



SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF COMPUTER, INFORMATION SCIENCES AND MATHEMATICS

Case Study #2: Second USC SDG Choice: Sustainable Cities and Communities

A Case Study
Presented to the Faculty of the
Department of Computer, Information Sciences and Mathematics
University of San Carlos

In Partial Fulfillment
of the Requirements for the Course
CIS 2205 - DESIGN PROJECT

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IDEATION DOCUMENT

Contents:

1. Introduction and Overview:

The team selects and focuses on addressing the critical issues of Sustainable Cities and Communities in alignment with Sustainable Development Goals. The goal of the team is to revolve around the development of innovative solutions to promote sustainable social inclusivity and social cohesion, enhancing the quality of life for civilians.

In this portfolio, the team aims to address the challenge of promoting and facilitating sustainable and efficient and eco-friendly commuting solutions for university students.

In today's urban landscapes, navigating daily travels to and from campus can be daunting, often leading to congestion and environmental strain. CommuteSmart aims to revolutionize this experience by providing real-time traffic updates and alternative route suggestions, empowering students to make informed decisions and reduce their carbon footprint. Through this innovative platform, we aspire to foster sustainable mobility practices and contribute towards building healthier and more resilient communities.

2. Problem Statement:

In our fast-paced world, maintaining a sustainable lifestyle often takes a back seat amid competing priorities and daily pressures. The challenge lies in devising accessible, user-friendly solutions that encourage individuals to embrace eco-friendly practices and contribute to building sustainable communities. There is a pressing need for innovative platforms capable of addressing these challenges and fostering a collective commitment to sustainability.

CommuteSmart endeavors to tackle these issues head-on by providing a user-friendly, comprehensive platform designed to streamline daily commutes for university students. By offering real-time updates on traffic conditions and suggesting alternative routes, CommuteSmart aims to empower students to make informed choices that reduce their environmental footprint while optimizing their travel experience.

The scope of CommuteSmart extends to developing a robust system tailored to the specific needs of students commuting to and from the University of San Carlos Talamban campus. Through features such as route optimization and transportation sharing options, the platform seeks to enhance accessibility and promote sustainable transportation practices among students. However, potential challenges related to infrastructure, user adoption, and behavior change may arise. Efforts will be directed towards addressing these challenges and continually

improving the platform to maximize its impact on fostering sustainable commuting habits among students.

3. User Personas:

Persona 1:



1. Demographic Information:

Name: Lawrence Gilbert

Age: 30

Gender: Male

Occupation: Web Development Teacher

Income Level: Middle Class

Location: Talisay City, Cebu

Marital Status: Married

2. Geographic Segmentation:

Location: Talisay City, Cebu

3. Demographic Segmentation:

Lawrence Gilbert is a Cebuano born who lives in Talisay, a barangay in Cebu, age of 30 years old, He is a Web Development Teacher in University of San Carlos, Talamban Campus. He is married and has two children. He is a working class man. These demographic segments provide a basic understanding of Lawrence's background, including his age, gender, occupation, income level, marital status, and location. This information helps in identifying his general characteristics and potential needs or preferences.

4. Psychographic Segmentation:

- Lifestyle: Lawrence leads a busy lifestyle balancing his career as a web development teacher and his personal life with his family.
- Values: Lawrence values education, innovation, and family.
- Interests: He is interested in technology, programming languages, and staying updated with the latest trends in web development.
- Attitudes: Lawrence has a positive attitude towards learning and teaching. He believes in the power of education to empower individuals.
- Behaviors: He is diligent in his work, often spending extra hours preparing lesson plans and keeping up with industry developments. He enjoys spending quality time with his family during weekends and holidays.

5. Behavioral Segmentation:

- Usage Behavior: Lawrence demonstrates a routine commute from home to school and vice versa, often relying on public transportation or his personal vehicle. He seeks convenience and efficiency in his commute, preferring routes with minimal traffic congestion and reliable transportation options.
- Information-Seeking Behavior: Lawrence actively seeks out information related to commuting routes, traffic conditions, and alternative transportation options. He may use mobile apps, websites, or social media platforms to gather real-time updates and make informed decisions about his daily commute.
- Usage Frequency: Lawrence uses commuting applications on a daily basis, particularly during weekdays when he travels to and from work. He relies on these applications to help him navigate through traffic, estimate travel times, and plan his commute efficiently.

6. Persona Development:

Lawrence Gilbert is a 30-year-old male residing in Talisay City, Cebu. As a web development teacher, he has a busy schedule juggling work commitments and family life. Lawrence values efficiency and convenience in his daily routines, always seeking ways to optimize his time. He is tech-savvy and has a positive attitude towards utilizing technology to improve his productivity.

During his commute from home to school and vice versa, Lawrence seeks a solution that can help streamline his journey, minimize delays, and provide real-time updates on traffic conditions. He is interested in digital tools that offer practical solutions to his commuting challenges and is likely to adopt a web application that offers reliable and user-friendly features to assist him in navigating his daily commute effectively.

7. Goals and Pain Points:

Goals Points:

- Streamline his daily commute: Lawrence aims to find a solution that helps him optimize his travel time from home to school and vice versa, allowing him to reach his destination efficiently.
- Stay updated on traffic conditions: Lawrence seeks a tool that provides real-time updates on traffic conditions, helping him plan his commute effectively and avoid delays.

Pain Points:

- Traffic congestion: Lawrence often encounters heavy traffic during his commute, causing frustration and delays in reaching his destination on time.
- Time constraints: Balancing work and family commitments leaves Lawrence with limited time, making it challenging to manage his daily commute effectively.
- Lack of efficient transportation options: Limited public transportation options and traffic congestion in Talisay City add to Lawrence's commuting woes, increasing his stress levels and impacting his productivity.

Persona 2:



1. Demographic Information:

Name: Lorenzo Santos

Age: 19

Gender: Male

Occupation: BSIT Student

Income Level: Low Class

Location: Consolacion, Cebu

Marital Status: Single

2. Geographic Segmentation:

Location: Consolacion, Cebu

3. Demographic Segmentation:

Lorenzo Santos is a Cebuano born citizen who was born in Consolacion, a barangay in Cebu, age of 19 years old, He is a BSIT Student in University of San Carlos, Talamban Campus. He is on a daily allowance for his commute to school and home. These demographic segments provide a basic understanding of Lorenzo's background, including his age, gender, occupation, income level, marital status, and location. This information helps in identifying his general characteristics and potential needs or preferences.

4. Psychographic Segmentation:

- Lifestyle: Lorenzo leads a simple lifestyle, prioritizing his studies and responsibilities.
- Values: He values education, independence, and making the most out of his opportunities.
- Interests: Lorenzo enjoys technology, gaming, and spending time with friends when he can.
- Attitudes: He is determined and resourceful, always looking for ways to improve his situation and overcome obstacles.
- Behaviors: Lorenzo is diligent in his studies and often seeks out ways to enhance his skills and knowledge in the field of information technology.

5. Behavioral Segmentation:

- Reliance on Public Transportation: Lorenzo heavily relies on public transportation for his daily commute between home and school. He regularly utilizes buses or jeepneys to get to his destination.
- Tech-Savvy Usage: Being a tech-savvy individual, Lorenzo prefers using digital tools to facilitate his commute. He might use mobile apps for tracking bus schedules, finding the best routes, or even carpooling services.
- Time-consciousness: Lorenzo is conscious of time and tries to optimize his commute duration. He seeks the most efficient routes and transportation options available to minimize travel time.
- Cost-consciousness: Due to his low-income status, Lorenzo is particularly mindful of transportation expenses. He looks for affordable options and seeks discounts or promotions whenever possible.
- Flexibility in Schedule: Lorenzo's schedule might vary, depending on his class timings and extracurricular activities. He needs a commute solution that can adapt to his changing schedule.

6. Persona Development:

Lorenzo Santos, 19, is a BSIT student living in Consolacion, Cebu. As a low-income, single young man, Lorenzo faces various challenges in his daily

life. He is passionate about pursuing his education and building a better future for himself despite financial constraints.

7. Goals and Pain Points:

Goals Points:

- Improve efficiency in daily commute: Lorenzo wants to find ways to reduce the time and effort spent traveling between home and school so that he can allocate more time to studying and other activities.
- Save money on transportation: Given his low-income status, Lorenzo aims to minimize transportation expenses without compromising on safety and convenience.
- Enhance safety during commute: As a young student traveling alone, Lorenzo prioritizes his safety during his daily commute and seeks solutions that can help him feel more secure.

Pain Points:

- Unreliable public transportation: Lorenzo often experiences delays and overcrowding when using public transportation, which affects his punctuality and adds stress to his daily routine.
- Limited transportation options: Living in a suburban area with limited transportation infrastructure, Lorenzo struggles to find alternative means of commuting besides public transit.
- Concerns about safety: Lorenzo feels vulnerable during his commute, especially when traveling at night or in poorly lit areas, leading to feelings of unease and anxiety.

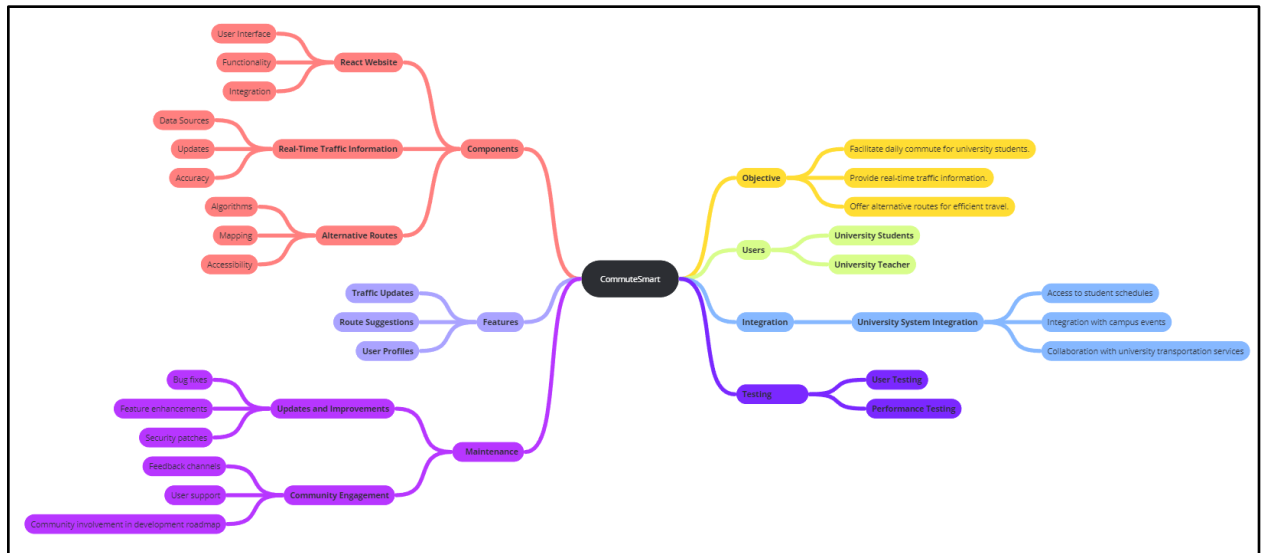
4. Research Insights:

In the country, the only place which has a proper and formal public transportation is Metro Manila which is the Light Rail Transit and Metro Rail Transit. Other than that, the remaining urban areas of the country are catered by the use of jeepneys and buses as their mode of transportation (Mayo & Taboada, 2020).

According to Transportation Research Interdisciplinary Perspectives' research regarding the factors that affect public transport mode of choice of commuters, out of 191 respondents the intent of their travel resulted in (48.2%) are work-related, (24.1%) school-related, (4.7%) business-related, and (6.3%) are for other reasons.

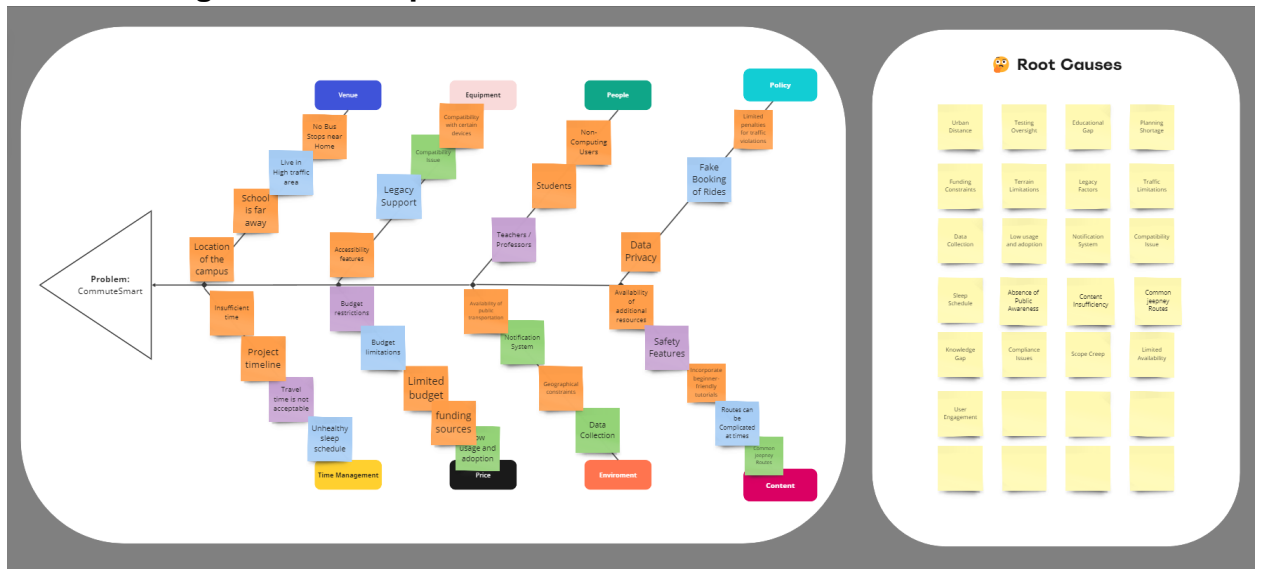
In today's fast-paced world, where time and efficiency are paramount, Go-Ahead Singapore embraces smart mobility solutions to elevate the commuting experience. The BC Click app digitizes various day-to-day tasks for bus captains, such as paperwork submission, vehicle condition checking, and accident reporting (Go-Ahead Singapore, 2013). By eliminating the need for manual documentation,

(Visual Board for the inspiration of CommuteSmart)

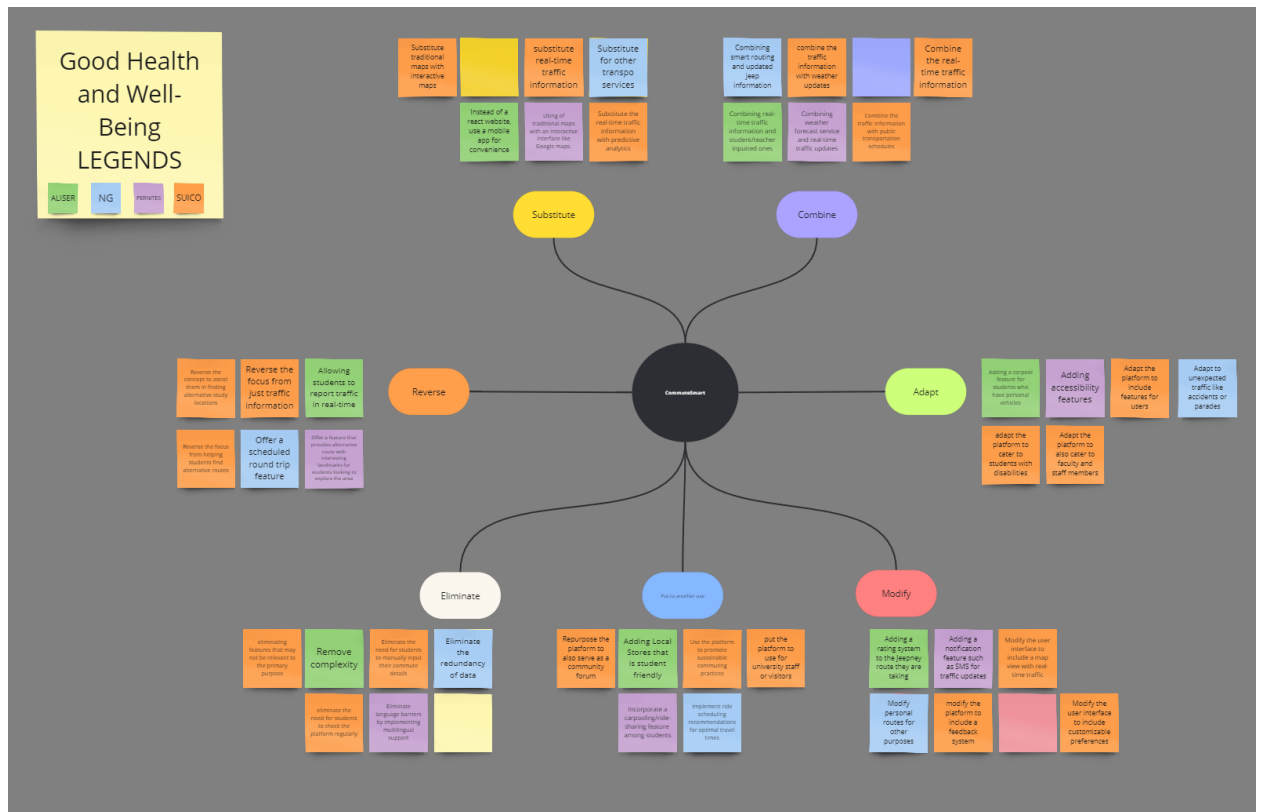


(Mind Map for CommuteSmart)

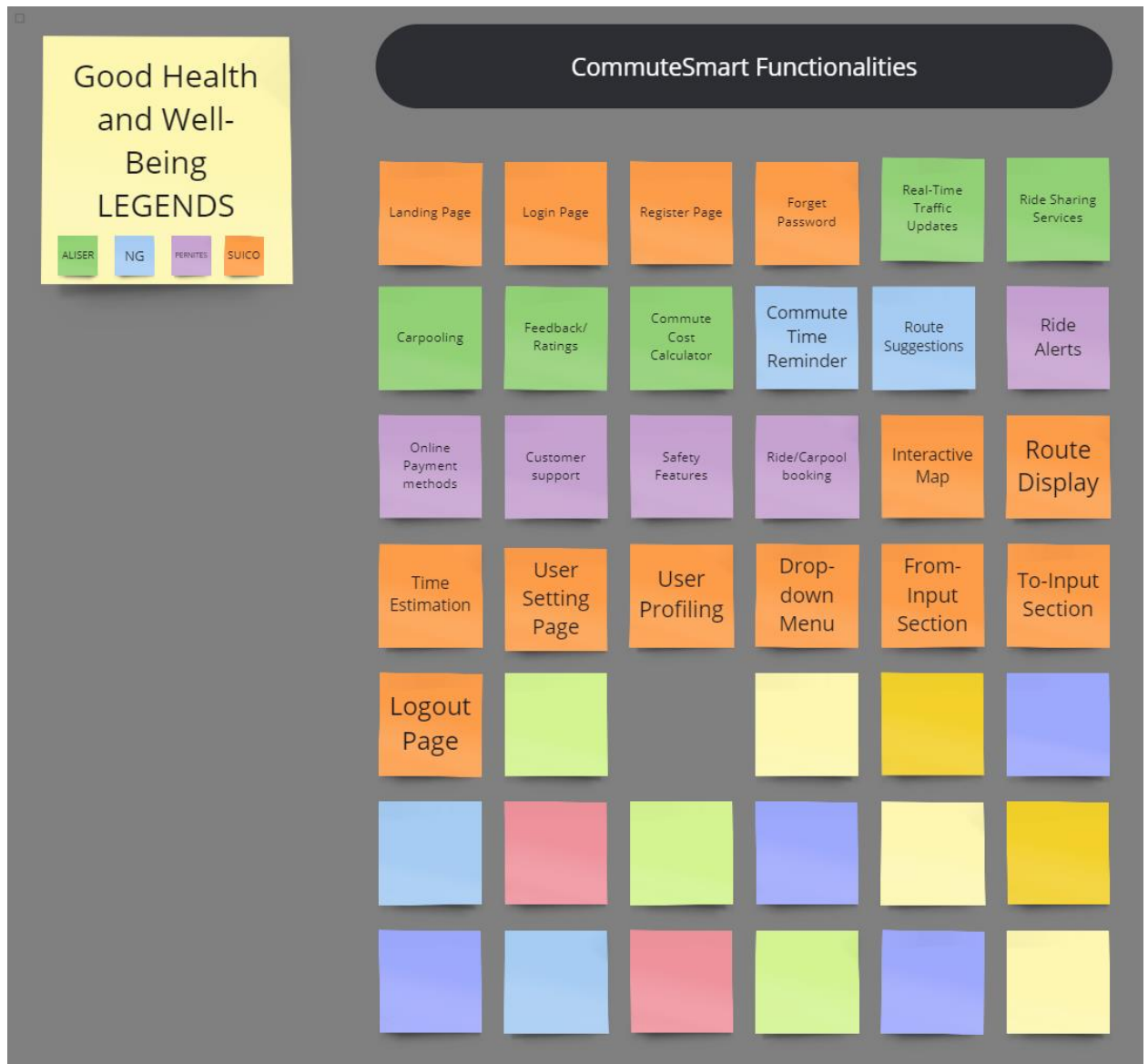
6. Brainstorming Session Outputs:



(Fishbone Diagram of CommuteSmart)

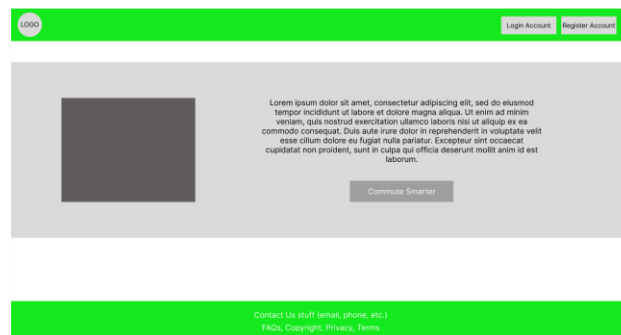


(SCAMPER Diagram of CommuteSmart)



(Brainstorming Diagram of CommuteSmart)

7. Concept Sketches or Wireframes:



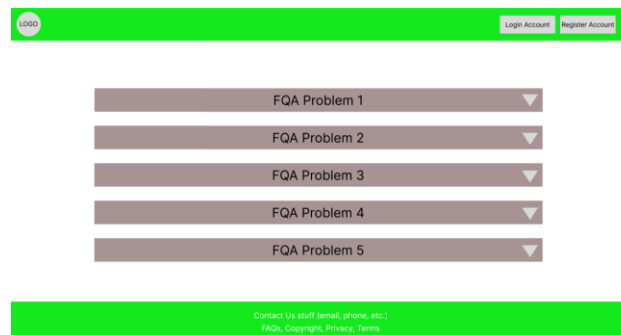
(Section 1 of Landing Page of CommuteSmart)

Once the user opens the website, the user will be introduced to the landing page. The page consists of the logo, Login button, and the Register button is located in the navigation bar at the top. In the top section, an image of the brand name of the system, a brief introduction, and a Commuter Smarter button for the user to enter the login page



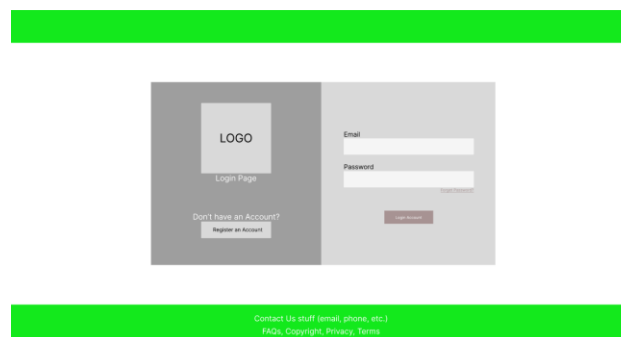
(Section 2 of Landing Page of CommuteSmart)

In the middle section, its display additional information to the system such as stored information of traditional and modern jeepney, alternative routes to help in commuting, and more time sufficient in aiding in daily travel



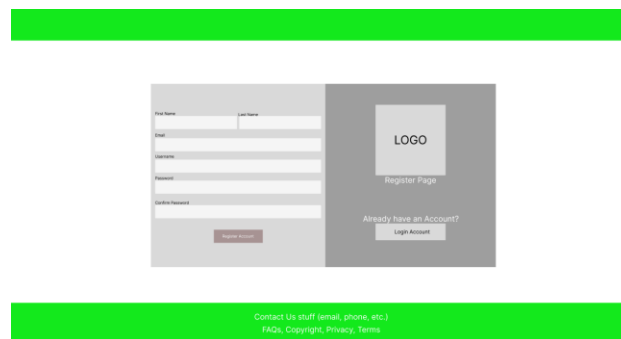
(Section 3 of Landing Page of CommuteSmart)

In the bottom section, a list of drop-down tabs of different frequently asked questions that users have or wondered to know how to navigate throughout CommuteSmart and have information on how to handle systematic issues. Footer bar at the bottom of the page



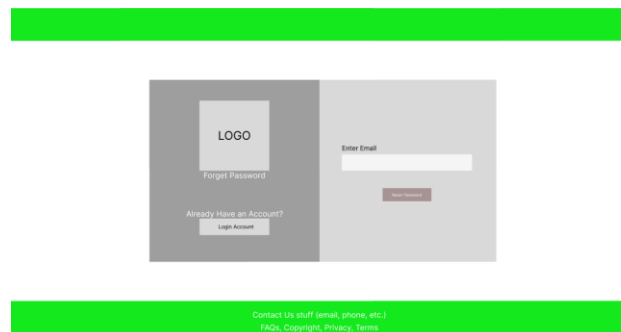
(Login Page of CommuteSmart)

If the user clicks the Login button or the Commute Smarter button, the website will redirect the user to the Login Page. The login page has the website's logo together with a button labeled "Register an Account" which redirects users to the register page. The middle section also has the email address field and the password field where the user can input their login information. It also has the Forgot Password link in the scenario where a user forgot their password and desires to reset their current password. Below the email and password field is the "Login Account" button which takes the user to the home page after successfully logging into their information. Footer bar at the bottom of the page.



(Register Page of CommuteSmart)

The register page has the website's logo followed by input fields where the user can input the necessary information to create an account. Under the logo, if the user already has an account, the user can click on the "Login Account" button to be redirected to the login page. Under the input fields, the user must input their first and last name, email, username, password, and confirm password. Once the user has completed all the necessary steps, then the user can register an account. Footer at the bottom of the page.



(Forgot Password Page of CommuteSmart)

The forgot password page also contains the website's logo in the middle section of the page. It also has the button labeled "Login Account" if the user

wants to go back to the login page and try to login again. Beside this is the enter email field which asks the user to input their email address so they will be able to receive instructions for resetting their password. Under the enter email field is the button “Reset Password” which prompts the system to send the inputted email password reset instructions. Footer at the bottom of the page.



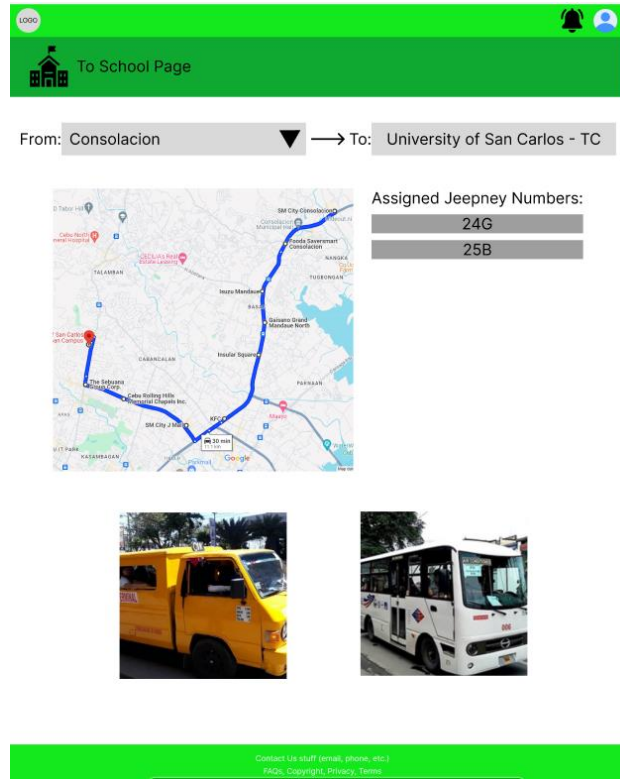
(Home Page of CommuteSmart)

The logo, notification bell icon, and user profile is located in the navigation bar at the top. Name of the CommuteSmart, To School, From School, and Recent Travels buttons are located under the navigation bar. Date and Time section, weather and traffic report displays in the body section. Footer bar at the bottom



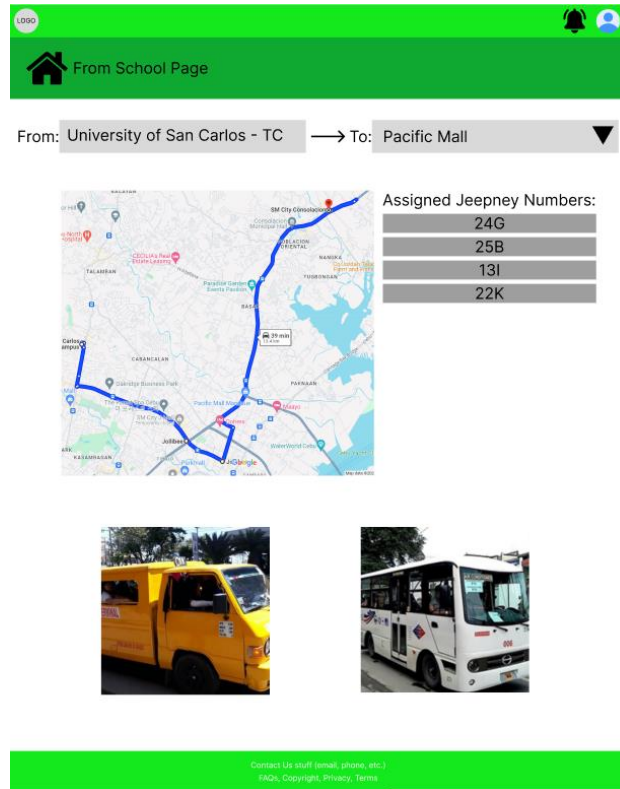
(Recent Commute Guides Page of CommuteSmart)

The navigation bar at the top includes the logo, notification bell icon, and user profile. Users can view a list of recently selected commuting guides on the To School or From School pages. Each recent commuting guide is accompanied by an "open" button. Clicking the "open" button next to a guide automatically directs users to the "To School" or "From School" page for the selected destination. A footer bar is located at the bottom of the page for additional navigation and information.



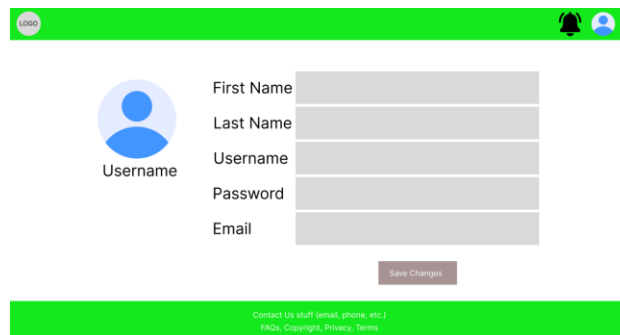
(To School Page of CommuteSmart)

The navigation bar at the top includes the logo, notification bell icon, and user profile. A map display highlights the route options using both traditional and modern jeepneys for travel to the University of San Carlos, Talamban campus. It will also display all the bus/jeepney stops throughout the commuting processes. Users can select from a list of buttons corresponding to jeepney number codes. Each button switches the routing and public transportation information based on the selected jeepney number code. Clicking on either the traditional or modern jeepney option opens a pop-up module displaying all the relevant routing information for the selected jeepney. A footer bar is located at the bottom of the page for additional navigation options.



(From School Page of CommuteSmart)

The navigation bar at the top includes the logo, notification bell icon, and user profile. A map display highlights the route options using both traditional and modern jeepneys for travel from the University of San Carlos, Talamban campus. Users can select from a list of buttons corresponding to jeepney number codes. Each button switches the routing and public transportation information based on the selected jeepney number code. Clicking on either the traditional or modern jeepney option opens a pop-up module displaying all the relevant routing information for the selected jeepney. A footer bar is located at the bottom of the page for additional navigation options.



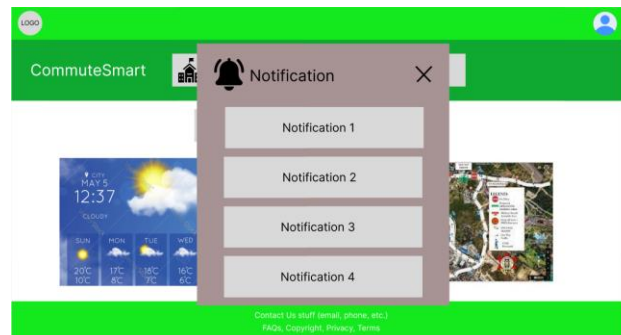
(User Setting Page of CommuteSmart)

At the top is the navigation bar with the website's logo, a notification bell, and the user's profile icon. The middle section has the user's profile picture and below it their username. Beside that is where the user can change their profile information such as first name, last name, username, password, and email address. Below is a button labeled "Save Changes" which saves whatever information the user inputted in the fields above. A footer bar is located at the bottom of the page for additional navigation options.



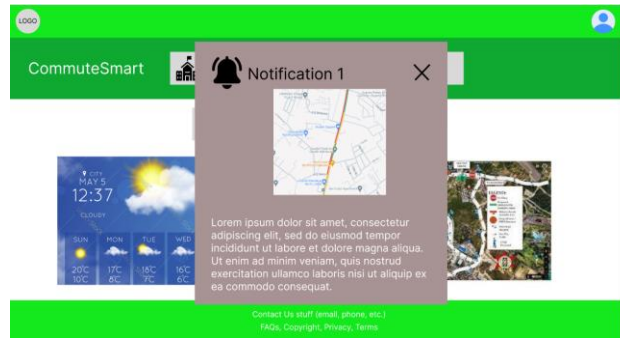
(Sidebar Menu of CommuteSmart)

The sidebar menu contains the profile picture of the user and under that picture is the username of the user. There are four buttons which are Notifications, Recent Travel, User Setting, and Logout Account.



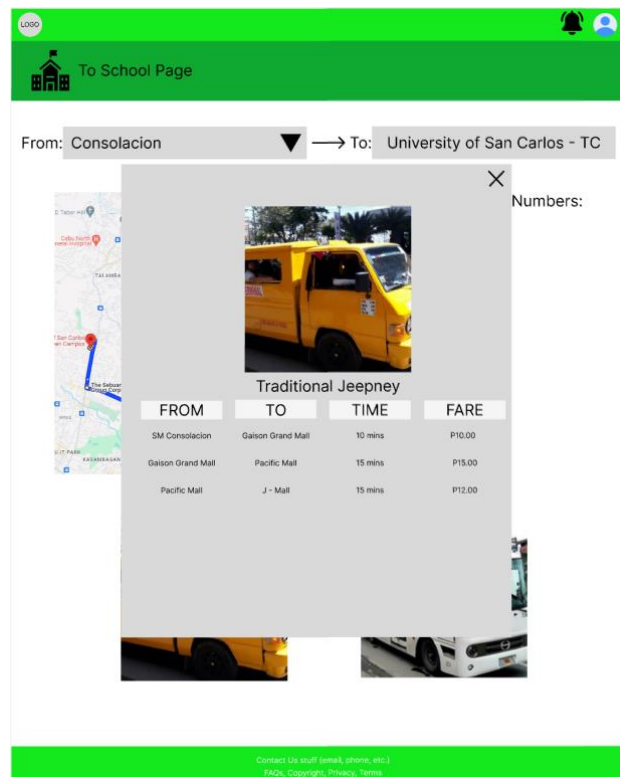
(Notification Module of CommuteSmart)

The navigation bar at the top includes the logo and user profile. A pop-up module card will be opened after the user clicks the notification bell in the navigation bar. It will display all notifications from the CommuteSmart system on ongoing traffic updates and daily weather report



(More Information Display of Commute Smart)

If the user clicks a notification, it will display additional information to that notification, such as ongoing traffic in AS Fortuna, heavy rainfall, etc. A footer bar is located at the bottom of the page for additional navigation and information.

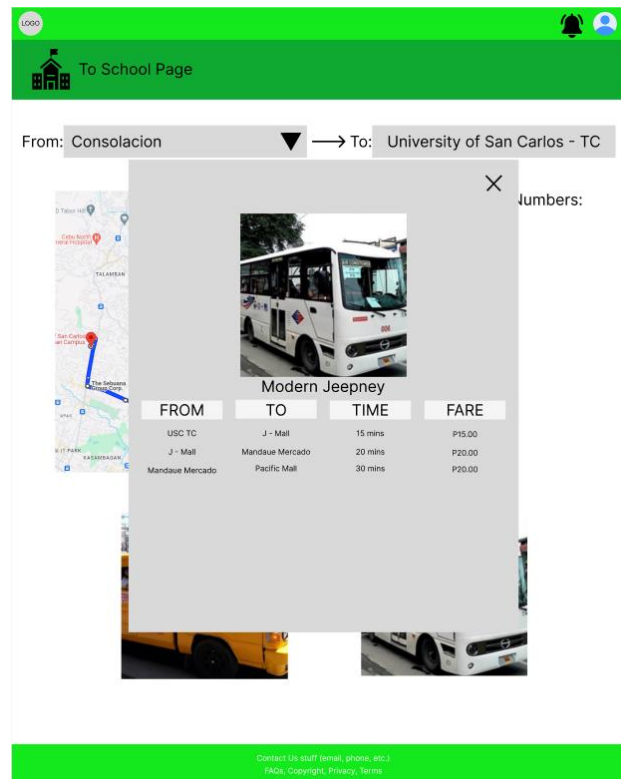


(Traditional Jeepney Module of CommuteSmart)

Clicking on the traditional jeepney option opens a pop-up module card displaying all routing information. The module presents a table with the following details:

- From locations: Indicates the previous bus/jeepney stop.
- To destinations: Shows the next bus/jeepney stop.
- Estimated time of arrival at each destination.

- Total fare for the user's commuting travel assigned to the traditional jeepney.



(Modern Jeepney Module of CommuteSmart)

Clicking on the modern jeepney option opens a pop-up module card displaying all routing information. The module presents a table with the following details:

- From locations: Indicates the previous bus/jeepney stop.
- To destinations: Shows the next bus/jeepney stop.
- Estimated time of arrival at each destination.
- Total fare for the user's commuting travel assigned to the modern jeepney.

8. Prototypes:

CommuteSmart, an initiative aimed at promoting sustainable cities and communities, to support students in their daily commutes to and from the university campus. This interactive platform will be presented to the university as a solution to aid students in navigating their travels efficiently. Leveraging Figma's features, an interactive prototype has been crafted to showcase the functionality of the proposed website. Users will be able to explore real-time information on traffic

conditions, receive advice on alternative routes, and interact with clickable links or hotspot areas for seamless navigation.

CommuteSmart Figma Link:

<https://www.figma.com/file/crhFKUNdQxrJoRZbhwspQY/CommuteSmart-Wireframe?type=design&mode=design&t=TZ9ta3JuyxhiuTju-1>

9. Feedback and Iteration:

SUICO's Feedback:

My feedback based on the progress of the idea of CommuteSmart and processes presents a compelling concept with the system, aiming to address the critical issue of promoting sustainable cities and communities through improving public vehicle transportations to aid daily commute in today's fast-paced world. The introduction sets the beginning of the development processes by highlighting the team's focus on developing innovative solutions aligned with Sustainable Development Goals, CommuteSmart. The problem statement succinctly outlines the challenges individuals face in maintaining and improving their daily commute to different locations, setting the context for CommuteSmart's role in providing accessible and effective solutions.

The team performed research to gain insights supporting the viability of CommuteSmart, indicating a growing demand for traveling and commuting guides driven by factors such as smartphone penetration and daily commuting assistance. The team conducted sessions by brainstorming outputs, and concept sketches offered a visual representation of CommuteSmart's proposed features and functionalities. This ideation documentation created a solid foundation for the development of CommuteSmart, but further refinement is needed to articulate a compelling value proposition and address specific user needs effectively.

ALISER's Feedback:

My feedback on this case study aims to contribute to USC's Sustainable Development Goals for sustainable cities and communities. The project entitled CommuteSmart, targets commuters, particularly students and workers traveling between destinations. This case study helps visualize the platform's purpose of creating a safe and efficient environment for users. My involvement in this initiative has highlighted the importance of providing a solution for commuters, especially students like myself, navigating through Cebu's streets. CommuteSmart aims to address this need by offering a reliable platform to assist individuals in their journeys, ensuring they reach their destinations confidently. In

essence, CommuteSmart holds significant value for commuters relying on public transportation.

NG's Feedback:

The goal of creating this prototype is to address the sustainable communities and cities SGD issue that was selected. It is critical that we carefully assess our investigation into this issue. Instead of utilizing cars, which can result in significant carbon emissions, this "CommuteSmart" prototype design can actually be a beginning point for people to travel more. My perspective on the environmental side of things has truly shifted during the course of creating this prototype. All things considered, if properly developed and deployed in the future, this prototype can truly be a helpful and valuable tool.

PERNITES's Feedback:

The prototype's goal

10. Feasibility Assessment:

CommuteSmart presents a promising solution to the pressing challenge of sustainable and efficient commuting for university students, particularly those attending the University of San Carlos Talamban campus. However, several factors need consideration to evaluate the feasibility of implementing this innovative platform, including technical, financial, and resource constraints.

Technical Feasibility:

The technical feasibility of CommuteSmart relies heavily on the development of a robust and user-friendly application. It requires real-time traffic updates, route optimization algorithms, and seamless integration with existing transportation systems. Developing and maintaining such a complex platform may require expertise in software development, data analytics, and geographic information systems (GIS). Ensuring compatibility across various devices and operating systems is also crucial for widespread adoption. Solutions may involve partnering with experienced tech firms or hiring skilled developers internally to oversee the project's technical aspects.

Financial Feasibility:

The financial feasibility of CommuteSmart involves assessing the costs associated with development, deployment, and maintenance. Initial investments will be required for software development, infrastructure setup, and marketing efforts to promote user adoption. Additionally, ongoing expenses will include server

maintenance, data acquisition, and customer support. Revenue streams can be explored through subscription models, advertising partnerships, or collaborations with transportation agencies. To ensure financial viability, a detailed cost-benefit analysis is essential, along with exploring potential funding sources such as grants, sponsorships, or venture capital.

Resource Constraints:

CommuteSmart's successful implementation also hinges on the availability of human resources, data resources, and infrastructure support. Recruiting a skilled team with expertise in software engineering, user experience design, and project management is essential for project execution. Data acquisition and integration from transportation authorities, weather agencies, and user-generated content will require partnerships and access agreements. Moreover, ensuring scalable server infrastructure and reliable network connectivity is critical to handling increasing user traffic and data processing demands.

Potential Challenges and Proposed Solutions:

- **Infrastructure Limitations:** In areas with inadequate transportation infrastructure or limited internet connectivity, accessing real-time updates may pose challenges. Solutions may involve developing offline functionalities, caching data for offline use, or partnering with telecom providers to improve network coverage in targeted areas.
- **User Adoption:** Encouraging students to adopt a new commuting platform amidst existing habits and preferences can be challenging. Strategies such as targeted marketing campaigns, educational workshops, and incentives like loyalty programs or discounts can incentivize initial adoption and retention.
- **Behavior Change:** Changing commuter behavior towards sustainable practices requires ongoing engagement and reinforcement. Implementing gamification elements, social sharing features, and personalized recommendations can incentivize eco-friendly commuting choices and sustain user engagement over time.

11. Final Concept and Solution:

CommuteSmart is a comprehensive solution designed to address the challenge of sustainable and efficient commuting for university students, with a focus on the University of San Carlos Talamban campus. It is a user-friendly platform that offers real-time traffic updates, alternative route suggestions, and various transportation options to empower students in making informed decisions and reducing their environmental footprint.

CommuteSmart revolutionizes the commuting experience for university students by offering a user-centric platform that addresses their specific needs and challenges. Through real-time updates, alternative route suggestions, and comprehensive transportation options, the platform empowers students to make sustainable and efficient choices in their daily travels. With a focus on user-friendliness, personalization, and safety, CommuteSmart aims to enhance the overall quality of life for students while contributing to the development of healthier and more resilient communities.

By leveraging technology and fostering a collective commitment to sustainability, CommuteSmart paves the way for a greener and more accessible future of commuting, ultimately leading to positive social and environmental impact.

12. Next Steps and Action Plan:

Development Planning:

- Define the technical requirements and specifications for the CommuteSmart platform, including real-time traffic updates, route optimization, and user-friendly interface.
- Develop a detailed project timeline with milestones, tasks, and responsibilities for each team member.

Technical Development:

- Start developing the backend infrastructure for CommuteSmart, focusing on data acquisition, processing, and storage.
- Develop the frontend interface, ensuring it is intuitive and user-friendly for university students.

User Testing and Feedback:

- Conduct user testing with a small group of university students to gather feedback on the platform's usability and functionality.
- Iterate on the platform based on user feedback, making necessary improvements and adjustments.

Deployment and Marketing:

- Deploy the CommuteSmart platform to the University of San Carlos Talamban campus, ensuring it is accessible to all students.
- Implement a marketing strategy to promote the platform among students, including social media campaigns, posters, and informational sessions.

Monitoring and Evaluation:

- Monitor the usage and performance of the CommuteSmart platform, collecting data on user interactions and traffic patterns.

- Evaluate the impact of CommuteSmart on reducing carbon footprint and improving commuting experiences for university students.

Scaling and Sustainability:

- Explore opportunities to scale the CommuteSmart platform to other universities and communities, taking into account local needs and infrastructure.
- Develop a sustainable business model for CommuteSmart, including revenue streams such as subscription fees, advertising, or partnerships.

Community Engagement:

- Engage with the university community and local stakeholders to gather feedback and insights on commuting challenges and needs.
- Collaborate with student organizations and community groups to promote sustainable commuting practices and raise awareness about CommuteSmart.

Continuous Improvement:

- Continuously improve the CommuteSmart platform based on user feedback, technological advancements, and changing commuting needs.
- Stay updated with the latest trends and developments in sustainable commuting solutions to ensure CommuteSmart remains innovative and effective.

13. Conclusion:

CommuteSmart presents a transformative solution to the challenges of sustainable commuting for university students, particularly those attending the University of San Carlos Talamban campus. Through real-time traffic updates, alternative route suggestions, and various transportation options, CommuteSmart aims to empower students to make informed decisions and reduce their environmental footprint.

The significance of CommuteSmart lies in its potential to revolutionize the commuting experience, not only improving the daily lives of students but also contributing to the development of healthier and more resilient communities. By fostering a collective commitment to sustainability and leveraging technology, CommuteSmart paves the way for a greener and more accessible future of commuting.

Encouraging collaboration and further exploration is essential to the success of CommuteSmart. We invite stakeholders, including university administrators, students, transportation authorities, and tech enthusiasts, to join us in refining and implementing this innovative platform. Through collaboration, we can address potential challenges, enhance user experience, and scale

CommuteSmart to other universities and communities, maximizing its positive impact.

Together, let's embrace sustainable commuting practices and build a brighter future for our cities and communities. Join us in the journey towards a more efficient, eco-friendly, and inclusive commuting experience with CommuteSmart.

14. Appendix:

Reference:

- Go-Ahead Singapore, July 2023, *Smart Mobility: Enhancing the Commuting Experience with Go-Ahead Singapore*; <https://www.linkedin.com/pulse/smart-mobility-enhancing-commuting-experience-go-ahead/>
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