

# Human Computer Interactions: IRCTC Website Improvements

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## ABSTRACT

Indian Railway Catering and Tourism Corporation (IRCTC) is an Indian public sector undertaking that provides ticketing, catering, and tourism services for the Indian Railways. This paper suggests potential improvements to the IRCTC's website through a user-driven study. We investigated the website, issued questionnaires, and interviewed experienced users to find issues in, and suggestions for the website. Based on our questionnaire, the major issues of the website identified and discussed in this paper include the complicated navigation in the home page, an error-prone registration process, and the ambiguous options in the search result page. In addition, a report is provided on a high-fidelity prototype that abides by the HCI principles and the limitations of this prototype are also covered. Overall, the prototype was well received by our interview sample. Nonetheless, the improvements proposed in the high-fidelity prototype need to fulfil universal usability, concrete and conceptual design.

## ACM Classification Keywords

HCI, Travel Booking Website, Website Evaluation

## INTRODUCTION

The IRCTC itself is an e-ticketing system that enables train bookings from station to station by applying filters involving journey class, departure time, arrival time, etc. It is operated under the administrative control of the Ministry of Railways for the Government of India. Its purpose is to end the hassles of booking at a physical location and enable instant online bookings. Unfortunately, the website violates several HCI principles, which leads to poor user experience in navigation, search, and registration. This paper will include a literature review, the

identification of clear problem statements, a prototype, the limitations of the aforementioned prototype and future work.

## LITERATURE REVIEW

Overall, the literature reviewed during the study allowed us to guide design changes. It gave us a more concrete understanding of the changes required to create a more effective prototype. The first example of an insight attained is regarding the structure of a search results page provided by Search Results on Flight Booking Websites: Displaying Departure and Return Flights on a Single Page vs Two Consecutive Pages by Tatiana Zlokazova, Irina Blinnikova, Sergey Grigorovich and Ivan Burmistrov (2019). The study conducted an experiment of 23 users and compared a two pages vs single page setup for search results. The users' performance on the two setups was measured through the speed of action along with error rate, with cognitive load being measured using eye and mouse tracking. It found that while the percent error rate was about three times higher in the two-page setup, the speed of search time was reduced from 37.8 (in one page) to 34.3 in two-page setup. Obviously, the search result page layout will influence two things: the error clicking and the completing speed, which also applies to the layout of the whole website. Therefore, in the improvement of IRCTC we need to consider a balance between the speed and the error rate when designing the web page layout.

The second insight came from an in-depth look into Human-Computer Interaction was undertaken in Designing the User Interface: Strategies for Effective Human-Computer Interaction (6th edition) by Shneiderman, B., Plaisant, C., Cohen, M., and Jacobs,

S (2016). This textbook highlights the eight golden rules of HCI, demonstrating how to properly create a website that users can use and master. The book includes several studies: outlining hypotheses, notes, problems, and potential solutions for web redesigns. We have looked at, referenced, and taken inspiration from this textbook throughout our creation of an IRCTC new and improved website.

Moreover, in Chinese Customers' Evaluation of Travel Website Quality: A Decision-Tree Analysis (Sun, Cárdenas & Harrill, 2016), the authors take advantage of the decision trees and "Wekas" to analyze the critical factors that influence the user experience and satisfaction on the travel website. From the research, we knew that information quality is the top evaluation attribute of the website. Thus, in improving the IRCTC, we first need to make sure that the information we provide to our customers is accurate and effective to reduce unnecessary errors brought by incorrect information. Furthermore, since the customers are willing to see more functionality that minimizes the website complexity, we decided to focus on improving the ease of use and the personality (e.g. customized filter result) of the IRCTC. Also, we need to consider adding useful features into the website to facilitate user life and improve website attractiveness.

According to Relationship between Hotels' Website Quality and Consumers' Booking Intentions with Internet Experience as Moderator, the relationship between the website and its user is essential. The study of Liang Wang has demonstrated the effects of website dimensions on booking intentions, wherein website usability and booking intentions are the strongest (2020). Furthermore, in his study, the website's security also played an important role in users' booking intentions. As Liang Wang mentioned, virtual communities magnify the threat of online vendors' opportunistic behaviours such as misuse of personal information and credit card fraud (Shen & Chiou, 2010). Our team has seen an example of misuse of personal information. Users of the IRCTC website have commented that the IRCTC website's formal email has been sending junk emails and fraud emails to its user, which impacted their willingness to book on the IRCTC website. At the same time, Morrison (2004) has mentioned that consumer behaviours are partially influenced by people's past experiences, which will help offset perceived risks and uncertainties. This phenomenon often happens to most older people. Without past online booking

experience, they are less willing to spend their time online booking. Hence, if there is a relation between the website and real-world experience, users will be more likely to try it out. These security, usability, and similarity of websites sum up to one big idea, user-centred design. Users will always gravitate toward something that better fits their demands. Utilizing the user-centred design was the main method to create a popular and high satisfaction website.

## PROBLEM STATEMENT

When booking a train ticket, there are certain features that must be present. Users should be able to find what they need as easily and quickly as possible. Tickets should be sorted according to date, time, and location of travel, and everything should seem eerily familiar to the user, even if they have never used the website. The IRCTC website fails at these tasks. The landing page features a confusion navigation bar, with inconsistent, vague headers, thus breaking rule one and eight of Shneiderman's eight golden rules. Error messages are ambiguous and improperly displayed (Rule 5). Content is seemingly thrown on the page with no directive, and users are allowed to check out train tickets without even filling in their information (Rules 1 and 7). Unfamiliar terms combined with hidden necessary features stop users from booking a ticket as easily as they hoped. Confusion can lead to frustration which is not ideal for the user nor the train service. These faults in the IRCTC website can cause lost revenue, angered customers, and possibly competition. The impact that a faulty website can have on a corporation is massive, especially when it covers both the quality of the user experience and the quantifiable losses. Our goal throughout the semester was to improve this website. We wanted to take these faults and use them to improve the experience users had on the IRCTC website. Through our research, low and high-fidelity prototypes, and interviews, we want to make a cleaner, better, IRCTC.

## RESEARCH QUESTIONS

1. What is an effective way to maintain a user's relation with the website such that actions are error-free and reversible?
2. What is a simplistic structure of a search result that allows easy information gathering while maintaining low cognitive load?
- 3.

## USER REQUIREMENT

### Adding & Removing Author Fields Above

Based on the problems we identified for the website, our team has developed a few different solutions. Our primary goal was to create a user-centered design that would require a reliable result from requirement establishment. Nevertheless, we did not have more time to repeat the interaction design life cycle. Thus, we decided to include part of the prototyping into the requirements establishing stage. This decision will guarantee that our solution is on the right track and that the website can better serve its users.

Then, to illustrate the solutions we provided, we have drawn several low-fidelity prototypes, including the home page, the registration form, and the search result page. The prototype will focus on informative feedback offering, error prevention, high-level user controls and a straightforward layout. If our solution choices were correct, our final prototype would resolve most of the frustration that occurred during the use of the website.

**Figure 1. Low-fidelity prototype of the home page search box with the date picker and error displaying**

### Target User

From statistical research, we acknowledged that the average ages that use the IRCTC website are people aged from twenty-five to forty. Moreover, men use the website 68% of the time; women use it 32% of the time (Sri Ram, 2020). To gain insight into the user's genuine demands, we mainly focused on Sri Ram's demographics in our requirement gathering stage. However, by considering universal usability, our team enlarged the target users' age range to include older users in our study.

### Requirement gathering methods

If our team wants to cover the diverse users, we will need ample feedback to support the statement we are going to make. The survey provides a considerable amount of quantitative data and brief qualitative data. Consequently, the survey became an ideal option for our team. However, a quick appraisal from the user would not be a solid backer for our conclusion; thus, we included semi-structured interviews as a supplement. Semi-structured interviews would guarantee that interviewees and us were exchanging information under a fixed topic.

The survey was divided into three parts: Personal Information, Feedback on Website, and Feedback on Prototype. We first asked for personal information like age, sex, and travel frequency to better understand the result. Then, we demanded feedback on the website that focuses on the problem we identified and additional deficiencies. Lastly, we used a rating system to quantify the user satisfaction on our low-fidelity prototypes and improved user experience.

On the other hand, interviews started with the interviewee's self-introduction. Then, we asked for a detailed response from interviewees on the overall experience and desire on the website. After that, we ended the interview with feedback on our prototype in general.

### Result of survey and semi-structured interview

After completing the requirement gathering, we had 29 participants, 26 from the survey and 3 from interviews. These participants had different ages, educational backgrounds, and various computer skills. We had 76.9% of the participants aged 15 to 24 and included 7.7% of elders. Also, 61.3% of males participated in the survey. These concluded data showed the match between our participant and the target user, which gives a higher probability of meeting the user's requirement of the IRCTC website.

After looking at the result from the survey, we immediately noticed that 33.6% of users were dissatisfied with the current website (rated under 4/7). They have encountered issues like inconsistent design and cluttered layout that's hard to read and might cause ambiguity. Then, almost all users agreed that our solution choice on layout, registration and search results would considerably improve this website. (only 3.8% rated below 4/7) Last, all interviewees and 92.3% of the survey taker said they were more likely to recommend the improved website to others. In addition, the most popular feature during the interview

was the price calendar. However, interviewees also pointed out some changes they like to see. For example, remove the 'select all' button on the departure period and the ability to re-edit the previous form they have filled.

Therefore, the changes that received positive feedback in the low fidelity prototype would be retained in the high-fidelity prototype. Also, we would consider the changes proposed by the participants during this stage. In conclusion, our high-fidelity prototype will mainly focus on three areas under the guarantee of Ben Shneiderman's eight golden rules of interface design:

1. Making the registration and booking process smoother and more user-friendly.
2. Adding new features to the searching feature makes the website more convenient and helpful.
3. Restructuring layouts to make the website clean and easy to follow.

## PROTOTYPE

Our team used Figma as our high-fidelity prototyping tool. And due to the characteristics of Figma, we can't set up responses to all user interactions. Hence, our team implemented some built-in input like username and password to get the ideal result page.

### User Registration

The registration form was divided into individual steps that the user can only move on after finishing. Still, users are always able to revisit the previous actions after completion. Individual steps could avoid the confusion caused by the switch between different form tabs. Also, the prototype listed all the requirements with an asterisk first and then placed a checkmark on the left to indicate valid inputs. Listing requirements would make users feel the website is under control by speeding up their registration process. Moreover, the check mark provided informative feedback to the user, showing their action was completed. When the user pressed the continue or register button, a red text note would highlight the missing information. This feedback could help the user locate the error faster with eye-catching red color. Last, we added an information preview page at the end for review and modification. The preview function could avoid most mistakes made during the registration process and calm the user's anxiety.

### Obtain Ticket Information

We reallocated the "alert" pop-up on the home page and added a collapse function. Removing the alert

pop-up could prevent distraction and allow users to concentrate on booking. Then, we placed font size adjustment and language preference to the upright corner. Furthermore, we moved transportation, hotel, and holiday booking from the navigation bar to the search ticket area. The deduction of different functions could leave a cleaner navigation bar, allowing users to perform their actions faster. Also, putting related parts together could minimize scanning time and reduce memory load. Next, we replaced the pop-up error message with a red border to highlight the invalid input. Compared to the error dialogue at the top right corner, the red border would allow users to find their mistakes faster without confusion. Last, we used a drop-down date picker to input the month and year. This method could avoid unnecessary failures caused by human error.

### Search Result Page

We moved the special needs (Flexible with Date, Train with Available Berth, etc.) to the filter on the result page. This abatement of choice could leave a cleaner search portal and a higher flexibility filter. Then, we allowed users to select their preferred departure and arrival period on the filter. Next, we cleared up the filter option, leaving only the departure and arrival stations. This choice would highly elevate the convenience based on users' demand. Last we added a daily lowest price and price trend as a new feature. It's valuable to include the calendar in the prototype, because it has shown its general useability in the requirement gathering stage.

Consequently, our product of high-fidelity prototype was very close to the actual website. However, the prototype will not elevate users' expectations on the final website since all changes are easy to modify on the original website. Our team believed the high similarity between the prototype and the final website would accurately collect the user performance data. Then, those performance data will reveal the disadvantage of our design and bring us closer to the user-centered design we crave.

## USABILITY STUDY

We have chosen the semi-structured interview as the method of performing the usability study. Compared to other methods such as questionnaires and the focus group, face-to-face interviews have created a better opportunity to get in touch with individual participants, providing our study with more non-verbal data and personal and truthful answers. These

various verbal and non-verbal data, such as body language and eye contact, helped us to collect more accurate user reactions and impressions towards our prototype. At the same time, the semi-structured interview allowed us to gather more precise users' feedback for a particular design feature in real-time (Preece, Rogers & Sharp, 2019, p. 268).

Due to the covid pandemic, we held the interviews both online and in-person. The interview was mainly composed of four parts:

1. Study overview and informed consent
2. Interviewee background question
3. Three tasks for the interviewee to perform (registration, obtaining ticket information and filtering results, and view lowest price functionality)
4. Questions throughout the study (e.g., post-task questions and post-study questions).

In part 2, where we conducted a simple background check with the interviewee, we collected data such as ages, educational backgrounds, technical backgrounds, and personal experiences on similar booking websites. These quantitative data helped us better understand our interviewees and their reactions and responses to the task performance. During the task-performing stage, we asked interviewees to think out loud and answer a few post-task questions to gather the initial impression. The questions included both qualitative data questions and quantitative data questions. For instance, "What parts of the task did you like the most? Why?" is an example of open-ended questions for qualitative analysis and the Likert scale questions on user satisfaction for quantitative analysis. We also applied these two types of questions in the post-study questions section for quantitative and qualitative analysis.

Moreover, many measures have been taken to reduce possible biases in the research. In the interview question design process, we have ensured that the questions were unbiased and would not subconsciously lead the user to think or answer in a certain way. For example, in the post-task questions stage, we asked both satisfying and amendable aspects of the features in a specific task to avoid the impact of single value orientation. At the same time, during the task conduction processes, we have minimized the involvement of task and question designers of the research and have provided as little help as possible to eliminate the influence brought by them.

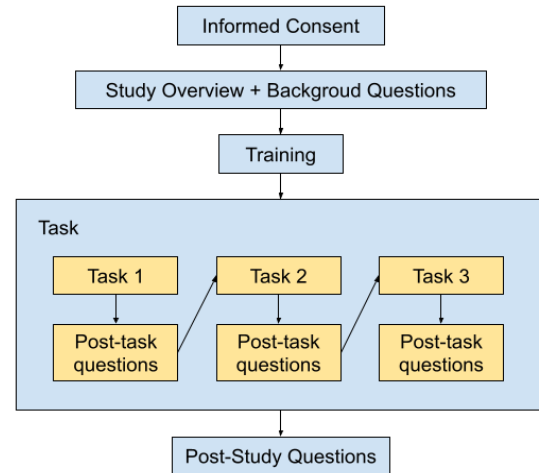


Figure 2. Structure of the Usability Study

## RESULT

### Background Information

In the usability study stage, we received 7 responses in total, with 2 from in-person interviews and 5 from online interviews. Through simple demographic questions, we learned that respondents from our study were all in the 20 - 25 age range, and were pursuing a bachelor's degree. The main difference among the subjects is their field of study. Most of them major in computer science (5 participants) and are familiar with technical devices; however, some major in English literature (1 participant) or traditional Chinese medicine (1 participant). The two non-computer science majors identified themselves as casual users. Moreover, the personal online booking experiences of interviewees are also slightly different. Most of our interviewees have already used some well-known travel booking websites, such as AirCanada and Airbnb, and have booking records within half a year. But we also had an interviewee with nearly no online booking experience.

### Quantitative Analysis

We recorded the completion time, number of mis clicks, and Likert scale questions to collect the data for quantitative analysis. Because of our task and prototype settings, the interactions between the user and our prototype were limited. We finally decided only to consider the mis click count and the Likert scale data, and excluded the task completion time.

Generally speaking, all interviewees were satisfied with our high-fidelity prototype (avg 6 on overall experience) and thought the prototype was easy and intuitive to interact with (avg 2 on the overall ease of

use). From the summary of table I and table II, we noticed a correlation between the scale of ease of use and the scale of satisfaction. Usually, the easier the task was, the more satisfying the experience was. For example, every participant completed the first two tasks (registration and obtaining ticket information and filtering result) successfully and rated below 2 for ease of use and rated over 5.5 on avg for satisfaction. However, in task 3, most of our participants met challenges in finding the lowest price and rate below 5 for user satisfaction.

In addition, we also found that in the task, as long as users were not frustrated in a critical process, it will not significantly impact the overall experience. For example, most of our interviewees (4) clicked on the date instead of the set date button when choosing the train ticket date. Even though the design did not follow their expectations, they figured out the solution quickly and rated 6 on task 2.

	Task 1	Task 2	Task 3
Ease Of Use	1.43	1.5	3.29
Overall	2.07		

**Table 1. Table of ease of use (1 – very easy and 7 – very hard)**

	Task 1	Task 2	Task 3
Satisfaction	5.64	5.89	4.92
Overall	5.79		

**Table 1. Table of satisfaction (1 – very dissatisfy and 7 – very satisfy)**

### Qualitative Analysis

To collect data for qualitative analysis, we asked our participants to think out loud during the task and finish several open-ended opinion questions after each task. These follow up questions included the general idea toward our interfaces, satisfactory parts and parts that needed improvement. Also, we opened post-study question sections to collect suggestions and concerns from our interviewees after they finished all the tasks.

For our interfaces, the most replies we received were “simple”, “clean”, “intuitive”, and “easy to look at”. Thus, it indicated that our reconfiguration of page structure was relatively successful and made the website easier to use.

Second, some new functionalities we proposed previously, such as the registration process indicator and view information in the registration, received positive responses from most of our participants. For

example, two of our interviewees (interviewee #2 and interviewee #4) liked the registration process indicator. Interviewee #2 told us that “this shows where I am and I like it.” and interviewee #4 said, “this shows your position on the form is very important, and it gives an overview.” Moreover, the lowest ticket price information we proposed as a new concept also received a better response. “Pretty good concept in involving lowest price” from interviewee #5, and “Quite well easy to compare the price during the whole month and efficient.” from interviewee #7.

However, some of our design elements in the prototype were controversial. First, the price calendar and the price trend graph displaying the lowest price information received diametrically opposite answers. Some of the interviewees (5 participants) felt the price related elements make their lives easier, while others were confused by the price information we provided. Furthermore, as suggested by interviewee #6, we still need to balance the conceptual design and the concrete design and take universal usability more into consideration. For example, it was hard to understand the meaning of the calendar icon and distinguish whether it was clickable or not in the search result page. Also, foreigners may not be familiar with some terminologies used in the website, such as “divyaang” in the type in the ticket search box.

### LIMITATIONS

While the process of the interview was seamless, we still ran into a few limitations. These limitations can be categorized into three main parts: the study settings, the study equipment, and the study respondents.

First, due to the ongoing COVID-19 Pandemic, we have to conduct our interviews both online and in person. However, we encountered several technical difficulties in the online interview, such as the online platform choice and the task preparation. For example, one of our interviewees encountered difficulty connecting to zoom and spent extra time looking for an alternative platform to conduct the interview. Because of the inconvenience of these study settings, participants were likely to have personal emotions, which would bias against the task and affect the final results.

The second limitation is related to the study equipment we provided for the task. For the testing purpose, we reduced the space for users to interact with the prototype, such as the prefilling registration form and specific task options, and provided a detailed



task requirement. Because of all these controlled variables, participants had less chance of making mistakes, which may not reflect the actual situation in the interaction.

Furthermore, the base of our study was small and single. Budi and Moran (2021) suggested that the recommended participants number is 40 for quantitative research. Our usability study only involved 7 participants, which is much less than the recommended number. Moreover, the backgrounds of the participants were similar to each other. Even though the technical backgrounds and personal online booking experience, we can't ignore that these interviewees were all college students in their 20s. Since a uniform group of participants is hard to reflect various users' interactions well, we cannot exclude the bias brought by our participants.

### FUTURE WORK

In future work, we plan to improve our prototype to allow more freedom in the interaction between the users and the prototype. The improvement of the prototype could be made by deeper exploring the Figma or other high-fidelity prototype tools to introduce more workflows and choices. Moreover, as we mentioned in the qualitative analysis section, our current prototype is flawed in the concrete versus the conceptual design and the universal usability. Therefore, we plan to review more related literature and conduct several iterative questionnaires to make the prototype more in line with the usage habits and psychological expectations of the mass users.

Considering the limitations of our usability test, we plan to include larger sample size and various groups into the next step of usability study requirements. These require us to have a deeper understanding of the demography of IRCTC website users and choose the suitable and typical participants to cover the user groups as much as possible. Furthermore, due to the difference between the in-person and virtual interviews, we need to deliver the interview more effectively to reduce unnecessary influence factors brought by the study setting.

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## Appendix

- Sample Informed Consent Used for the Usability Study

**Usability Study – Informed Consent Form**

**Title:** *IRCTC Website Improvements*  
**Investigators:** *Yuanyuan Li, Yuxin Chen, Xiaohan Lu, Jaiteg Sahota, Mohamed Halat, Armand Sarkezi*

I \_\_\_\_\_ hereby consent to participate in a usability study conducted by the Investigators (listed above) as part of a Fall 2021 project for **CSCC10, Human-Computer Interaction**, a course offered by the Department of Computer & Mathematical Sciences at the University of Toronto Scarborough.

I **agree** to participate in this study and the purpose of this study is *a purely educational study on the possible improvements on irctc.co.in in terms of human computer interactions.*

I **understand** that:

- The procedures to be used are *a google form questionnaire, and an interviewing regarding their interactions on the irctc website and a questionnaire.*
- The risks incurred by participating are *having my results (excluding personal details/information) analyzed.*
- I will receive no compensation for my participation.
- I am free to withdraw at any time during the study without the need to give any explanation or penalty.
- All materials and results will be kept confidential, and, in particular, that my name and any identifying or identified information will not be associated with the data.
- I can contact the course instructor, *Naureen Nizam (nnizam@cs.utoronto.edu)* with any questions or concerns.

**PARTICIPANT**

Name (please print) \_\_\_\_\_

Signature \_\_\_\_\_

Date: \_\_\_\_\_

**INVESTIGATOR(s)**

Name \_\_\_\_\_

Signature \_\_\_\_\_

Date: \_\_\_\_\_



- Usability Study Interview Questions

**Introduction and consent**

Hi, we are students from UTSC taking c10 this semester. This interview is related to our project on improving IRCTC. Thank you for agreeing to participate in our study!

The purpose of our study is to analyze and improve the IRCTC - an Indian railway booking website. And we are currently on that stage of analyzing the high-fidelity prototype. We would like to determine the initial reaction to the interface and the concept of our current prototype.

We will be audio recording this session to supplement the notes we will be taking on how you complete the task we assign you. If you are comfortable being recorded, please sign this consent form.

**Background knowledge**

How old are you?

What is your education background?

When was the last time you used the booking website?

How often do you use the booking website?

What are the booking websites you used before and have you used IRCTC?

**Testing on high-fidelity prototype:**

During the task, we would like you to think out loud. We do not want to interrupt your thought process with our questions, so if you are thinking about which button to press, explain what you are thinking.

(what data needs to be collect and the follow up question is specify in the second page)

**Task one:** Registration

Register an account: select English as preferred language and continue. Select female in gender and continue. Check yes to copy residence for official address and view info. Check I'm not a robot and press register.

**Task two:** Obtain Train Ticket Booking Information

Search for tickets from NEW DELHI - NDLS to DADAR - DR on date November 8th 2021 with type general. (Warning! Now we only design the result that's selected)

**Task three:** Find price trends / lowest price for a journey

Find November lowest price.

**Task four:** Filtering the Search Result

Check AC first class, Garib Rath, select departure time from 6 am to 7 am and press select all for from stations. Last reset the filter.

**Data collect during the task:**

When user is conducting the task we need to collect:

Compute the overall time to complete the registration.

Take error clicks

If a user is stuck on something, record the part that stops the user. (then during the follow up question we can ask why they are stuck on that)

During the process provide as minimal help as possible.

**Follow-Up question of each task:**

Ask about the general feeling about the task?

How do you feel about the task?

What do you think of the interface?

What parts of the (task) did you like the most? Why? (Can have more than one favorite part)

What part do you think still needs to improve? Why?

Can you give a rate on your experience for this task? We have 1-Not satisfied to 7-Very satisfied.

(Can be more questions here)

**Ending:**

What's your overall feeling about our high-fidelity prototype?

Do you have any suggestion of concern about the high-fidelity prototype?

(Can be more questions here)

Thank you for participating in our interview and doing the task.

- Usability Interview Note: [https://docs.google.com/document/d/1bO6HhdZaM\\_edwbxUjSY3g3a-eu9lg-D9c\\_kFveTXRYA/edit?usp=sharing](https://docs.google.com/document/d/1bO6HhdZaM_edwbxUjSY3g3a-eu9lg-D9c_kFveTXRYA/edit?usp=sharing)

- Google Form Questionnaire

Section 1 of 3

## IRCTC User experience

IRCTC target them self as next generation e-ticketing system, but our group found many inconvenience during the use. Our target is to improve the website and help them approach their goal.

This survey contains three pages. Please take a moment to explore the booking and registration experience on IRCTC's website to compare to our proposed changes.

IRCTC website: [irctc.co.in](http://irctc.co.in)

Age

☐ 0-14

☐ 15-24

☐ 25-34

☐ 35-44

☐ 45-54

☐ 55-64

☐ 65 and older

Sex \*

☐ Female

☐ Male

☐ Prefer not to say

☐ Other...

How many times have you traveled using public transportation in the past 12

☐ 0

☐ 1-3

☐ 4-6

☐ 7-9

☐ 10+

## Feedback on website

This section will ask you a few question about experience on interacting with current IRCTC.

How was the overall experience on IRCTC's

1 2 3 4 5 6 7

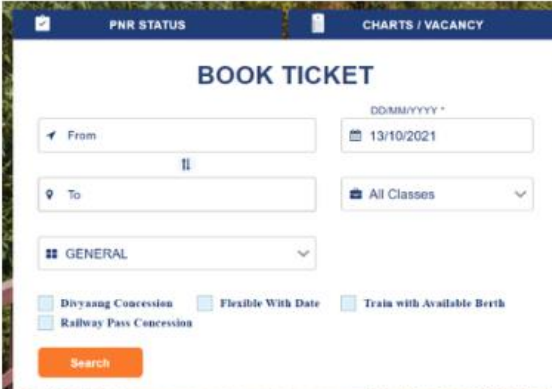
Terrible ☐ ☐ ☐ ☐ ☐ ☐ ☐ Wonderful

How was the experience with the website's registration

1 2 3 4 5 6 7

Terrible ☐ ☐ ☐ ☐ ☐ ☐ ☐ Wonderful

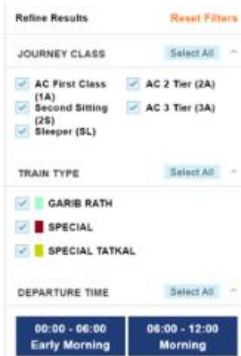
What do you think about the website's ticket search



1 2 3 4 5 6 7

Frustrating ☐ ☐ ☐ ☐ ☐ ☐ ☐ Satisfying

How was applying filter on search



Mid Day

Night

00:00 hrs

24:00 hrs

ARRIVAL TIME 

Select All

00:00 - 06:00  
Early Morning

06:00 - 12:00  
Morning

12:00 - 18:00  
Mid Day

18:00 - 24:00  
Night

1

2

3

4

5

6

7

Easy

Difficult

During the use of website, is there a part that you felt most frustrate with? Please explain your answer. \*

Long answer text

After section 2 Continue to next section

### Section 3 of 3

## Feedback on prototype

This section will let you experience with our prototype and answer a few question related to your experience.

Search Result - our team modify the enter method for the departure and arrival time in the filter (type in or select on drop down menu).

Alert ☒

Font Size: 

-

12

+

 | Language: English 

v

IRCTC

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NEW DELHI - N

DADAR - DR

21/10/2021

GENERAL 

v

Modify Search

Refine Filter

JOURNEY CLASS 

Select All

☒ AC First Class (1A)

☒ AC 2 Tier (2A)

☒ Second Sitting (3S)

☒ AC 3 Tier (3A)

☒ AC Chair Car (CC)

☒ Exec. Chair Car (EC)

☒ Sleeper (SL)

TRAIN TYPE 

Select All

☒ GARIB RATH

☒ SPECIAL

DEPARTURE TIME 

Select All

00:00 

v

TO

24:00 

v

ARRIVAL TIME 

Select All

00:00 

v

TO

24:00 

v

FROM STATIONS 

Select All

☒ DELHI CANTT

☒ NEW DELHI

☒ H NIZAMUDDIN

TO STATIONS 

Select All

☒ BANDRA TERMINUS

☒ C SHIVAJI MAH T

☒ DADAR

☒ MUMBAI CENTRAL

NEW DELHI → DADAR

< ₹ 2085 

Fri - (Oct 29)

₹ 2560 

Sat - (Oct 30)

₹ 2210 

Sun - (Oct 31)

₹ 2170 

Mon - (Nov 1)

₹ 2170 

Tue - (Nov 2)

>

AUG KR RAJ SPL (02954)

17:15 → 16:00 → 10:05

H NIZAMUDDIN | Sat - Oct 30

MUMBAI CENTRAL | Mon - Nov 01

AC 3 Tier (3A)  
AVAILABLE - 0969  
₹ 2210

AC 2 Tier (2A)  
AVAILABLE - 0124  
₹ 2900

AC First Class (1A)  
W11 96%  
₹ 4495

CSMT RAJDNI SPL (01222)

16:55 → 18:20 → 11:15

H NIZAMUDDIN | Sat - Oct 30

C SHIVAJI MAH T | Mon - Nov 01

AC 3 Tier (3A)  
AVAILABLE - 0975  
₹ 2210

AC 2 Tier (2A)  
AVAILABLE - 0101  
₹ 2810

AC First Class (1A)  
AVAILABLE - 0008  
₹ 4800

THE END

13

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Create Your Account SIGN IN

Basic Details Personal Details Address View Information

Example Name ✓ Middle Name Last Name

Student ✓ ✓ 01-01-2000 ✓

Male ✓ ✓ India ✓ ✓

Example@gmail.com ✓ Single ✓

India +91 ✓ ✓ 1234-567890 ✓

Back Continue ⇒

How do you feel about highlighting the must fill in term and adding checking system before moving to next page? \*

1 2 3 4 5 6 7

dislike ○ ○ ○ ○ ○ ○ ○ like

Registration system - We add a information review before you confirm your submission during the registration.

Alert V Font Size: 12 | Language: English v

IRCTC Book | Promotion | Customer Support | Premium Answer | IRCTC Exclusive | Sign In

Create Your Account SIGN IN

Basic Details Personal Details Address View Information

User Name  
Example User Name ✓

Password  
\*\*\*\*\* ✓

Confirm Password  
\*\*\*\*\* ✓

Preferred Language  
English ✓

Security Question  
What is your pet name? ✓

Security Answer  
Example Pet Name ✓

First Name Middle Name Last Name  
Example Name [Optional] [Optional] ✓

Occupation Date of Birth  
Student ✓ ✓ 01-01-2000 ✓

Gender Nationality  
Male ✓ ✓ India ✓ ✓

Email Marital Status  
Example@gmail.com ✓ Single ✓

Area Code Phone Number  
India +91 ✓ ✓ 1234-567890 ✓

Flat / Door / Block No.  
Example address ✓

Street / Lane  
[Optional]

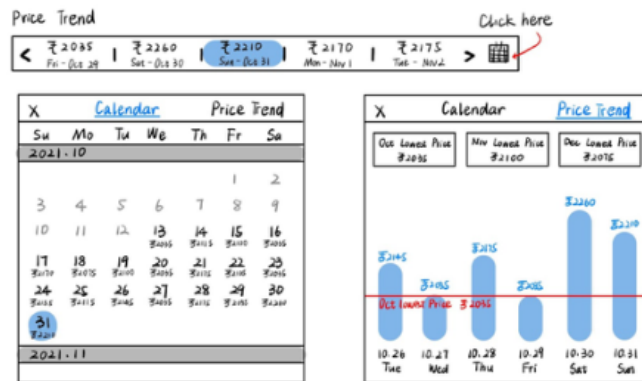


What you opinion on changing entering method of departure and arrival time in the \*

1 2 3 4 5 6 7

bad ☐ ☐ ☐ ☐ ☐ ☐ ☐ good

Search result - We add price trend and daily lowest price function in search result



How do you feel about the daily lowest price and price \*

1 2 3 4 5 6 7

unhelpful ☐ ☐ ☐ ☐ ☐ ☐ ☐ helpful

Registration system - We specify the must fill in section in register form and allow you to move to next one after passing the all the checking in the current page.

Registration

Alert V Font Size: [ - ] [ 12 ] [ + ] Language: English v

IRCTC Book | Promotion | Customer Support | Premium Answer | IRCTC Exclusive | Sign In

Create Your Account SIGN IN

Basic Details Personal Details Address View Information

First Name \* Middle Name Last Name

Occupation \* Date of Birth \*

Gender \* Nationality \*

Email \* Marital Status \*

Area Code \* Mobile \*

Back Continue

Alert V Font Size: [ - ] [ 12 ] [ + ] Language: English v

Phone Number  
1234-567890

Copy residence to office Address  
@ Yes

Cancel Register

What do you think about the information preview function? \*

1 2 3 4 5 6 7

unhelpful ☐ ☐ ☐ ☐ ☐ ☐ ☐ helpful

Search Ticket - We specify the error message by highlighting the invalid terms. Also, we allow drop down menu for choosing the Year and the Month in Date term.

Entering Date

Trains Buses Flights Hotels Holidays

4 From ⇌ To

Date GENERAL v

< October v 2021 v >

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Error Message

Trains Buses Flights Hotels Holidays

From  
NEW DELHI - NDLS ⇌ CHANDIGARH - CDG

Date GENERAL v

Search

How do you feel about error message notification? \*

1 2 3 4 5 6 7

unhelpful ☐ ☐ ☐ ☐ ☐ ☐ ☐ helpful

How do you like selecting date in this design? \*

1 2 3 4 5 6 7

dislike ☐ ☐ ☐ ☐ ☐ ☐ ☐ like

After viewing all the prototype, how likely are you to recommend our website to someone after the changes? \*

1 2 3 4 5 6 7

Less likely after the changes ☐ ☐ ☐ ☐ ☐ ☐ ☐ More likely after the changes

Please explain your answer if your answer is below 5 on last question

Long answer text

- High-Fidelity Prototype

<https://www.figma.com/file/PHInLAvMeQ8H9w3Kkztwaw/Pineapple-team-library?node-id=513%3A3843>

- Interview Notes

Interviewee #1

How old are you?

- 20

What is your education background?

- university student
- familiar to social media and game

When was the last time you used the booking website?

- half year ago (rarely)

How often do you use the booking website?

- at least 1 time per year

What are the booking websites you used before and have you used IRCTC?

- Xiecheng

**Follow-Up question of each task:**

Ask about the general feeling about the task?

How do you feel about the task?

task 1: too much info needs to be entered. 3/7

task 2: 2/7

task 3: 2/7

task 4: 2/7

What do you think of the interface?

task 1: captcha section is too close to the cancel button. Less ads are good.

task 2: layout is very clear and content could be easily found.

task 3: layout is very clear and content could be easily found.

task 4: font too small.

What parts of the registration did you like the most? Why? (Can have more than one favorite part)

task 1: layout is very clear and content could be easily found.

task 2: layout is very clear and content could be easily found.

task 3: price calendar is good.

task 4: filter had lots of options, select all and reset button is convenient

What part do you think still needs to improve? Why?

task 1: adding a cross to the back of invalid input.

task 2: fonts and icons are too small, reading difficulty for nearsighted people.

task 3: calendar icon is not intuitive, text is required to justify it. Different font color for lowest price.

task 4: fonts and icons are too small, reading difficulty for nearsighted people.

Can you give a rate on your experience for this task? We have 0-Not satisfied to 7-Very satisfied.

task 1: 6 task 2: 6 task 3: 5 task 4: 5

error rate: click basic information(just to see if it's clickable, not in the progress of task)

overall rate: 6/7

Interviewee #2

### **Background knowledge**

How old are you?

- 22

What is your education background?

- computer science
- 8 on technology skill

When was the last time you used the booking website?

- August

How often do you use the booking website?

- once or twice a year

What are the booking websites you used before and have you used IRCTC?

- Air Canada and Airbnb

### Follow-Up question of each task:

Ask about the general feeling about the task?

How do you feel about the task?

task 1: it's straightforward but a lot of information needs to be put in

task 2: it's very specified, less chance to cause error

task 3: task is easy

task 4: it simple

What do you think of the interface?

task 1: interface is good

task 2: calendar button needs more improvement

task 3: interface it's confusing(option to show past month), colour scheme to distinct different price

task 4: it's good

What parts of the registration did you like the most? Why? (Can have more than one favorite part)

task 1: showing your position on form is very important, and it gives an overview.

task 2: result page is very organized

task 3: calendar interface is good except problem mentioned above

task 4: no preference

What part do you think still needs to improve? Why?

task 1: No, it's a easy task

task 2: make sure date is clickable, and add icon to specify location

task 3: In price trend graph could be clean up a bit, not everyone could understand the dates

task 4: could be a am pm slide bar, could be a text entry for more specified time

Can you give a rate on your experience for this task? We have 0-Not satisfied to 7-Very satisfied.

task 1: 6 task 2: 6 task 3: 5 task 4: 5

error rate: select all, calendar

The foundation is good, but needs improvement on small details. a rate 6 will be on the overall experience

Interviewee #3

Background Knowledge:

21

4th utsc

familiar with computer and different kind of tech

a month ago (last time)

1 a year / 1 every two years

AirCanada

Task 1:

easy or hard: 1/7 (clearly present with error checking, red words hint, and green checkmarks, able to tell what info are needed to be keep in and what info has already keep in) last page view info double check

interface: clean, easy to look at, everything on one page

like most: first three part (no scrolling, nice to look at), green checkmarks, red word hints, continue button change color to indicate next step

improve: view info, better presentation of the info, avoid mis read

rate: 6/7

Task 2:

error: 1 - set date (clicking the date in order to enter the date)

easy or hard: 2/7 (set date part)

interface: easy to look at, clean

improve: date

rate: 5/7

Task 3:

easy or hard: 2-3 / 7 (should indicate calendar has price information)

interface: price trend is very straight forward, like the price info of other month (see the price trend between months), graphic representation, calendar compare between days



like most: price calendar

improve: not sure whether you can scroll it or not, make it easier for user to see

rate: 6/7

Task 4:

easy or hard: 1/7 (all the train info are listed on the side)

interface: pretty nice and clean, not too much useless information, not familiar with the term

most: departure time and arrival time gives a range make it easy to choose

improve: ticket on the right, little bit hard to look at

rate: 7/7

Ending

overall feeling: 6 - 7 / 7 (ease of use)

Interviewee #4

### **Background knowledge**

How old are you?

21

What is your education background?

undergraduate

When was the last time you used the booking website?

8 months ago

How often do you use the booking website?

once a year

What are the booking websites you used before and have you used IRCTC?

Booking.com

### **Task one: Registration**

Overall time:

30s, but since our information is auto filled, it may take more time in reality.

Take error clicks:

None

Stuck on something:

None

How do you feel about the task?

Not comfortable with the multiple bullets after the registration. I would prefer a single message



What do you think of the interface?

I like the in-line message. It tells what I did wrong.



Also this shows where I am and I like it.



What part do you think still needs to improve?

The font size is not consistent with other text in the page. Also I got confused by the sign up button on the top right. I don't know what does it mean

Can you give a rate on your experience for this task?

5/7

### **Task two: Obtain Train Ticket Booking Information**

Overall time:

43s

Take error clicks:

When choosing the data. Interviewee continuously clicks on the date instead of the set date button.

Stuck on something:

Same as above.

How do you feel about the task?

Pretty good. But it is designed for experienced users though. Especially what the options in seat type mean (LOWER BERTH DIVYAANG)

What do you think of the interface?

For the location choosing, I would prefer to choose the location by pinning on the map.

What parts of the task did you like the most?

The select menu is pretty convenient

What part do you think still needs to improve?

See previous questions

Can you give a rate on your experience for this task?

6/7

### **Task three: Find price trends / lowest price for a journey**

Overall time:

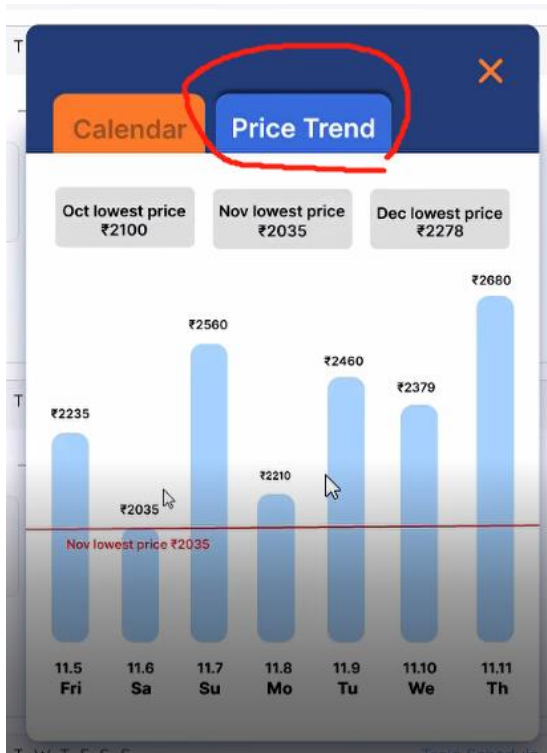
1 minute 22s

Take error clicks:

He click the ticket

Stuck on something:

From the beginning. Also he's stuck at the price trend tag.



How do you feel about the task?

I don't like how it takes me. I was especially confused by the information on the ticket.

What do you think of the interface?

I would also want the highest price. Also I'm confused by the price showing on the calendar, are they mean value or sth?

Can you give a rate on your experience for this task?

3/7 or 4/7

#### Task four: Filtering the Search Result

Overall time:

43s

Take error clicks:

None

Stuck on something:

None

How do you feel about the task?

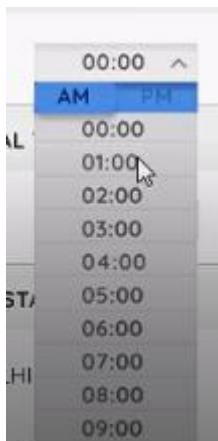
This is good. I like the reset filter button.

What do you think of the interface?

What parts of the task did you like the most?

The checkboxes and also the reset filter button.

What part do you think still needs to improve?



This thing could be bigger and could be more responsive

Can you give a rate on your experience for this task?

7/7

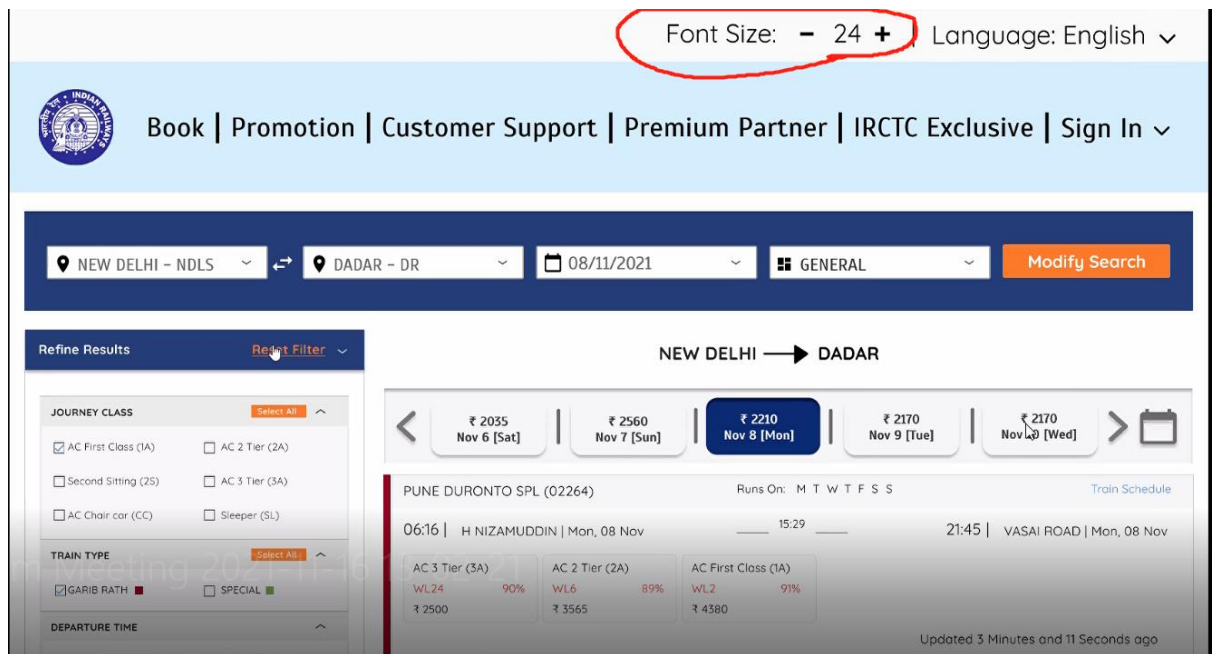
### Ending:

What's your overall feeling about our high-fidelity prototype?

It's pretty good.

Do you have any suggestion of concern about the high-fidelity prototype?

It's mainly about font size. The font size controller could be responsive. For example when I click "+" button the font size could become bigger. And also the "Font Size" should match the font size that we are using.



Interviewee #5

background knowledge:

21

computer science coop

familiar with computer

no previous experience, but heard about couple booking website

task 1:

easy of use: 1 - 2 / 7

interface: simple and intuitive, form is simple too, we know what to be put in

most: back and continue, allow rollback to change previous page

improve: the scrolling goes to the top when switching pages

rate: 6/7

task 2:

error: set date (click date and enter the date)

essay: 2/7

improve: set date

rate: 5.5/7



task 3:

error: not able to find the calendar

essay: 6/7

interface: calendar is obvious but the price trend is not obvious

most: pretty good concept in involving lowest price

improve: including highest price: how much will saving

rate: 4 / 7

task 4:

essay: simple 1/7

mistake the reset filter button on the bottom

interface: intuitive

most: select all (saving time / efficient)

improve: de-select all

rate: 6/7

ending:

rate: 5.5 / 7

flow is intuitive, but maybe because having no experience on booking website some concept are new

Interviewee #6

background knowledge:

20

university

not very good at technology things

3 months ago (last time)

one for a semester

携程, 铁路12305

task 1:

essay: 1 - 2 / 7

interface: letter is a little bit small, process is similar and info is similar, too

most: view info, check all of them before the registration

improve: personal details required too much info

rate: 5 - 6 / 7

task 2:

essay: 1 / 7

interface: quite well

most: dropdown menu to select the places

improve: calendar is a little bit small, and the mouse is not sensitive, would like to type-in

rate: 6 / 7

task 3:

indicate the calendar icon is clickable

essay: 3 - 4 / 7

interface: quite well, trying to find the sort functions in this website

most / improve: quite well easy to compare the price during the whole month and efficient. B

ut sure whether the calendar button is clickable or not

rate: 6 / 7

task 4:

essay: 2 / 7

interface: select all is good for convenience

most: like select all, everything is good

improve: may be a help document can be included to explain the train types and journey class  
(not friendly to foreigner)

rate: 6 / 7

Ending:

quite easy for the beginners, providing a clear choice. Provide more details on some unique terminology and more obvious indication on some clickable elements

rate: 6 / 7

suggestion / concern: should be able to zoom in and it will make it for elder people

Interviewee #7

**Background knowledge**

How old are you?

- 20

What is your education background?

- university student
- knowing the basic of the computer skill

When was the last time you used the booking website?

- last semester, june of 2021

How often do you use the booking website?

- at least 4 time per year

What are the booking websites you used before and have you used IRCTC?

- 12306

**Follow-Up question of each task:**

Ask about the general feeling about the task?

How do you feel about the task?

task 1: task is very easy, 1/7

task 2: task is very easy, 1/7

task 3: 2/7

task 4: 2/7

What do you think of the interface?

task 1: layout is very clear and content could be easily found.

task 2: layout is very clear and content could be easily found.

task 3: calendar is useful

task 4: layout is very clear and content could be easily found.

What parts of the registration did you like the most? Why? (Can have more than one favorite part)

task 1: check mark behind the text entry is very good, it shows the complete content to the user clearly.

task 2: meet the basic standard of a booking website.

task 3: meet the basic standard of a booking website.

task 4: meet the basic standard of a booking website.

What part do you think still needs to improve? Why?

task 1: change register state into a progress bar(going between different states will not be allowed),due to the ambiguity of registration state, might cause confusion.

task 2: no improvement is required.

task 3: price trend is not very useful, in other countries the price for train tickets is unified.

task 4: a fixed filter will be better, for the convenience of the user.

Can you give a rate on your experience for this task? We have 0-Not satisfied to 7-Very satisfied.

task 1: 5 task 2: 7 task 3: 5 task 4: 5

error rate: click basic information(just to see if it's clickable, not in the progress of task). The set date in the calendar section is not very compelling.

overall rate: 5/7