Deriving Test Strategy from UX Design Practices

Using UX design practices to drive Agile Exploratory Testing

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Agenda

- Test Strategies
  - Pitfalls
  - Agile testing
  - Exploratory testing
  - UX strategy for exploratory testing

- UX Design Process
  - What is UX Design?
  - User Research, Personas & Scenarios
  - Task Analysis
  - UX Based Testing
  - User Stories & Acceptance Criteria

- Case Study
  - The Problem Statement
  - Personas & their Goals
  - User Attributes
  - Mock-up – a review
  - UX-driven exploratory testing

- So What?
Test Strategies

- Traditional test strategies and what is wrong with them?
- Agile testing techniques provide continuous feedback.
- UX design as strategy for exploration
Most of the traditional approaches that drive test strategies are based on some attributes that is derived from other assessments such as requirements-driven, risk-driven or metrics-driven test strategies.

The problem with these approaches is that they are:

- Inside-out view of the solution rather than an outside-in.
- Prescriptive rather than being adaptive.

Test strategies are closely aligned with development methodology.

Test strategies have to be dynamic and adaptive.

Test strategies should not merely assess quality as a function of stated requirements, they should continuously assess “fitness-for-use.”

Agile methodology provides the right adaptive framework.
Exploratory testing techniques (ET) have been developed not only as a best-practice for testing but also found to be most suited for agile testing.

Agile methodology manages risks incrementally – eliminates big-bang integration issues with quality.

Lisa Crispin in her book agile testing describes metaphorically that a project is like a car that is on cruise control but the terrain and the trajectory are also unknown.

Automation accelerators are practiced today which eliminate Technical Debt (script-less automation and improved object recognition algorithms) – Ward Cunningham first coined technical debt in 1992.
• Over time the technical debt grows exponentially – and becomes insurmountable.
• There is never time to do it right, but doing it wrong will lead to failure. This is the number one cause of poor products from a development perspective.
• Ken Schwaber and Jeff Sutherland provide some original insights into this term which was first coined by Ward Cunningham in 1992.
• Exploratory testing techniques are not to be confused with ad-hoc or random testing and is highly adaptive and based on feedback which is the key tenet of agile software development.
• Time-boxed evaluation of the solution space within the bounds of a charter and followed by a retrospective.
• What I am proposing here is to leverage User Experience (UX) Design process as a strategy for exploratory testing strategy and guide test execution.
James Bach’s minefield analogy: Repeatedly running the same scripted tests over and over again reduces the chances of uncovering any new bugs just as walking on the footsteps of another in a minefield is unlikely to set off any new mines.
Session based test management (SBTM) is a popular exploratory testing technique. You can use the UX design as a framework to SBTM.
Jesse James Garrett’s elements of UX describe the activities and functions at each plane during a UX design process.
Knowing what the user really needs and catering to those needs make-or-break any system.
Customer is always right and does not know what she wants until she sees it.
• Very often development teams focus only on the **one user** that it targets the solution to. And sometimes, the teams break these users by business hierarchy or functional groups.

• For acceptance and ‘fitness for use’ though, end-users have to be studied and true *acceptance* criteria established within the context of these users.

A lot of times the true end-users are not accessible to the development teams as well.
• Target user-base is established. Number of personas depends on the extent of this user-base.
• Basis for understanding users in the context of their environment.

“To design a tool, we must make our best efforts to understand the larger social and physical context within which it is intended to function.” – Bill Buxton

Solution or product strategy is where this larger social physical contexts for their use are established.
• Essential use cases (Constantine & Lockwood) describe the interaction with a system in a technology and implementation independent manner.
• Task optimization studies conducted *in-context* under the actual operating and working conditions of the user.
• User stories are the feature lists that developers and testers use to develop the solution. Scenarios are the vehicles through which user stories manifest.
• Good user stories follow the INVEST paradigm. *Define a valuable user value story – implement and test it in a short iteration - demonstrate/and or deliver it to the user – capture feedback – learn – repeat forever!* – Dean Leffingwell
• Locality of reference
• Categorization and cataloging of content
• While reviewing skeletal layer, evaluating the structure of the presentation with a given task at hand, the “location” in the software becomes the context of interaction.
• It is not enough to test linearly for a static goal from a given context. Personas and end-to-end scenarios which span multiple tasks provide the framework for evaluation of navigation and interaction because interaction contexts change as task goals change for the persona.
Designing for the lowest common denominator, forgiving application – one that is resilient.
Heuristic assessment: Easy access to content, guidance to workflow and conversion funnel.
*Affordance* is the quality of the object allowing an action-relationship with an actor.
UX Based Testing by the Elements

**Surface**
- Rich interactive experience
- First opportunity for error prevention

**Skeleton**
- Domain decomposition – task analysis
- Usability flows and interaction – eye tracking

**Structure**
- Layout validation – Card sorting
- Content presentation & alignment

**Scope**
- Solution capabilities
- Functional objectives & business goals

**Strategy**
- Convergence of user needs & solution strategy
- Addresses user-base & user research
When exploration is guided by the user strategy, scenarios become the vehicles that drive the acceptance assessment.

- Scenario + personas => tool for their tasks
Case Study – Mobile Application

- The problem statement
- Personas & their Goals
- User attributes of the user-base
- Mock-up based on UX Design
- UX-driven Scenario-based Exploratory Testing
The Problem Statement

- **Objective**: To develop a bird-spotter application on the mobile platform that is at the intersection of
  - Crowd-sourcing,
  - Social media and
  - Collaborative computing

- **Value Proposition**: The bird spotter application provides an easy-to-use bird identification and learning platform for amateurs. It provides collaborative tools for recording bird sightings, population studies and tracking migratory patterns for the professionals and advanced users by enabling geo-tagging, collaborative computing and instant messaging.

Feature list (epics & themes) for the bird-spotter application

- Spotter recording & searching capability that includes geo-tagging
- Social networking capability to share information
- Capturing supplementary information – bird calls, pictures – local storage
- Bird catalog and look-up capability
- Synchronization for collaborative computing
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Personas & their Goals

Alex is a 10 year old who likes to enjoy the outdoors in the company of his dad who feeds birds in the near-by park. He lives in the suburbs of Chicago and is out walking with his dad one evening. He spots a new kind of bird that catches his eye in the tree. He is curious to find out what the bird is and asks his dad whether he has seen it before. His dad wants to find out whether it is native to the local habitat or a migratory one. Alex wants to narrate his watching experience to his class. He asks his dad who is clueless and wishes he could help his son with his class project which he thinks is a great idea.

Amateur

- Domain knowledge – challenged user
- Must enable visual & observable identification
- Browse listing – as few interactions as possible – intuitively
- Limit listing to avoid overwhelming user
- Simple vocabulary so that user does not get confused
Personas & their Goals

Frank is an avid bird watcher who wants to spot exotic birds that are seasonal and migratory. He wants to share the spotting information with others in the community. Frank is expecting to use the application while on the road or outdoors. He would like to report his observations to the conservatory once he returns home or office where the higher network bandwidth is available. Further, Frank is interested in tagging other semi-professional bird-spotters from the comfort of his home and exchange information.

Avid bird spotter

- High domain knowledge but not tech-savvy
- Advanced search capability – search by zoological name, etc.
- Record observations locally but share collaboratively
- Advanced edit features
- Do not limit list of birds by geographic locality
- Vocabulary that is not tech-heavy
• Demographic – typical population based categorization without consideration of other factors
• Psychographic – based on social class, lifestyle, personality characteristics
• Ron Jeffries of XP programming fame describes 3Cs – Card, Conversation and Confirmation
Personas & Scenarios

When personas are not merely demographic data, rather capture geographic, psychographic or ethnographic and technical savvy attributes, they provide a valuable set of scenarios and conditions of use.

**Amateur**
- Domain knowledge — challenged
- Visual & observable identification
- Browse listing — few interactions
- Limit listing to avoid overwhelming user
- Simple vocabulary

**Avid bird spotter**
- Not tech-savvy but an domain expert
- Advanced Search
- Record locally but share collaboratively
- Advanced editing
- Do not limit listing of available species
- Rich vocabulary

**Research Student**
- Tech savvy and domain expert
- Advanced browsing/searching
- Advanced recording
- Collaboration, crowd-sourcing and advanced analytics
- Administration
- Geo-tagging.

Personas and scenarios make identification of acceptance criteria for the scenarios easier and objective.
User attributes that Define the User-base

- **Motivation:** The novice users want to learn to identify the birds in the neighborhood in an interactive way without contacting the subjects (birds). The amateur user wants to spend time in the outdoors and spend the time educationally, informing herself about the types of birds in the area. The professional or advanced user wants to contribute to the study and preservation of wildlife, environmental conservation and understand the migratory patterns of birds. She wants to share the sightings collaboratively with other members of her conservation club.

- **Age (demographics):** kids and amateurs want to explore and learn. Active adults want to spend time outdoors meaningfully and the elders want relaxation by the outdoors that is also informative.

- **Operating environment:** outdoors, high mobility, smaller screens, not tethered

- **Domain knowledge:** the application should cater to the needs of a novice user without any knowledge of computers or rich interactive devices as well as people who are tech-savvy that are comfortably and routinely use multiple platforms in their daily life.

- **Frequency:** Expect to use the application on a daily basis.

- **Vocabulary:** the choice of words should be such that they are easily understood by kids of readable age.

- **Scale:** The numbers of bird sightings can vary by geography. An avid bird watcher has to be able to access many different birds up to the hundreds.

- User attributes govern the way the different personas use the system.
- They serve to be the bounds of the design space – and so provide the space for exploration.
Mock-up based on UX Design

Bird Spotter

Home
Observations
Preferences

Last logie: 03/05/2012
Total Records: 12
Sync Records: 4

Search by Name
Search
Info
Clear

Home
Observations
Preferences

New
Erase
03/10/2012
Atlanta, GA

<pic file name>
Info

<sound clip file name>

Lorem ipsum
UX-driven Scenario-based Exploration Testing

- “Your friend saw a bird in central park and wants to share the spotting information with you as she knows you are pursuing a degree in ornithology. She wants to use the application to capture the details and share it with you instantaneously through instant messaging.”

- “You want to search through all recordings you made in the field as you prepare to write-up a report of the recent field trip where you observed over a 100 different species of birds. Once you have found the specific species you are reporting on you want to compare against recorded spotting by others in the community by tag-clouds.”

- “As you prepare for your next field trip, you want to make sure you have all of the latest catalog of birds that you expect to find in the geographic location you are going to but limited only by space constraints in your mobile device. You want to control the downloadable data to your phone restricted by geography and content size.”

- “You are an expert in birds and you want to be able to quickly search the catalog by zoological species name rather than by visual characteristic to record your information. Once you’ve found it in the catalog, you simply want to auto-populate the attributes that you want recorded such as geographic location but want to add your own picture and sound clips you captured.”
UX-driven Scenario-based Exploration Testing

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So What?

- Why leveraging UX is not in vogue? And what can you do about it?
Why is leveraging UX Design for testing not in vogue?

- Test professionals and managers are not familiar with the UX design process
- Test professionals are kept away from engaging with the solution team as the requirements are elicited and designs are created.
- There is very little literature available on the adoption of UX design as a core competency in many solution development methodologies including agile solution frameworks.

- Bring about awareness amongst your teams and management on the benefits of testing early.
- Learn UX design and understand the process and benefits.
- Think laterally about test strategies and try cross-functional teaming to improve the testing approach.
- Strive for continuously engaging the solution teams and the customers to solicit feedback and adapt your tests.
Thank You!

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References