Usability Test & Monitoring

IF3110 – Web-based Application Development

What is Usability?

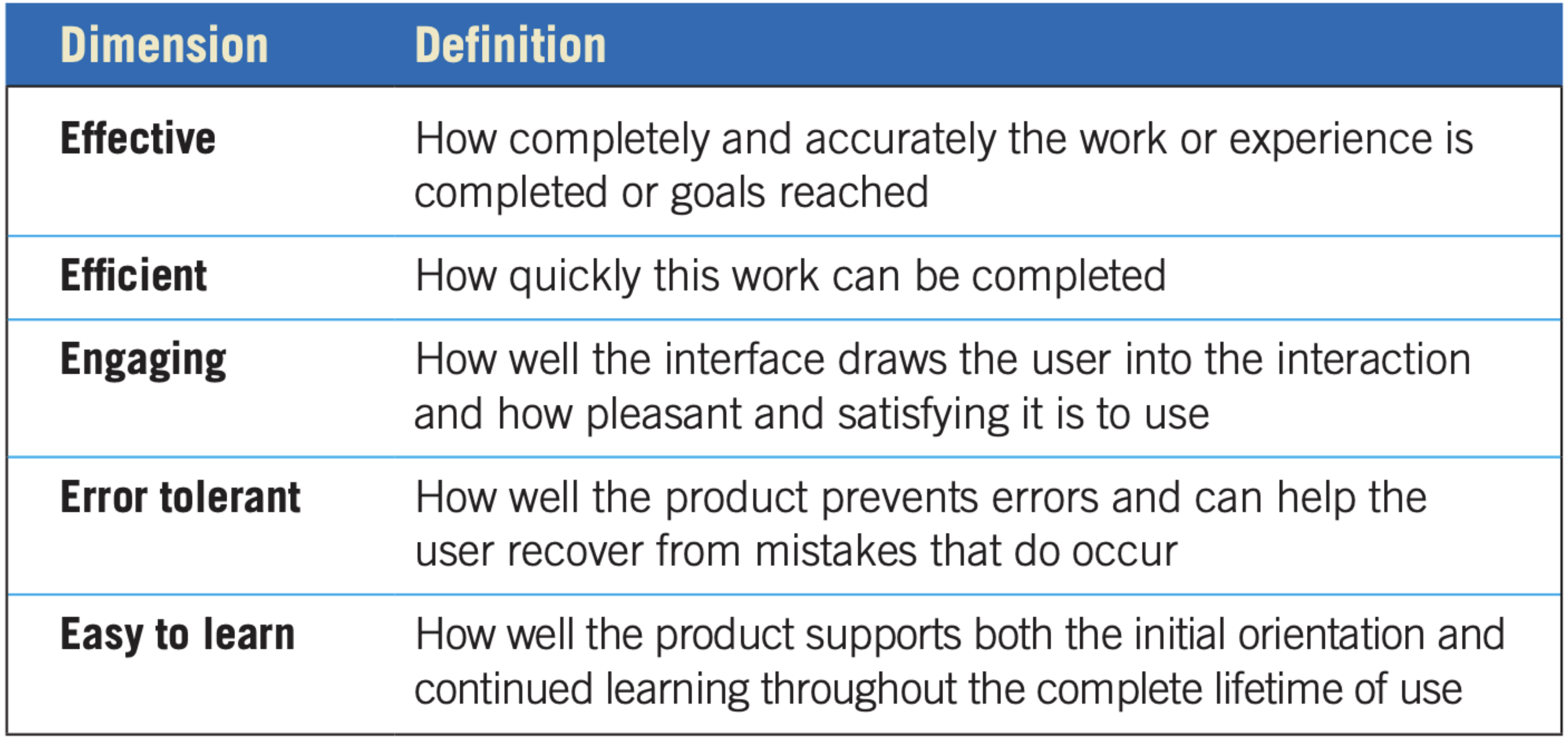
“The extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.” ISO 9241–11:2018

Usability

- Be the User - Jakob Nielsen
  - Learnability: How easy is it for users to accomplish basic tasks the first time they encounter the design?
  - Efficiency: Once users have learned the design, how quickly can they perform tasks?
  - Memorability: When users return to the design after a period of not using it, how easily can they re-establish proficiency?
  - Errors: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
  - Satisfaction: How pleasant is it to use the design?

Usability Dimension

Whitney Quesenbery 5Es



Dimension	Definition
Effective	How completely and accurately the work or experience is completed or goals reached
Efficient	How quickly this work can be completed
Engaging	How well the interface draws the user into the interaction and how pleasant and satisfying it is to use
Error tolerant	How well the product prevents errors and can help the user recover from mistakes that do occur
Easy to learn	How well the product supports both the initial orientation and continued learning throughout the complete lifetime of use

Test User

- Be the User
  - Imagine and and visualize, what would this user look like?
  - The users you've considered thus far would probably be sitting at a desk with their hands keyboarding sixty words per minute and their gazes set upon an 20-inch screen.
  - A mobile user might be walking along a busy street or looking down from a mountain top. Their screen will be a few inches across, and they may be able to type only five or ten words per minute.
  - What kinds of content and means of participation will best suit this class of users?

Clean Up User Experience

- Multiple programmers => easy for small inconsistencies to creep into the designs of various pages
  - Look for larger problems, how consistent task accomplishment within the application you've built is with the page design and flow vs popular app, such as Amazon, eBay, and Google.
    - Remember that it is **unique content** that should distinguish one Web site from another, **not** unique **interface**
- Check total click for navigate. (Ex. user must click down one more level to find out how many items are in a category then back up and click down to another, then back up and click down to another, ...)?
- How much of the screen space is taken up by site bureaucracy versus how much is available for displaying information?
  - Such things as identifying logos, navigation links and icons, mini search forms, and copyright and policy notes.
  - Could some of that bureaucracy be eliminated, or at the very least be pushed to the bottom of the page?

Usability Test

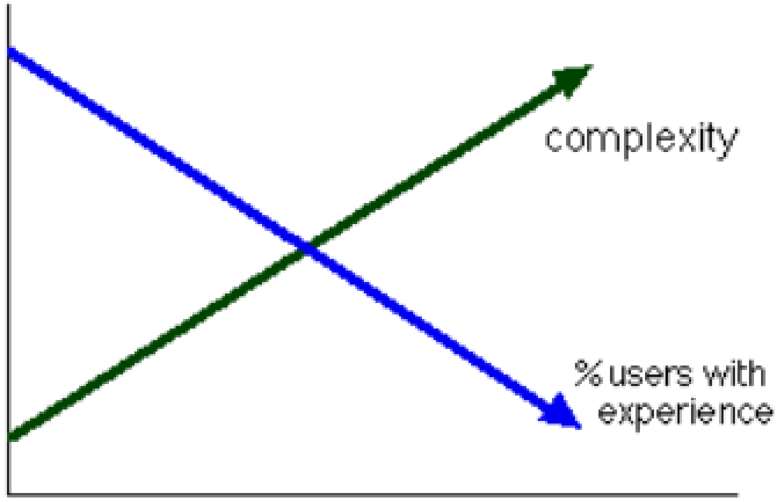
The activity that focuses on observing users working with a product, performing tasks that are real and meaningful to them.

- Formative testing—while the product is in development, with a goal of diagnosing and fixing problems; typically based on small studies, repeated during development.
- Summative testing—when the product is nearly finished or finished, with a goal of establishing a baseline of metrics validating that the product meets requirements; generally requires larger numbers for statistical validity.

Usability Test

- Case: Forum
  - Done coding: Users can register. Users can ask questions. Users can post answers. Is it usable?
  - It is only in encounters with real users that most problems become evident.
- One reason is the large and growing user experience gap
  - Users are less sophisticated while the applications have grown more complex.
  - Text based web → +JavaScript, ActiveX, Java, Flash

Usability Test



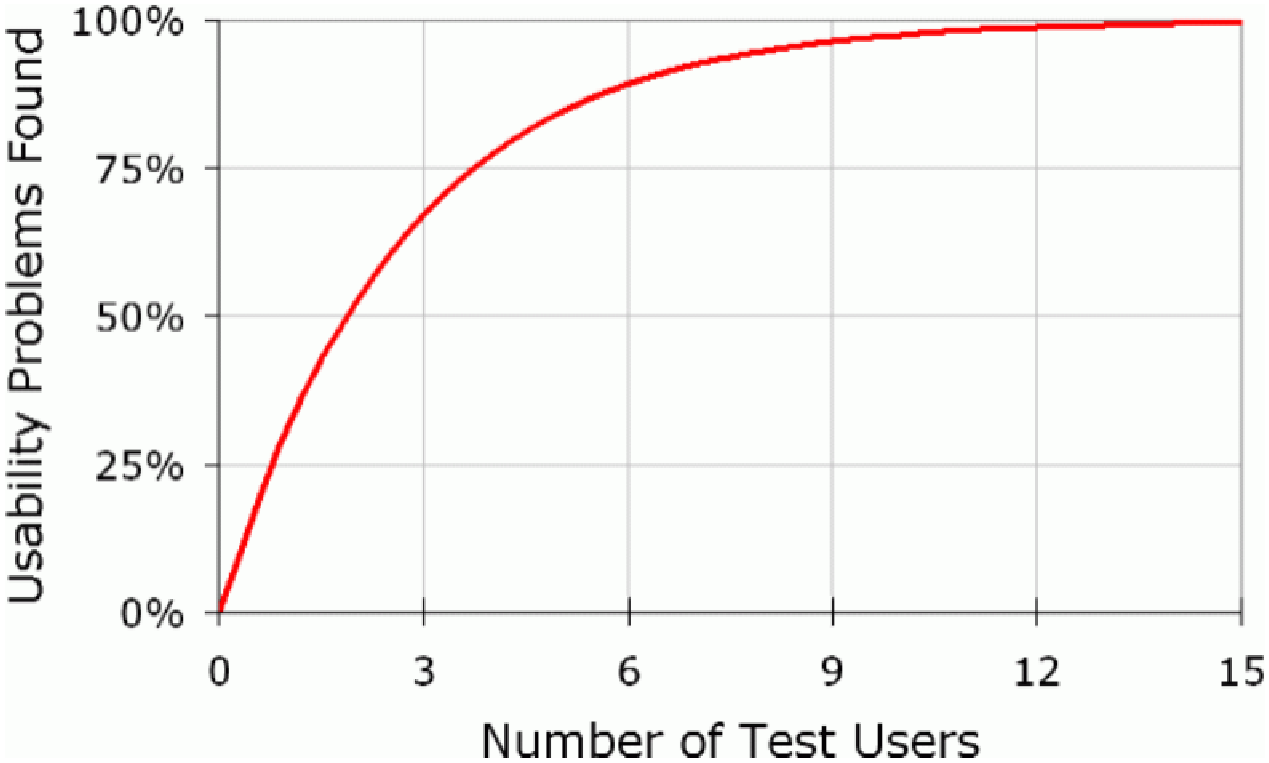
time

Usability Test

- Different is **bad** if it means the user needs **extra time** or extra **clicks** to get to the desired task
  - on **each** extra click there is a **50 percent** chance that a user will **abandon** the site altogether
  - Webvan went bankrupt, taking with it $1.2 billion of invested cash, because of the inferior usability
- Don’t imagine your own good taste, instead, **copy** the **successful** Internet services (e.g., Yahoo!, Amazon, Google) or listening to the users?
  - "those with limited knowledge in a domain suffer a dual burden: Not only do they reach mistaken conclusions and make regrettable errors, but their incompetence robs them of the ability to realize it."

Usability Test Number of user

- You only need 5 user for test!



According to Nielsen, you should stop after the fifth user because you are seeing the same things repeated, and you will have reached the optimal return of 85% of the findings to be uncovered.

It’s called “Discount” usability testing

Usability Test Number of user

- 0 user = 0 insight
- 1 user = 1/3 all problem!
- 2 user = something new, but mostly overlap
- 3 user = small new data
- 5 user = 85% problem
- After the fifth user, you are wasting your time by observing the same findings repeatedly but not learning much new.
- Do iterative! Retest after re-design
- You need to test additional users when a website has **several highly distinct groups of users**

Usability Test Ideal Condition

1. a test subject whose experience with computers and the Internet is comparable to what you expect for your average user
2. a set of tasks that you want the subject to try to accomplish
3. a quiet comfortable environment for the test subject
4. no assistance from the product developers
5. observation of the test subject through a one-way mirror
6. videotaping of the test subject's experience for later study

Usability Test Key Question

- **How long** does it take the subject to **complete** a **task**?
- Does the subject get **stuck** on any step?
- Does the subject indicate **confusion** as to the appropriate **next step** at any time?

Example usability Flow

1. starting as an unregistered user at the site home page, find the area on the site where one would ask questions of other users (if you can't accomplish this task, or any other task on this page, within 3 minutes, give up and move on)
2. read through the existing questions and answers to determine whether or not *[some question that has been asked already]* has been asked and answered already; if not, post a question on that subject (registering if necessary)
3. read through the existing questions and answers to determine whether or not *[some question that has been not been asked already]* has been asked and answered already; if not, post a question on that subject
4. log out
5. log in with the existing username/password of *[user/pass]* and try to find all the unanswered questions in the discussion forum
6. answer the question(s) that you yourself posted a few minutes earlier, pretending to be this other user
7. log out
8. log in with the existing username/password of *[admin username/password]* and find the administrator's pages
9. delete the discussion forum thread(s) that you created earlier
10. log out

Notable example flow

1. If your first subject has a disastrous experience, consider taking a few hours off to fix your software, add links and annotation, etc., before proceeding with the second subject
2. If the subject is completely confused and clicking around randomly, let the subject continue until he or she figures it out.
3. Keep track of the number of seconds each subject requires to complete each task..

Chicken and egg problem

- Case Forum:
  - No User, because nobody answer, nobody ask.
- Create an incentive system that rewards users for exhibiting the desired behavior.
  - At amazon.com, the site owners want users to write a lot of reviews.
  - They don't want to pay people to write reviews.
  - The solution is to recognize contributors with a "reviewer rank".
    - If a lot of other Amazon users found your reviews useful, you may rise above 1000 and a "Top 1000 Reviewer" icon appears next to your name. Top 10 reviewers have written more than 5000 reviews, all free of charge to Amazon!

User monitoring

- How to monitor
- How use that information

1. Ask the right question

- What are the URLs that are producing server errors? (answer leads to action: fix broken code)
- How many users requested non-existent files, and where did they get the bad URLs? (answer leads to action: fix bad links)
- Are at least 50 percent of users visiting /foobar/, our newest and most important section? (answer leads to action: maybe add more pointers to the new section from other areas of the site)
- How popular are the voice and wireless interfaces to the application? (answer leads to action: invest more effort in popular interfaces)
- Which pages are causing users to get stuck and abandon their sessions? I.e., what are the typical last pages viewed before a user disappears for the day? (answer leads to action: clarify user interface or annotation on those pages)
- Suppose that we operate an e-commerce site and that we've purchased advertisements on Google and www.nytimes.com. How likely are visitors from those two sources to buy something? How do the dollar amounts compare? (answer leads to action: buy more ads from the place that sends high-profit users)

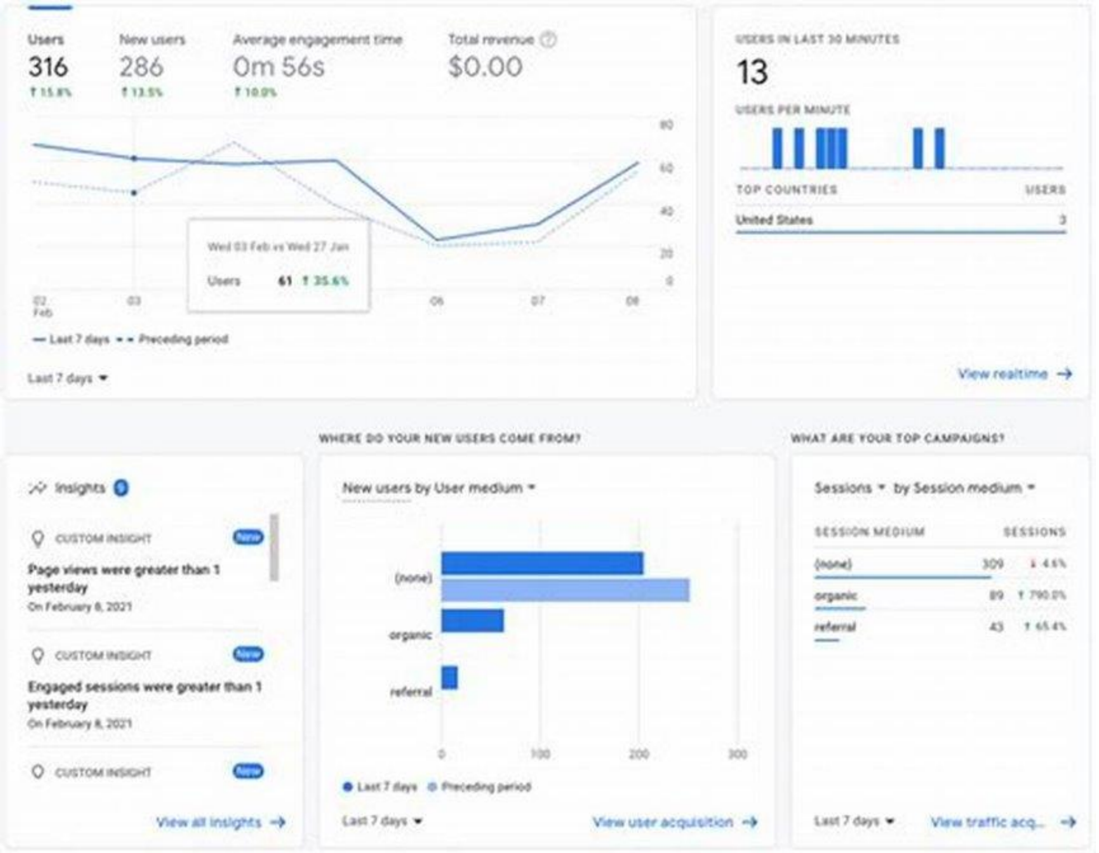
Step 2: Look at What's Easily Available

- Access log
  - 193.2.79.250 - - [06/Mar/2003:09:11:59 -0500] "GET /dogs/george HTTP/1.1" 200 0 "http://www.photo.net/" "Mozilla/4.0 (compatible; MSIE 5.0; Windows NT; DigExt)"
- Error log

Step 3: Figure Out What Extra Information You Need to Record

- Extends standard logs
  - configure the HTTP server program to add cookie header contents
  - augment your software to log additional user activity into the RDBMS and construct ad hoc query pages in the site administrator area of the service
  - construct a full dimensional data warehouse of user activity

Example tool: Dashboards & Flow Analysis



TOP COUNTRIES	USERS
United States	3

CUSTOM INSIGHT New

Page views were greater than 1 yesterday
On February 8, 2021

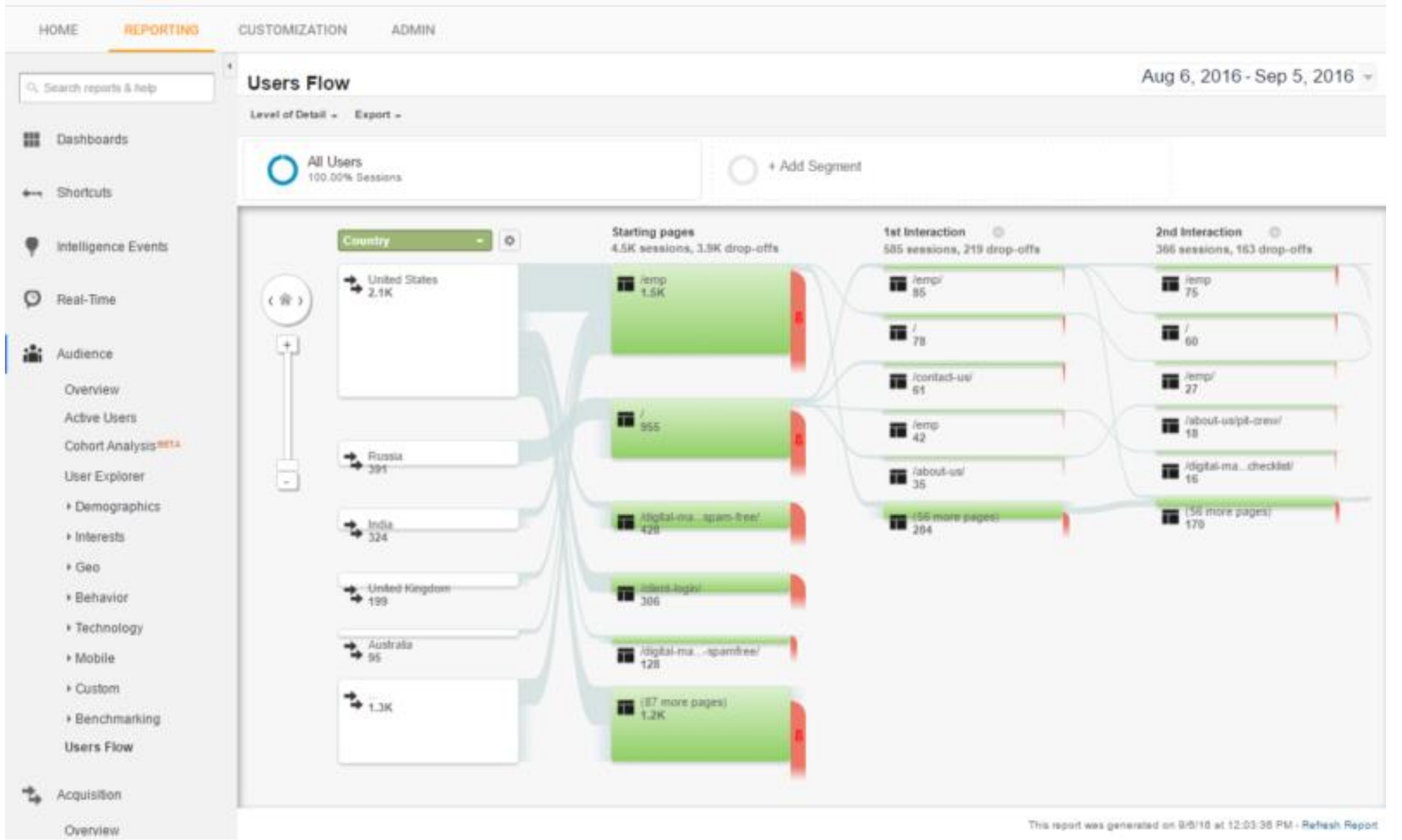
CUSTOM INSIGHT New

Engaged sessions were greater than 1 yesterday
On February 8, 2021

CUSTOM INSIGHT New

View all insights

SESSION MEDIUM	SESSIONS	
(none)	309	↓ 4.6%
organic	89	↑ 790.0%
referral	43	↑ 65.4%



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