Enhancing User Experience through Effective Requirement Engineering for User Interfaces

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CS 846 – Advanced Topics in Requirement Engineering

Overview

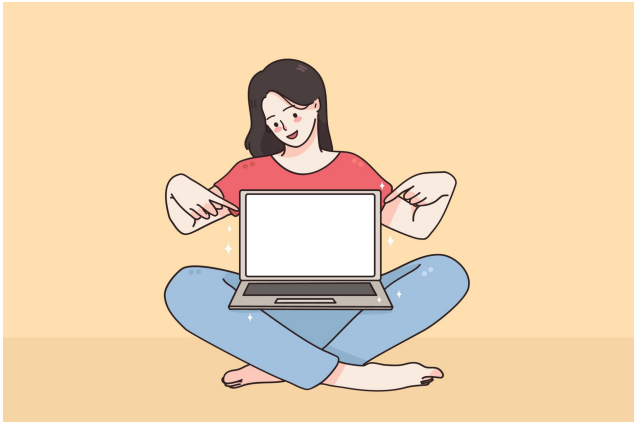
- Brief Introduction
- Importance of user experience in UI design
- Role of requirement engineering in UI development
- User-Centered Design Principles
- Requirement Elicitation Techniques(RET)
- Benefits of using RET
  - Quick discussion on Eyawo app
- User Interface Design Guidelines
- Accessibility Considerations
- Case studies and examples
  - Dive deep into case studies for Eyawo app and Picture Link
- Future Trend
- Related work

Brief Introduction

About me

Software Developer in Health-Tech Industry

- Self taught full-stack dev
- Passionate about user design
- Exploring Advanced CS



Importance of user experience in UI design

User satisfaction

Positive UX leads to user satisfaction, enhancing their overall experience with the product or service

User retention and loyalty

Good UX promotes user retention and fosters customer loyalty, benefiting the business in the long run.

Competitive advantage

Prioritizing UX provides a competitive edge, attracting more users and increasing market share.

Reduced user errors and support costs

User-friendly UIs minimize user errors, resulting in lower support costs

Enhanced user engagement

Engaging UIs encourage users to explore more features and promote longer interaction sessions

Alignment with user goals and expectations

UIs that understand user needs and preferences create a personalized and tailored experience.

Role of requirement engineering in UI development

Understanding user needs

Requirement engineering helps identify and understand user needs, goals, and expectations

Translating user requirement

Requirement engineering helps bridge the gap between user needs and UI design by translating user requirements into clear and actionable design specifications

Establishing project scope and objectives

Requirement engineering defines the scope and objectives of the UI development project, considering target audience and project constraints

Facilitating communication and collaboration

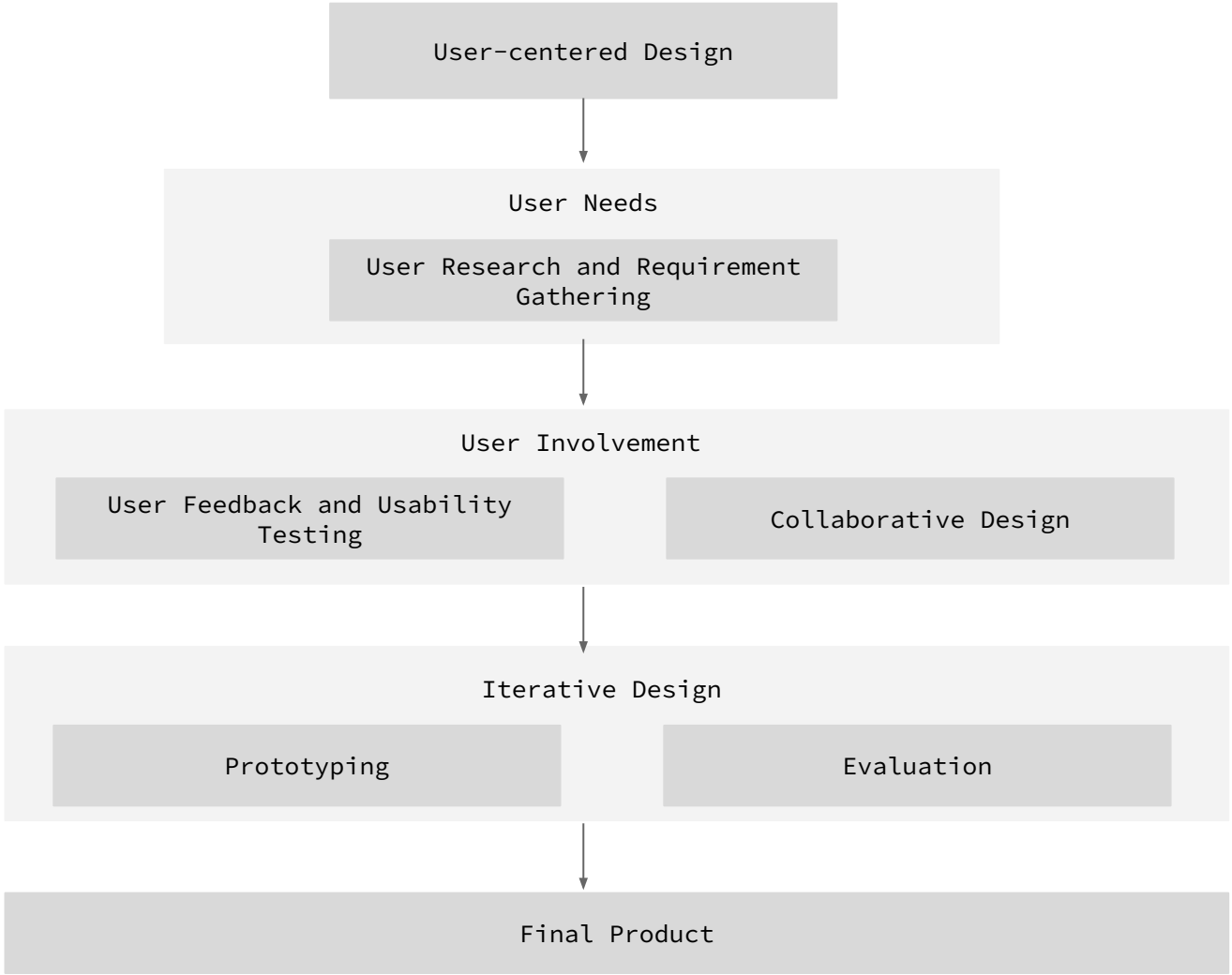
It promotes effective communication and collaboration among stakeholders involved in UI development

Guiding UI design decisions

Requirement engineering guides UI design decisions by considering user requirements and ensuring informed design choices.

User-centered design principle

This principle is an approach to designing products, systems, and interfaces that places the needs, goals, and behaviors of the users at the forefront of the design process. It involves understanding the users, their tasks, and their context of use to create solutions that are intuitive, efficient, and satisfying to use


User-centered Design
User Needs
User Research and Requirement Gathering
User Involvement
User Feedback and Usability Testing
Collaborative Design
Iterative Design
Prototyping
Evaluation
Final Product

Requirement elicitation technique

Interviews

One-on-one discussions with stakeholders and users to gather in-depth insights and requirements

Surveys and Questionnaires

Structured surveys to collect data and feedback from a larger group of stakeholders or users

Observations

Directly observing users in their natural environment to understand their behaviors, workflows, and pain points

Focus Groups

Group discussions to explore opinions, preferences, and shared experiences of stakeholders and users.

Prototyping and Mock-ups

Creating visual representations or interactive prototypes to gather feedback and validate requirements

Contextual Inquiry

Engaging directly with users in their work environment to understand their tasks, challenges, and needs

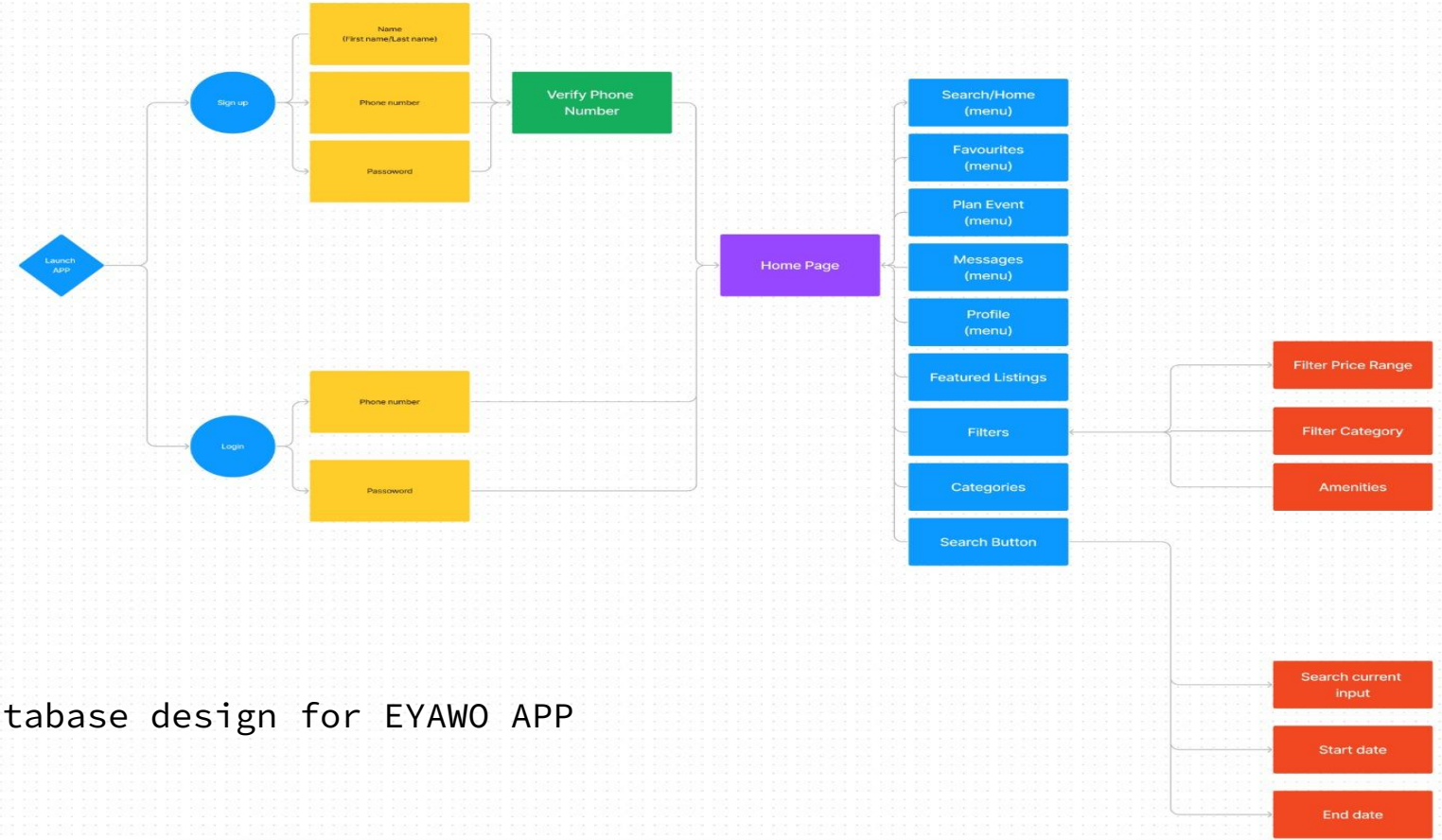
Card Sorting

Asking users to categorize and prioritize content or features to understand their mental models and preferences

User Feedback and User Testing

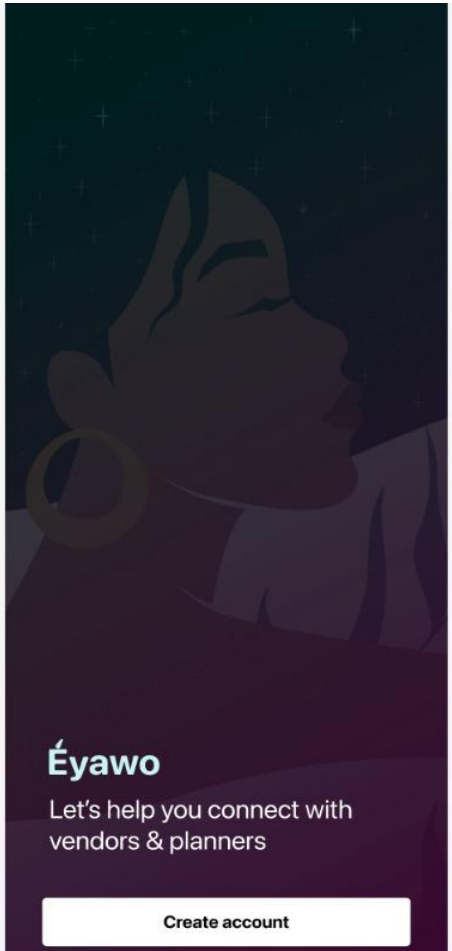
Gathering feedback and requirements directly from users through testing sessions and feedback sessions.

Example of Results gotten after RET was done for Eyawo app

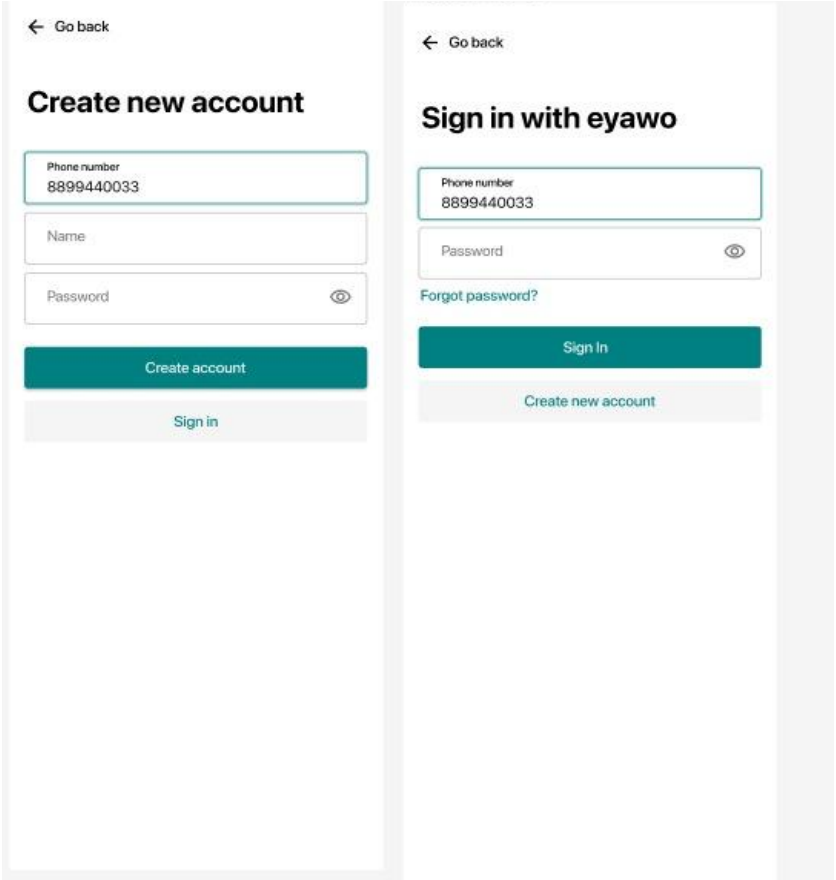


Database design for EYAWO APP

Dashboard User Interface iteration

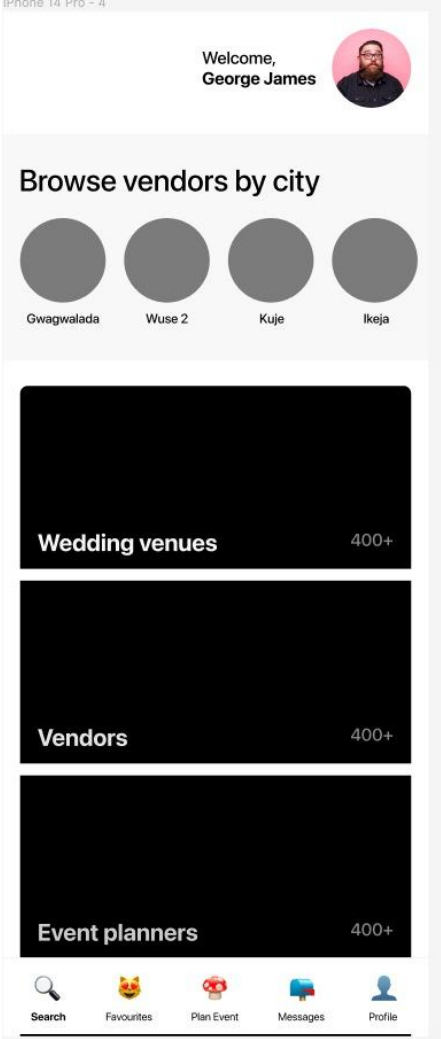


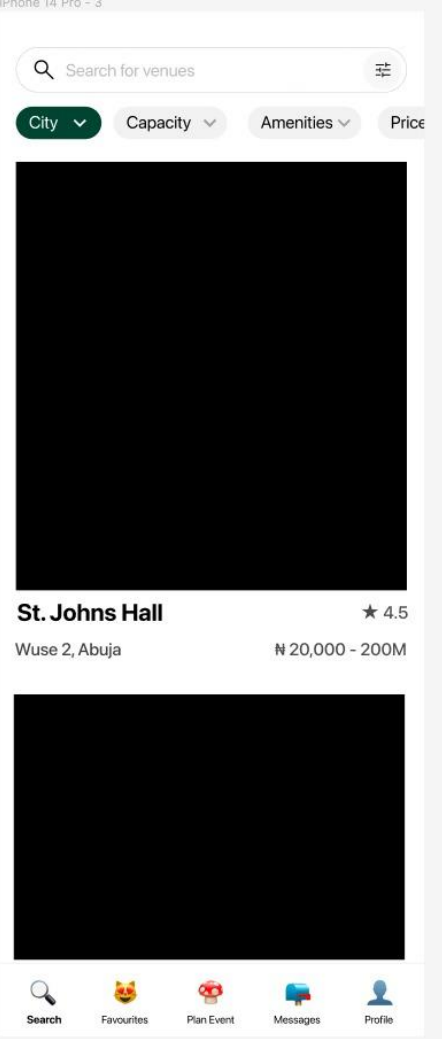
User Registration Process



Next Phase Iteration

- Browse vendors by city
- Browse Venue location
- Browse by event planners





Accessibility consideration

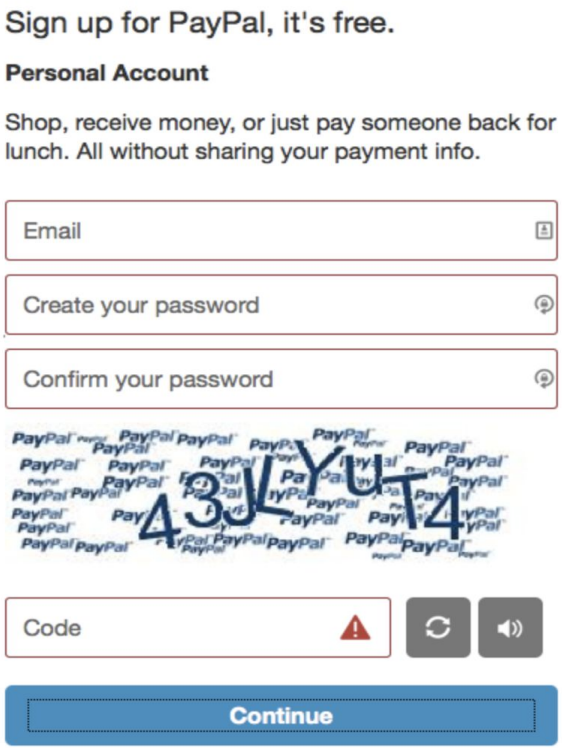
Accessibility in UI design ensures that people with disabilities or impairments can access, understand, and interact with the user interface. It promotes inclusivity, allowing a diverse range of users to effectively use the product or service.

Few Guidelines:

Don’t use color as the only visual means of conveying information. This helps users who are unable to, or have difficulty with, distinguishing one color from another. This includes people who are color blind, have low vision or are blind.

Use color to highlight or complement what is already visible.

How many errors can you see from the image below?



Turning on the color reveals a different story altogether.

Ensure sufficient contrast between text and its background

This helps users with low vision, color blindness, or worsening vision see and read the text on your screen.

- For smaller text, the lightest gray you can use on a white background is #767676.

- For bigger bold text the lightest gray you can use on a white background is #959595.

User Interface design guidelines

Consistency

Maintain consistency throughout the user interface to provide a familiar and intuitive experience. Use consistent visual elements, layout, terminology, and interactions across different screens and components.

Clarity and Simplicity

Ensure that the user interface is clear, simple, and easy to understand. Use concise and meaningful labels, provide clear instructions, and avoid unnecessary complexity.

Navigation

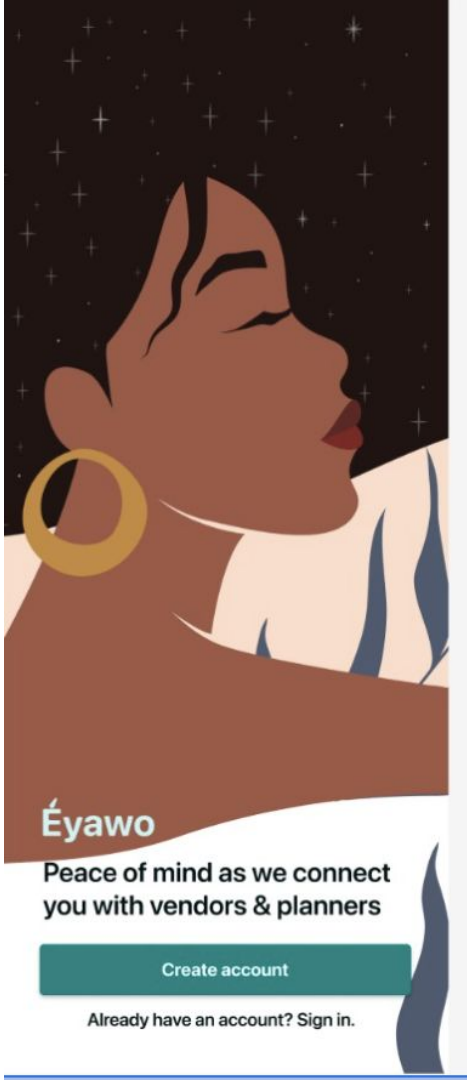
Design an intuitive navigation structure that allows users to easily move between different sections and screens. Use clear and visible navigation menus, breadcrumbs, and hierarchical organization to help users find information and perform actions efficiently.

Responsiveness

Design the user interface to be responsive and adaptive to different screen sizes and devices. Ensure that the layout, content, and interactions adjust gracefully to provide a seamless experience across desktop, mobile, and tablet devices.

Case Studies and Examples

- Ability to discuss with vendors possible things they are looking out for.
- Created a simple google doc questionnaire that had things users were looking for.
- Had focused group meetings to discuss the MVP and what to kick off on based on that.
- UI design was fully considerate of the database design as well
- Successful happy few trusted users after using proper testing



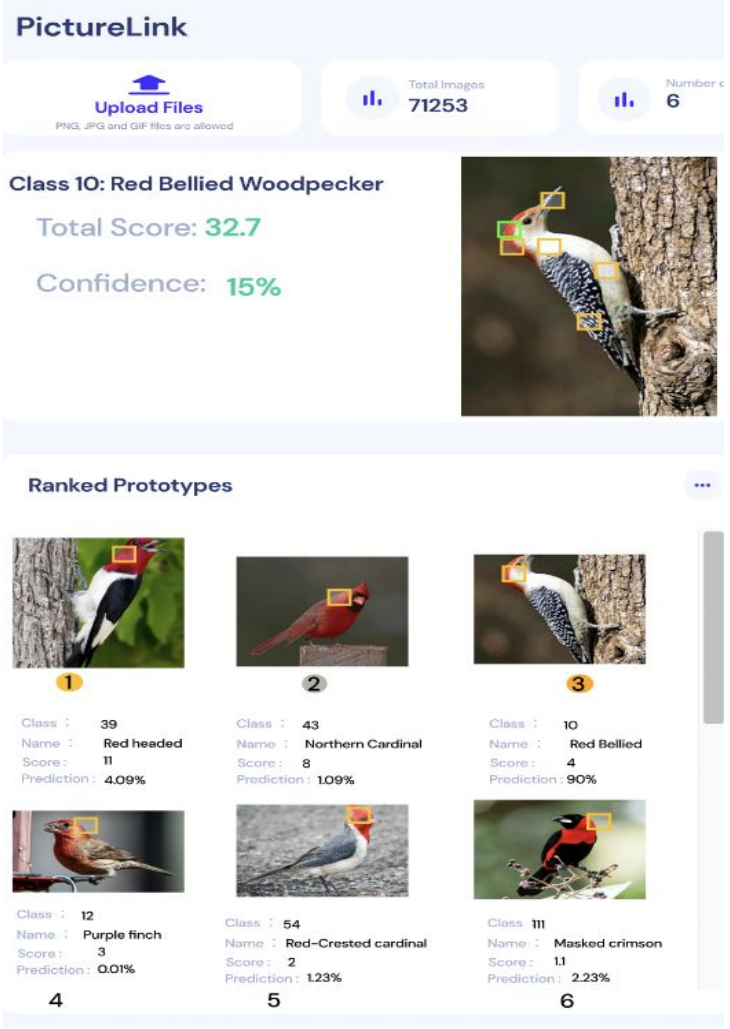
Case Studies and Examples

Problems

- Lacked RET techniques
- Lacked consideration of database design
- Lacked responsive design on mobile

Outcome

- Unable to use on mobile
- Only met satisfaction of developers but not regular end users
- Required re-engineering requirement in the Process of development



Refrences

https://www.ramotion.com/blog/accessibility-in-ux-design/
https://medium.com/salesforce-ux/7-things-every-designer-needs-to-know-about-accessibility-64f105f0881b

Related Work

https://cs.uwaterloo.ca/~dberry/ATRE/Slides/AntonyIrudayaraj.pdf

https://www.researchgate.net/publication/269293012_QualiHM_A_requirement_engineering_toolkit_for_efficient_user_interface_design

Future Trends

Detailed research on prototyping

QUESTIONS

Any questions for Susan?