

Team PINEAPPLE

CSC10H3 Project Proposal

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Description and Purpose

This project aims to apply HCI principles to the irctc.co.in site with the goal of making it more user-friendly and an enjoyable experience. The site 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. Its purpose is to save one of the hassle of booking at a physical location and enable instant bookings, whose prevalence may be scarce in India.

It should be noted that while this site's design choices are subpar at best, its mobile version has a cleaner, more app-like simplicity, nonetheless, the website fails to keep features consistent with that mobile version. Most notably a link to the critical feature of alerts is absent in the desktop version. Instead, the alerts arrive on screen as a pop-up. Furthermore, when on the alert page (irctc.co.in/nget/enquiry/alerts) or any other page, it is difficult to navigate back to the home page.

When one submits the departure and destination stations while leaving the date on default an error message is produced. The message states that "Journey Date is not within ARP range...." and gives the user no instructions in solving the error. 'ARP range' is an uninformative abbreviation that cannot be understood even by the technologically proficient.

When one is able to fill in the basic information regarding the train ride, they are met with the screen in Figure 7. The bookings page (see Figure 7), overloads one's short term memory with an excess of information. The journey classes are too numerous and their distinctions are unexplained. The train type has a 'special' filter for no apparent reason. The screen is cluttered with filters on the top and on the left side.

The problems defined herein are the tip of the iceberg, these are the key flaws that are evident even to an average user on the internet. Undoubtedly, more problems and their solutions will surface as this assignment progresses. Additional problems are outlined below along with possible solutions in the *Proposed Solutions* Section.

Target Audience

As this website is designed with specific services in mind; ticket booking, catering and train schedule queries, its target audience is as obvious as its title: people that use the Indian railway system. With information provided by the ticket booking section (Figure 1), we can categorize our target audience into six groups: general public, ladies, lower berth, senior citizens, Divyaang and Tatka. Lower berth and Divyaang, in general, both refer to people with disabilities; such that lower berths refers to individuals who

cannot climb to upper berths and divyaang can be translated to those with disability. As for Tatkal, it is a ticketing program established by Indian Railways which can be translated into “immediate” and refers to booking at short notice.

Given these categories it seems we need no further insights on this topic. Nonetheless, it would certainly help to make sure we understand our users completely, since knowing of users’ special needs can help us better understand where the site falls short. These needs can include age, reading level, language proficiency, cross-cultural issues, or any other special characteristics (Shneiderman, Plaisant, Cohen, Jacobs, 2017, p. 509). So although it may be easy to traverse this site for users with a good understanding of the web, others may have more difficulty. For example, people with different language backgrounds (which is quite a large portion of the Indian population) may want to use the website to plan their travels in a different language but may have trouble finding the English-Hindi transfer icon. And that is assuming they manage to find their way past the several pop ups and ads that cover the web page, something that may also pose an issue for the site’s older demographics. Seeing as the site has a wide range of users in terms of age, ability and language, it should have focused more on its user experience to ensure all users can accomplish what they came for.

Proposed Solutions

In real life, we are often frustrated by the effort it takes to book transportation, and this site is a clear reflection of this. Even when lightly exploring the website, a user will have encountered several obvious problems, and even though some of them do not influence the overall experience, most are still detrimental. Some of these issues and possible solutions include the following:

Login / Registration System:

After comparing this website with existing online booking systems (e.g. Air Canada and WestJet), the registration process of the IRCTC produces a higher error rate. On IRCTC, users need to provide three main pieces of information: Basic Details, Personal Details and Address (Figure 2). The design suggests that with IRCTC’s implementation of red crosses to prompt the user to fill in the required fields when moving to the next page, that the system should prevent the user from switching pages without filling up all the required terms, but does not. Therefore, the registration design of the IRCTC violates the “prevent errors” in 8 “Golden Rules” of Interface Design (Shneiderman et al., 2017). In fact, it does not notify the end user of this issue at all and throws a generic error. The solution to the registration issue is to use a similar process as Air Canada (Figure 3), which allows users to proceed to the next page only after they

have finished all the required fields in the current form and shows completion status. Also, the website should allow users to preview and check profiles before completing the registration. Moreover, we will keep the "back" button in the current design. Therefore, the website will satisfy both "prevent errors" and "permit easy reversal of actions" rules (Shneiderman et al., 2017).

Advertisement:

The overflow of advertisements is getting the travellers' attention, causing them to be lost in the website (Figure 5). Thus, by the HCI guideline, we are looking forward to improving the efficiency of this part of the website. The solution we are proposing is to reduce the number of advertisements and put them in undistracted places while maximizing the advertising revenue. After our research, we found Google's heat map (Figure 4) that shows the best locations to place their Google Advertisements (Where Should I Place Advertisements on My Website? - AdSpeed AdServer, 2012). According to that, we will target the area before primary content to release advertisements. Second, on the search results page, we'll avoid any advertisement in between the results and adding advertisements on the load page. Since higher click rate and higher satisfaction will make users willing to support this website, hence we can provide a donation entry for recovering the loss of reducing advertisements. By Sean McGowan, we know that that commonality every user shares is an intense dislike of advertising (2019), so the deduction of advertisement is definitely a pump on user experience.

Search Result Page:

The chaotic layout of the search result page violates the critical concept of usability: easy to use and remember (Nielsen, 2012). First of all, the presence of the main navigation bar has many redundancies. Instead, only valuable functions that are useful to the page should remain, like the home page button, adjusting the font size, and switching language. Furthermore, to improve visual clarity, we will increase the margin between the result and filter so that travelers can distinguish them at first glance. To provide a more delightful user experience, they should also have a function that would display the lowest price for upcoming days. This display (similar to Air Canada) would link each day's price trends. Thus, users could take advantage of the price trend on booking train tickets and increase users' savings and satisfaction. By boosting convenience and satisfaction, the website will be more congruent with the user-centered design.

Resources

1. (2017o). *Designing the User Interface: Strategies for Effective Human-Computer Interaction(6th Edition)*. Pearsn.

A big fault with the IRCTC website is the lack of communication between the website and user regarding errors and confirmations. This also falls under the eight golden rules of interface design, keeping the users in control. When mishaps occur, giving the users a general error message, such as “unknown error” or “something went wrong” usually infuriates the users, as they feel as though the control they had over the site has vanished. This is also mirrored with confirmations. When confirmations are not included in websites (“confirmation for booking tickets, or getting refunds), the user usually assumes that the function failed, and will again get frustrated at the website.

McGowan, S. (2019, September 8). Advertising And UX: A Complex Relationship. Usability Geek. Retrieved from <https://usabilitygeek.com/advertising-and-ux-relationship/>

This article confirms the well known notion that advertisements are the common enemy of all consumers. Unfortunately, sites that rely on advertising revenue do not have another choice. There is common ground between sites and users on this concept, however, it must be designed to give users the best experience possible. The article goes in depth on how the relationship between users and advertising must be ever-evolving, one pulling back when the other pushes. Websites designed with user experience as a key feature must keep this in mind.

Nielsen, J. (2012, January 3). *Usability 101: Introduction to Usability*. Retrieved from <https://www.nngroup.com/articles/usability-101-introduction-to-usability/>

A product is usable when it fulfills the needs of consumers, is accessible, and easily understandable, regardless of the users personal abilities. This site violated two components of a usable site: learnability and efficiency. While having a lot of information on a single page can be efficient, it is not learnable in the slightest. Having little information per page makes each one more learnable, but not efficient. These two concepts need to go hand in hand to create a good website, which was overlooked when the IRCTC site was made.

Where should I place advertisements on my website? - AdSpeed AdServer. (2012, May 2). AdSpeed. Retrieved from <https://www.adspeed.com/Blog/place-advertisements-website-1249.html>

Allowing the user to feel as though they are in control of your site is a key principle in Human-Computer Interaction design. The inclusion of bothersome pop up advertisements not only removes control from the user - by resetting how they think the site works - it also increases the memory load on the users. Advertisements themselves are not the problem, but placing them in the correct positions can help your users feel better about using the site. Following this study will allow for better usability, readability and memorability of websites.

LeBlanc, J. (2016, May 2). Eight Golden Rules: Rule 8 - Reduce Short Term Memory Load. ICS.
<https://www.ics.com/blog/eight-golden-rules-rule-8-reduce-short-term-memory-load>

An integral part of an HCI system is the ability to reduce the short term memory load. Users of this site will respond better to less information bundled up on a single page. The IRCTC page does not follow these standards. Information must be easily readable and easily memorable. There does not need to be a lot of content per page, content must be organized in such a way that the user does not need to spend time understanding the layout of the page before being able to learn it. The article speaks to this, and explains how less information is more information, and giving your users a chance to remember your page will lead to more positive impacts than packing your website with details.

Appendices

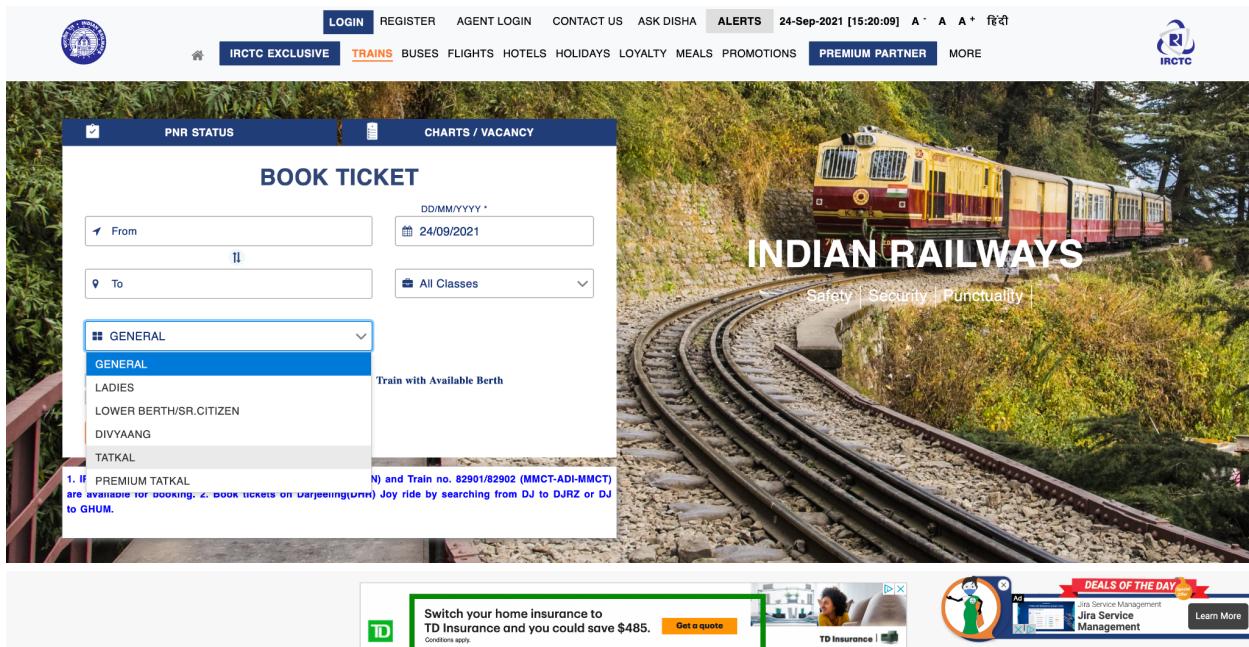


Figure 1:

Ticket booking showing the intended users of the booking system: General public, ladies, lower berth and senior citizens, Divyaang (disabled) and Tatkal (translates to immediate).

Create Your account [SIGN IN](#)

Basic Details **Personal Details** **Address**

GARBAGE/JUNK VALUES IN PROFILE MAY LEAD TO DEACTIVATION
Please use a valid E-Mail ID and mobile number in registration.

User Name (*) User Name is required.

Password

Confirm Password

Preferred Language

Security Question

Security Answer

[Cancel](#) [Continue →](#)

Figure 2:

Registration form from IRCTC showing its missing field and a continue button that can still be pushed.

1 Account information
Enter your email address and a password to start your enrollment.

Email address

Create password 

I have read and accepted [Aeroplan's Terms and Conditions](#)

[Continue](#)

2 Personal information

3 Contact information

Figure 3:

Registration form from Air Canada with a better step by step solution, notice the grayed out Personal Information and Contact Information portions of the form.

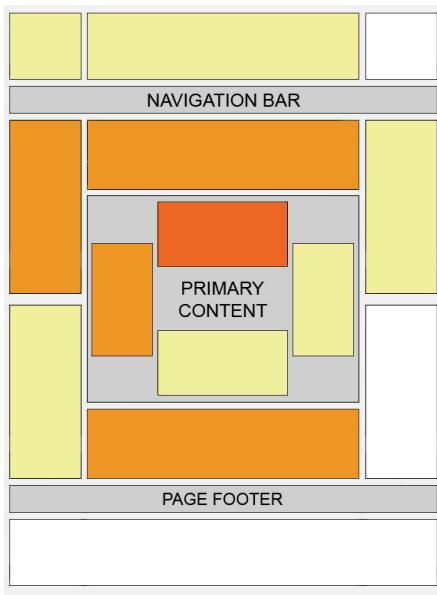


Figure 4:

Google's heat map that shows the best locations to place their Google Advertisements.

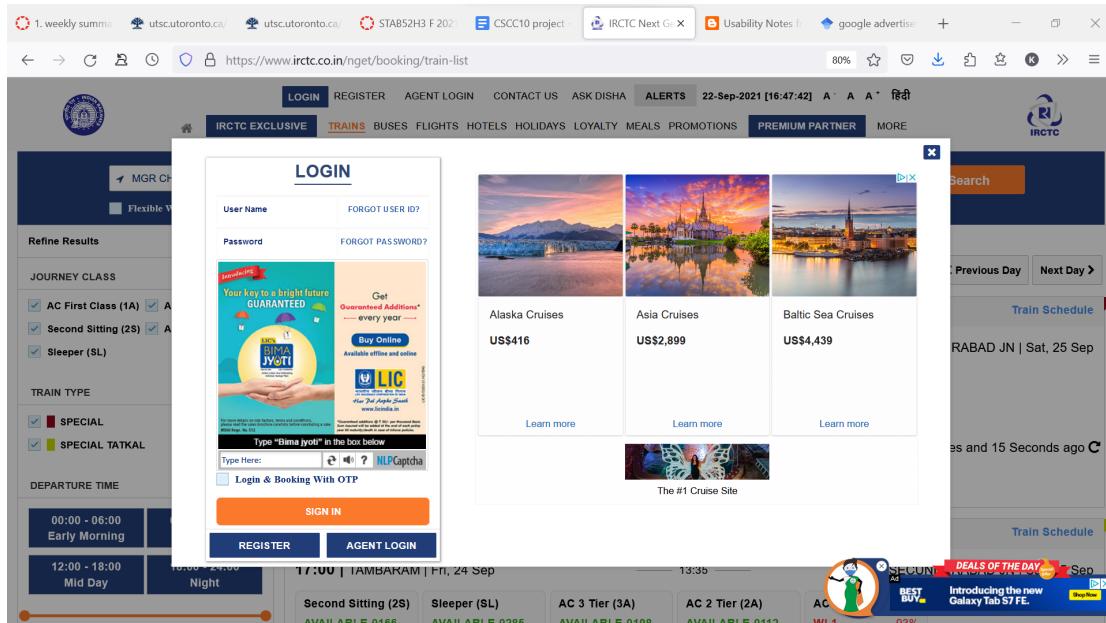


Figure 5:

Advertisement is even on the login popup page, distracting users attention.

The screenshot shows the Air Canada flight search results for a departure from Toronto (YYZ) to Vancouver (YVR) on Monday, September 27th, 2021. The search parameters are set for Friday, Sep 24 to Thursday, Sep 30. The results are displayed in three categories: Economy, Premium Economy, and Business Class.

Flight	Departure	Arrival	Duration	Price	Class
AC 101	07:40 Toronto	09:29 Vancouver	Non-stop - 4hr49m	CA \$800	Economy
AC 105	08:55 Toronto	10:50 Vancouver	Non-stop - 4hr55m	CA \$800	Economy
AC 185	09:30 Toronto	11:40 Vancouver	Non-stop - 5hr10m	CA \$800	Economy
	10:00 Toronto	11:49 Vancouver	Non-stop - 4hr49m		

Important: Make sure to [review our Travel Ready hub](#) prior to travel for the latest information on entry requirements, testing, flexible change and cancellation policies, biosafety measures, and more.

Departing flight [Modify search](#) [Display options](#)

Toronto (YYZ) to Vancouver (YVR) Monday, September 27th, 2021

Site Feedback

Figure 6:

Search result page from Air Canada. This result page includes an area that shows the lowest everyday price in recent days. And the search filter is hidden in the “display options”. Also, the navigation bar only contains the most useful functions.

The screenshot shows the IRCTC website interface. At the top, there's a navigation bar with links for LOGIN, REGISTER, AGENT LOGIN, CONTACT US, ASK DISHA, ALERTS (showing 26-Sep-2021 [23:38:32]), and other site-wide links. Below the navigation is a header with the IRCTC logo and links for TRAINS, BUSES, FLIGHTS, HOTELS, HOLIDAYS, LOYALTY, MEALS, PROMOTIONS, PREMIUM PARTNER, and MORE.

The main content area displays search results for a journey from NEW DELHI - NDLS to ABHAIPUR - AHA on 26/09/2021. The results are filtered for All Classes and GENERAL. There are buttons for Flexible With Date, Train with Available Berth, Divyaang Concession, and Railway Pass Concession.

On the left, there are several filter boxes:

- JOURNEY CLASS:** AC First Class (1A), Second Sitting (2S), Sleeper (SL), AC 2 Tier (2A), AC 3 Tier (3A).
- TRAIN TYPE:** SPECIAL.
- DEPARTURE TIME:** 00:00 - 06:00 Early Morning, 06:00 - 12:00 Morning, 12:00 - 18:00 Mid Day, 18:00 - 24:00 Night.
- ARRIVAL TIME:** 00:00 - 06:00 Early Morning, 06:00 - 12:00 Morning.

The search results list the VIKRAMSHILA SPL (02368) train. It runs on Monday through Saturday (M T W T F S S). The train departs from ANAND VIHAR TRM at 13:15 on Sunday and arrives at ABHAIPUR at 06:17 on Monday. The fare for Second Sitting (2S) is ₹ 300, Sleeper (SL) is ₹ 505, AC 3 Tier (3A) is ₹ 1315, AC 2 Tier (2A) is ₹ 1875, and AC First Class (1A) is ₹ 3165.

At the bottom of the page, there's an advertisement for 'DEALS OF THE DAY' featuring four people holding signs with Hindi text: 'कोई शिकायत', 'कोई परिवाद', 'कोई उत्पाद', and 'कोई सेवा'. The ad is powered by TELUS Business.

Figure 7:

Search result page from IRCTC. The navigation bar contains too many functions and it is hard to distinguish the search results from the rest. And also the advertisement takes too much space.