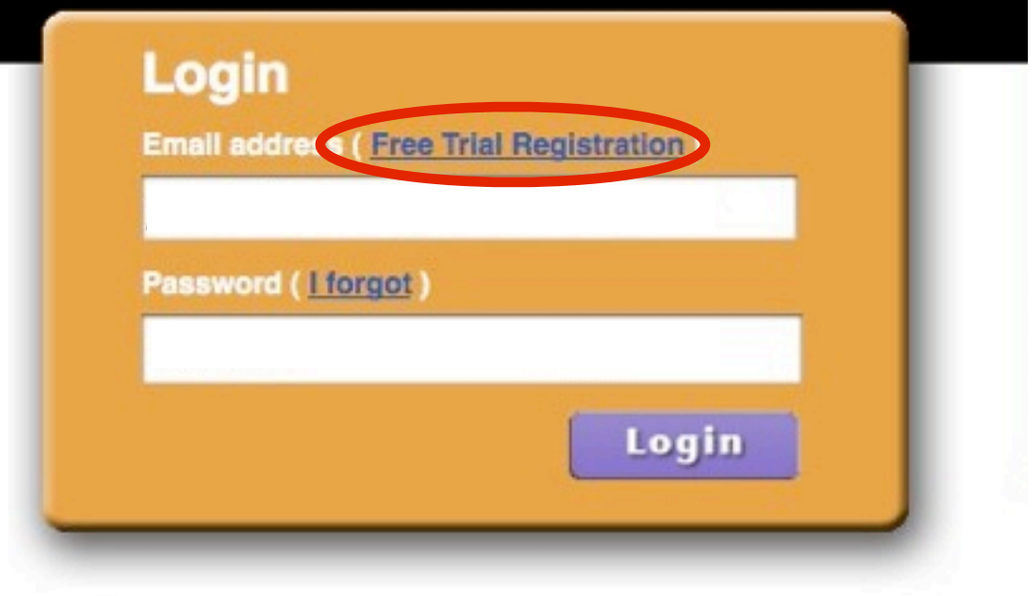
Signup for free trial in 30 seconds

1. **Go to:**
   http://www.hexawise.com
2. **Click on "Free Trial Registration"**
   (No credit card information required)



Questions? Contact:

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Contact through Software Testing Club profile