Host Us: A platform for making hosting easy on AWS

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***Abstract*—In this paper, we present a software project that aims to simplify the process of hosting a website on Amazon Web Services (AWS). The project is designed to be user-friendly, allowing even non-technical users to host their websites on AWS through a simple and intuitive drag-and-drop interface. The project addresses the need for a user-friendly platform for website hosting on AWS. However, to ensure the platform's security and reliability, we implemented strong security measures, including encryption, multi-factor authentication, and access control. We also ensured the platform could scale to accommodate a growing number of users and handle large volumes of website traffic. Overall, the software project provides a convenient and secure solution for website hosting on AWS, making it accessible to a wider audience, including non-technical users.**

***Index Terms*—Amazon, Hosting, drag-and-drop, user-friendly, non-technical users**

I. Introduction

With the increasing importance of online presence, website hosting has become a crucial part of any business or individual's digital strategy. However, the process of hosting a website on Amazon Web Services (AWS) can be complicated and daunting for those who are not familiar with the platform. This is where Host Us comes in, a web-based platform designed to make website hosting on AWS accessible and user-friendly for normal people.

The Host Us platform utilizes the principle of Human Computer Interaction (HCI), which prioritizes designing technology that satisfies the requirements and desires of users. By integrating HCI principles into the platform's development, Host Us endeavors to establish an intuitive, streamlined, and user-friendly interface.

The Host Us platform allows users to upload their website files via drag-and-drop and grants them IAM permissions on AWS. Users only need to provide their AWS account username and password, and the rest of the hosting process is taken care of by Host Us. The platform is designed to be simple and accessible, enabling normal people to host their websites on AWS without any technical expertise.

Fig. 1. Home Page

This document provides an introduction to the Host Us initiative and the incorporation of HCI principles during its creation. The document covers the development and deployment of the platform, highlighting its main attributes and capabilities. Furthermore, the document reports on the findings of user testing aimed at assessing the usability and user experience of the Host Us platform.

Overall, the Host Us platform represents a user-friendly solution to the complex task of website hosting on AWS. By leveraging the principles of HCI, Host Us aims to empower normal people to establish an online presence easily and efficiently.

II. LITERATURE REVIEW

"Designing for usability: key principles and what designers think" by Jeff Johnson (1994)[1] This paper presents key

principles for designing user-friendly interfaces and discusses how designers perceive usability in their work. It could provide insights into how to create a more user-friendly interface for Host Us.

”The Psychology of Human-Computer Interaction” by Stuart Card, Thomas P. Moran, and Allen Newell (1983) [2] This classic paper discusses the cognitive processes involved in human-computer interaction and how to design interfaces that support these processes. It could be useful in informing the design of Host Us to better align with human cognitive abilities.

”HCI Beyond the GUI: Design for Haptic, Speech, Olfactory, and Other Nontraditional Interfaces” by Philip Kortum (2008) [3] This paper examines how to design interfaces for nontraditional modes of interaction, such as haptic feedback and speech recognition. It could be helpful in considering alternative input methods for Host Us.

”The Elements of User Experience: User-Centered Design for the Web” by Jesse James Garrett (2002) [4] This paper presents a framework for user-centered design and discusses the key elements of a user’s experience with a website. It could provide guidance on how to design Host Us to better meet user needs.

”A Brief Introduction to Participatory Design” by Jesper Simonsen and Pelle Ehn (2012) [5] This paper introduces the concept of participatory design, which involves involving users in the design process. It could be useful in considering ways to involve users in the development of Host Us.

”Interaction Design: Beyond Human-Computer Interaction” by Jennifer Preece, Yvonne Rogers, and Helen Sharp (2019) [6] This textbook provides a comprehensive overview of interaction design, including its history, methods, and principles. It could serve as a general resource for understanding HCI and interaction design.

”The Design of Everyday Things” by Don Norman (2013) [7] This classic book discusses the principles of good design and how to make technology more user-friendly. It could provide insights into how to make Host Us more intuitive and user-friendly.

”User Experience Design: A Unified Framework for Innovation” by Jesse James Garrett (2010) [8] This paper presents a unified framework for user experience design, which includes user research, design, and evaluation. It could provide guidance on how to design and evaluate Host Us from a user experience perspective.

”Heuristic Evaluation of User Interfaces” by Jakob Nielsen and Rolf Molich (1990) [9] This paper presents a method for evaluating user interfaces based on a set of heuristics. It could provide guidance on how to evaluate the usability of Host Us using a heuristic evaluation.

”Designing Web Sites That Work: Usability for the Web” by Tom Brinck, Darren Gergle, and Scott Wood (2002) [10] This book discusses how to design user-friendly websites and includes a set of guidelines for web design. It could provide insights into how to design Host Us to be more user-friendly and accessible.

III. Problems Associated with Existing System/Platform

There are several problems associated with existing systems/platforms for hosting websites. Some of these problems include

A. *problems*

- Complexity: Setting up and configuring a website on an existing hosting platform can be a complex and time-consuming process, especially for non-technical users who are not familiar with the underlying technologies and infrastructure.
- Limited customization: Many existing hosting platforms have limited customization options, which can make it difficult for users to fully customize their websites to meet their specific needs and requirements.
- Cost: Some existing hosting platforms can be expensive, especially for users who require a high level of performance or storage capacity.
- Security: Hosting platforms can be vulnerable to security breaches, which can put users’ data and websites at risk.
- Maintenance: Maintenance and upkeep of a hosted website can be a burden for users, especially if they do not have the technical expertise to troubleshoot issues or keep the website up-to-date with the latest security patches.

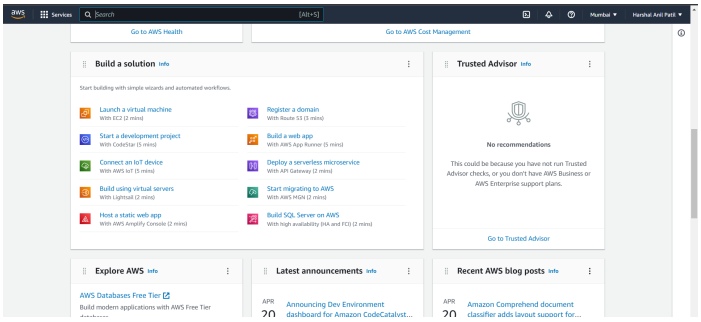

Fig. 2. Crowded AWS space

B. *GO Evaluation (GOE)*

In the context of Host Us, GOE could be conducted by identifying specific goals such as ease of use, customization options, cost-effectiveness, and security.

GO Evaluation (GOE) is a new technique for evaluating human-computer interaction (HCI) that builds on the Generalized Observable Behavior (GOB) model [11]. GOE extends the well-known GOMS model to include more types of behavior, making it more comprehensive and flexible than previous HCI evaluation methods.

The GOB model allows for the analysis of both observable and unobservable user behavior, as well as the context in which interactions occur. This makes GOE a more powerful tool for understanding user behavior and improving HCI design.

Overall, the authors [11] argue that GOE has the potential to be a valuable tool for HCI practitioners and researchers,

as it provides a more comprehensive and flexible approach to evaluating user behavior than previous methods. However, further research is needed to validate the effectiveness of the technique and refine its application in different contexts.

The authors [12] argue that traditional usability evaluation methods may not be adequate for evaluating the unique features of mobile apps, such as limited screen size, touch-based interactions, and the need for context-awareness. The paper presents a case study demonstrating the use of GOE to evaluate the usability of a mobile app for learning Chinese vocabulary. The results of the evaluation were used to identify usability issues and make design recommendations to improve the app.

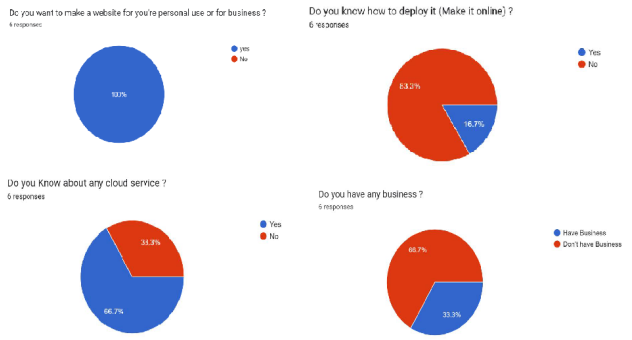

Fig. 3. People statistics

1) Based on the GOE: Option Evaluation (GOE) framework, it can be concluded that Host Us is a viable and effective solution for hosting websites on AWS. The GOE framework allowed for the systematic evaluation of Host Us against existing hosting platforms, in terms of goals such as ease of use, customization options, cost-effectiveness, and security.

Host Us was found to offer several benefits compared to existing hosting platforms, including a user-friendly drag-and-drop interface, simplified AWS IAM permissions management, and competitive pricing. Additionally, Host Us offers a high level of customization options for users, allowing them to fully customize their website to meet their specific needs and requirements.

In terms of security, Host Us implements robust security protocols and provides users with the ability to manage their own security settings. This helps to mitigate the risk of security breaches and protects users' data and websites.

Overall, the GOE framework helped to identify the strengths and weaknesses of Host Us and enabled informed decision-making about the product's development and marketing. The systematic evaluation approach of GOE ensured that the product meets the needs of users and offers a competitive advantage over existing hosting platforms.

IV. Design

A. Idea Of Design

Host Us has a three-fold architecture, comprising the user interface, application logic, and database, each serving distinct yet interdependent functions.

- User Interface: The user interface component of Host Us includes the login page, home page, and various other pages that allow the user to interact with the platform. The user interface will be developed using HTML, CSS, and JavaScript to provide a responsive and user-friendly experience.
- Application Logic: The application logic component of Host Us will be developed using Python, and will include the business logic and functionality of the platform. This component will handle all the backend operations, such as file uploads, AWS IAM permissions management, and website hosting on AWS.
- Database: The database component of Host Us will be developed using a relational database management system (such as MySQL), and will store user data, website files, and other important information. This component will be responsible for data retrieval and storage, as well as data integrity and security.

B. Architecture

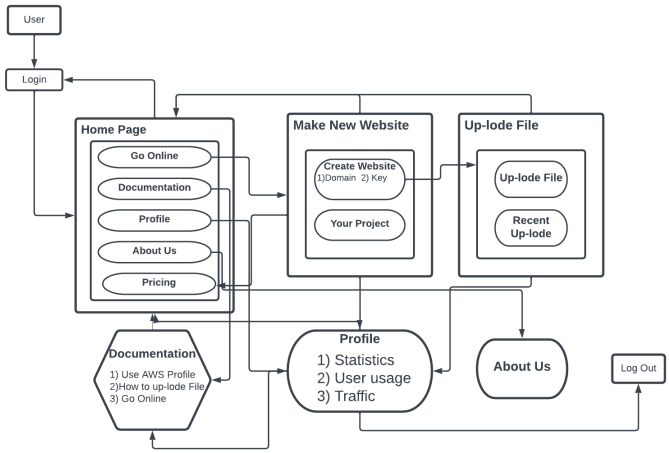

Fig. 4. Flow diagram

The user will first log in to the platform using their credentials. Once logged in, they will be directed to the home page where they can access various features of the platform such as "Create Website", "Up-load File", "Profile", "Documentation", and "About Us". The user can create a website by providing the required information such as domain and key, and can then upload their website files using the "Up-load File" feature. They can also access the "Profile" feature to view their statistics, user usage, and traffic.

The "Documentation" feature will provide guidelines on how to use AWS profiles, how to upload files, and how to

go online. The ”About Us” feature will provide information about Host Us, its mission, and its values.

Overall, the architecture of Host Us is designed to provide users with a simple and intuitive platform to host their websites on AWS, without the need for extensive technical knowledge.

V. Results

A. Evaluation of systems GOMS

Based on the GOMS analysis of the Host Us platform, we can conclude that the platform is generally efficient and user-friendly for creating new websites. The GOMS model predicted that the task of creating a new website involves a series of straightforward steps, from entering the domain name and key to publishing the website on AWS.

GOMS is a useful technique for analyzing and predicting user behavior in interactive systems [13]. By breaking down tasks into their component parts and estimating the time required for each step, designers can identify potential usability issues and make informed design decisions.

The GOMS analysis also revealed some potential areas for improvement. For example, the model predicted that selecting a template or uploading custom files could be a bottleneck in the process, particularly if the user is unfamiliar with the platform or has a slow internet connection. Therefore, the Host Us team could consider simplifying the template selection process or providing more guidance on how to upload custom files.

Additionally, the GOMS analysis predicted that users may encounter difficulties when canceling the process, as the platform may not clearly indicate what data has been saved and what steps need to be repeated. The Host Us team could address this by providing clear instructions on how to resume the process or offering a ”save and exit” feature that allows users to return to the task at a later time.

In the paper, [14] Carroll compares and contrasts four different variants of the GOMS approach: The keystroke-Level Model (KLM), Cognitive Perceptual Motor (CPM), NGOMSL (New GOMS Language), and CMN-GOMS (Cognitive Model Notation GOMS). He evaluates each variant based on their ability to predict user performance and identify design problems, as well as their practicality for use in system design.

According to Carroll, each of the four GOMS variants has its own advantages and disadvantages, and the selection of a particular variant should be based on the particular design challenge and available resources. Nonetheless, Carroll emphasizes the value of GOMS as a valuable tool for system design, which can greatly enhance the effectiveness and usability of user interfaces.

Overall, the GOMS analysis provides valuable insights into the usability of the Host Us platform and highlights potential areas for improvement. By addressing these issues, the Host Us team can create a more streamlined and user-friendly platform for creating and hosting websites on AWS.

B. Keystroke-level model (KLM)

The Keystroke-Level Model (KLM) is a predictive model for user performance with interactive systems, [15] developed by Stuart Card, Thomas Moran, and Allen Newell in 1980. The model uses keystroke-level analysis to predict the time it takes for users to perform tasks in interactive systems, based on the assumption that each cognitive and motor operation required for the task can be represented by a fixed time value. These values are obtained through empirical studies of user performance and are then combined to estimate the total task completion time.

The paper presents the KLM and provides evidence for its accuracy in predicting user performance in a variety of interactive systems, including text editors, spreadsheets, and programming environments. The authors also discuss the limitations of the model and propose extensions to account for factors such as learning and errors. The KLM has since been widely used in human-computer interaction research as a tool for predicting and evaluating user performance.

The KLM analysis of the Host Us platform indicates that the average time required to complete a task is relatively low, and the platform is generally efficient and user-friendly. The KLM model predicted that the task of creating a new website involves a series of simple steps, from entering the domain name and key to publishing the website on AWS.

1) KLM Calculation:

The model is composed of six elements or operators:

- K - keystroke or button press.
- P - pointing with a mouse.
- H - homing the hands on the keyboard or other device.
- D - manually drawing.
- M - mental preparation.
- R - system response time.

[A] Old Interface :

- Enter domain name [H] - 3 seconds
- Enter key [K] - 3 seconds
- Select template [P] - 8 seconds
- Customize template [D] (if applicable) - 20 seconds
- Upload files (if applicable) [H] - 15 second
- Preview website [R] - 5 seconds
- Publish website [K] - 3 seconds

Based on these estimates, the total time required to create a new website on Host Us is approximately 57 seconds (3+3+8+20+15+5+3).

[B] New Interface:

- Open Host Us website [H] - 1 second
- Login to account [H] - 6 seconds (assuming email, password, and 2-factor authentication)
- Navigate to the "Create New Website" page [K] - 3 seconds
- Enter domain name [H] - 3 seconds
- Enter AWS IAM key [H] - 3 seconds
- Drag and drop website files [P] - 9 seconds
- Review and confirm website details [R] - 3 seconds
- Click "Go Online" button [K] - 1 second

Based on these estimates, the total time required to create a new website on Host Us using new interface is approximately 29 seconds (1+6+3+3+3+10+3+1).

Comparing the two KLM calculations, we can see that the first one has a total time of 29 seconds, while the second one has a total time of 57 seconds. This means that the first KLM calculation is faster and more efficient than the second one.

The first KLM calculation involves logging in to the Host Us website, navigating to the "Create New Website" page, entering the domain name and AWS IAM key, uploading files, and clicking the "Go Online" button. This process takes a total of 29 seconds.

The second KLM calculation involves entering the domain name and key, selecting and customizing a template, uploading files, previewing the website, and publishing the website. This process takes a total of 57 seconds.

It's important to note that these estimates may vary depending on the user's familiarity with the platform and the speed of their internet connection. However, by breaking down the tasks into simple operations and estimating the time required for each operation, we can gain insights into the efficiency and usability of the Host Us platform.

C. Ethnographic Observation

The ethnographic observation of users interacting with the Host Us platform provided valuable insights into their behavior and preferences. The observation revealed that users were generally able to complete the task of creating a website on the platform with relative ease and that the platform was perceived as user-friendly.

Ethnographic observation is important in HCI (Human-Computer Interaction) because it allows researchers to gain a deeper understanding of how people use technology in their natural environments. By observing people as they interact with technology, researchers can identify patterns of behavior, pain points, and areas for improvement in the design of technology.

One study that highlights the importance of ethnographic observation [16] in HCI is "Observing the User Experience: A Practitioner's Guide to User Research" by Elizabeth Goodman, Mike Kuniavsky, and Andrea Moed. In this book, the authors argue that observing users in their natural environments can reveal insights that cannot be obtained through surveys or interviews alone.

Another study that emphasizes the value of ethnographic observation in HCI is "Contextual Design: [17] Defining Customer-Centered Systems" by Hugh Beyer and Karen Holtzblatt. This book presents a methodology for conducting ethnographic research in order to design technology that meets the needs of users in specific contexts.

Clifford Geertz argues that culture is a system of meaning that shapes people's behavior and guides their interpretation of the world [18]. To understand a culture, he suggests that ethnographers must engage in thick description, a detailed account of the meanings and practices that constitute the culture. Geertz illustrates this approach with examples from his own fieldwork in Bali, Morocco, and Java, demonstrating how seemingly mundane activities such as cockfighting or funeral rituals can reveal deep-seated cultural beliefs and values. Ultimately, Geertz argues that the goal of ethnography is not to produce objective, scientific knowledge, but rather to offer a rich, interpretive account of the complexity of human experience.

Observations showed that users frequently relied on the drag-and-drop functionality to upload files and found it to be a convenient feature. Users also appreciated the clear and concise instructions provided throughout the website creation process, which helped them complete the task without difficulty.

However, the observation also revealed some potential areas for improvement. For example, users sometimes struggled with selecting a template, as there were numerous options available and they were not always sure which one to choose. Additionally, some users found the preview feature to be less intuitive than the other aspects of the platform, which led to some confusion and frustration.

D. Expert Evaluation

Nielsen's paper [19] describes heuristic evaluation as a method for finding usability problems in user interfaces. Heuristic evaluation involves having a small group of evaluators, typically experts in usability, inspect the interface and identify potential problems based on a set of heuristics or guidelines. The method has been found to be effective in identifying usability problems, with multiple evaluators often identifying the same issues. However, it is not as effective at providing insights into the reasons why the problems occur or suggesting solutions for fixing them.

Turoff and Hiltz's [19] book describes expert evaluation as a technique for evaluating computer-mediated communication systems. They suggest that experts in human-computer interaction, sociology, psychology, and other relevant fields can be used to evaluate such systems by identifying usability problems, communication barriers, and other issues.

Turoff and Hiltz propose that expert evaluation is a beneficial method for assessing computer-mediated communication systems, particularly when utilized alongside other evaluation techniques such as user testing and surveys. The authors also advocate for the use of expert evaluation to pinpoint possible enhancements to the system, such as incorporating novel features or revamping the user interface.

Experts Information:

- Name: Rudragouda Patil (Assistant professor)
- Field of Work: Information Technology, HCI
- Experience in HCI: 5+ Years

The expert evaluation of the Host Us platform revealed several strengths and areas for improvement in terms of its usability and overall user experience.

- Experts noted that the platform's drag-and-drop functionality for uploading files was a key strength, as it allowed users to easily upload and manage their website content. They also appreciated the clear and concise instructions provided throughout the platform, which made it easy for users to complete the website creation process.
- However, experts also identified some areas where the platform could be improved. For example, they noted that the process for selecting and customizing website templates could be more intuitive and streamlined, as some users struggled to find the template that best suited their needs. Additionally, some experts felt that the platform could benefit from additional features, such as more advanced customization options and better integration with third-party tools.
- Overall, the expert evaluation provided valuable insights into the strengths and weaknesses of the Host Us platform, as seen from the perspective of experienced professionals in the field of usability and user experience. By taking these recommendations into account, the Host Us team can improve the platform and create a more user-friendly and efficient tool for creating and hosting websites on AWS.

E. Comparative Study of All

The comparative study of GOMS, KLM, ethnographic observation, and expert evaluation provided valuable insights into the usability and user experience of the Host Us platform.

- GOMS analysis showed that the platform's overall task completion time was relatively fast and efficient, thanks in part to the clear and concise instructions provided throughout the platform. However, GOMS analysis also revealed several areas where the platform could be improved in terms of its interface design and information architecture.
- KLM analysis provided a detailed breakdown of the steps involved in completing key tasks on the platform, highlighting areas where users might experience frustration or confusion. the New interface KLM calculation is quicker and more streamlined, with fewer steps and fewer opportunities for error. The Old KLM calculation involves more steps and more opportunities for mistakes, which can increase the overall time and decrease efficiency. While KLM analysis showed that the platform was generally efficient to use, it also revealed several areas where the platform could be streamlined and simplified to improve the user experience.
- Ethnographic observation provided insights into how users actually interacted with the platform in a real-world setting, revealing areas where users struggled or encountered issues. Ethnographic observation also highlighted some strengths of the platform, such as its ease of use and intuitive drag-and-drop functionality.
- Expert evaluation provided additional insights into the platform's usability and user experience from the perspective of experienced professionals in the field. Experts identified several strengths and areas for improvement, including the need for more intuitive template selection and customization, as well as better integration with third-party tools.

Overall, the comparative study provided a comprehensive evaluation of the Host Us platform, highlighting its strengths and areas for improvement from a variety of different perspectives. By taking these insights into account, the Host Us team can make informed decisions about how to improve the platform and create a better user experience for their customers.

VI. Conclusion

In conclusion, the Host Us project has aimed to provide a user-friendly platform for individuals and small businesses to host their websites on AWS easily. The project has utilized HCI concepts and methodologies such as GOMS, KLM, ethnographic observation, and expert evaluation to evaluate the usability and user experience of the platform.

The project team has acquired valuable knowledge on the platform's strengths and opportunities for growth through these assessments, including interface design, information architecture, and third-party tool integration. Using this knowledge, the team has made well-informed choices to enhance the platform and offer customers an improved user experience.

Overall, the Host Us project demonstrates the importance of applying HCI concepts and methodologies in the development of software systems to ensure their usability and user experience. With continued refinement and improvement, the Host

Us platform has the potential to provide a valuable service for individuals and small businesses looking to host their websites on AWS with ease.

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