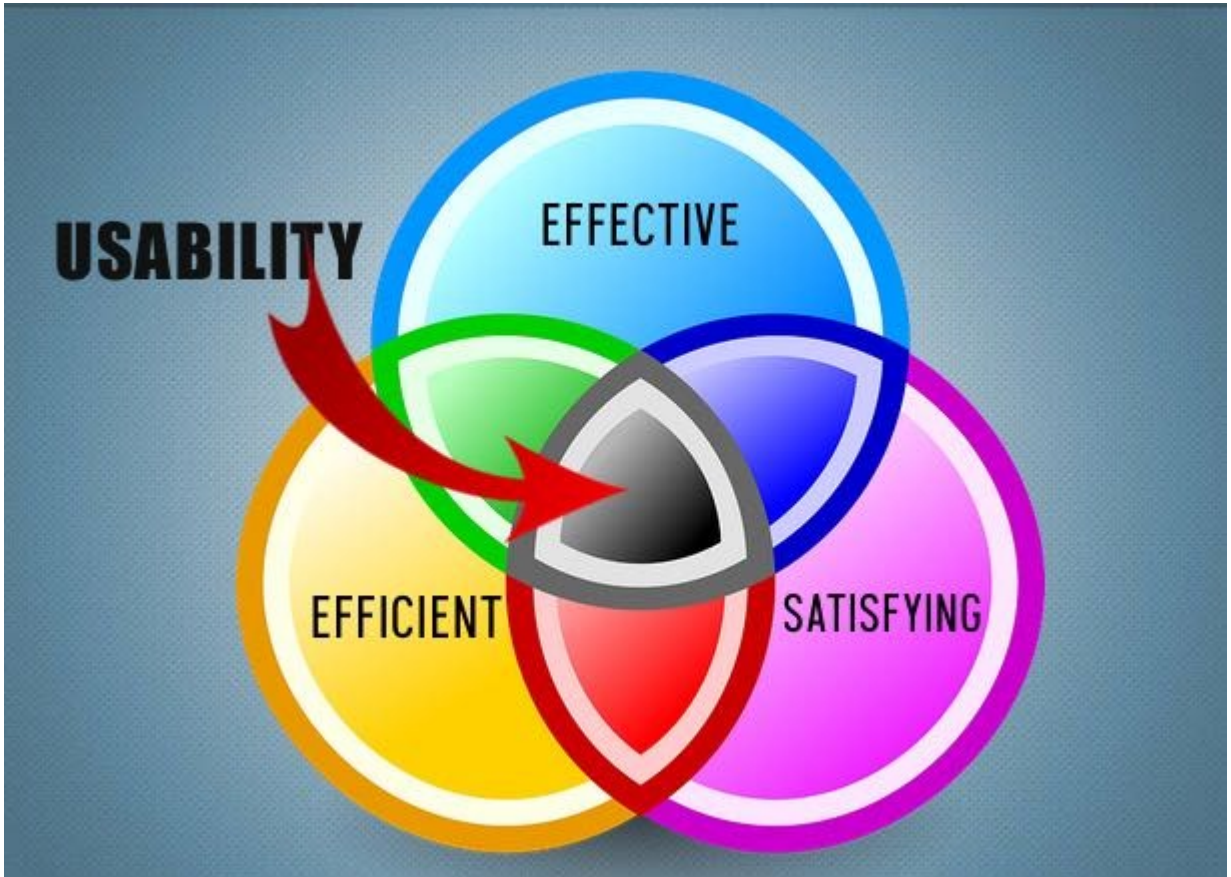
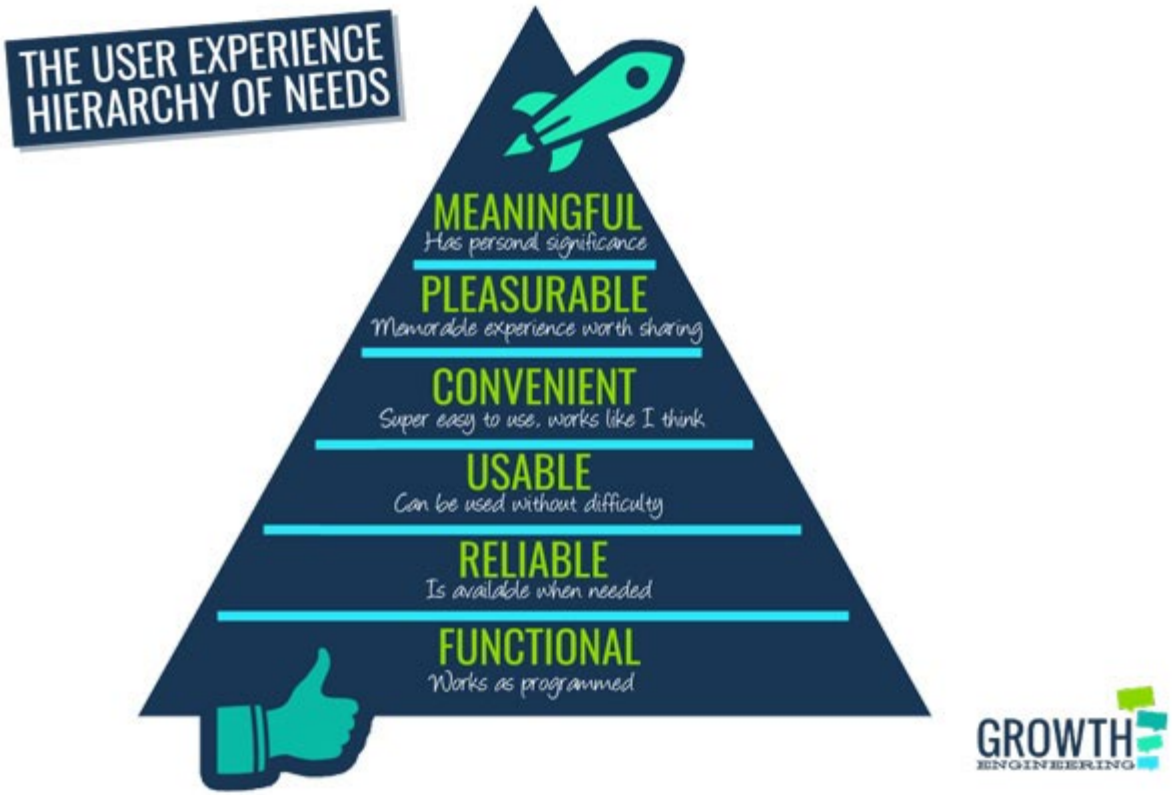
Introduction to Usability

- Understanding the ease of use and effectiveness of a system.



Importance of Usability

- Usability impacts user satisfaction, productivity, and error rates.

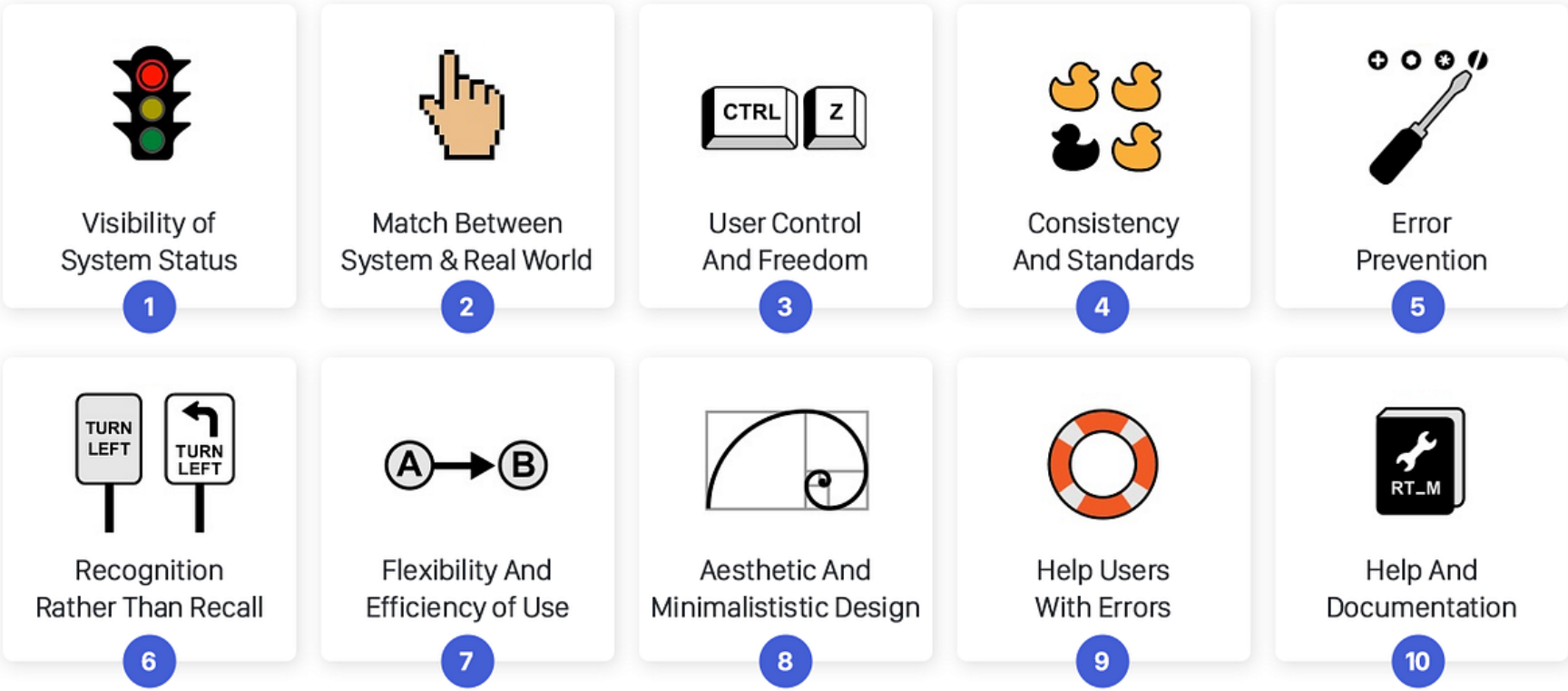


Heuristic Evaluation

- A method to identify usability problems using usability principles (Nielsen, 1994).

Usability Heuristics

- Common principles: visibility, consistency, error prevention, and more.



Cognitive Walkthroughs

- Evaluating task flow based on user goals and system feedback.

Steps in Cognitive Walkthrough

- Define tasks, identify goals, analyze actions (Wharton et al., 1994).

Task Action step				Action success	Action failure
Will the user try to achieve the right result?	yes ☐	from experience	the system tells them to	no ☐	
Will the user notice that the correct action is available?	yes ☐	from experience	they would see a call-to-action	no ☐	
Will the user associate the correct action with the effect they're trying to achieve?	yes ☐	from experience	a prompt/label matches action	no ☐	

Think Aloud Studies

- Users verbalize thoughts while interacting with a system.

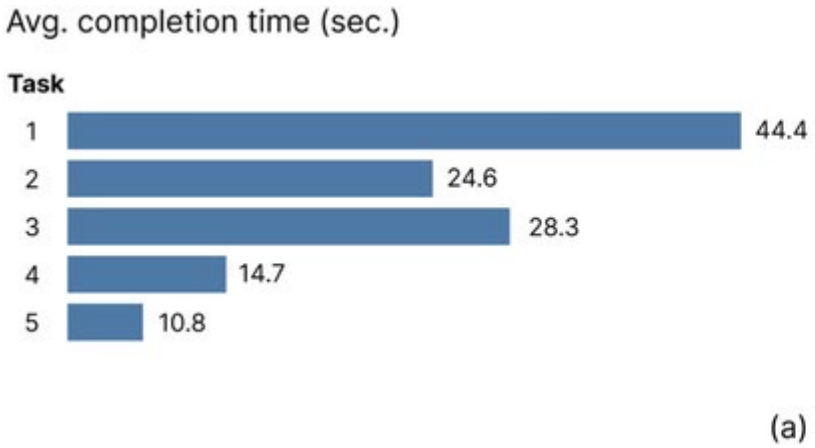
Problem type	Description	Typical protocol-items signalling the problem
Uncertainty about action planning	Subjects do not see where they possibly could go (click) next, or they see several possibilities but haven't got a clue about which one to select	I see books, I see a lot of things...but where should I go now? Can I click this at all? OK, let me see of something is clickable here.
Orientation	Subjects do not understand where they are or cannot interpret their current location in the context of other locations in the website	What does this mean? Where am I now? I guess I should be in a completely different part of the website?
Stuck in loops	Subjects think they move on to a different location in the website but appear to (repeatedly) return to where they came from	… hey, I've been here before! **, again this stupid page.
Unexpected result	Subjects expect a certain result after clicking a link, but this result does not occur	…and then I click this and hope something happens…but it doesn't.
Failed repetition of actions	Subjects think they remember how to navigate because they feel they did that before, but the (assumed) repetition fails	Oh … yes…and now I should be able to select a title here…. Oh no, apparently I can't.
Reasoning about navigation logic	Subjects start reasoning about why the interface makes them think they can find certain information behind a link	A clock that is ticking… ah, perhaps that's a time machine. Let me try that….
Interface manipulation problem	Subject have problems handling certain objects in the interface (e.g. dragging a pointer over a calendar in order to get to	There's a calendar here, but when I click it nothing happens… how can I do this?

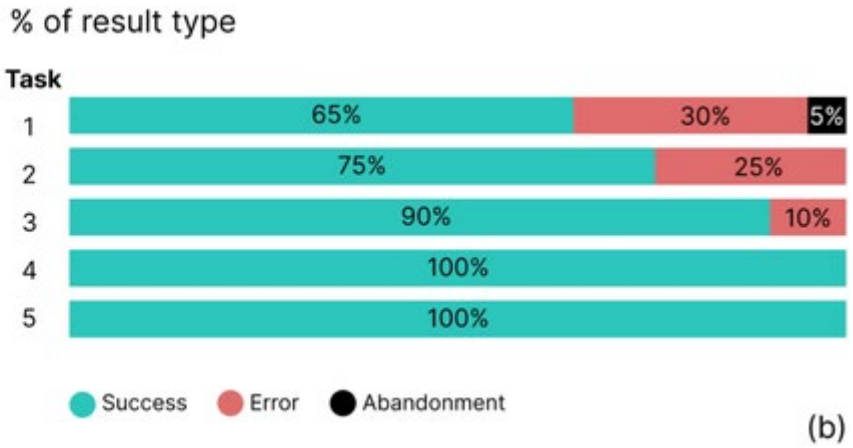
Benefits of Think Aloud

- Provides insights into user decision-making processes.

Usability Metrics

- Objective measures: task completion rate, error rate, and time on task.





Task Completion Rate

- Percentage of users who successfully complete a task. Aim for >85%.

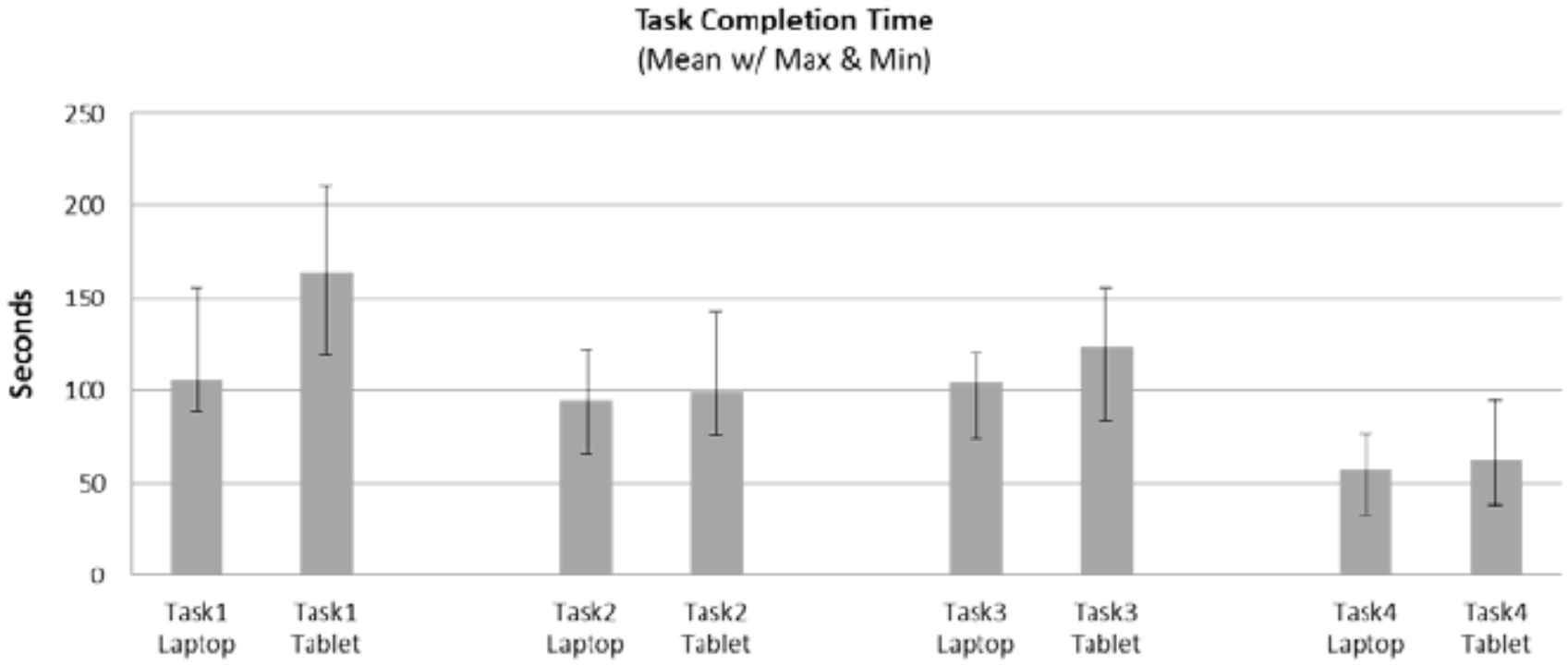
Error Rate

- Tracks errors made during interaction. Lower is better (e.g., 5%).

	Task 1	Task 2	Task 3	Task 4
Success Rate	17/20	13/20	14/20	18/20
Error rate	3/20	7/20	6/20	2/20
The avg. completion time	58 sec.	49 sec.	63 sec.	53 sec.
Satisfaction	7.25/10	6.75/10	7.5/10	8/10

Time on Task

- Measures efficiency by recording time needed to complete tasks.



System Usability Scale (SUS)

- A standardized survey to evaluate usability (Brooke, 1996).

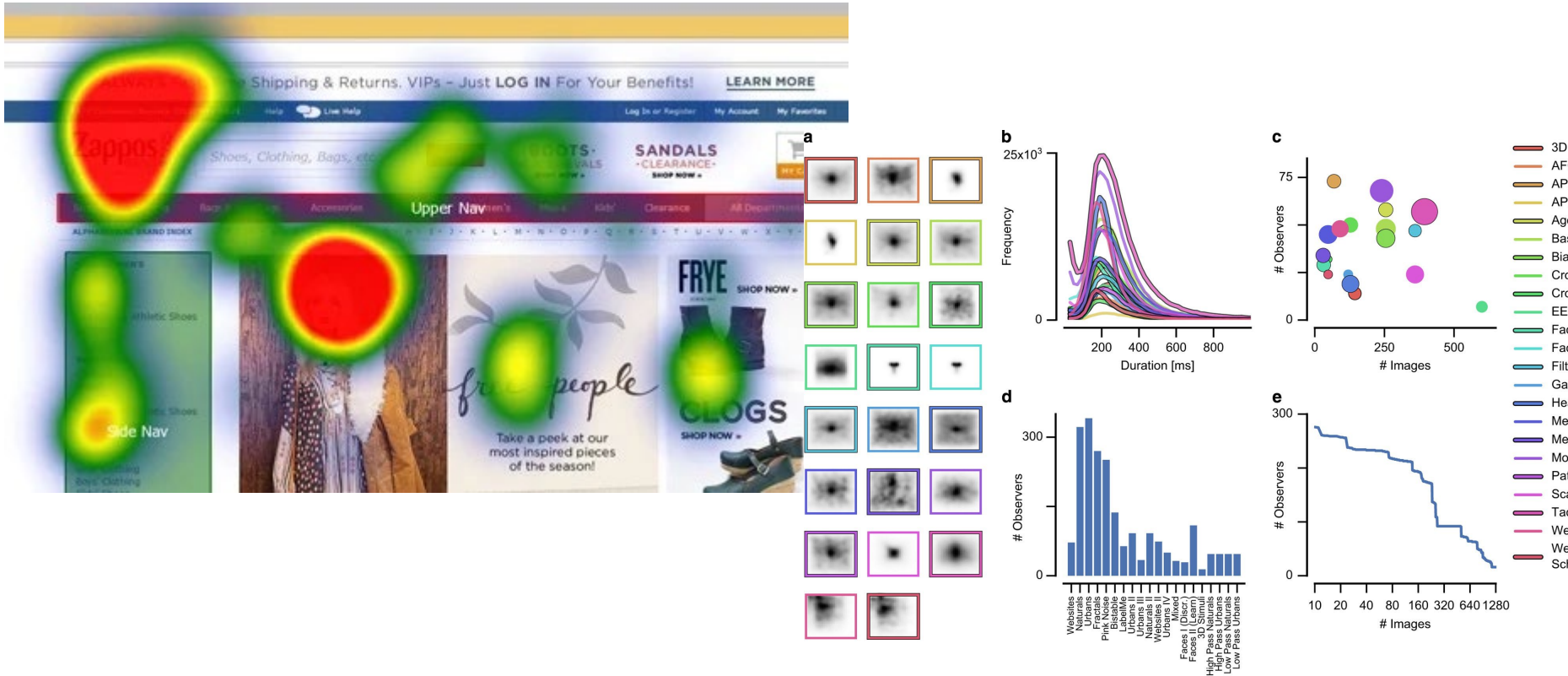
	The System Usability Scale Standard Version	Strongly Disagree	1	2	3
1	I think that I would like to use this system frequently.		O	O	O
2	I found the system unnecessarily complex.		O	O	O
3	I thought the system was easy to use.		O	O	O
4	I think that I would need the support of a technical person to be able to use this system.		O	O	O
5	I found the various functions in this system were well integrated.		O	O	O
6	I thought there was too much inconsistency in this system.		O	O	O
7	I would imagine that most people would learn to use this system very quickly.		O	O	O
8	I found the system very awkward to use.		O	O	O
9	I felt very confident using the system.		O	O	O
10	I needed to learn a lot of things before I could get going with this system.		O	O	O

SUS Scoring

- Scores >68 indicate above-average usability.

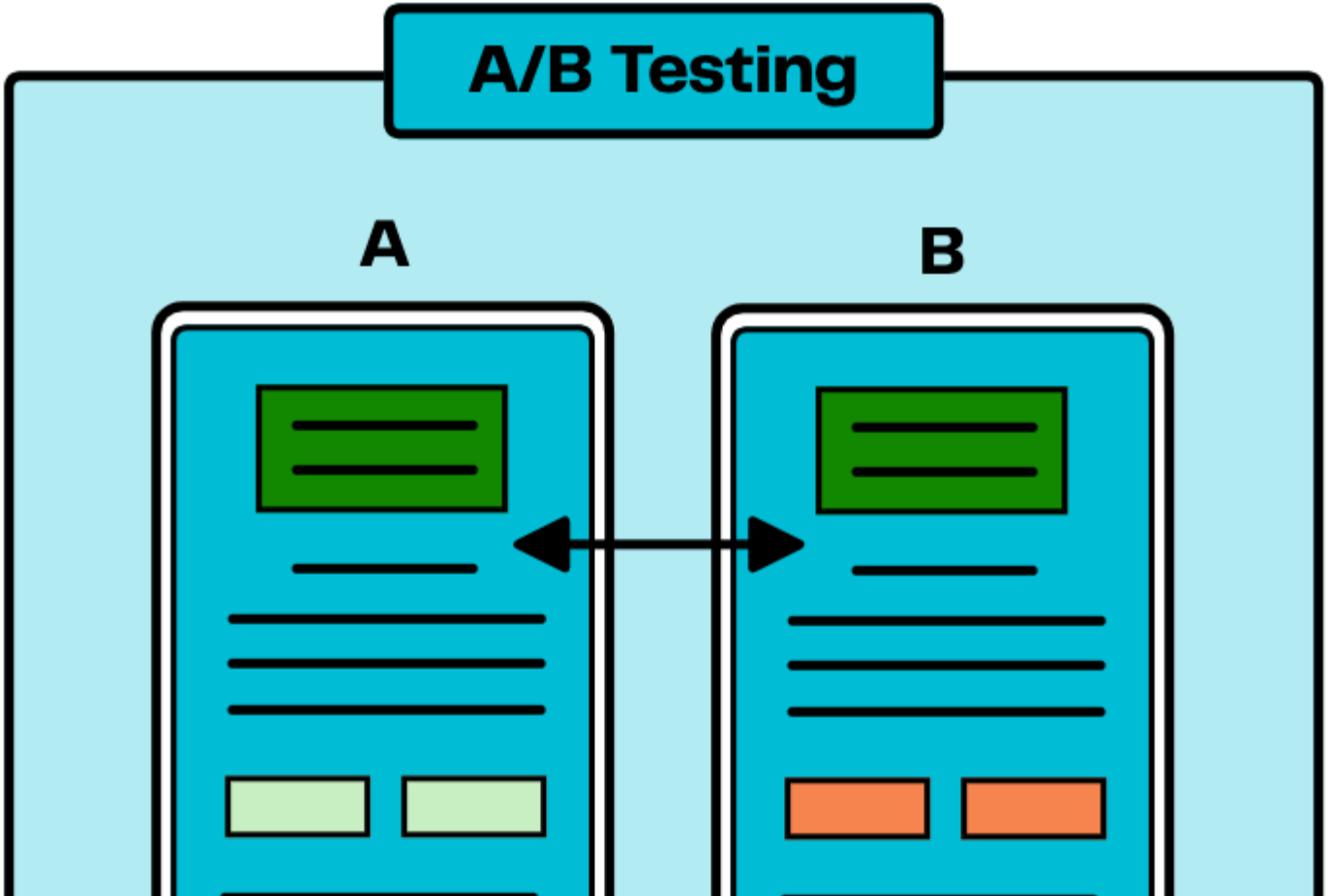
Eye-Tracking Studies

- Analyze user focus and navigation patterns (e.g., heatmaps).



A/B Testing

- Comparing two versions of a system to

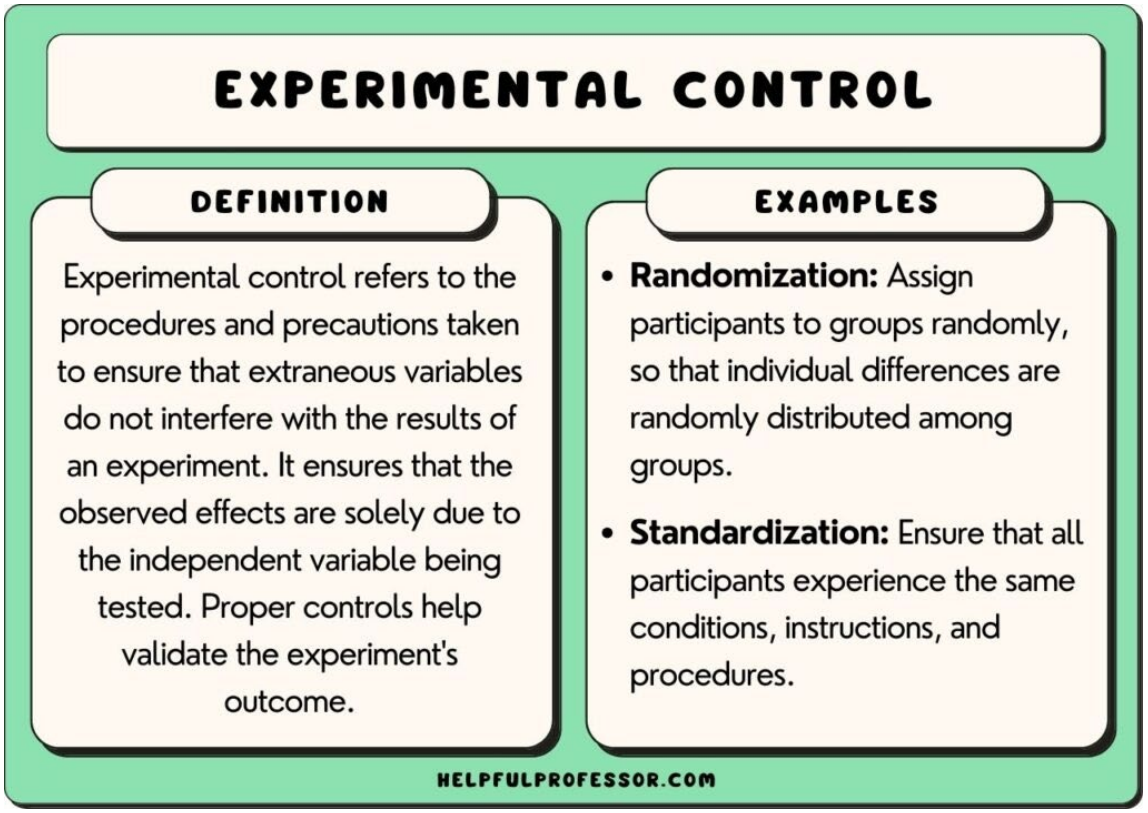


Advantages of A/B Testing

- Provides quantitative data on user preferences.

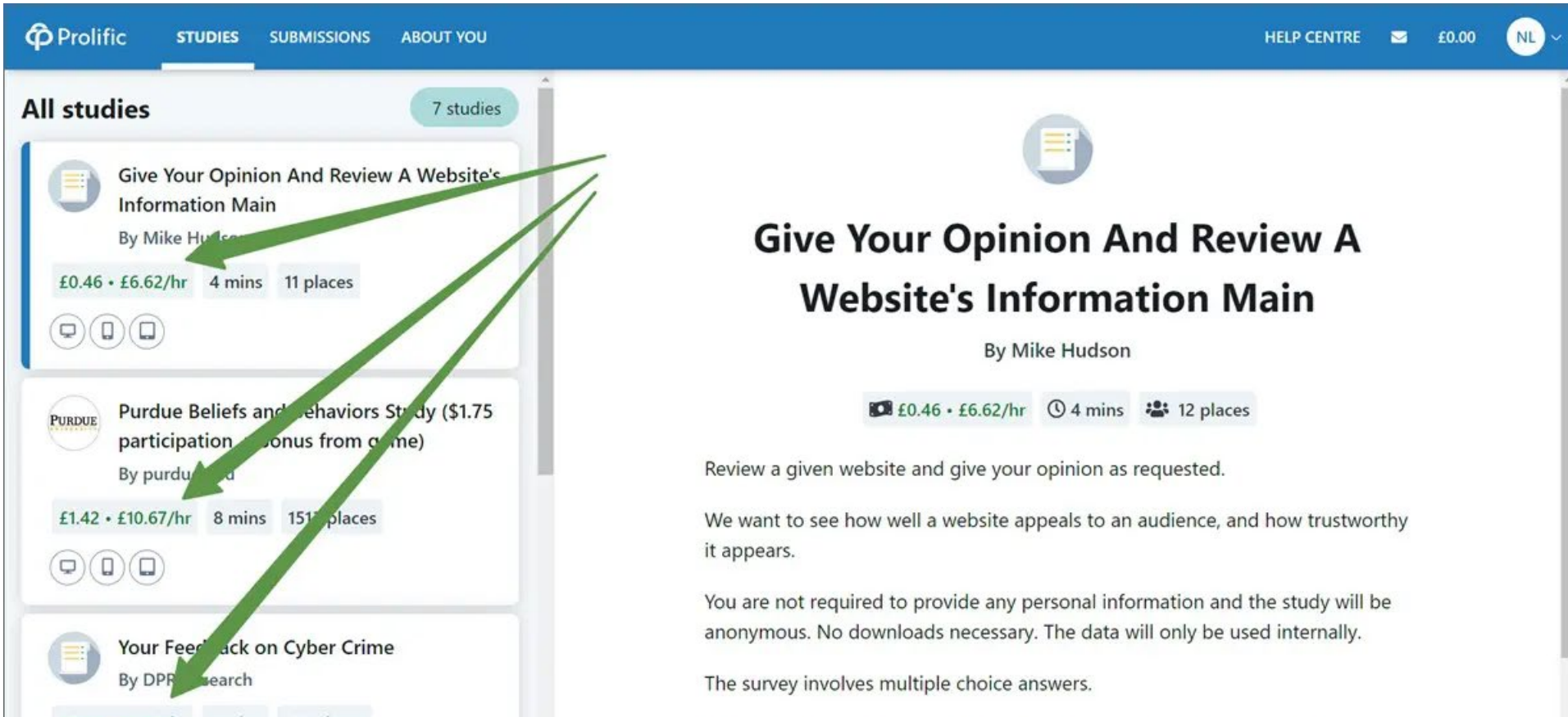
Controlled Experiments

- Studies that test usability changes under controlled conditions.



Remote Usability Testing

- Allows users to test systems from their own environment.



Qualitative Feedback

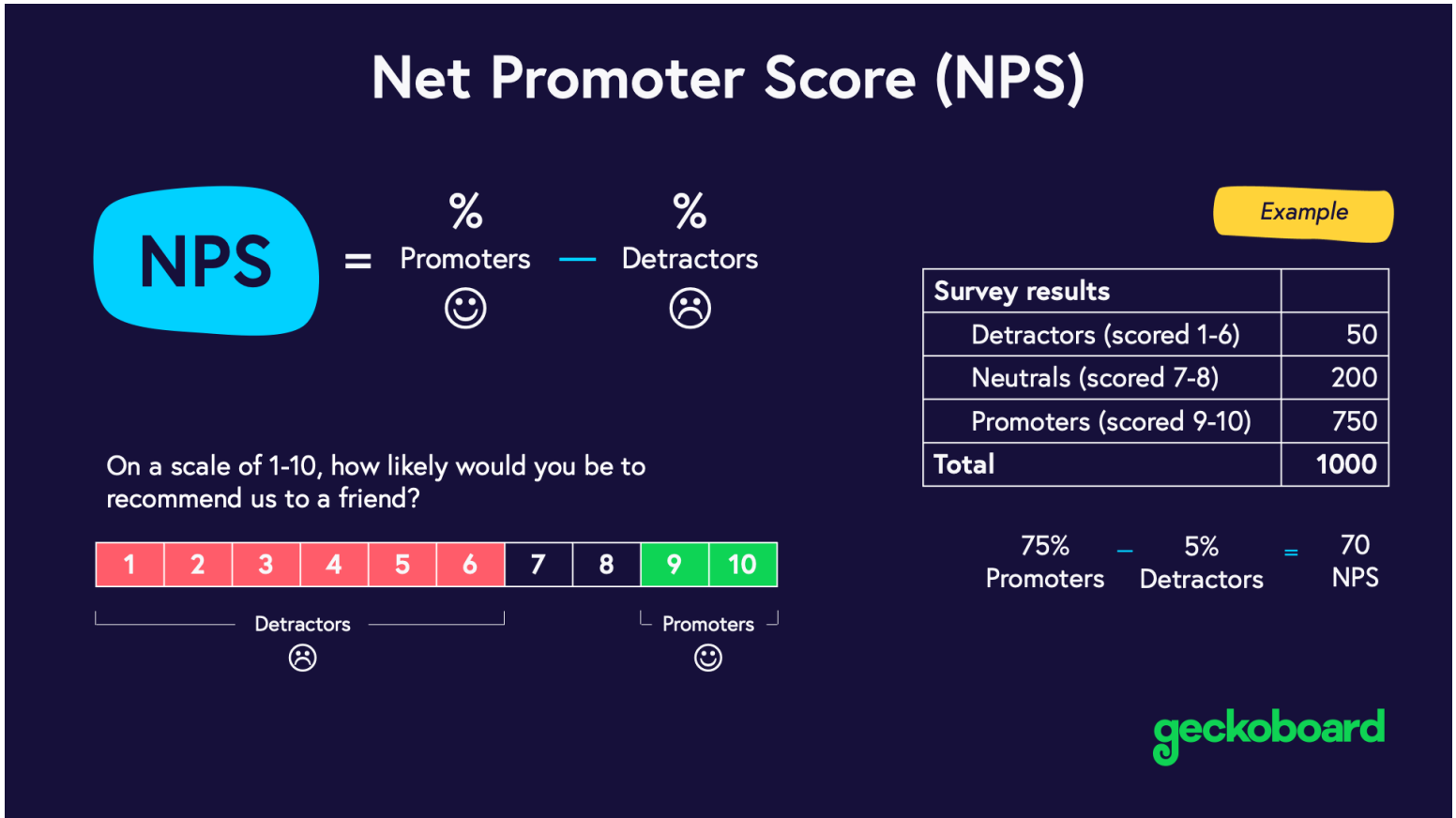
- Insights gained from user interviews and open-ended questions.

Quantitative Metrics

- Objective measures like error rates and task efficiency.

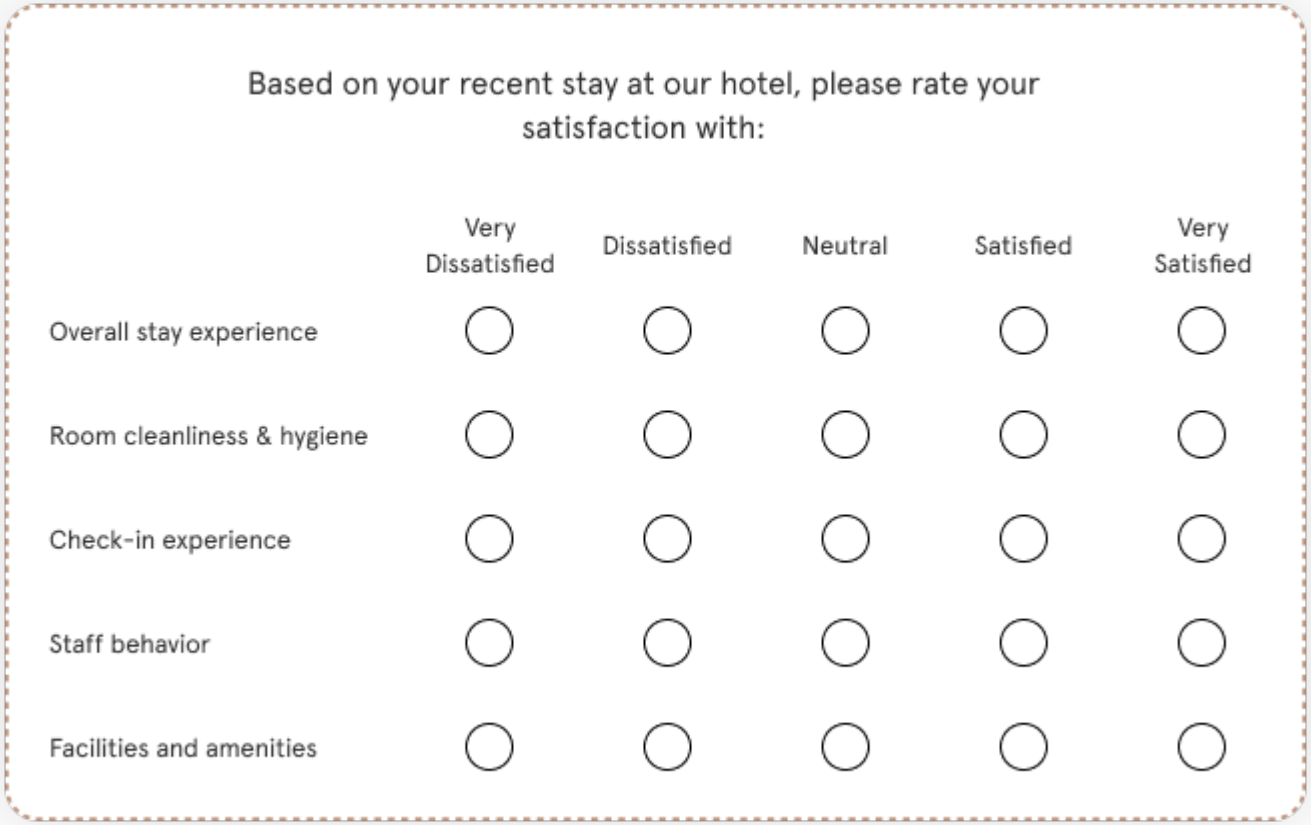
Net Promoter Score (NPS)

- Measures user loyalty based on likelihood to recommend.



User Satisfaction Surveys

- Gather subjective user feedback on system performance.



Based on your recent stay at our hotel, please rate your satisfaction with:

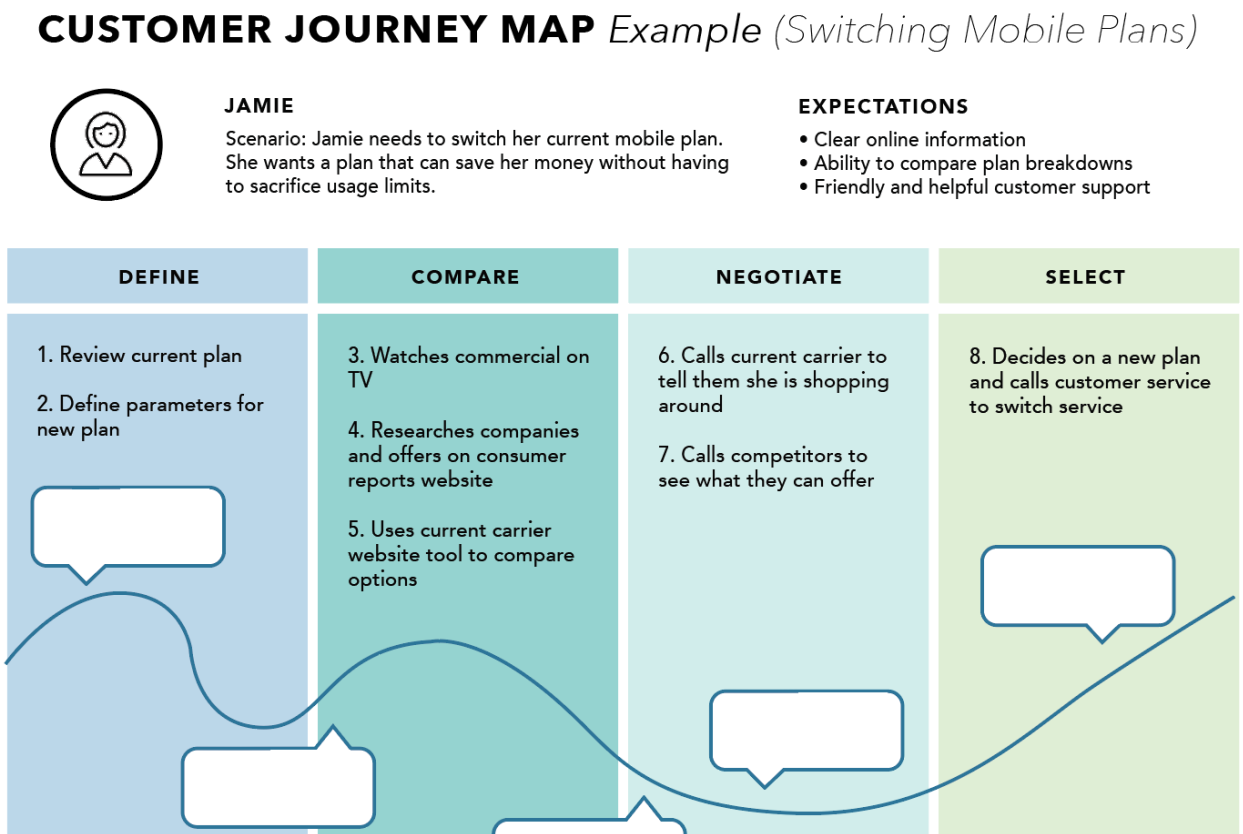
	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Overall stay experience	◯	◯	◯	◯	◯
Room cleanliness & hygiene	◯	◯	◯	◯	◯
Check-in experience	◯	◯	◯	◯	◯
Staff behavior	◯	◯	◯	◯	◯
Facilities and amenities	◯	◯	◯	◯	◯

Task Analysis

- Breaks down tasks to understand user goals and difficulties.

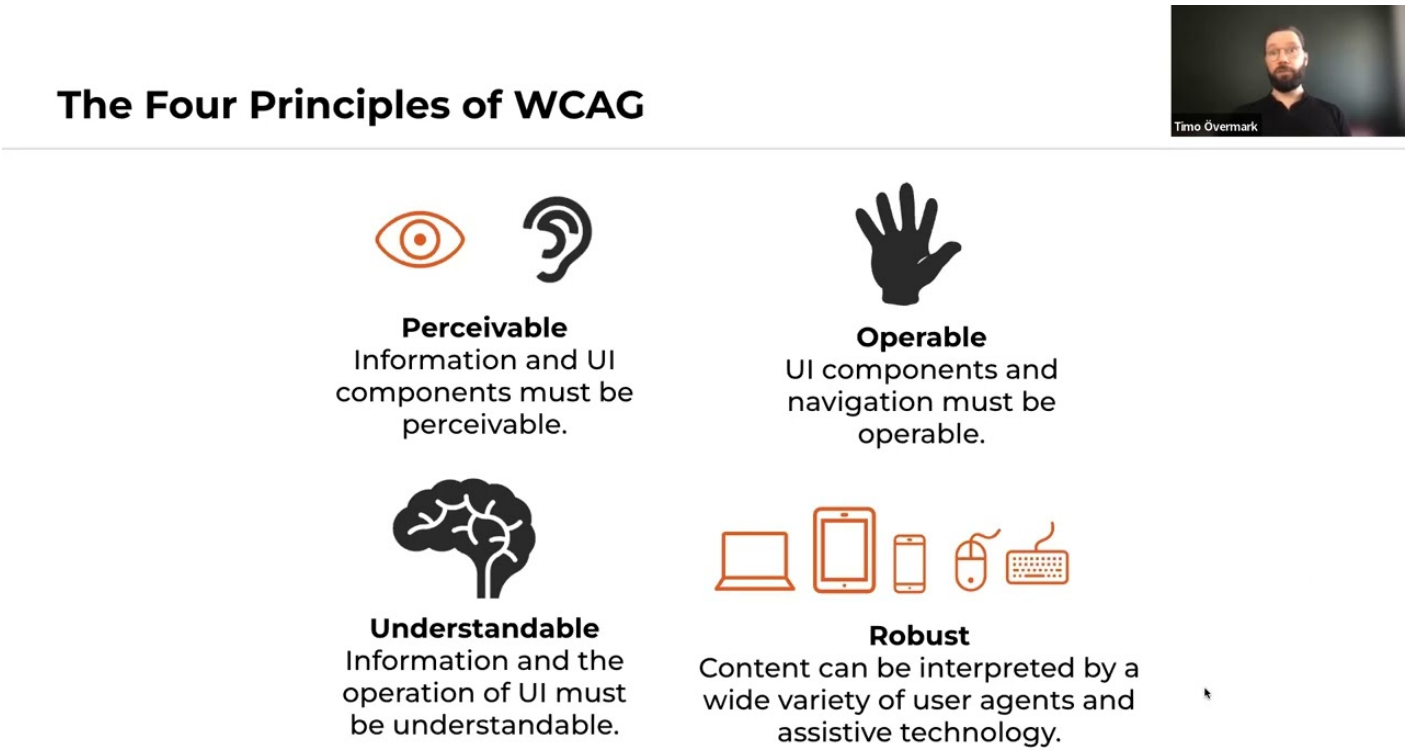
User Journey Mapping

- Visual representation of user interactions over time.



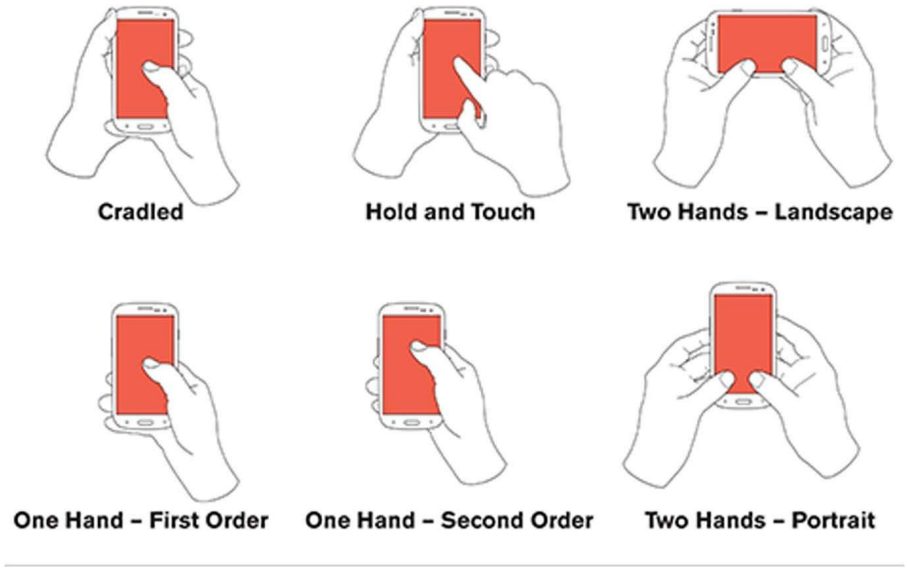
Accessibility Testing

- Ensures usability for users with disabilities (e.g., WCAG standards).



Mobile Usability

- Special considerations for usability on mobile devices.

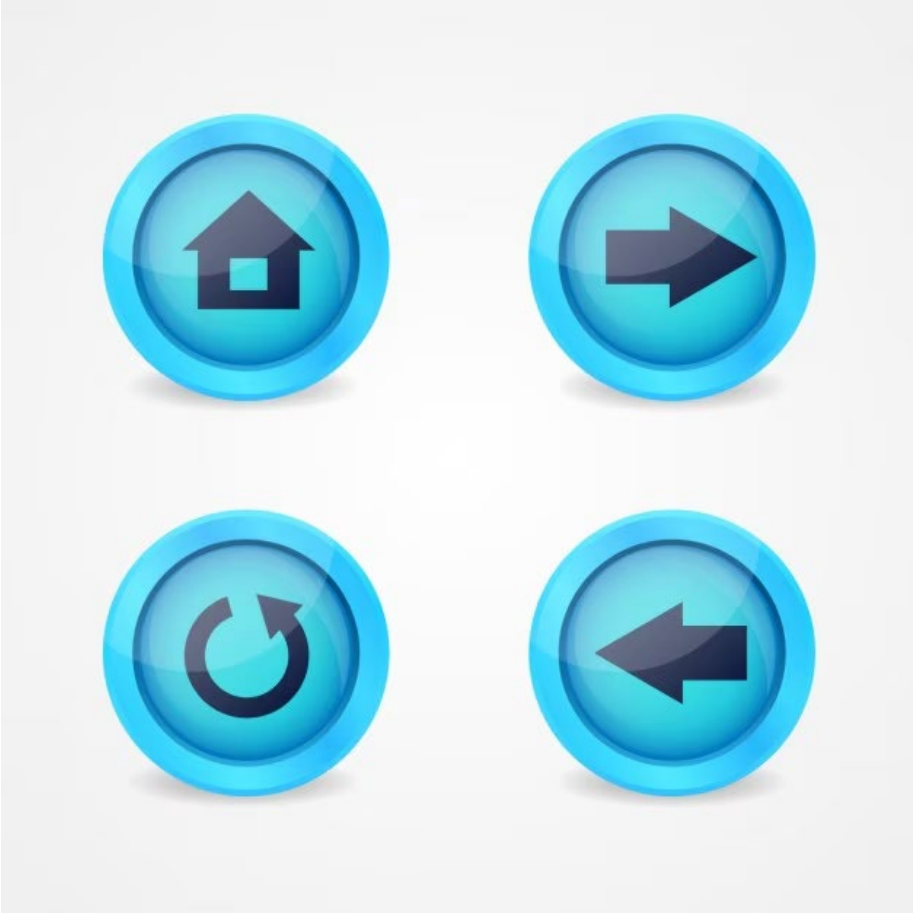


Responsive Design

- Adapts layout and functionality to different screen sizes.

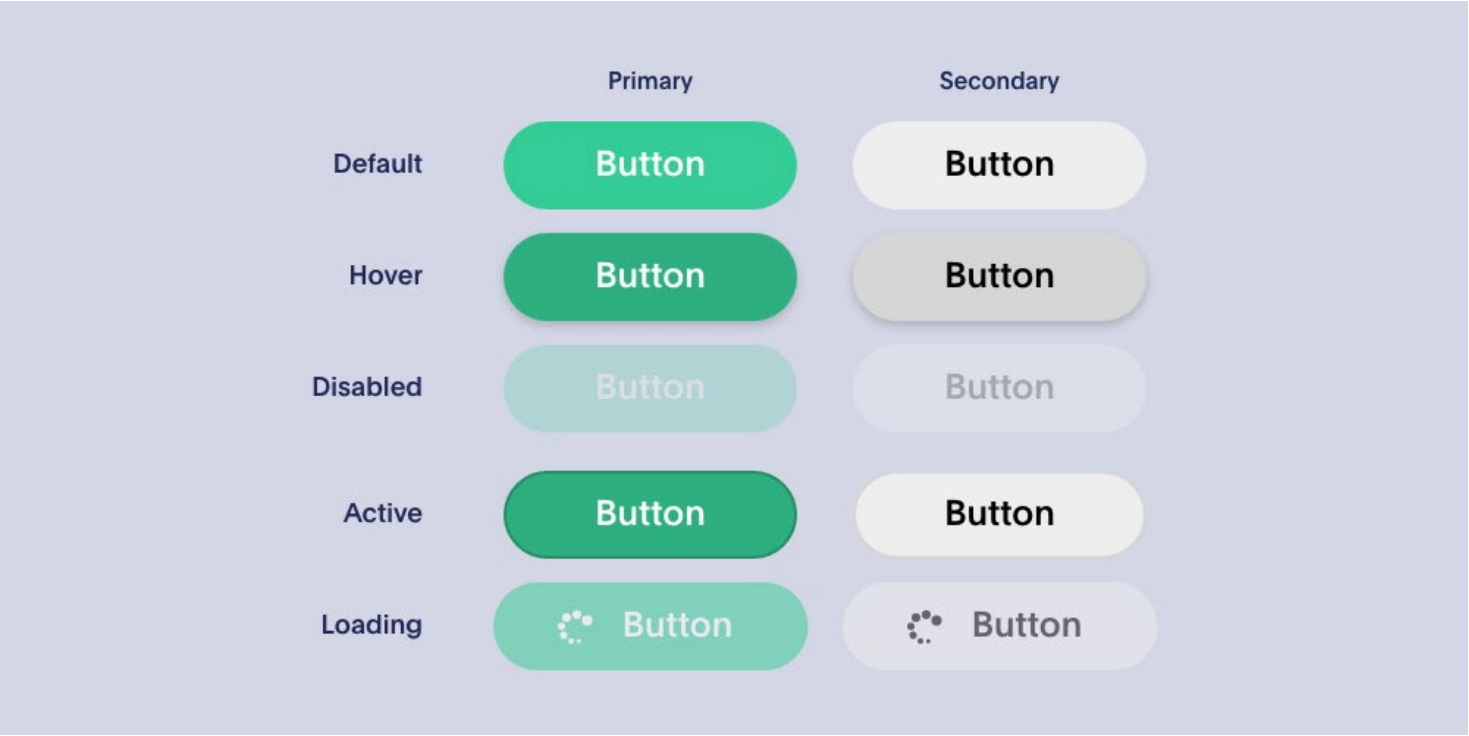
Error Recovery

- Designing for smooth recovery from errors.



Feedback Loops

- Providing users with immediate and clear system feedback.

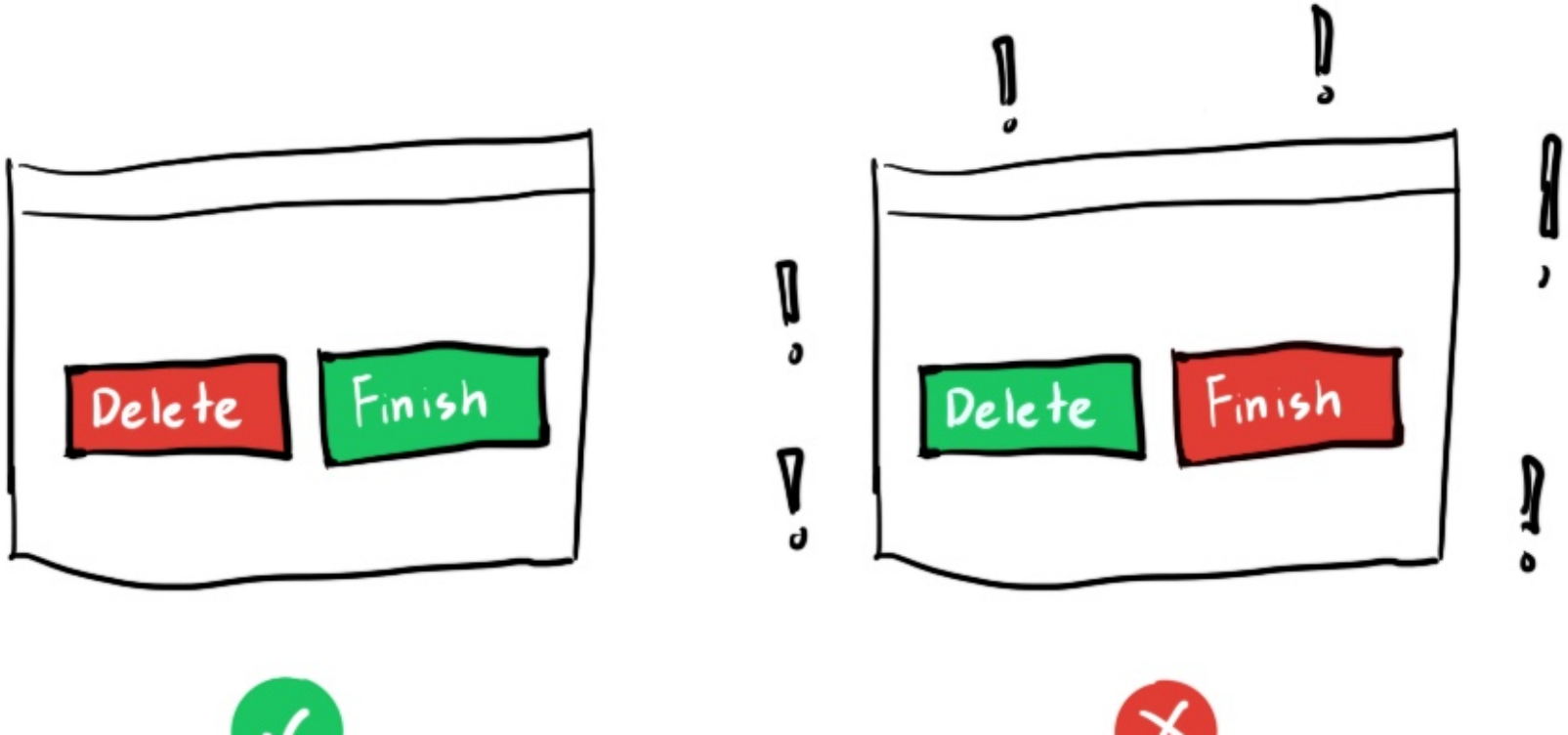


Progress Indicators

- Show users their progress in multi-step tasks.

Consistency in Design

- Ensures uniformity in navigation and interaction patterns.

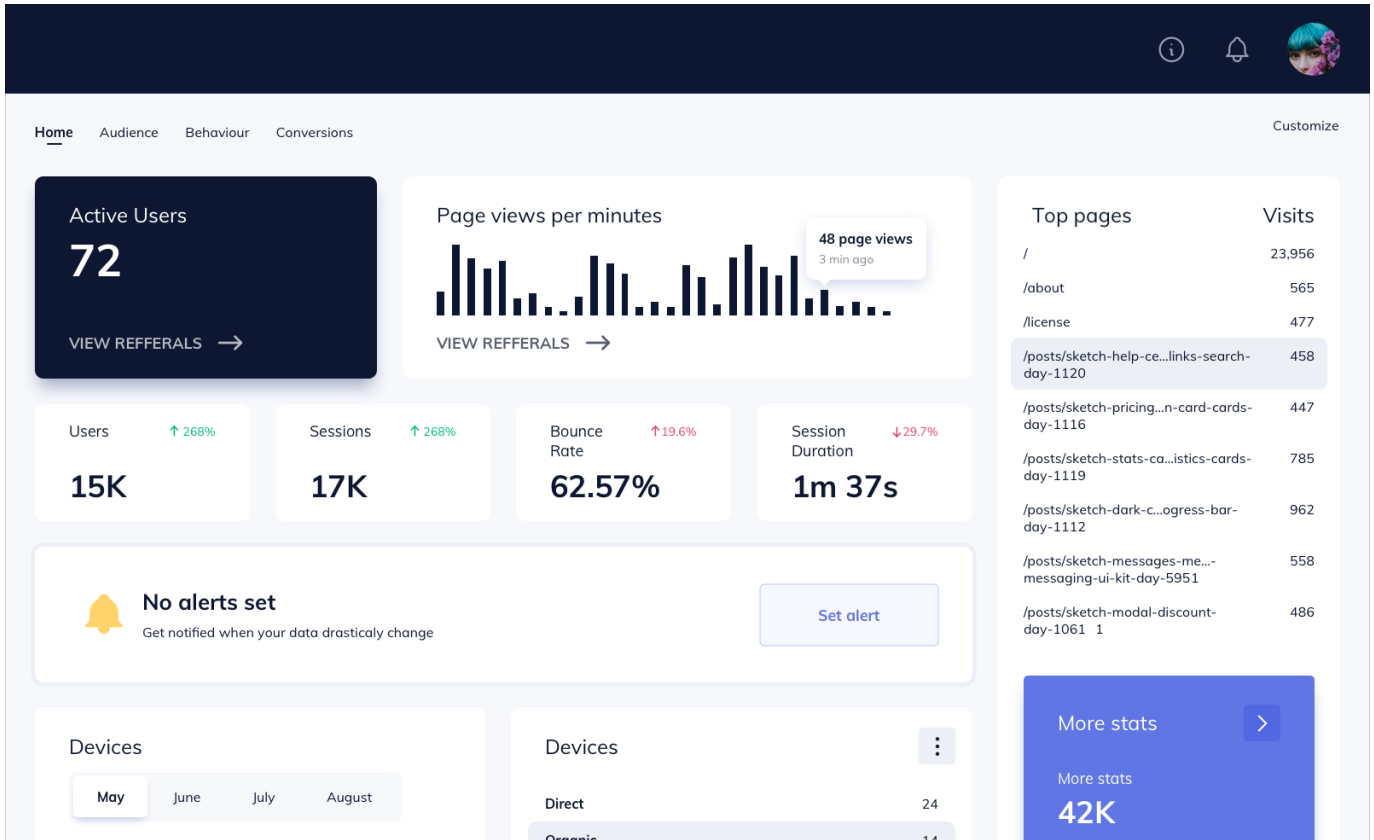


Minimizing Cognitive Load

- Reduces mental effort needed to use a system.

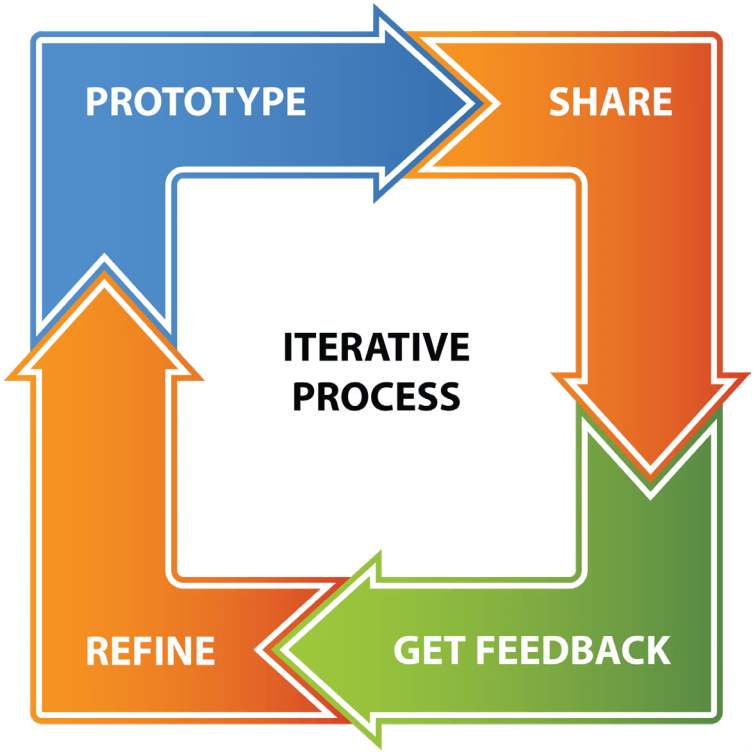
Engagement Metrics

- Measures how users interact and stay engaged with a system.



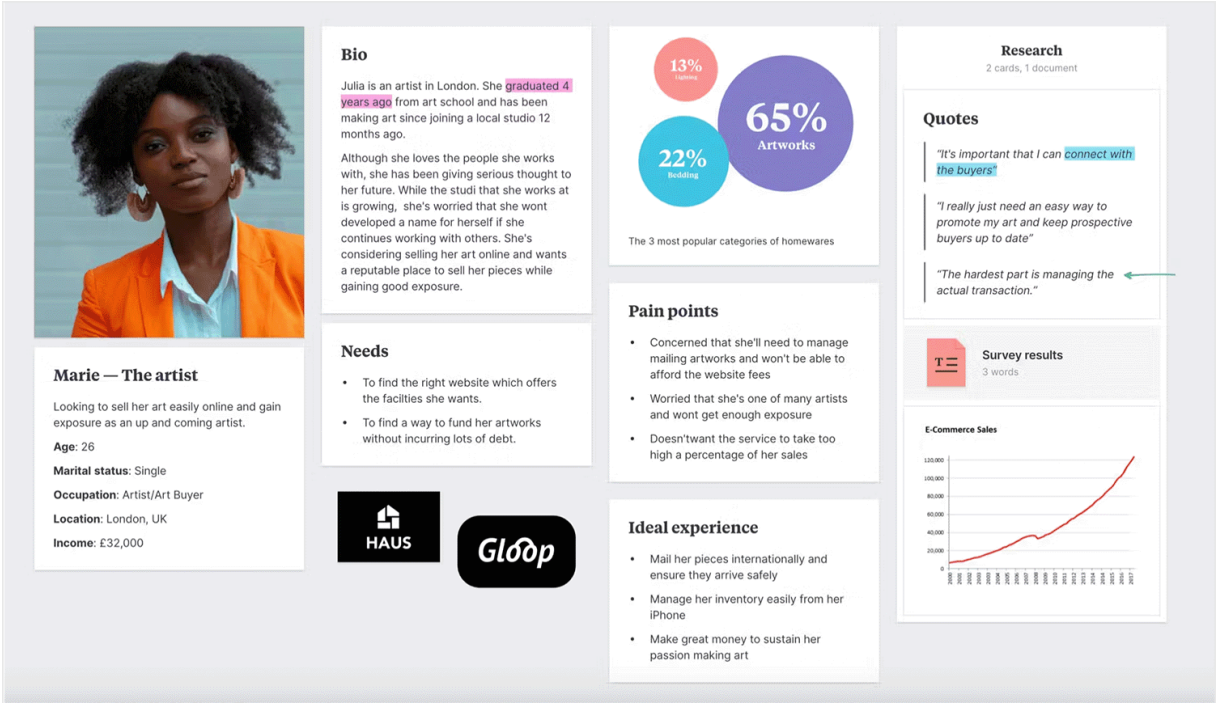
Iterative Design

- Improves usability through repeated cycles of testing and refinement.



Persona Development

- Creating user personas to guide design decisions.



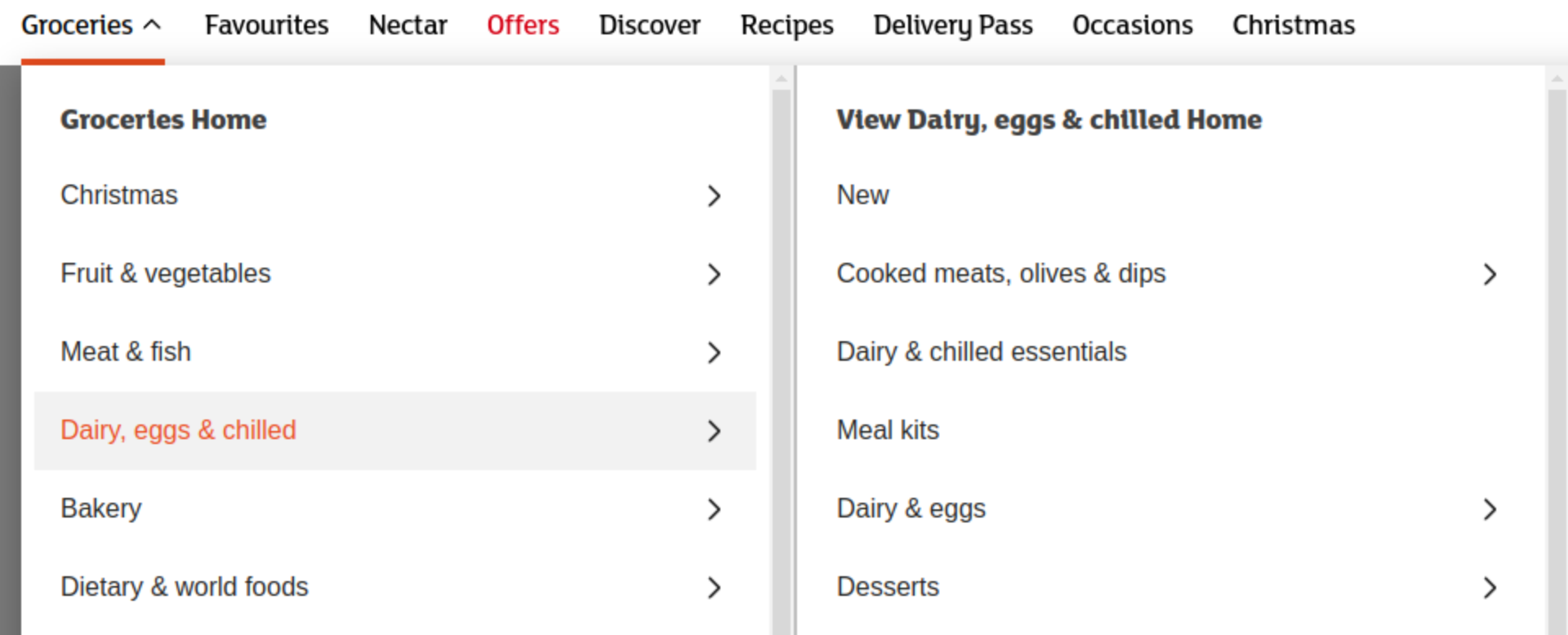
Scenario Testing

- Evaluating usability through real-world user scenarios.

Tasks	Description
Task 1	Demonstrate typical interaction with the documentation site as part of everyday work
Task 2	Find Exhibit Policies and Procedures on site and then interpret when this policy was last updated
Task 3	Locate specific instructions relating to 3 ½ inch floppy disks within the Digital Media Transfer Workflow and navigate the multi-page documentation using filter/search options on homepage, sitewide search, and the table of contents
Task 4	Locate specific instructions within the Reading Room Manual (repeating navigation functions from Task 3)
Task 5	Choose documentation to share with wider archival community and facilitate external access.
Task 6	Use search function to locate specific access statements for realia/memorabilia within the Guide to Processing Collections

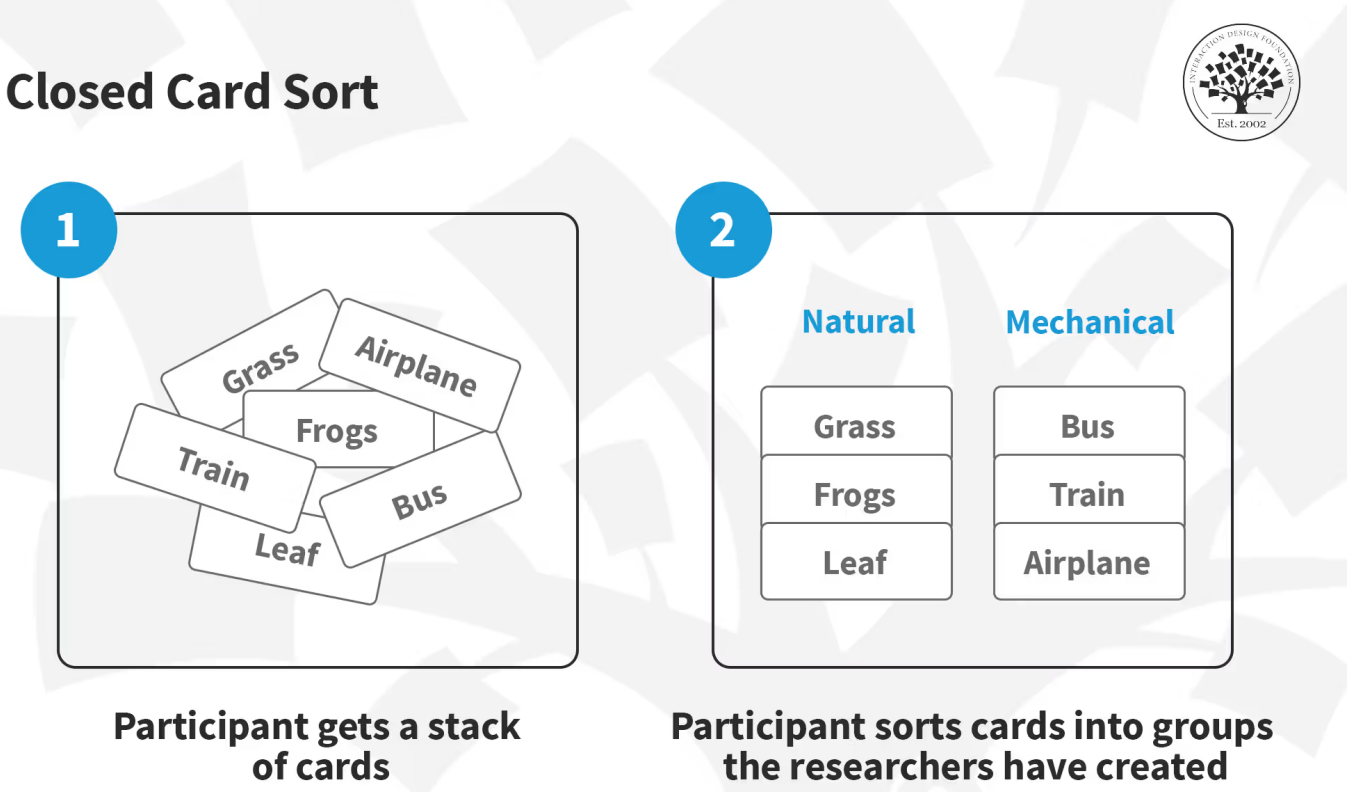
Information Architecture

- Structuring content and navigation for optimal usability.



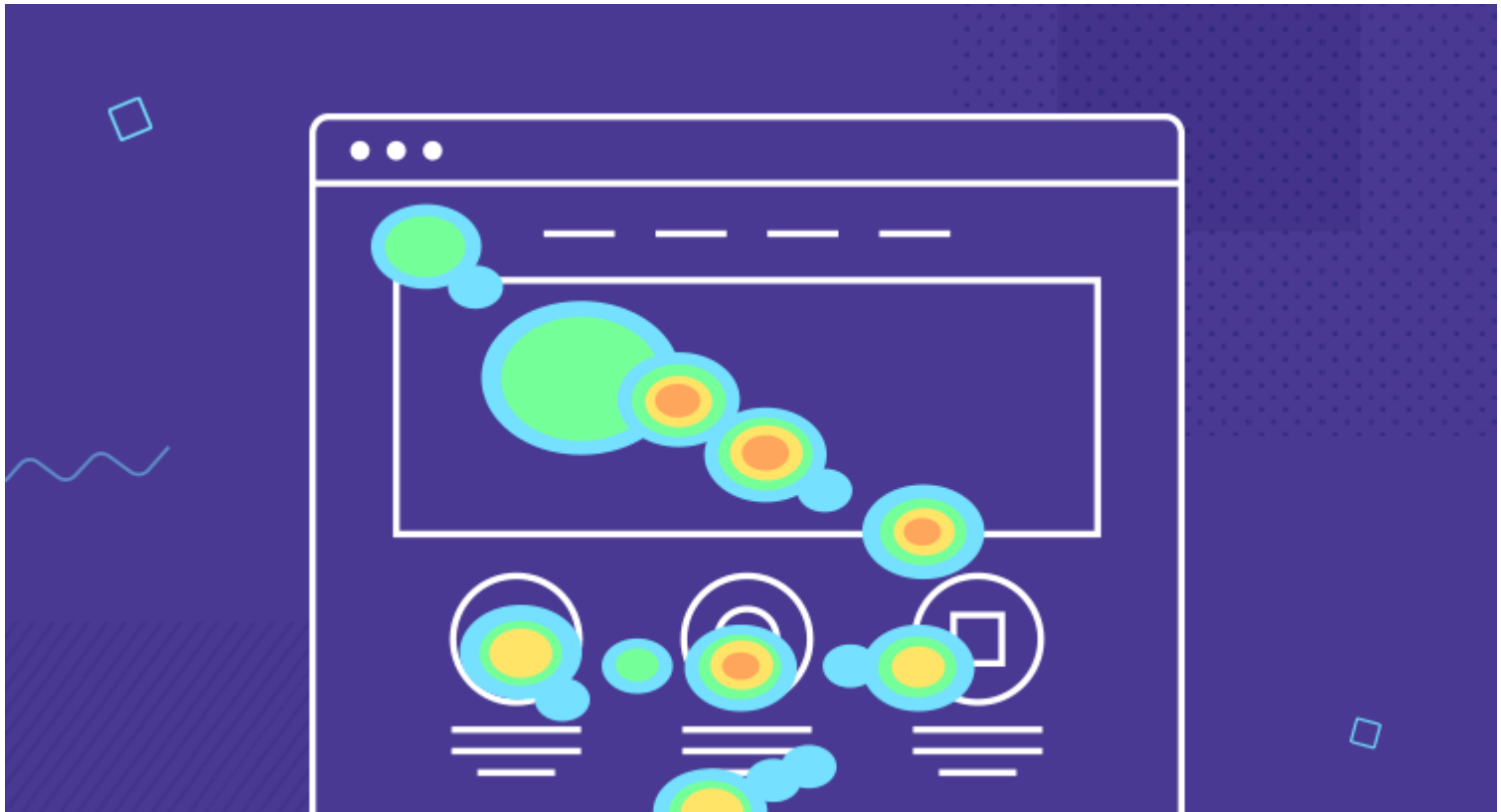
Card Sorting

- Understanding how users categorize and label information.



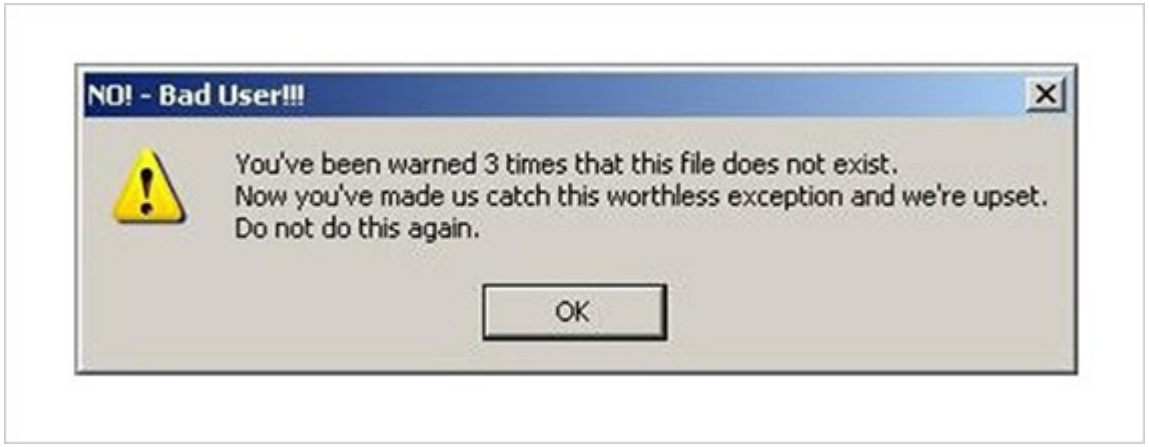
Heatmaps

- Visual representations of user interaction patterns.



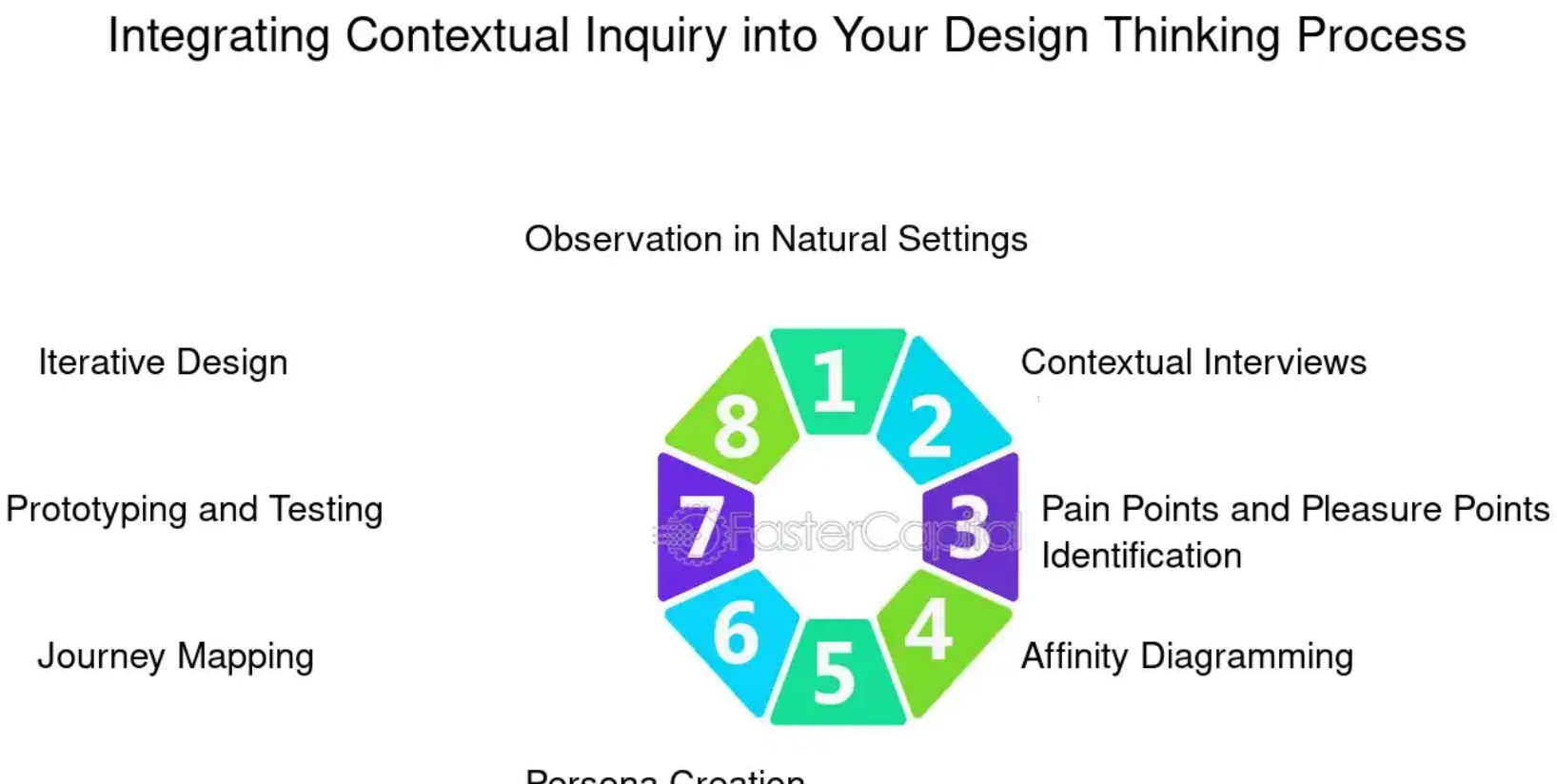
Error Messages

- Designing clear and actionable error messages.



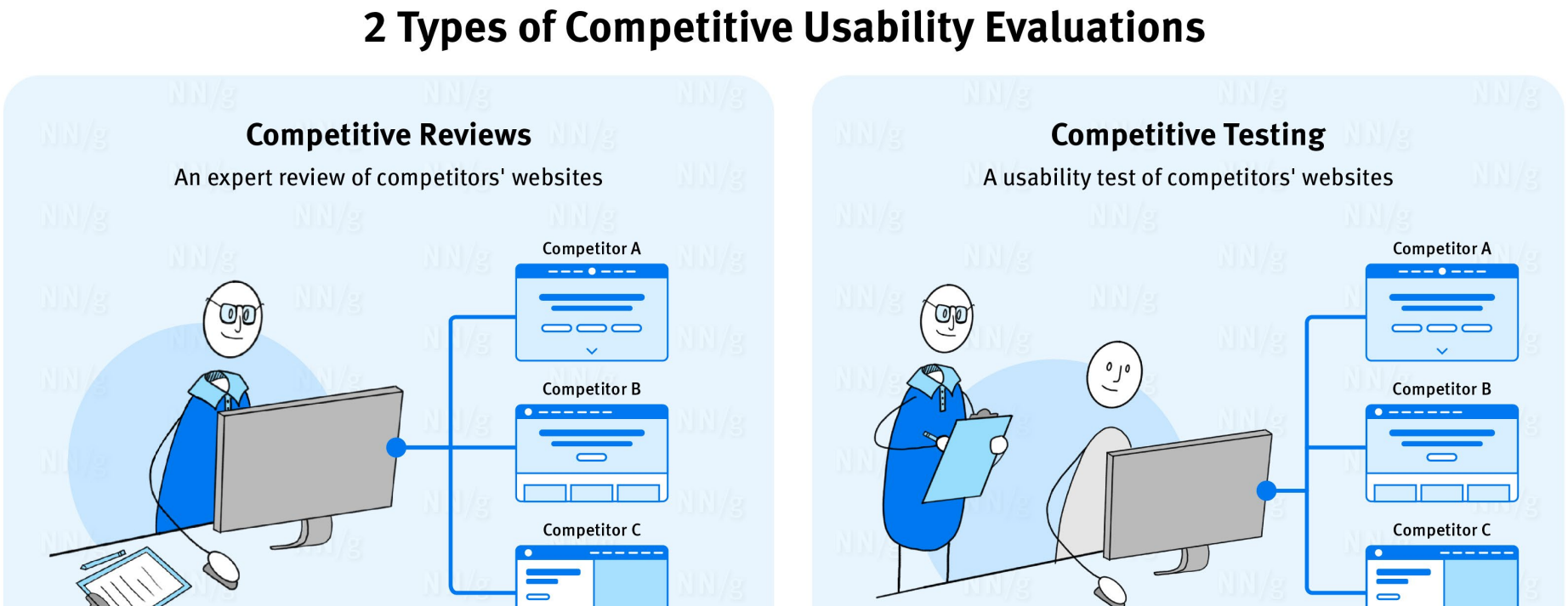
Contextual Inquiry

- Observing users in their natural environment to gather insights.



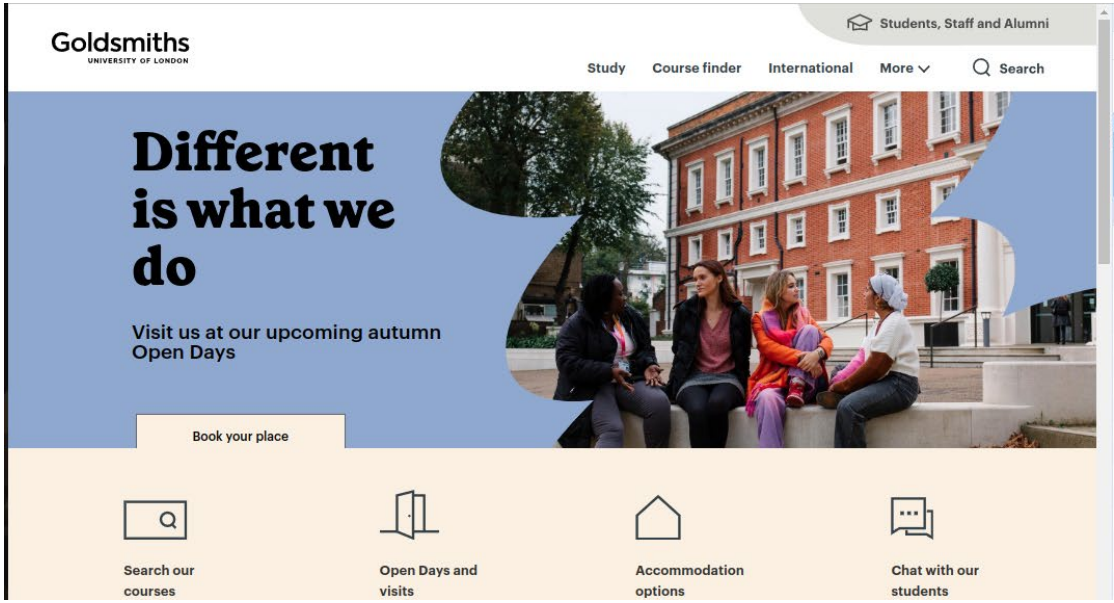
Competitive Usability Analysis

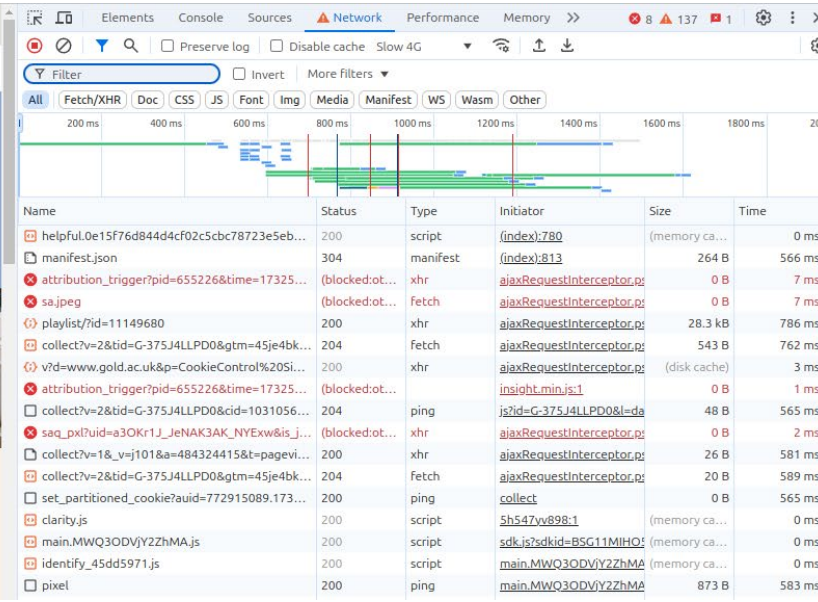
- Benchmarking usability against competitors.



Load Time Metrics

- Assessing how quickly pages and features load.



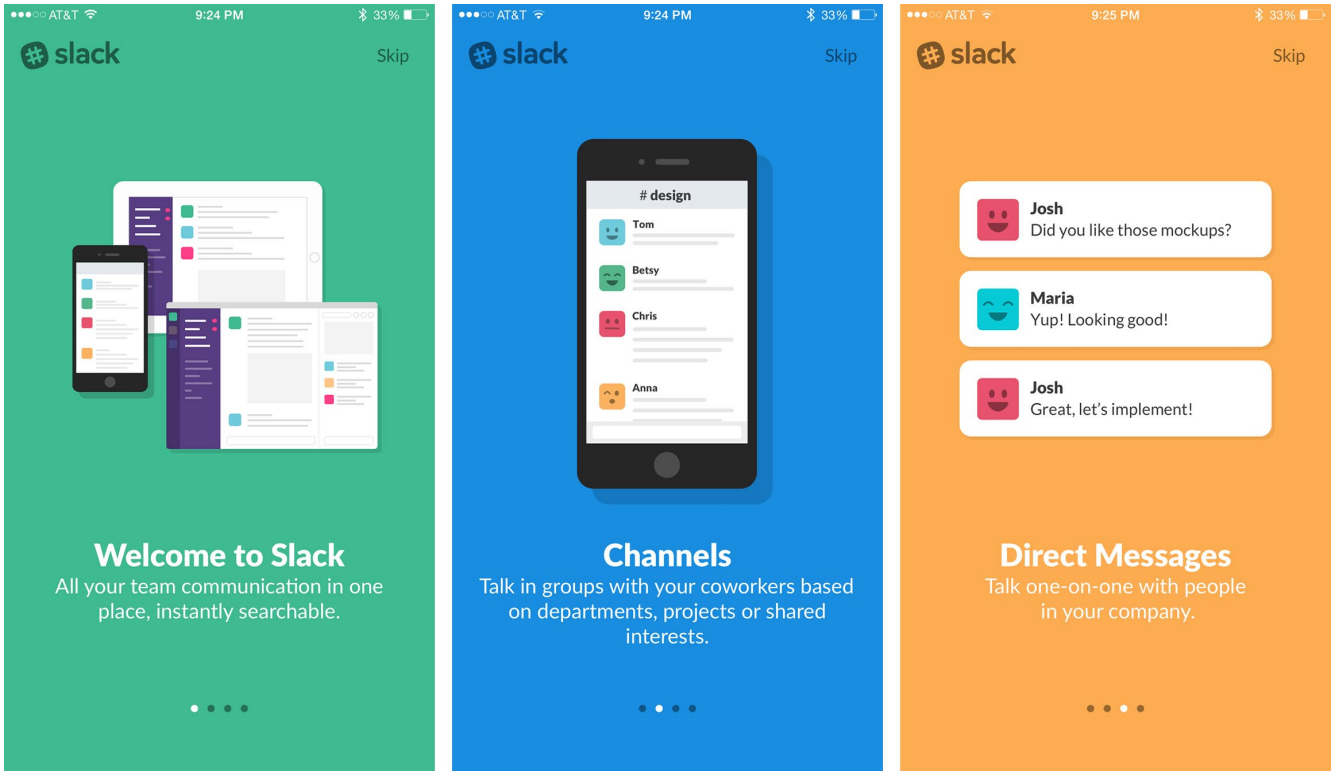


Microinteractions

- Small design details that enhance user experience.

User Onboarding

- Strategies to help users quickly adapt to a system.

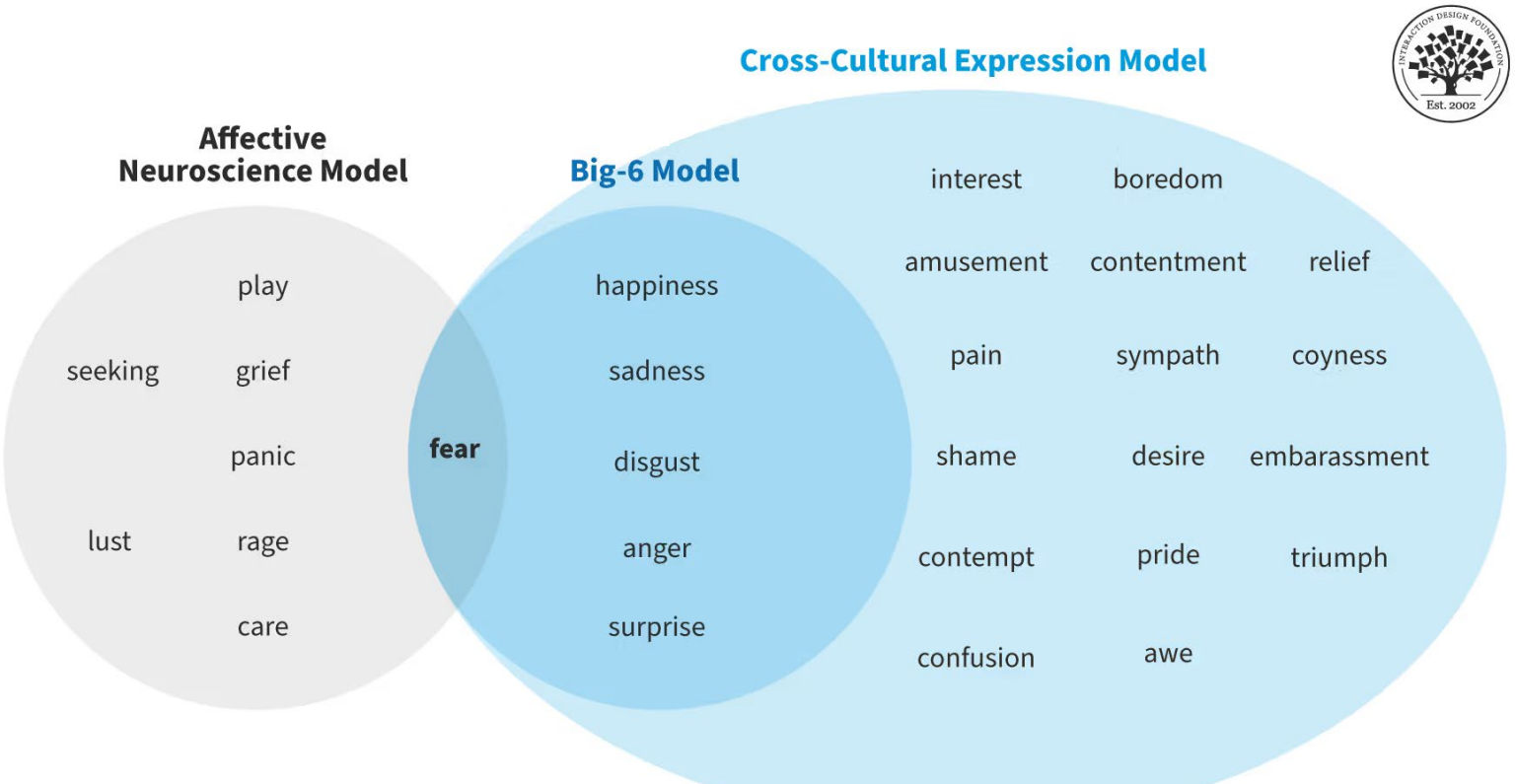


Gamification

- Using game-like elements to increase engagement.

Emotional Design

- Creating designs that evoke positive emotions.

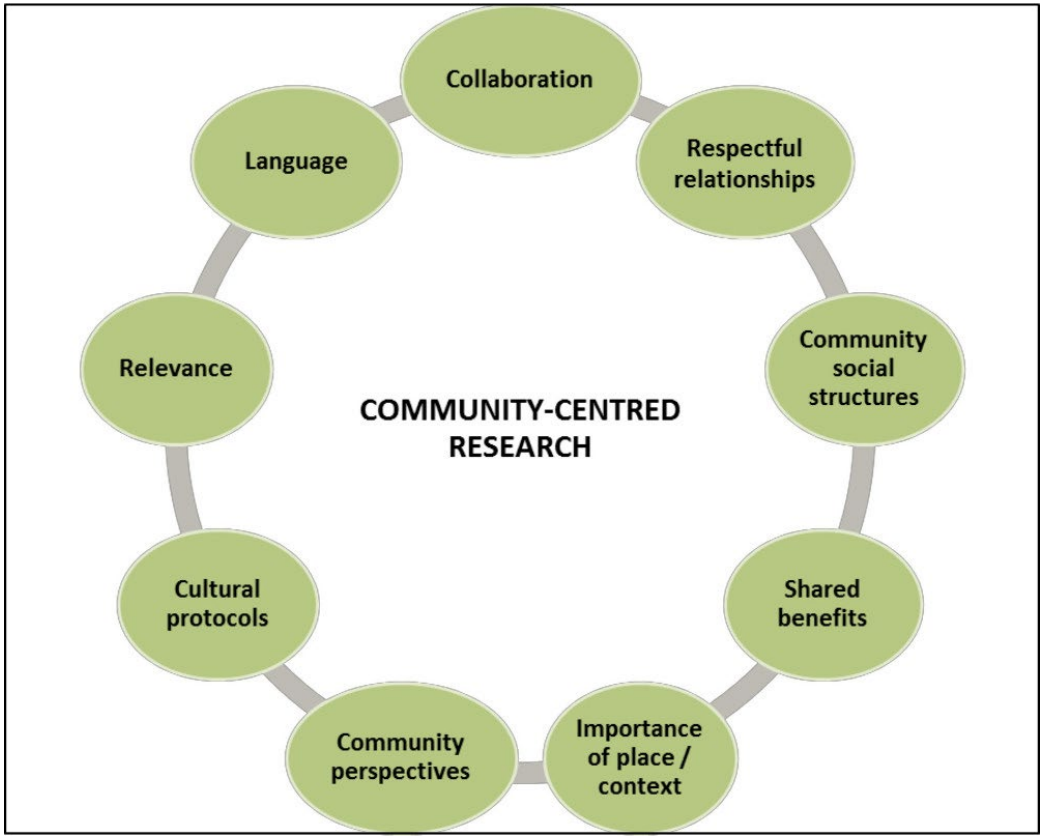


Future Trends in Usability

- Exploring innovations like AI and VR in usability testing.

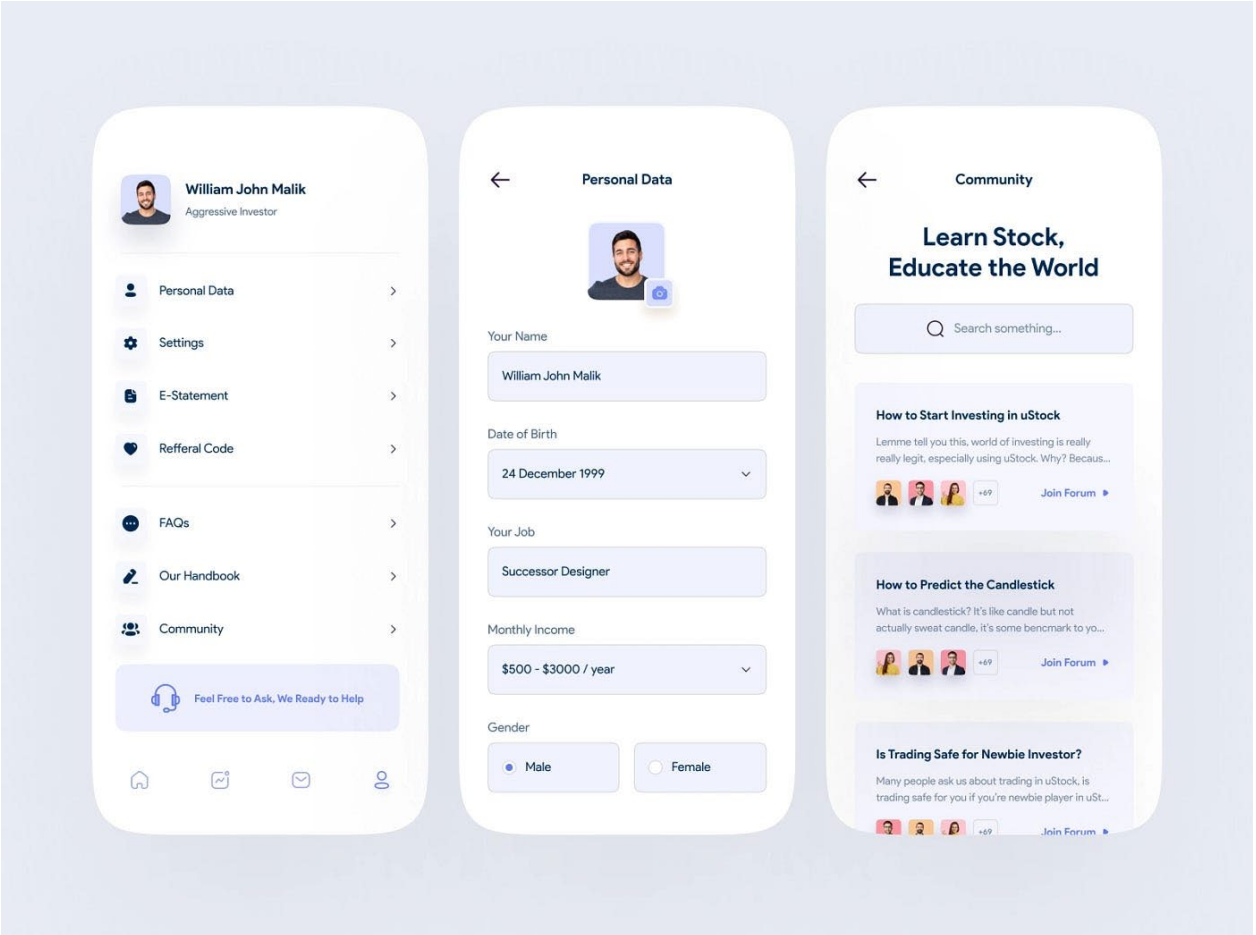
Cross-Cultural Usability

- Designing for a global and diverse audience.



Simplicity in Design

- Emphasizing clarity and ease of use.



User Advocacy

- Ensuring that user needs remain the focus of design decisions.

Summary and Conclusion

- Purpose of testing with users?
- When should we test with users?
- How would you plan an in person study?
- Considerations around remote usability testing?