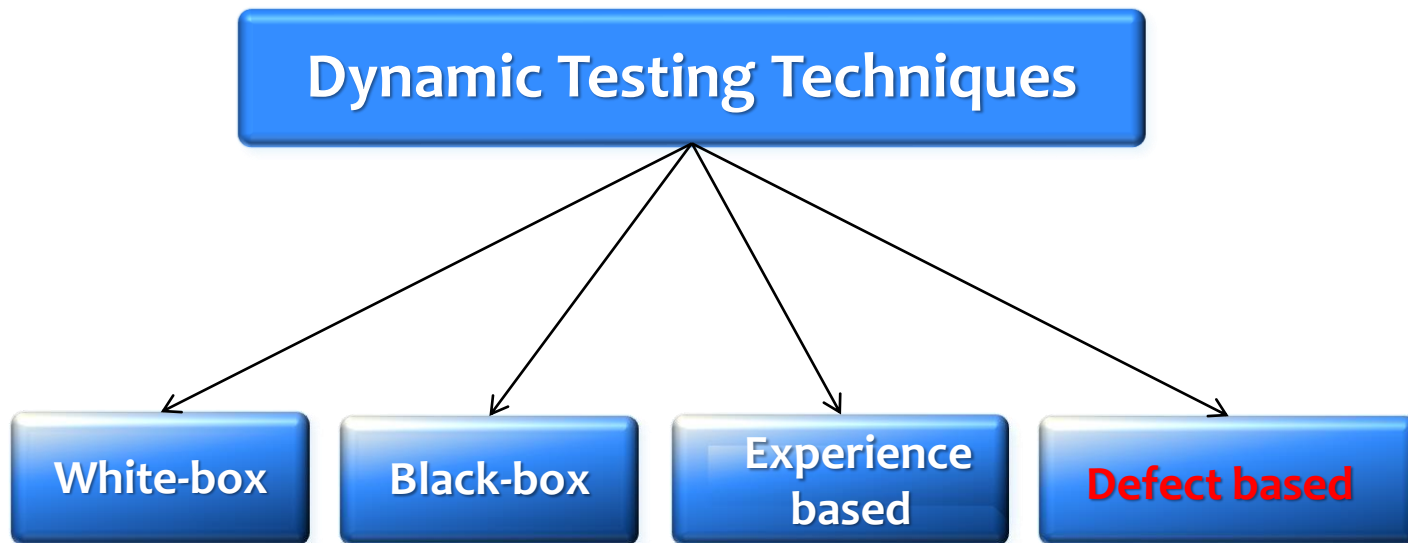


Defect Based Approach using Defect Taxonomy

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Defect Based Testing



Defect Based Testing

- In defect based testing test cases are derived on the basis of defects
- Specific tests are developed from specific defect category known as Defect Taxonomy

Defect Taxonomy

Defect taxonomies are categorized lists of defects which can include lists of defect types, root causes, failure symptoms, and other defect-related data

- **Informal Defect Taxonomy**
 - * Industry/application specific taxonomy
- **Formal Defect Taxonomy**
 - * Created to target specific defects commonly found within the organization

Defect taxonomy categories for a web application

- Functionality
- Error handling
- Graphics display
- Performance

Defect Taxonomy for the Functional category of a Web Application

Text Field

ID	Details
1	Valid data is not accepted
2	Invalid data is accepted
3	Length of input is not verified
4	Special characters are not detected
5	User error messages are not informative
6	User is not able to modify the erroneous data

Defect Taxonomy for the Functional category of a Web Application

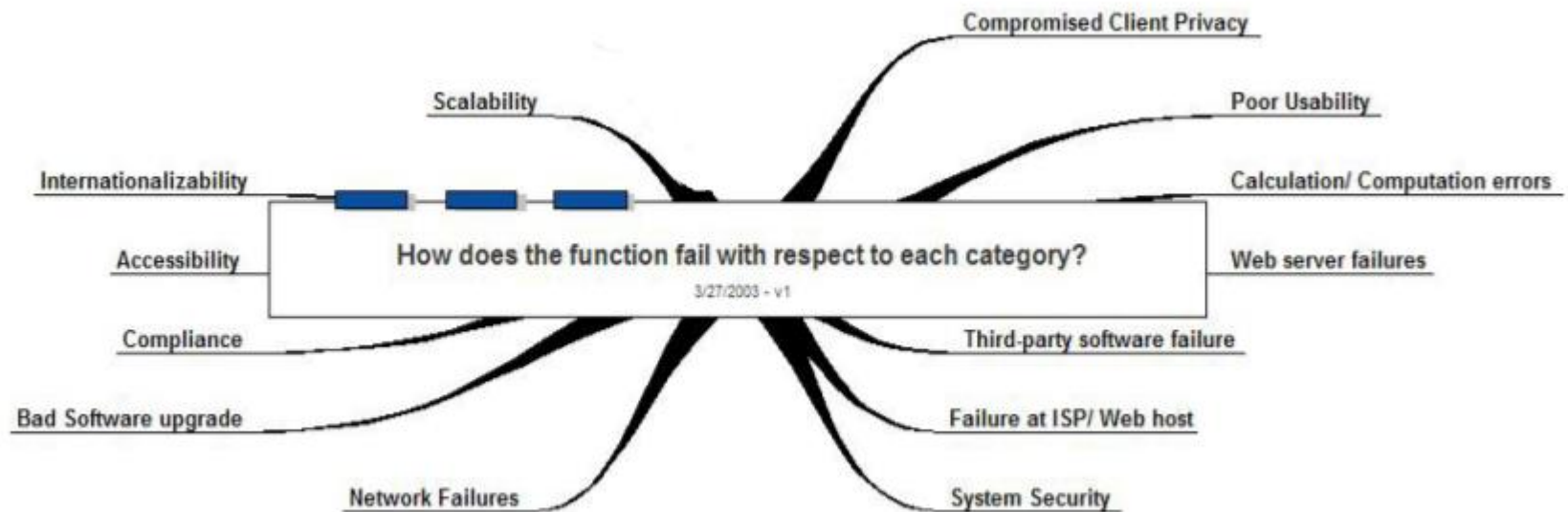
Date Field

ID	Details
1	Valid dates are not accepted
2	Invalid dates are not rejected
3	Date ranges are not verified
4	Precision data is not handled correctly (e.g., hh:mm:ss)
5	User is not able to modify the erroneous data
7	Rules are not applied (e.g., ending date must be greater than starting date)

Brainstorming session without a taxonomy

- Shopping cart does not load.
- Unable to add item.
- Unable to remove item.
- Unable to modify order.
- Correct item not added.
- Shopping cart incompatible with browser and browser crashes.
- Hidden functionality, not able to find checkout button.
- Oops! Clicked the wrong button.
- Broken URLs.
- Missing URLs.
- Shopping cart fails to populate the images in the shopping catalogues.
- Able to hack the cart and change prices from client side.
- Customer credit card numbers compromised due to security glitch.
- Get “Page not found” error on clicking checkout button.

Brainstorming session with simplified version of the e-commerce taxonomy





Poor usability:

- The user cannot add an item directly from the search result page.
- The user does not know at every single point in time how many items are in the cart and the total price.
- User has to go through too many pages to complete an order.
- Difficult to use the system: difficult to add, remove and update.
- Cannot see the final value or estimate the checkout price.
- Hard to use the “Search” function and hard to locate the “Search” field.
- Unable to find “Help” menu
- Customer feedback forms unavailable.



Calculation/computation errors:

- Removing/adding an item from the cart does not update the total.
- Negative number of items will discount from the total price.
- Shopping cart doesn't update/refresh price when adding new items.
- Discounts are not computed correctly.
- Postage fees or state taxes are not computed correctly.
- Recalculate function fails.



Compliance

- Site does not follow HTML standard (W3C compliant)
- Non-compliant with possible credit card/ merchant account regulations.



Scalability

- The adding to cart, check out, and search processes take much longer during peak hours.
- Timeouts of requests during peak hours.
- Site cannot handle additional web/application/database servers



System security

- Test the strength of encryption.
- Test for vulnerability to buffer-overflow attacks.
- Test for vulnerability to SQL query attacks.



Client Privacy

- Check if there is a privacy policy
- Check for cookie expiration: check if anyone can access the content of the cart of a previous user (case of a shared computer)
- Test for existence of timeout routines that time-out the billing page when no activity is seen.



Web-server failure

- No custom error page in case of “Page not found error”.
- Server fails under heavy load Third-party software failure
- Failure of credit card verification system



Network Failures

- Link to inventory database goes down
- Link to user profile database goes down



Failure at ISP/Web Host:

- The user successfully checks out but the notification e-mail never reaches him.
- Non-restorable data loss at hosting center.
- Back-up routines fail at hosting center and order data lost.

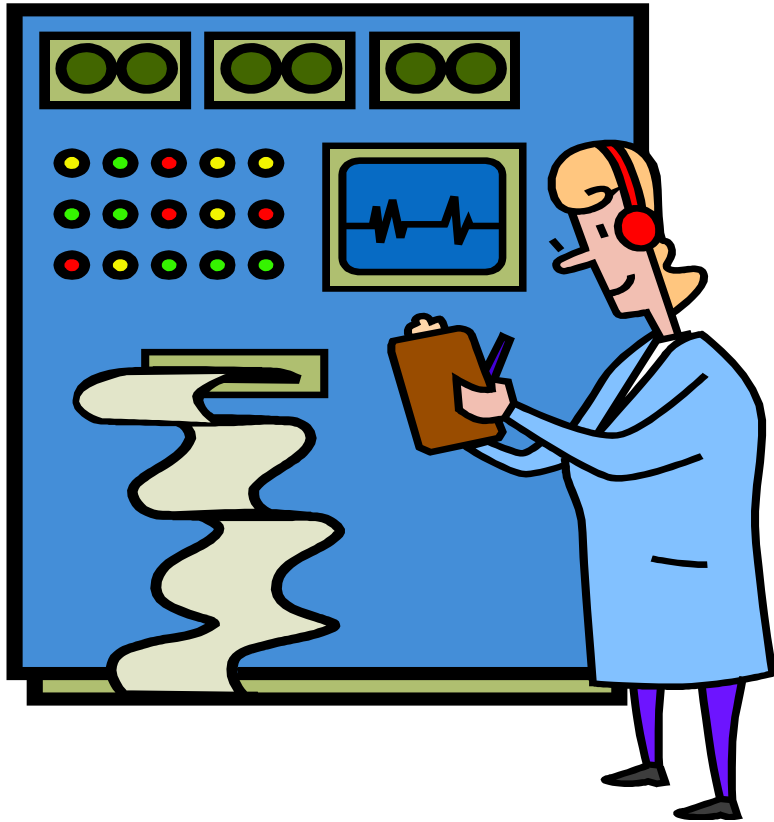
Observations from the session with Taxonomy

- * There were an increased number of good and more focused test ideas.
- * Test ideas were structured and organized
- * A few well known types of security attacks, popular flaws were addressed when the testers were specifically prompted.
- * Whole exercise was more interesting than a traditional, unstructured test idea generation meet.

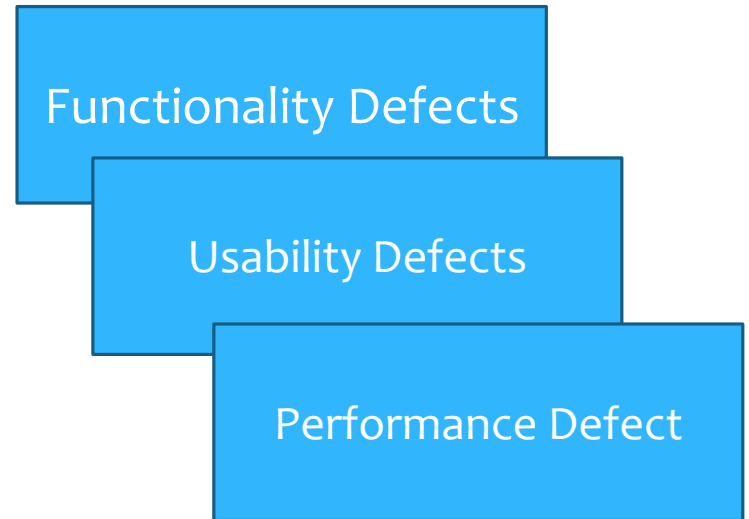
Defect Based Testing Coverage

- * Creating a test for every defect depends on the likelihood and/or impact of the defect
- * Sometimes tests might not be necessary at all to cover the defect
- * Sometimes several tests might be required to cover defect

How to create your own Taxonomy



Project defects



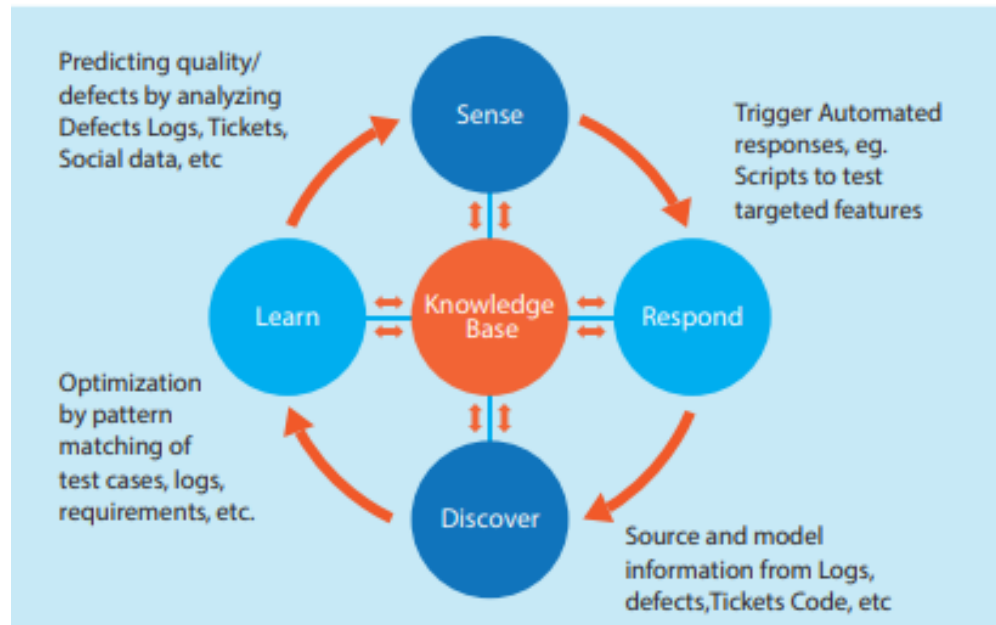
Qualities of Good Taxonomy

A Good Defect Taxonomy for Testing Purposes

- * Can help someone with moderate experience in the area to generate test ideas and raise issues
- * Has enough detail for a new person to understand the problems
- * Is expandable and ever-evolving

Future of Testing using Taxonomies

- * AI led -quality assurance software



Future of Testing using Taxonomies

- * High test coverage within time boxed window
- * Reduction on testing cycle and testing efforts
- * Digital and App testing