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International Jasin Multimedia & Computer Science Invention and Innovation Exhibition

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iKEN 3D Environment Mobile Application

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Abstract- iKEN app is a mobile application that maximizes tourists' experiences when traveling to destinations, especially historical destinations. The iKEN app uses a 3D environment commonly used in Virtual Reality (VR) technology, except it was used in mobile phones. Although tourists may grasp some of the historic building's past conditions through browsing pictures on the web, the iKEN app can create a better experience and easier access to historical conditions and environments. The iKEN app allows users to access targeted historical buildings from any era. The information about these buildings is gathered from the experts on that destination. Applying 3D modeling to the targeted destination helps tourists observe the area from any angle. Thus, by using this application, tourists can access the information of targeted goals, such as historical information, without searching it from various resources on the web. Moreover, this application is convenient for tourists that love to travel solo as the tourists still manage to access the information without the help of a tour guide. The benefit of this iKEN app is its ease of information access to the history of the places, increasing knowledge, and creating a whole other level of experience. The methodology or method used in developing the iKEN apps is the agile method. The agile method focused on improvement to be of better quality. In conclusion, the iKEN app helps maximize tourists' knowledge and experiences when visiting historical destinations and creates a new level of tourism innovation.

Keywords- iKEN app, mobile application, 3D environment

I. INTRODUCTION

Heritage or historical tourism is a subgroup of the tourism industry. According to the National Trust for Historic Preservation, heritage tourism is "traveling to experience the places, artifacts, and activities that authentically represent the stories and people of the past" [1]. Heritage tourism is closely related to nature, culture and history [2]. Today, there are 1,154 sites on the World Heritage List, meaning UNESCO protects more than a thousand sites to preserve heritage sites [3]. Some areas are visitable, while others are restricted from human activities. Besides experiencing a new cultural environment, such as observing a community's artifacts, buildings and customs, tourists also intend to create a memorable experience by visiting exotic and unique heritage sites that connect them with the past civilization and indirectly learn about the past. Tourists interested in learning about the historical sites' history usually depend on the tour guide and information boards, which are limited in terms of information delivery in a short time. While some tourists surf the internet to learn more about selected historical sites, it is time-consuming and the information may be less accurate over time and not updated from time to time.

Thus, creating an innovative way to assist tourists in conveniently accessing the information on historical sites is much needed. The use of old methods such as physical information boards to increase the effectiveness of conveying messages or information about the importance of history to human beings is now less effective due to changes in human nature and information acquisition. According to Hodson R. (2018), nowadays, humans are more familiar with digital technology in their

daily lives, which provides opportunities for digital innovation to be carried out [3]. People choose an easier way to access information, for example, using Google instead of reading from books. This is because using digital technology such as smartphones is more convenient as customers benefit from mobility, ubiquity, personalization, and, most importantly, convenience when using mobile Internet as an alternative buying channel [4]. While some people travel to heritage sites to witness the astonishing view personally, others use the internet to experience it. This shows that the information acquisition landscape has shifted whereby people want everything much easier and faster as much as possible, thus a reason for innovators to create innovations to fulfill this demand.

In addition, some historical enthusiasts may be deprived of traveling due to lack of time and budget, personnel problems, and many more. Therefore, creating an app enables people to travel digitally to historical destinations anytime. Not only is it cheaper and more accessible, but it also brings out a whole new historical experience using a readily available device like a smartphone. With that, the existence of an application would bring more benefits and convenience to people, especially tourists and historical enthusiasts.

II. OBJECTIVE

The objectives of this innovation are;

- i. To maximize the reach of information of a particular historical destination.
- ii. To create a new kind of travel experience.
- iii. To promote the use of technology in historical tourism.

III. METHODOLOGY

The iKEN application is designed for both Android and iOS users as an integrated travel app that provides different features and functions such as recording the history of historic destinations through intelligent apps, collecting data from the past, viewing destination conditions and environments from the past and place images from places the past can be created through 3D modeling. Therefore, to know how iKEN works below as an application, a brief description of the application is shown with figures for a clear understanding.

A. Interface: How the app works

After successfully installing the application on the user's phone, the user must register to create an account. Then, users must verify their identity by entering a privacy pin to gain access to the full features of the application. Figure 1 illustrates the main registration page for creating a new account, login page and password recovery page for the iKEN application.

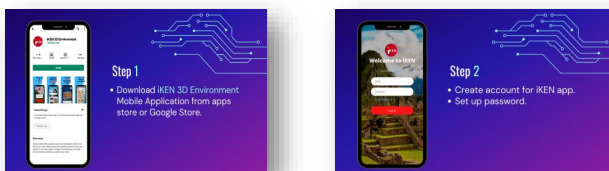


Fig. 1. The main page login pages of the iKEN app



Fig. 2. Home, search, and QR scan.

Figure 2 shows how to use product and application specifications. The app is divided into the home, search and QR scan, and profile. The home is divided into four categories: "For You" is specific to the recommendation of a historical site. "Hotspot" specific to popular historic sites. "What's Up" is about news and articles, and the latest "About Us" is specific to information about the iKEN application. This live page is created to make it easier for users to find the destination they want and give them recommendations on exciting destinations to visit. The profile page includes information for editing or changing anything related to this application.

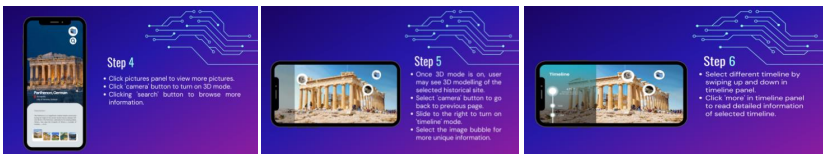


Fig. 3. 3D Mode, Timeline Mode, Unique and Detailed Information

Figure 3 shows that the user can see more pictures and information about the place by clicking on the panel picture. The best thing about this app is that by turning on the camera features, the user can use the 3D mode to find out the past state of the place. In addition, once the 3D mode is on, the user may see 3D modeling of the selected historical site. Next, users can browse for more information by clicking the search button. Besides that, users can choose the 'camera' button to go back to the previous page and slide to the right to turn on 'timeline mode.' Users also can select the image bubble to get unique information about the historical site. Furthermore, users also can choose different timelines by swiping up and down in the timeline panel. Lastly, click 'more' in the timeline panel to read detailed information about the selected timeline.

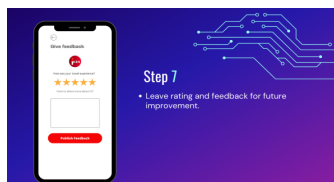


Fig. 4. Feedback session

Figure 4 shows the feedback space where users can leave their ratings and feedback so that creators can make improvements in the future so that iKEN applications can be commercialized in the market today.

IV. RESULTS AND FINDINGS

With the iKEN application, travelers or historical enthusiasts can access information about specific historical destinations. This innovation also helps those who prefer to travel to historical places to maximize their visit experience. At the same time, it promotes technology in historical tourism. Digital forms or apps can be the third-party portals to serve a digital visit from a

tourist seeking leisure activities online, including a digital museum [5]. Therefore, it is reasonable to expect that the value of digital apps will lead to several additional innovations in conserving heritage sites. In addition, it might improve the prestige of historical organizations in the developing internet market.

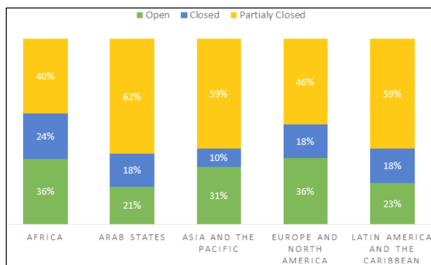


Fig. 5. Percentage of sites open, closed, or partially closed during the Covid-19 Pandemic.

(Source: UNESCO World Heritage, [2])

Figure 5 shows the percentage of sites open, closed, or partially closed during Covid-19. Visitors who visit heritage sites decline due to the impact of Covid-19 because they are worried about the spread of the epidemic. Indirectly, it will be more closely keen on communication technologies as a trend and indeed, the demand for applications such as digital tourism to heritage sites will increase [6]. Visitors will still use maps and advertising materials to learn about a particular historical place. Still, as websites become more visually attractive and useful, more people will use them for this purpose. Additionally, the iKEN application can affect visitors' plans to return, enhancing the reputation of the historic location.

V. CONCLUSIONS

iKEN is a very convenient mobile application that helps users conveniently grasp information about some destinations, especially historical destinations. This statement is undeniably true since all of the information in this application is gathered from trusted sources. Besides that, the tourists can also get any accurate information they need about the historical destinations regardless of the time limit to help them save their time. This application also provides its users with other features that can help them see the terrain of the historic destinations, such as 3D modeling that lets them know the place from every different angle. This application aims to help users travel by using only their gadgets since some people may not be able to travel due to their problems but hope to travel like everyone else.

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