

**STAR** **CANADA**

A TECHWELL EVENT

**T4**

Exploratory Testing

Thursday, October 18th, 2018 10:15 AM

# Testing in the Dark: Improving Quality when You Don't Know the Product

Presented by:

**Rob Sabourin**

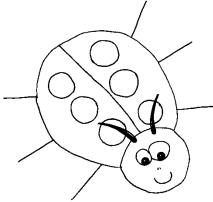
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# Rob Sabourin

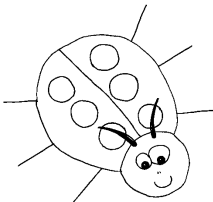
Rob Sabourin has more than thirty-three years of management experience leading teams of software development professionals. A highly-respected member of the software engineering community, Rob has managed, trained, mentored, and coached hundreds of top professionals in the field. He frequently speaks at conferences and writes on software engineering, SQA, testing, management, and internationalization. Rob authored *I am a Bug!*, the popular software testing children's book; works as an adjunct professor of software engineering at McGill University; and serves as the principal consultant (and president/janitor) of AmiBug.Com, Inc. Contact Rob at [rsabourin@amibug.com](mailto:rsabourin@amibug.com).




# Testing in the Dark

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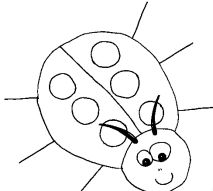
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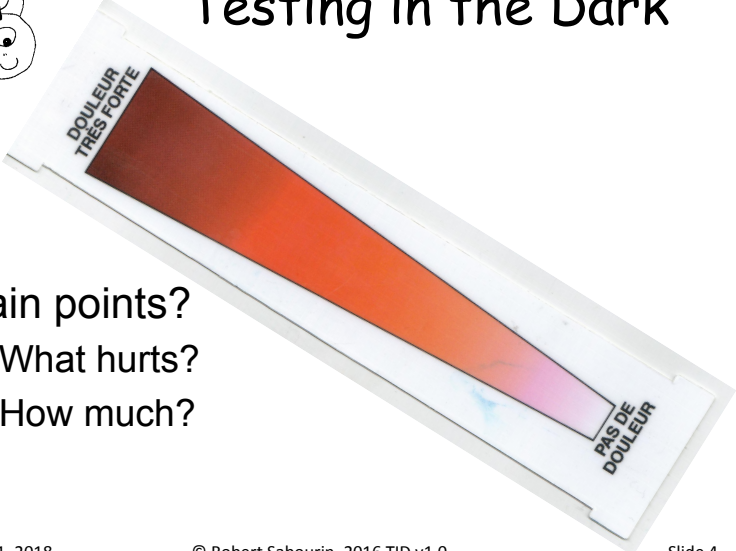


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- Pain points?
  - What hurts?
  - How much?

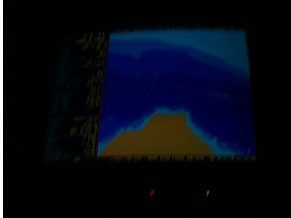


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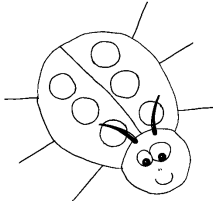
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Some Useful Metaphors

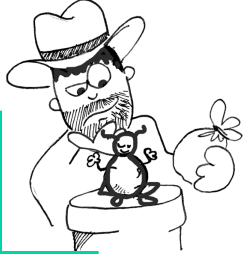
- Test in the dark
- See the light
- Car headlights
- Fog lifting
- Military recon
- Instrument Navigation



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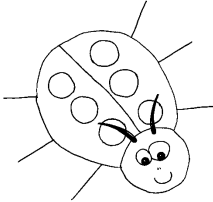
# Testing in the Dark




## Who Matters

- Who am I testing for?
- Who is paying for the product?
- Who is paying for development?
- Who is paying for testing?
- Who is developing the software?

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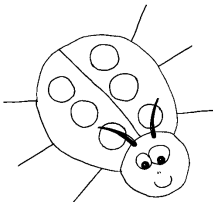
# Testing in the Dark



## Who Matters

- Who is the user?
- Whoever asked me to test this stuff in the first place?

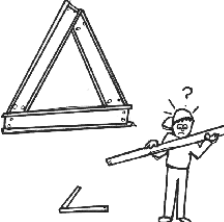
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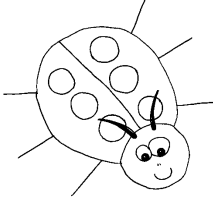
# Testing in the Dark

## Why Matters

- Why are we being asked to test?
- Why was the software developed?



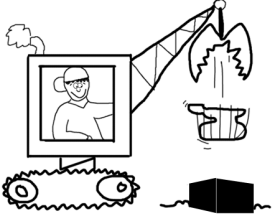
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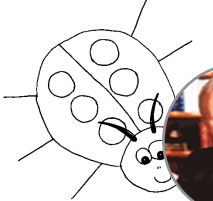
# Testing in the Dark

## What Matters

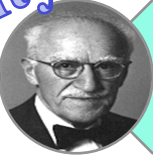
- What is being tested?
- What is quality?
- What are we solving?
- What is a bug?
- What is good enough?




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### Conforming to requirements



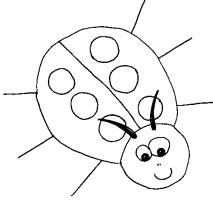
### Suiting purpose



### Delivering value to stakeholders

*Quality*

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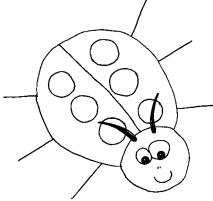
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**Conform to requirements**

- Implicit
- Explicit

*Issue: Hunting for requirements*

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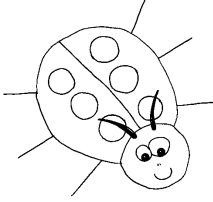
**Suitability to purpose**

- Meet the users
- See what they do

*Issue: Different strokes for different folks*

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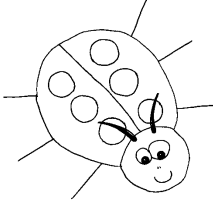
# Testing in the Dark

## Value to stakeholders

- Who are stakeholders
- What do they value

**Issue: Different cares at different times**

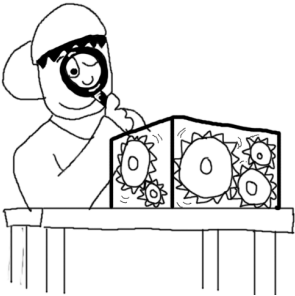
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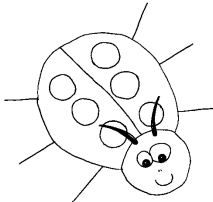
# Testing in the Dark

## What Matters

- What problem?
- What items?
- What's in?
- What's out?
- What variables?



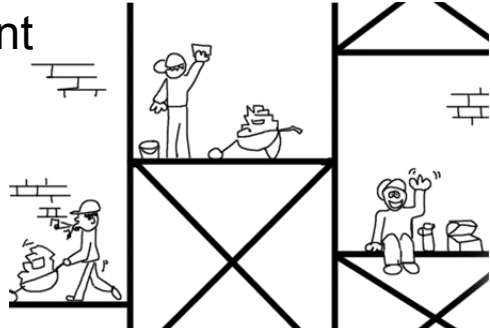
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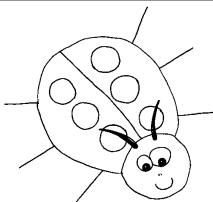
# Testing in the Dark

## Where Matters

- Environment
- Locale
- Data
- Network
- Platform




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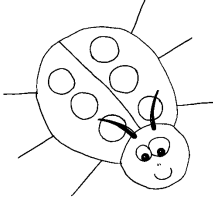
# Testing in the Dark

## When matters


- Timeline
- Deadline
- Project History
- Product use
- Dependency



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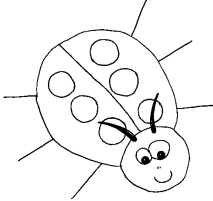
# Testing in the Dark



## When matters

- Past
- Present
- Future


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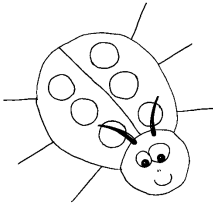
# Testing in the Dark

## How Matters

- Built
- Bought
- Changed
- Integrated
- SDLC



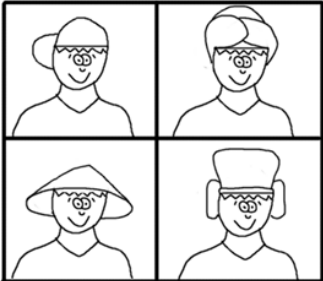
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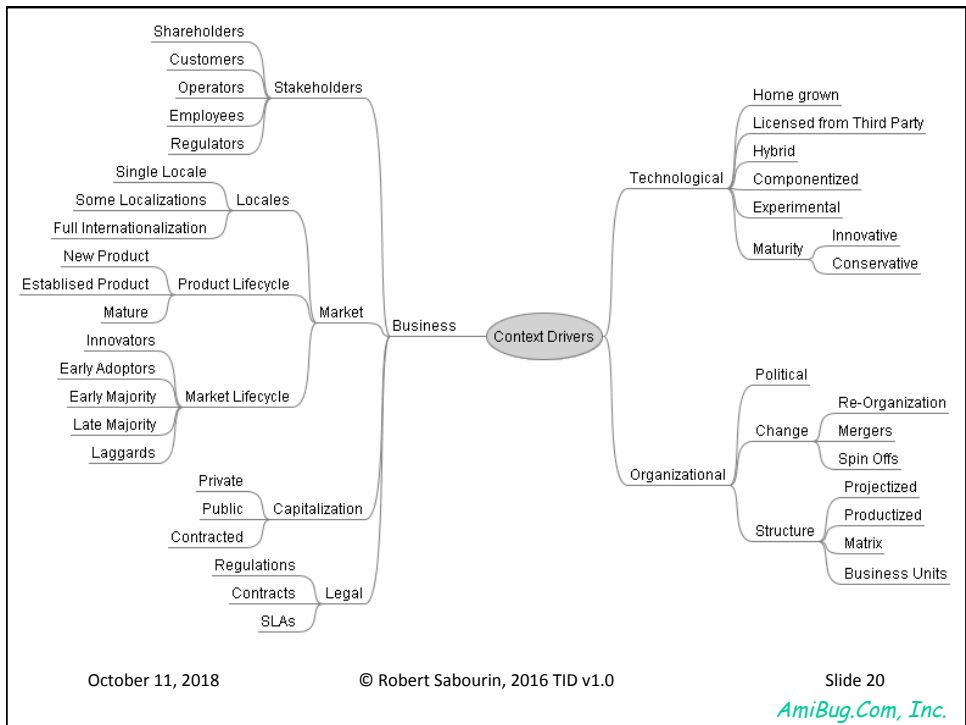
## Context Matters

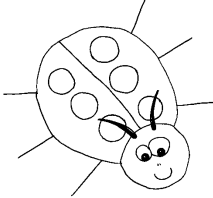
- Business
- Technology
- Organization
- Culture
- Governance



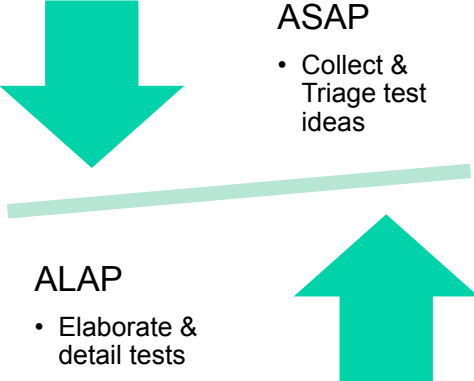
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# Testing in the Dark



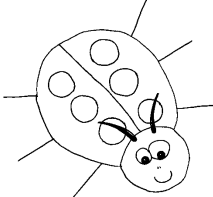
**ASAP**

- Collect & Triage test ideas

**ALAP**


- Elaborate & detail tests

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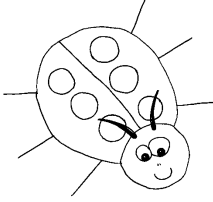
# Testing in the Dark

- **Collect all testing ideas you can find!**
  - List
  - Sort
  - Organize
  - Shuffle



**Plan to support change**


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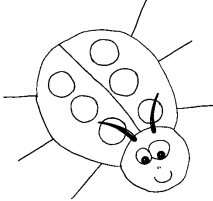
## Testing in the Dark

Plan to support change

- How to find them?
  - Does system do what it is suppose to do?
  - Does the system do things it is not supposed to?
  - How can the system break?
  - How does the system react to it's environment?
  - What characteristics must the system have?
  - Why have similar systems failed?
  - How have previous projects failed?




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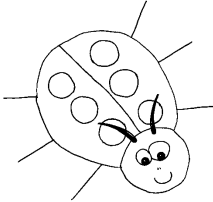
## Testing in the Dark

Capture testing ideas

- Collect testing ideas
- From testing ideas build a series of testing objectives
  - Each can be assigned as *work* to testers
  - Each can include *all, part of, or multiple testing ideas*




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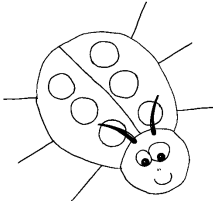
# Testing in the Dark

- I often use *Index Cards*
  - Unique id
  - One testing idea per card
  - Colour indicates source
  - Shuffled and reviewed
  - Organized and reorganized
  - Sorted, grouped, prioritized and collected




Capture testing ideas

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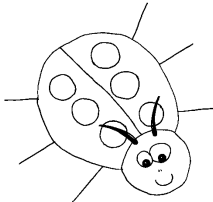
# Testing in the Dark

Capabilities	Failure modes
Quality factors	Usage scenarios
Creative ideas	States
Data	Environments
White box	Taxonomies
Across story relationships	Software attacks
End to end	Sequencing
Work flow	Process flow
Integration points	Pareto
Control flow	Domain specific



Capture testing ideas

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# Testing Ideas

**Capture testing ideas**

Who is paying for the software?


Who is supposed to use the software?

What problem is the software trying to solve?

Does other software have to run before after or during operation?

Will other unrelated software be running at the same time?

***In the Dark***  
***No requirements***  
***No design***

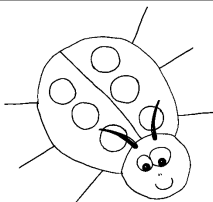


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# Testing Ideas

**Capture testing ideas**

Will data be shared with other software?

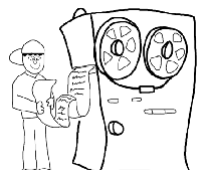
Will processing resources be shared with other software?

What are the users going to do with the software?

Are the users familiar with the problem?

Are the users familiar with the solution?

***In the Dark***  
***No requirements***  
***No design***



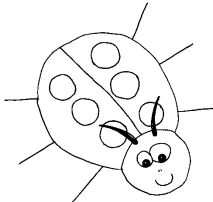
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# Testing Ideas

Capture testing ideas

Are there novice users?

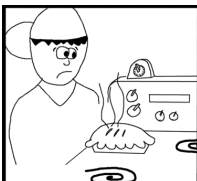
Are there expert users?

Are there typical users?

Are there different categories of users doing different tasks?

Who will install the software?

*In the Dark*  
*No requirements*  
*No design*

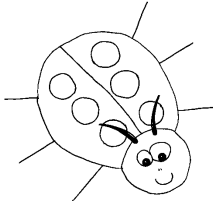


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# Testing Ideas

Capture testing ideas

Who will configure the software?

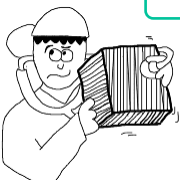
Who will manage the software?

Who will manage the data?

Where will data come from?

Does the software contain elements we do not need?

*In the Dark*  
*No requirements*  
*No design*

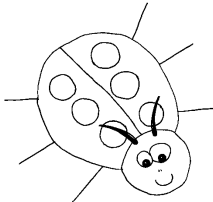


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# Testing Ideas

Capture testing ideas

Are there any non-functional needs?


Does the software have any environmental concerns?

What about operator locale?

Does this software replace existing software?

Does the software replace existing hardware?

***In the Dark***  
***No requirements***  
***No design***

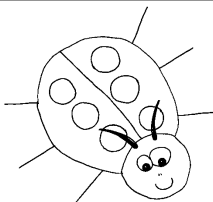


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# Testing Ideas

Capture testing ideas

Does the software automate previously manual work?

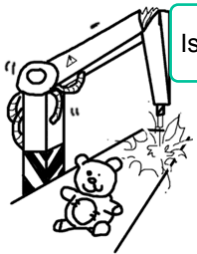
Is the software being reused?

Is the software being repurposed?

Is the software being customized?

Did the software purchaser understand risk?

***In the Dark***  
***No requirements***  
***No design***

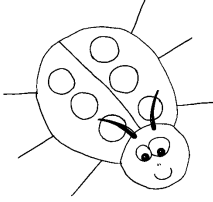


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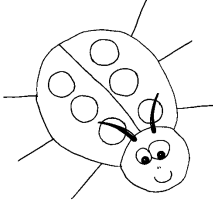
# Testing in the Dark

- Identify testing ideas

Reconnaissance Testing




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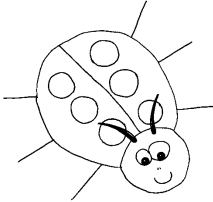
# Testing in the Dark

## Recon

- Find users
- Learn what test ideas matter
- Learn what users do
- Learn what varies
- Identify capabilities



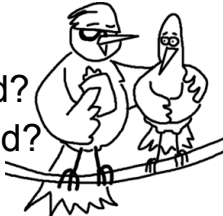
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# Testing in the Dark

## Recon

- Discover strategies to assess correctness
- How have similar projects failed?
- How have similar products failed?
- Inventory product claims
- Knowledge from past testing efforts



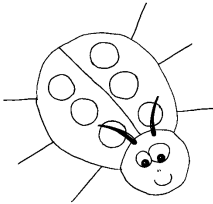
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# Assessing Correctness




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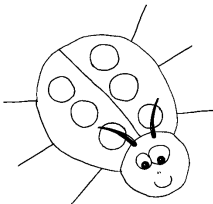
# Assessing Correctness




## Lifelines




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# Assessing Correctness



Call a friend

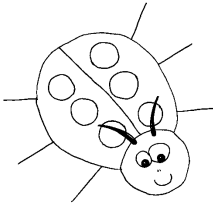


Subject matter expert






Test domain expert

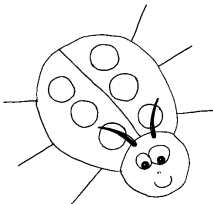
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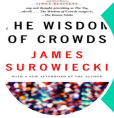

## Assessing Correctness

-  Eliminate incorrect ...
-  Eliminate impossible ...
-  Rules of thumb

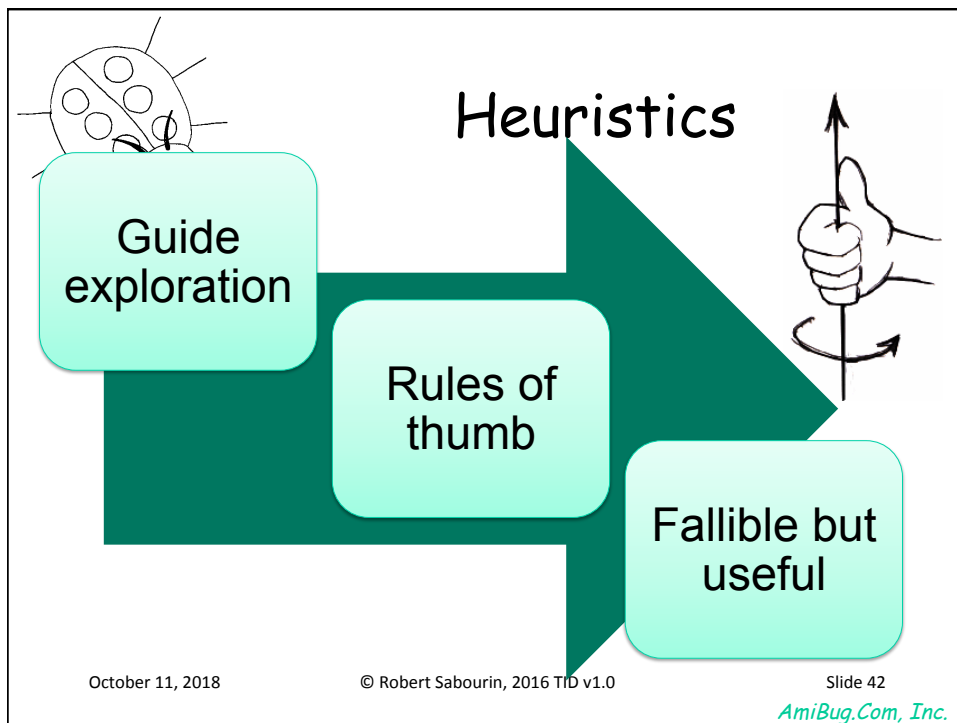
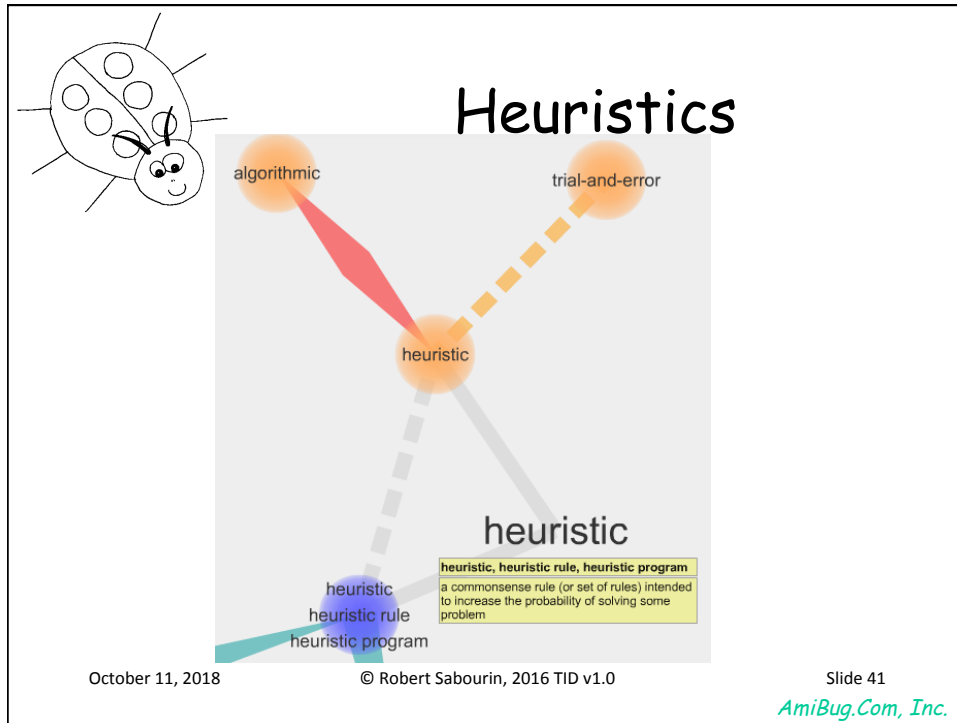
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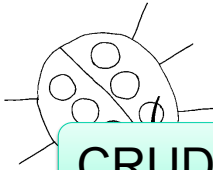


## Assessing Correctness

-  Ask the audience
-  Wisdom of crowds variety
-  Consult peers

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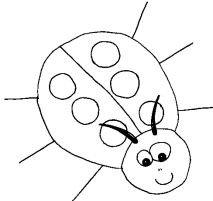




# Heuristics


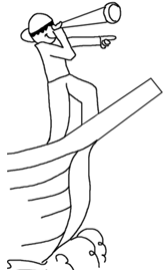
- CRUD**
  - Create Read Update Delete
- Goldilocks**
  - Too Big, Too Small, Just Right
- Take AIM**
  - Application Logic, Input Method, Memory
- Baby Steps**
  - Construct Progressively
- Action/Effect**
  - Conditions trigger actions?
  - Actions caused by conditions?
- Triangulate**
  - Confirm Screen, Database, Report

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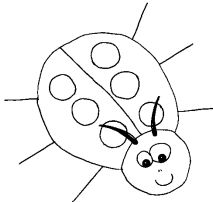
# Exploratory Testing

- Concurrent design, execution and result interpretation of tests while you learn about the system



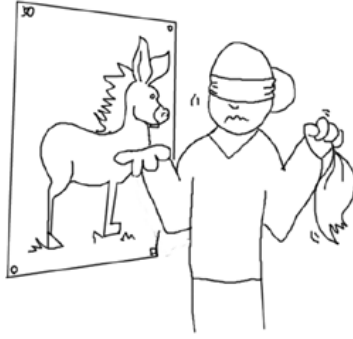
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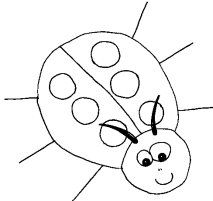


# Exploratory Testing

- Charter driven
  - One test idea can become many charters
- Session based
  - Testing is time boxed
  - Short sessions 30 minute
  - Typical sessions 2 hours
  - Long sessions 2 days




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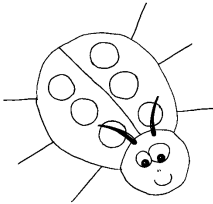


# Exploratory Testing


- End of session
  - Review findings
  - What did we learn
  - What do we still want to learn
  - Did we learn enough
  - Did we discover new ideas
  - Should we invest a new session on the same charter or move onto something new




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# Mandate to explore

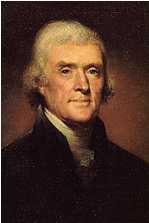


William Clark





Meriwether Lewis



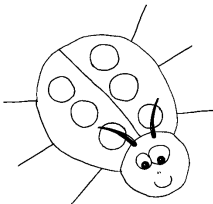
The object of your mission is to explore the Missouri river, & such principle streams of it, as, by its course and communication with the waters of the Pacific ocean...may offer the most direct & practicable water communication across this continent for the purposes of commerce.

- Thomas Jefferson's letter to Meriwether Lewis, June 1803


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# Make intelligent decisions



Take notes about your decisions

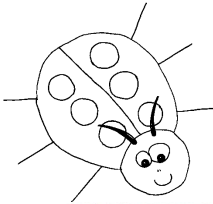
Map out where you have been

Others can use the result

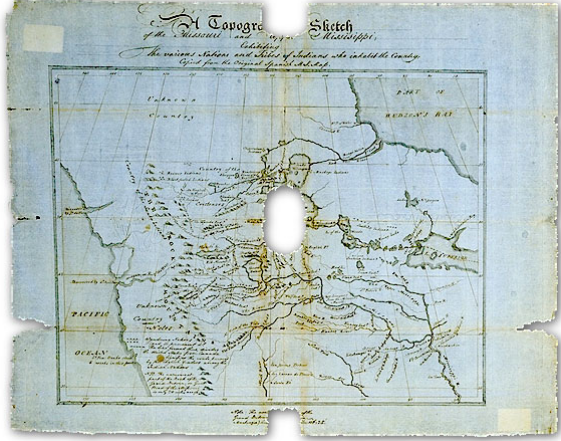
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# Chart as you explore



Further exploration yields a good idea of the state of the world!

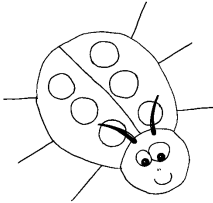
One bit at a time

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# Exploration Notes



- Tabular
- Chronological
- Schematic
- Point form
- Concise

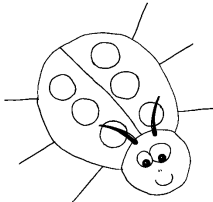


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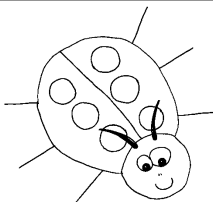


# Exploratory Testing

- **Test Cases**
  - Not known in advance
  - Defined & executed “on the fly” while you learn about the product
- **Map Making Skills**
  - Consistent note taking style
  - Practice




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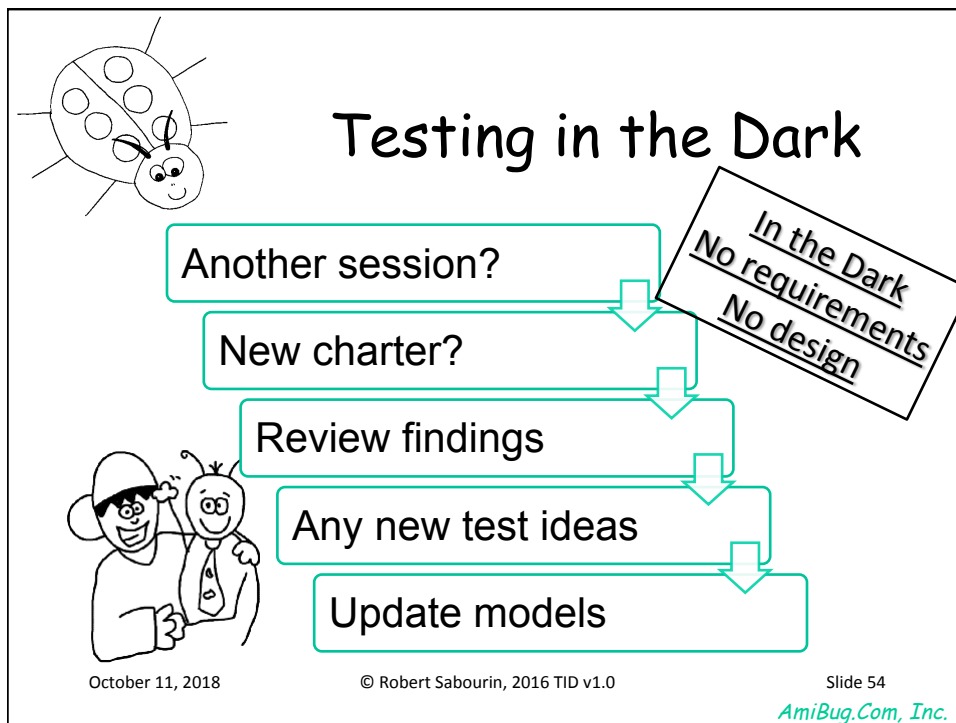
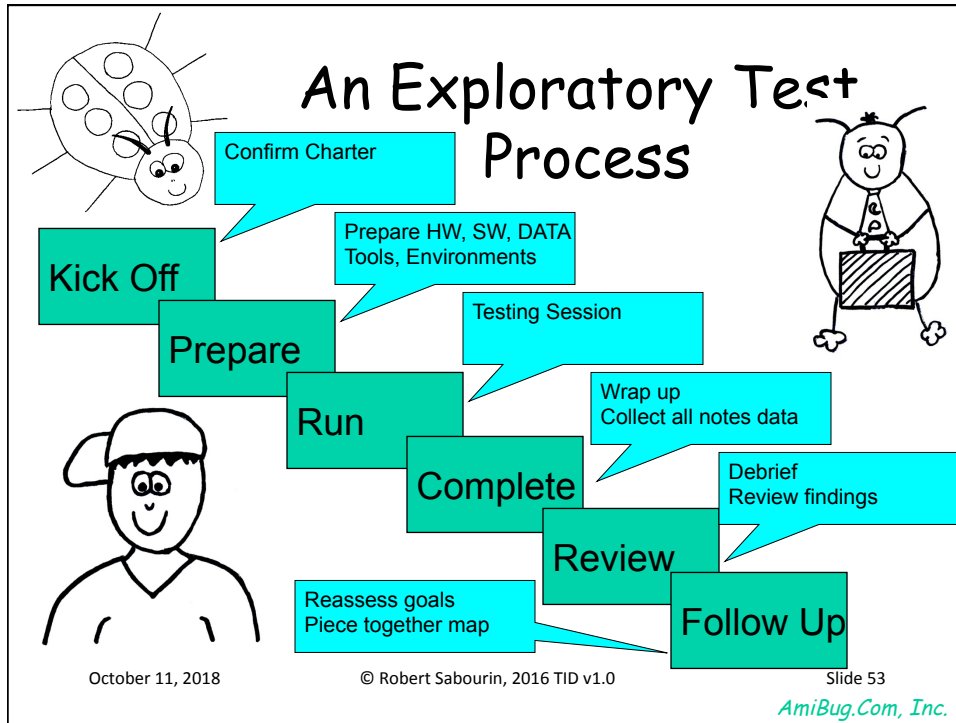


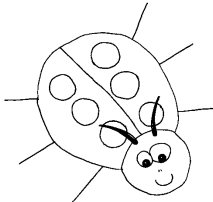
# Exploratory Testing

- ***During test we must capture***
  - Function, options or sub-functions being explored
  - Test cases attempted
  - Comments, notes, images or attachments
  - Hints, reminders and observations which may be useful to future testers
  - Date, Platform, Build or Configuration under test
  - Name of person running test
  - Oracles, “strategy to assess correctness”
  - Other relevant details



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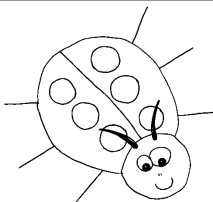
# Testing in the Dark

*In the Dark  
No requirements  
No design*

Update dashboard  
Update top ten list  
Update bug lists  
Update claims  
Reassess focus



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# Testing in the Dark

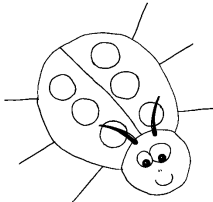
**Share Findings**

Mind maps					
Features	Usage	Workflows	Data flows	Risks	Environment

↓

Dashboards					
Charters	Claims	Bugs	To learn	Top 10 list	Effort spent

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# Testing in the Dark

## Effort Expended

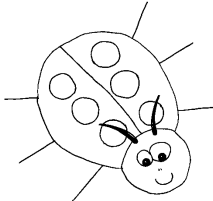
- Set up
- On charter
- Opportunity
- Reporting
- Rework
- Other

Effort Distribution




■ Environment Setup ■ Testing ■ Bug Logging ■ Investigating ■ Verifying and Closing

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# Testing in the Dark



Are we there yet?

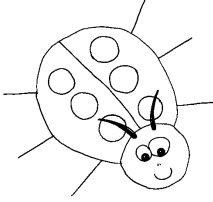
What can users do?

What doesn't work?

Claims met?


Claims not met?

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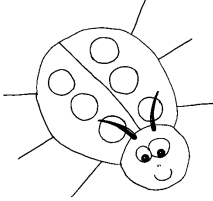
# Testing in the Dark

Guess and adapt



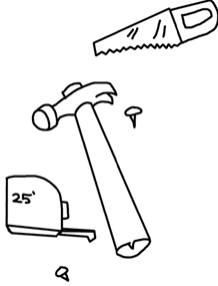
- Guess unknown
- Do reality checks
- Adjust guess as you learn
- Build confidence
- Be explicit
- Visualize assumptions

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# Testing in the Dark

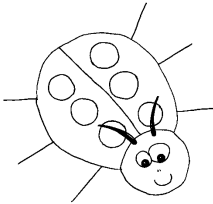
Tools support



- Note taking
- Test ideas
- Bug flow
- Screen capture
- Video capture
- Scripting
- Mind mapper
- Spreadsheet

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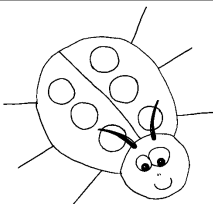
# Testing in the Dark

Bug storm

- Bug flow
- Hypothetical bugs
- Lean what matters
- What is a bug?
- New ideas
- Scope
- Mind mapper
- Spreadsheet




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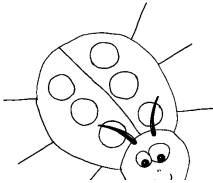
# Testing in the Dark

A la carte estimation

- Data on recent projects
- Size
- Complexity
- Bug escapes



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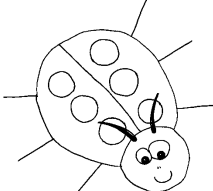
# Testing in the Dark

	<i>Small</i>	<i>Medium</i>	<i>Large</i>
<b><i>Simple</i></b>	Project Kermit	Project Ernie	Project Bert
	Effort: 2 days	Effort: 20 days	Effort: 50 days
	Duration: 1 day	Duration: 8 days	Duration: 22 days
	Production bugs: 6	Production bugs: 33	Production bugs: 23
<b><i>Typical</i></b>	Project Grover	Project Elmo	Project Big Bird
	Effort: 100 days	Effort: 200 days	Effort: 400 days
	Duration: 30 days	Duration: 75 days	Duration: 150 days
	Production bugs: 12	Production bugs: 9	Production bugs: 12
<b><i>Complicated</i></b>	Project Count	Project Snuffleupagus	Project Oscar
	Effort: 200 days	Effort: 400 days	Effort: 600 days
	Duration: 65 days	Duration: 80 days	Duration: 244 days
	Production bugs: 1	Production bugs: 0	Production bugs: 15

Table 1: Recent testing project menu

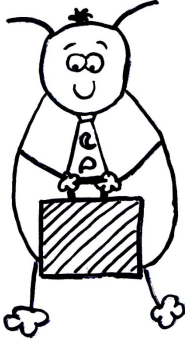
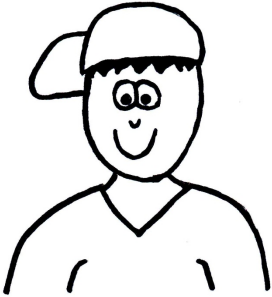
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# Testing in the Dark

- Questions?

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