ZwickExplorer

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ABSTRACT

An immersive and interactive program called the Robert Schumann ZwickExplorer application was created to take users through the life and legacy of Zwickau-born composer Robert Schumann. This app offers a contemporary way for users to enjoy Zwickau's Schumann-related sites by combining historical knowledge, cultural inquiry, and captivating multimedia experiences with its gamified interactions, educational material, and user-friendly navigation, the project places a strong emphasis on user involvement.

We show the Robert Schumann ZwickExplorer application prototype. We had first produced low-fidelity prototypes. The prototypes have different designs but are functionally comparable. After testing our paper prototypes with a few users, we received feedback from them that helped us improve the design of the prototype. We conducted Think Aloud testing with three to five users after making several adjustments to our low fidelity prototypes, and we arrived at a final design that we believe is effective and easy to use. Then, using Balsamic wireframes, we created our user interface application. We have discovered that low quality prototypes are economical, effective, and allow for easy application modifications. We have seen that when we use numerous sketches instead of just one, many test users have provided additional critiques and suggestions for enhancements. This demonstrates that using several sketches increases the likelihood of an effective application.

KEYWORDS

Design, Prototype, Usability testing, Evaluation, Method.

INTRODUCTION

The goal of the ZwickExplorer app is to honor the life and compositions of one of the most significant Romantic composers. This tour, which is based in Zwickau, the place where he was born, connects history, music, and contemporary technology to give guests an interesting and participatory experience. To guarantee an intuitive and engaging user experience, the project places a strong emphasis on a careful blending of design, prototypes, assessment, and testing. The application's design confirms to contemporary user expectations and aesthetic standards by utilizing wireframing and prototyping tools such as Balsamiq. The app's performance and user happiness were further guaranteed by thorough usability testing and review, giving it a complete platform for examining Schumann's legacy.
It is increasingly common practice to use paper prototypes and low-quality prototypes when designing commercial user interfaces.

This is due in part to their inexpensive cost and the results of multiple studies who found that the usability data they gathered from low-fidelity and high-fidelity prototypes was comparable. An early understanding of a design can be gained with the use of this type of technology before the expense of the investment precludes modifications. The primary benefit in this case is that it provides a less costly means of improving a design sooner than would be feasible otherwise. By contributing to the creation of the perfect design, they aid with this. Another benefit of paper prototypes' low cost is their capacity to enable the early exploration of additional design possibilities.

Creating low-fidelity prototypes for a Robert Schumann City Guide Tour was the primary task we completed for this project. We developed a set of usability test tasks with three to five persons and verified the related success requirements using a smartphone as the access point. Task 1's objectives are to evaluate your proficiency in designing and prototyping a mobile application and to show that you understand the fundamentals of user-centered design in a real-world setting.

In task 2, we designed and tested a mobile prototype in Balsamiq and conducted usability think-aloud testing once more. The objective was to show that we understood the fundamentals of evaluation when applied to a real-world scenario and to assess low-fidelity prototypes.

We designed the application, developed it iteratively, and evaluated it for this project. After conducting usability testing with a range of users from diverse backgrounds, we progressively enhanced the application's usability and design.

GOALS

Create a Mobile application that educates users to learn about Zwickau's sights related to Robert Schumann through interactive and engaging content.
Objectives:

1. Recognize fundamental ideas including accessibility, the design process, and user-centered design.
2. Determine the essential features that are required.
3. Develop features that allow users to learn about Robert Schumann-related Zwickau landmarks through captivating and interactive information.
4. Develop a low-fidelity prototype design by brainstorming.
5. To test the application, make low-fidelity paper sketches.

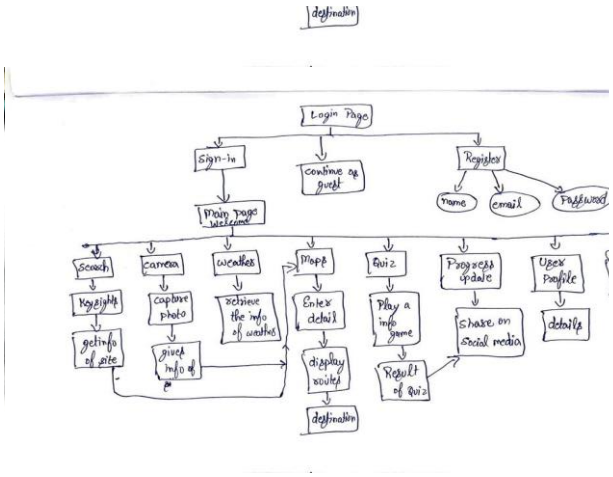


Figure 1: Concept map by Pavan Karehalli Manjegowda

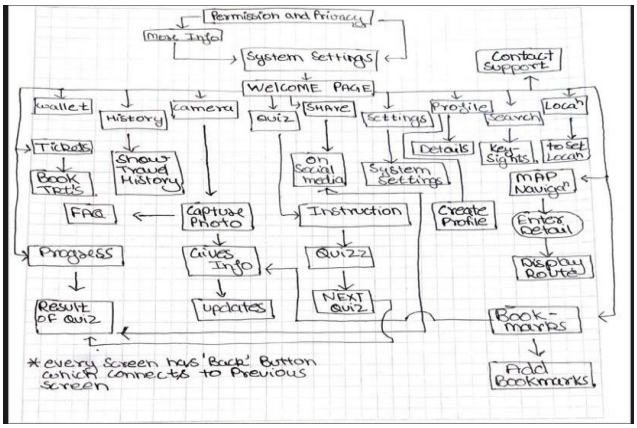


Figure 3: Concept map by Ravi Verma

6. To test the low-fidelity sketches, create a series of test activities.
7. Conduct testing with two to three users.
8. Create a wireframe in Balsamiq and make adjustments in accordance with the testing that has been finished.

BRAINSTORMING DESIGN IDEAS

We pooled our ideas throughout the brainstorming stage to create a mobile application that skilfully combines strategic strategy and creative fusion. The Concept Map acted as a guide for further design and prototyping phases by graphically illustrating the many features of the ZwickExplorer program. The ZwickExplorer application design is not only creative but also firmly grounded in user demands thanks to this iterative process. The brainstorming stage turned into a furnace where innovation and practicality collided.

Functionalities

The Zwickau Explorer app offers a variety of features associated with

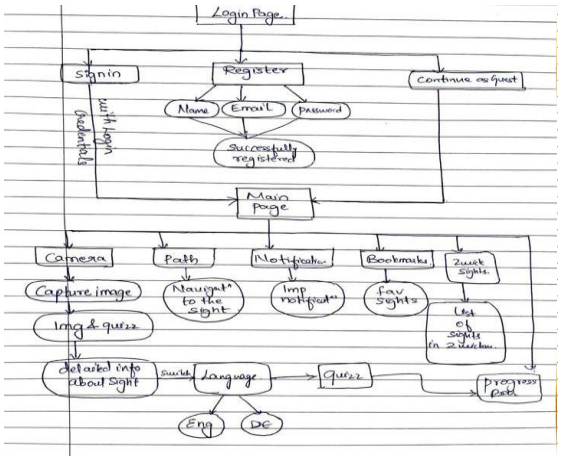


Figure 2: Concept map by Shubha Mahesh

the Robert Schumann City Tour. The functionalities can be divided into two groups according to their importance.

1) Required Functionalities:

- Intuitive Navigation.
- Games for active engagement.
- Language support in English and Deutsch.
- Camera Feature for image recognition.
- User friendly application to all kind off users.

2) Additional Functionalities:

- Login and Register options.
- Important Notifications.
- Bookmarking Sights.
- Zwickau Sights - overall Sights.
- Sharing Progress on external application.

INITIAL DRAFT OF LOW FIDELITY PROTOTYPE

Understanding how successfully the existing functionalities could be applied in a real-world setting is crucial before creating a digital functioning prototype. It all boils down to turning the functionalities into a real form that can be used and tested. There isn't a better technique than pencil and paper to make changes in real time while using the fewest resources possible. Three independent, functionally similar designs wearing different outfits were included in the first draft.

CONCEPT MAPS

Without a path, a destination is impossible. Prior to creating designs for the prototype testing, idea maps for every low resolution prototype iteration have to be created using pencil and paper, as seen in Figures [1], [2] and [3].

Drawing the sketches

After finishing the concept maps, our team created multiple iterations of ZwickExplorer before settling on the ideas for the low-fidelity prototype that would be put to the test. They were subsequently printed onto paper that was appropriate for think-aloud usability testing. Our team had no idea what we were drawing in order to maximize the production of the design ideas.

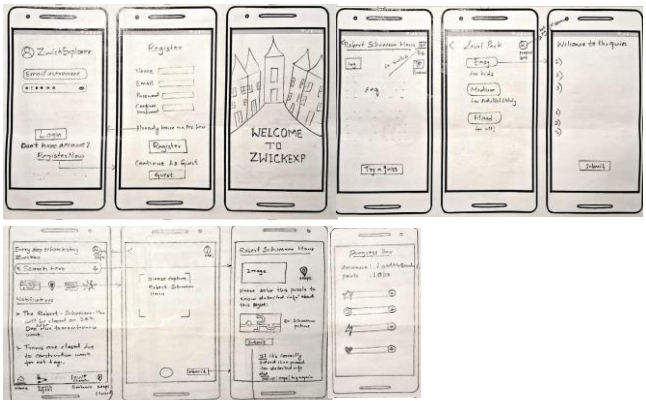


Figure 4: Sketches by Shubha Mahesh

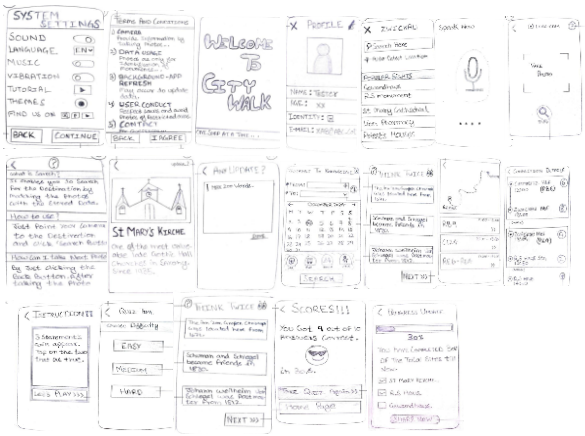


Figure 5: Sketches by Ravi Verma

Figure 6: Sketches by Pavan Karehalli Manjegowda

USABILITY TESTING

To evaluate only the most important and crucial features, test tasks were developed. For the matching low fidelity paper sketches, a series of test tasks was created. In order to determine how well the aforementioned functionalities could be implemented, these test tasks were designed to meet a set of success requirements.

TEST TASKS

To evaluate only the most important and crucial features, test tasks were developed. For the matching low-fidelity paper sketches, three sets of test tasks were created. In order to determine how well the functionality can be implemented, these test tasks seek to meet a set of success conditions.

SUCCESS REQUIREMENTS

- User Account Management (creating a new user Account in the application).
- Informative description (capturing the image).
- Language Support: Offer content in English and German.
- Navigation (providing navigation).
- Interactive gamification (providing quizzes).
- User-friendly Accessibility.

Three distinct users participated in the anonymous tests. Without giving specific instructions on how to complete the activities, the test tasks were written in such a way that the user being tested was capable of understanding them. Though they are formatted differently to test various chunks of the same functions, the tasks in each of our prototypes eventually test the same scenarios.

TEST TASKS FOR THE PROTOTYPE

1) Please log in to the Application.
2) Please use the application for navigation.
3) Assume now you are Robert Schumann's house please take a picture.
4) Click on the image to get detailed information about the sight.
5) Now you have arrived at Schumann's house please take up the quiz.

ITERATIVE EVALUATION

Login Page: User 1 had trouble navigating the welcome page, so it was fixed before testing with another user. However, User 2 discovered that the Guest was deceiving them, so it was fixed before testing with the
User 3.
Sight Navigation: All three users experienced no problems, and they enjoyed the navigation path.

Camera: All three users had no trouble capturing images, and they also tested the search and voice-assistant features.
Sight information: User1 did not want to play the quiz and therefore required sight information directly, which was rectified by providing an option before testing with other users.
Gamification: user2 was dissatisfied with the game pattern, thus it was corrected using a new strategy.

BALSAMIQ CONCEPTS

• Prototyping, Brainstorming, Rapid application development, User interface design, Website wire frame.

FINAL PROTOTYPE

Because of the think-aloud testing, ZwickExplorer's design greatly improved over its original pencil and paper sketches. The improvement was greatly enhanced by the participants critical input. Based on the test results, the design for ZwickExplorer's final digital prototype was created in Balsamiq.

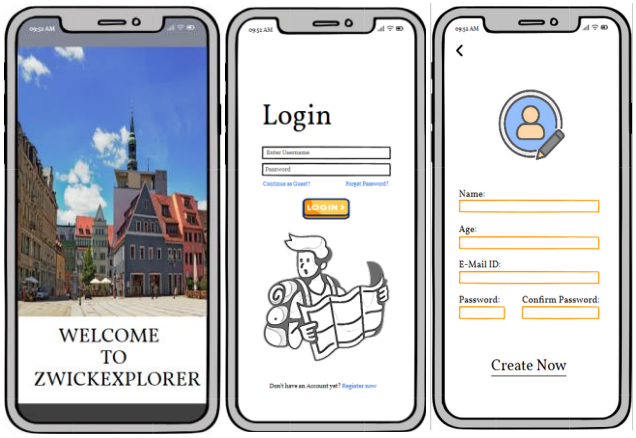


Fig 7 **Fig 8** **Fig 9**

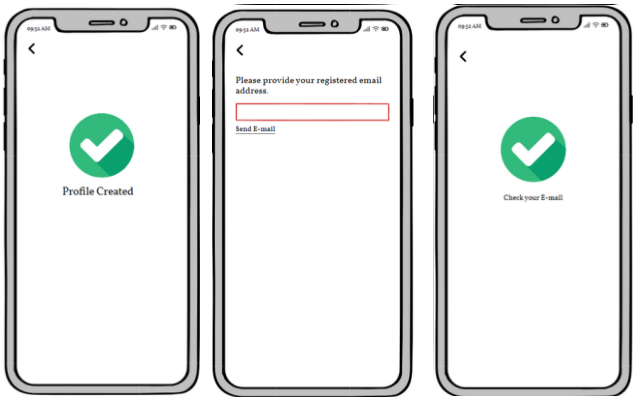


Fig 10 **Fig 11** **Fig 12**

Welcome Page:

Fig 7 indicates the welcome page of the ZwickExplorer application

Fig 8 indicates the Login page where user can can securely access personalized content by entering their credentials or creating a new account on the login page and also if user doesn't have interest to create account can login as a guest.

Fig 9 indicates registration page. In order to generate user profiles, the registration form gathers basic data such as name, age, email and password.

Fig 10 shows that profile has been created successfully. Fig 11 indicates the page for forgot password page where user can recover account by providing the email to create new password link.

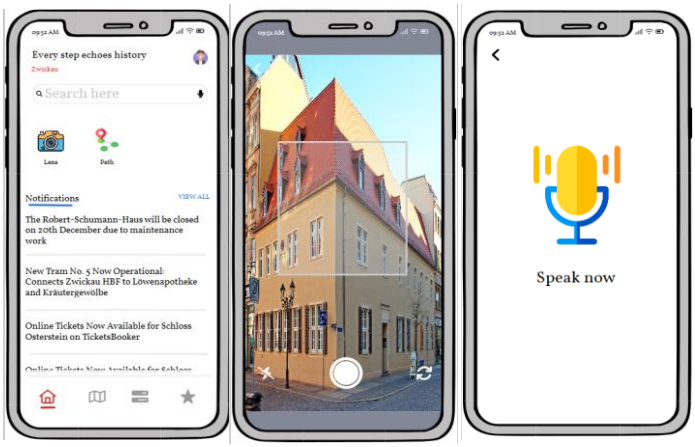


Fig 13 **Fig 14** **Fig 15**

Home Page:

Fig 13 indicates the Home Screen which includes the smartphone's **camera**, **search and voice-assistant features** which functions image recognition, voice recognition or identification to enhance the experience of exploring.

Fig 16

Easy Navigation:

Fig 16 indicates the navigation page offers a user-friendly navigation system that directs users to surrounding sights.

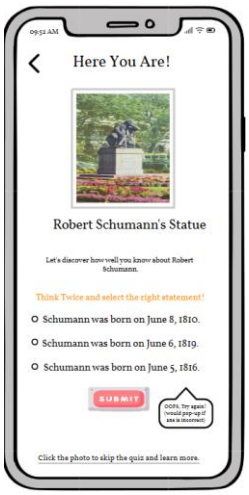
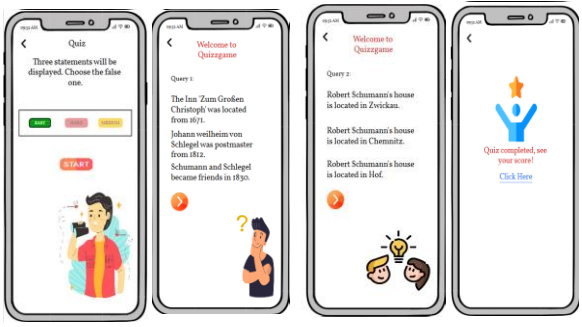


Fig 17

Fig 18

Information about Robert Schumann:

Fig 17 and 18 Educate users about Robert Schumann-related Zwickau attractions by providing them with interesting and interactive content with language support. Include elements that promote active participation and learning at every sight, such as mini-games or quizzes.



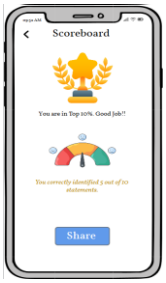


Fig 19:

Gamification:

Fig 19 indicates the **Screens of Gaming Functionalities.** In the context of the Robert Schumann City Walk Tour app, gamification is used to make exploring the city more interactive, enjoyable, and educational.

Here's how gamification is integrated into the city tour:

1. Questionnaire on Robert Schumann History and others.
2. Leaderboards.
3. Progress Tracking.
4. Virtual Rewards

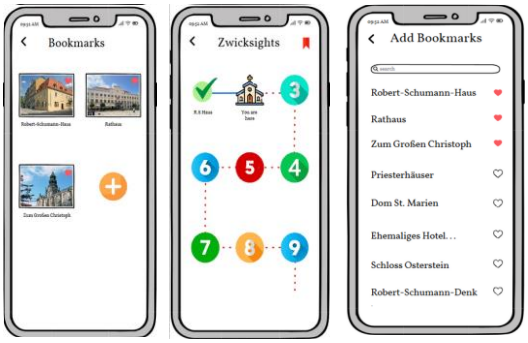


Fig 20

Bookmarks:

The bookmark feature in the Robert Schumann City Walk Tour app allows users to personalize their exploration experience by saving points of interest for future reference. This functionality is particularly useful for users who want to plan their tour or revisit specific landmarks.

TEST TASKS and REQUIREMENTS

Task / Requirements	**R1**	**R2**	**R3**	**R4**	**R5**
T1: Login to the application	X				
T2: Use the application for Navigation		X			
T3: Assume you're at R.S House, please take a picture			X	X	
T4: Get sight information				X	
T5: Take a Quizz.					X

Table 1:

	T1	T3	T5
TIME	3 min	1:24 sec	1:33 sec
OBSERVATIONS	Guest is misleading the user in 1st page	It was user friendly	Quiz pattern need to be changed to make it easy to hard level.
USER COMMENTS	User liked welcome page and login page	User liked the page	Changes in the quiz pattern
Errors	No errors	No errors	No errors

Table 2:

COMPARATIVE ANALYSIS OF HIGH FIDELITY APPLICATIONS

In order to assess the overall performance of the high-fidelity applications, a number of important characteristics were compared. Aesthetic appeal, navigation clarity, and consistency were among the characteristics of the user interface that were evaluated. In terms of user experience, responsiveness, feedback mechanisms, and ease of use were prioritized. Core features, extra capabilities, and integration possibilities were used to assess functionality. Standards compliance and inclusive design were among the accessibility considerations. Performance was evaluated in terms of overall stability, responsiveness during periods of high usage, and loading speed. Data encryption, secure login, and regulatory compliance were among the security-related topics highlighted. The degree of originality was evaluated in terms of distinctive features and the incorporation of cutting-edge technology. In these areas, each program showed distinct advantages and disadvantages, offering insightful information for determining whether or not it was appropriate for a certain use case.

CONCLUSION

The vital errors in our design that were otherwise clear to us were found with the aid of think-aloud usability testing. Additionally, evaluating a number of users gave us the chance to further develop our ideas on the features incorporated into the low-fidelity sketches. Because the sketches were done with paper and pencil, they could be reused, allowing for small financial outlays. Understanding the successes and failures associated with the appropriate functionality was made possible by the test tasks' precise conduct. Testing the paper prototypes led to the development of the Balsamiq prototype, which is a far improved version of the same basic design. Testing the Balsamiq in a more realistic setting in the future can help refine the prototype even more, advancing it to the development of a real application.

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