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Augmented Reality-enabled Mobile Apps for enhancing Value-Based Interpretation at Cultural World Heritage Sites of Sri Lanka

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Abstract

'On-site interpretation' is a critical success factor in conveying the significance and multiple heritage values of a cultural heritage site to the visitors. The initial assessment done on the current status of the on-site interpretation at six Cultural World Heritage Sites (CWHS) in Sri Lanka under this study, unveiled the need for a 'Value-based interpretation strategy' and integration of 'appropriate' digital interpretation techniques with the existing techniques. Accordingly, the objective of this study was to explore the potential digital interpretation techniques and their applicability, aiming at enhancing the level of on-site interpretation of Sri Lankan CWHS. The data gathered through thirteen in-depth interviews with respective professionals, on-site observations, a literature survey, and a survey questionnaire of 505 respondents, were analyzed against 24 criteria, categorized under six themes (Site condition, Legal and Regulatory concerns, Technical and Financial feasibility, Content preparation, Implementation, and Sustainability), which were developed as the theoretical framework for the present study by referring the literature. It was determined that 'Augmented Reality (AR) enabled Mobile apps', a combination of Mobile apps and Mobile-AR technology, are feasible and appropriate for all six CWHS. This study recommends a dedicated app for each CWHS, enriched with Mobile-AR modules (virtual tour guide, virtual markers for visitor navigation, virtual reconstructions, AR filters), Comparisons to world context, Customizable itineraries, Side-tabs of heritage values, User engagement features, etc., to provide a tailor-made and innovative visitor experience in complying with the value-based interpretation strategy. In addition, the study presents a set of recommendations for the proposed apps under the themes of 'Content creation', 'Organizational adaptability', 'Policy changes', 'Partnerships and Promotion', and 'Post-Implementation Evaluation and Extended Uses' for a successful future implementation. The composite outcome of the present study could be followed as a reference model in enhancing the level of on-site interpretation at the CWHS of the country but not limited to.

Keywords: *Digital Interpretation, Heritage Values, Visitor Experience*

Introduction

On-site interpretation plays a vital role in cultural heritage sites in conveying the significance and multiple heritage values to the visitors. '*The public explanation on a discussion of a cultural heritage site encompassing its full significance, multiple meanings, and values* is considered 'Interpretation' as per the International Council on Monuments and Sites (ICOMOS) Charter for the Interpretation and Presentation of Cultural Heritage Sites (ICOMOS, 2008). Hence, heritage managers apply different on-site interpretation techniques such as physical interpretation signage, guides, audio tours, guidebooks and publications, mobile apps, etc. at the sites.

As per the Visitor Lifecycle Model proposed by Davis in 2014, a heritage visit is not merely considered an incident but a process of three stages namely: Pre-visit, Visit (On-site), and Post-visit. Pre-visit means the stage of 'Fact-finding and planning, in which the visitor looks for information to plan the visit and creates a personalized context. Visit (On-site) stage includes 'In-visit interaction and content delivery, where the visitor obtains the cultural experience. Post-visit refers to 'Feedback and recommendations, in which the visitor follows up on any information and shares experiences through feedback and recommendations (Davis, 2014). Accordingly, during the 'Visit stage', visitors interact and obtain cultural experience with the cultural objects, monuments, and sites; hence, the delivery of heritage information shall be in a highly effective manner. Further, as Tilden (1977), the modern father of Heritage Interpretation, highlighted in his principles, '*the chief aim of interpretation is not instruction, but provocation*. Therefore, interpretation shall stimulate people into a form of action, which makes people understand the heritage, appreciate the heritage and protect the heritage (Canal & River Trust, 2014).

The initial assessment which carried out on the existing interpretation techniques of the six Cultural World Heritage Sites (CWHS) in Sri Lanka namely, Anuradhapura, Polonnaruwa, Sigiriya, Kandy, Galle, and Dambulla, by employing the data gathering techniques of on-site observation, literature survey and a visitor survey questionnaire of 505 participants, revealed that those six CWHS mostly remain with the conventional interpretation practices, expect few pilot-phased mobile apps. Further, besides the religious and historical value, other heritage values namely, architectural, landscape, town-planning, engineering and technological, and aesthetic, including the 'Outstanding Universal Value (OUV)', are not adequately communicated to the visitors (Wimalasuriya, Kapukotuwa, & Ranasinghe, 2022). The results unveiled the gap/need for a 'Heritage Value-based interpretation strategy' and integration of 'appropriate' digital interpretation techniques into the existing techniques.

Accordingly, the research question for this study was taken as 'What and how digital techniques could effectively be used to facilitate Value-based interpretation strategy in CWHS of Sri Lanka', aiming at enhancing the level of on-site interpretation of the Sri Lankan CWHS. The research objectives were to explore the feasibility and applicability of selected digital interpretation techniques and to present necessary recommendations for potential future implementation.

Materials and Methods

Data Collection and Sampling

The study collected both qualitative and quantitative data through 13 in-depth interviews, field observation, participatory observation (for existing digital interpretation techniques), a literature survey, and a visitor survey questionnaire that was responded to by 505 (including 66 foreigners), during the period Dec 2019–Dec 2020. The in-depth interviews were conducted with heritage management professionals (05), experts on digital content creation and platform development (05), and professional tour operators (03), who were selected by 'purposive sampling' to obtain the most relevant and plentiful data for the selected phenomenon. The six CWHS of Sri Lanka namely, the *Sacred City of Anuradhapura, Sacred City of Polonnaruwa, Ancient City of Sigiriya, Temple of Tooth relic in Kandy, Old Town of Galle and its Fortifications,* and *Rangiri*

Dambulla Temple were taken as the sample for on-site observations, out of the hundreds of heritage sites in Sri Lanka, following 'purposive sampling'. Out of the digital techniques identified through the literature survey and in-depth interviews, *Mobile Apps*, *Augmented Reality (AR) Technology, Virtual Reality (VR) Technology*, *Interactive Digital Screens*, and *Digital Sound and Light Shows* were taken into consideration.

Data Analysis

By referring to the literature, the study adopted the theoretical framework containing 24 assessing criteria for On-site Digital Interpretation Developments in Cultural Heritage Sites (Wimalasuriya, Kapukotuwa, & Ranasinghe, 2022), classified under six themes namely, '*Site Condition', 'Legal and Regulatory Concerns', 'Technical and Financial feasibility', 'Content Preparation', 'Implementation',* and *'Sustainability'*, to analyze the collected data of the six CWHS of Sri Lanka and the selected digital techniques (Fig 1).

Results and Discussion

Upon the analysis of the data concerning the 24 criteria mentioned in the theoretical framework (Fig 1), it was determined that among the selected digital techniques, Mobile apps and Augmented Reality (AR) technology is feasible for all six CWHS of Sri Lanka. However, under the identified circumstances in the analysis, it was found that Mobile-based AR technology is more feasible than Headset-based AR technology. In addition, rather than implementing the Mobile-AR technology as a separate interpretation technique, the integration of Mobile-based AR modules into the general Mobile apps appeared more effective. Accordingly, the study identified that ***'AR-enabled Mobile apps'***, the combination of Mobile apps and Mobile-AR technology is the most appropriate solution for all six CWHS of Sri Lanka to accomplish the expected objectives

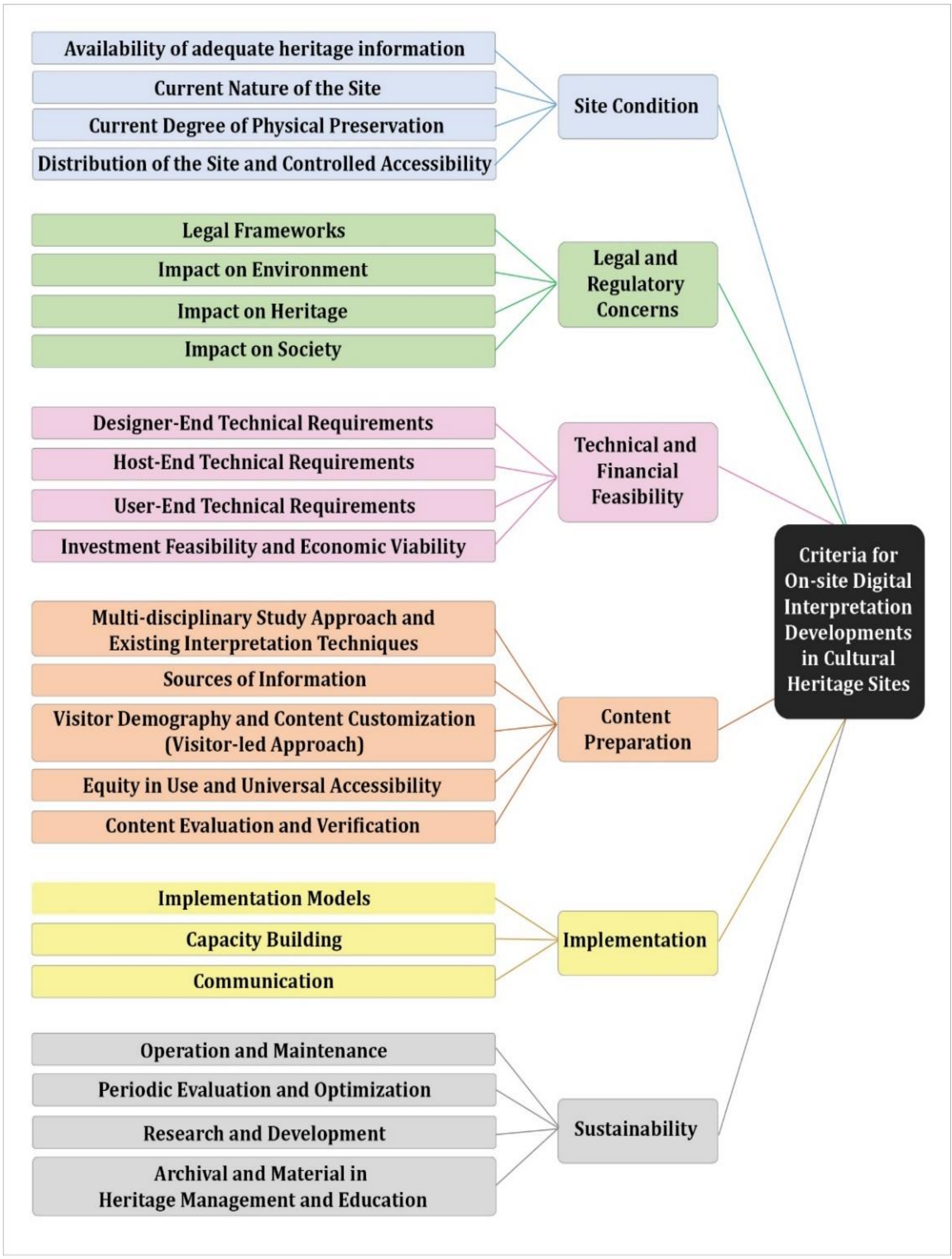

Figure 1: *Criteria for On-site Digital Interpretation Developments in Cultural Heritage Sites*
Source: (Wimalasuriya, Kapukotuwa, & Ranasinghe, 2022)

About the current use of Mobile Apps in the Sri Lankan Heritage field such as 'Heritage Sri Lanka App' and 'e-Info CCF App' which both are used as pilot projects, the practice is having a single app for all the hundreds of cultural heritage sites of the country. Considering the quantity of information to be delivered and the level of quality of the interpretation that especially meets the World Heritage status of the site, the present study suggests having a dedicated app for each CWHS. A customized User Interface (UI) and a flexible format shall be followed for each mobile app, based on a common structure.

The study next presents a set of recommendations under the developed themes of, *'Content Creation'*, *'Organizational Adaptability', 'Policy Changes', 'Partnerships and Promotion'*, and *'Post-Implementation Evaluation and Extended Uses',* in which the study employed itself to identify the proposed AR-enabled Mobile app technology as the best fit solution for the selected CWHS. Further, it is expected that these recommendations would lead to the development of a comprehensive reference model for On-site Digital Heritage Interpretation developments in Sri Lanka.

(i) Content Creation

The content creation for the proposed Mobile apps involves multiple Hardware, Software, and Human capability requirements from the Designer-end, Host-end, and User-end. Upon the identification of such requirements and feasibility for potential implementation, the present study recommends the proposed apps of each CWHS have the following modules to provide a tailor-made and innovative visitor experience complying with a value-based interpretation strategy.

For the visitors who wish to self-navigate at the sites and also as an assistant to the human visitor guides, the mobile apps shall consist of **AR-based Virtual markers** for visitor navigation (Fig 2). Even a **Virtual tour guide** can be used where the visitor is given the complete freedom to navigate the site and learn from the virtual tutor (Fig 3). There, Human-Computer Interaction (HCI) heuristics, Hand-

Gestures, and realistic audio material can be incorporated to provide the visitor with a realistic and immersive experience (Gammanpila, et al., 2019)

Figure 2: *Virtual markers for Navigation*
Source: https://dribbble.com/

Figure 3: *Virtual Tour Guide*
Source: https://sherpatours.com/

Since foreign visitors are not much familiar with Sri Lankan history and the context, most of the time they may not exactly understand the heritage site and its values as much as natives. Therefore, the researcher suggests embedding some **Comparisons to the world scenarios**, which would facilitate the foreign visitors to engage themselves with the Sri Lankan context much better by relating to their/world contexts, which will enlighten the local visitors as well. For instance, a height comparison may be presented between the Giza Pyramids of Egypt and the Jetavana, Abhayagiriya, and Ruwanveli stupas, to make visitors understand the ancient construction engineering value of the Anuradhapura WHS (Fig 4). Also, a chronological placement of the garden landscape design of the Sigiriya WHS about other royal gardens found in the world timeline (Fig 5) is another comparison.

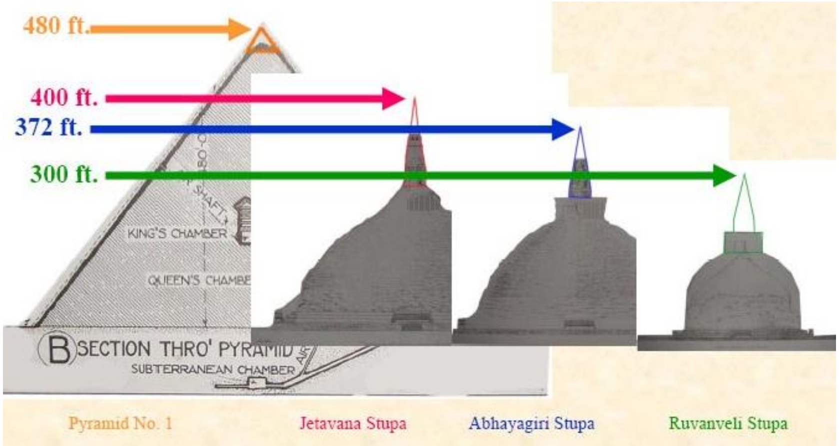

Figure 4: *Height Comparison of massive stupas with the Pyramid of Giza (Egypt)*

Moreover, the present study suggests having **Thematic and Customizable Itineraries** for visitors with special interests and expectations, and who have prior knowledge and prior visitor experience to the site (Fig 6).

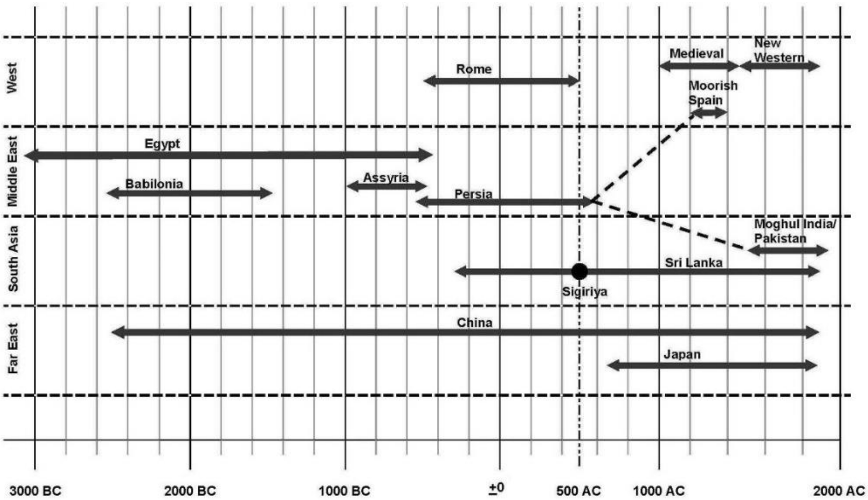

Figure 5: *Placement of Sigiriya in the international garden tradition*
Source: (Cooray, 2012)

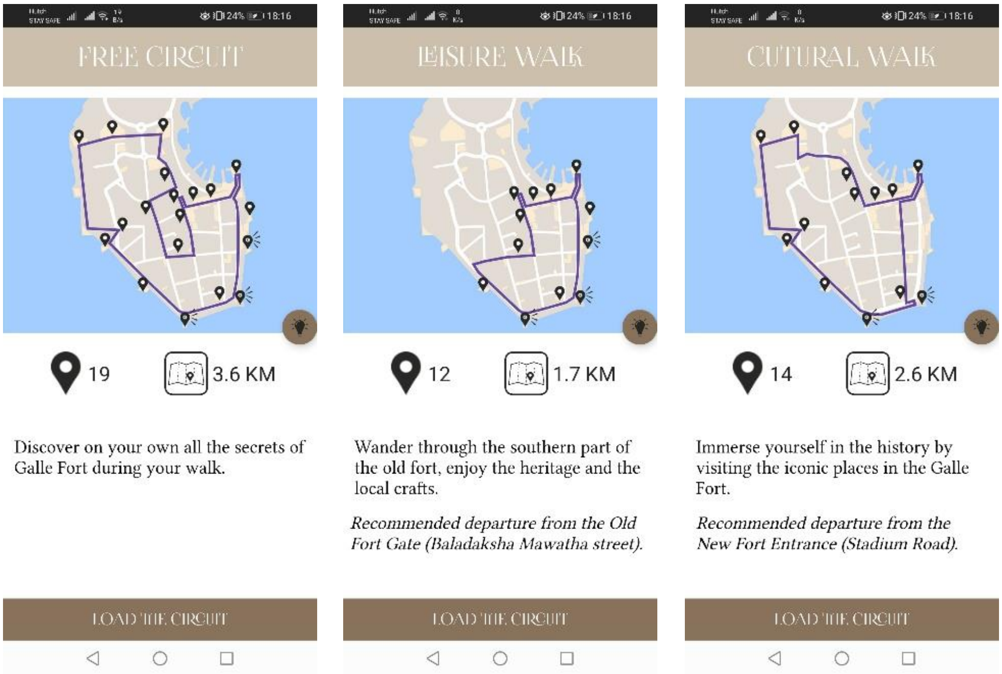

Figure 6: *Different itineraries suggested by for Galle WHS*
Source: 'Visit Galle' Mobile App by Yutsi

Visitors are often interested as well as curious to know the initial appearance of the heritage monuments or sites, which are in ruined states at present. The heritage professionals and digital solution developers are collaborating in accomplishing this requirement by conjecturing the possible monuments based on scientific evidence (Fig 7-8). Accordingly, the study suggests incorporating a module of **Virtual reconstructions** for relevant sites/monuments using Mobile-AR technology.

Figure 7: *Physical 3D model of Vatadage in Polonnaruwa Site Museum*

Figure 8: *Virtual 3D model of Vatadage created by FrammixVR*
Source: https://frammix.com/vrarchaeology.html

However, having almost intact monuments, like in Kandy, Galle, and Dambulla, does not always imply that there is no need for a virtual reconstruction but depends on the site itself. For instance, although the monument is physically intact if a certain perspective/ heritage value/ socio-environment context is missing, then there is a potential for a virtual reconstruction. For instance, the military context of the Galle fort can be virtually reconstructed where necessary (Fig 9).

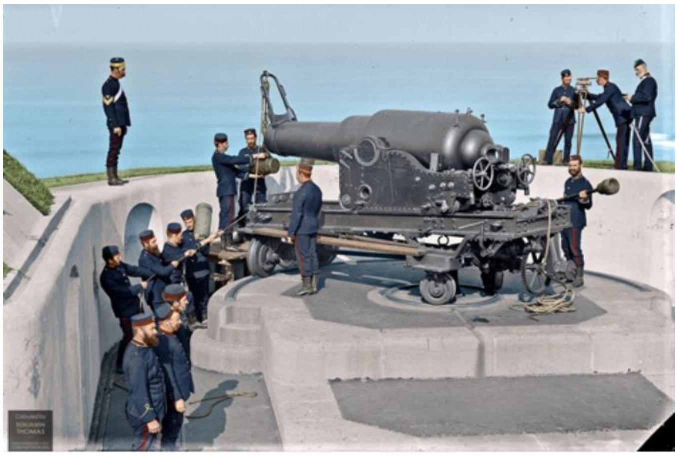

Figure 9: *Artillery gun and carriage to be replicated at Triton Bastion, Galle Fort*
Source: (The Sunday Times, 2020)

In addition, it is important that on the initial screen/ User Interface (UI), the general information about the monuments shall be provided while the in-depth information and relevant information sources shall be provided **only upon the request of a visitor,** as not every visitor category would be interested to go through the whole interpretation. However, the general information must be composed in a way that makes the visitors interested and lure them to request in-depth information. Nevertheless, the **Significance of the heritage (OUV and other heritage values)** shall be conveyed irrespective of the visitor demography, the purpose of the visit, visitor interests, etc., and should make visitors aware of why the site is of importance or declared as a World Heritage out of many.

Another important module that the present study recommends to be included in the proposed mobile apps is **User engagement features**, which certain visitor categories will be even more interested in, such as:

- Special AR filters (like in Snapchat/ Instagram/ Facebook) of dresses, accessories, weapons, etc. of relevant contexts (like Kandyan accessories, Dutch weapons, etc.) which allow visitors to take photographs in front of monuments and have the feeling of being in the historic context (Fig 10)
- Sharing options on social media

- Rating and feedback options, etc. (Fig 11).

Moreover, this rating and feedback are also important for the evaluation processes of visitor experience for optimizing the content.

Figure 10: *Use of AR Filters*
Source: https://www.wearehydrogen.com/ post/how-to-use-instagram-ar-filters-for-marketing

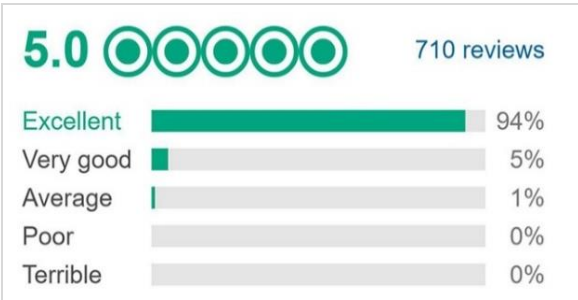

Figure 11: *Rating option in Trip Advisor app*
Source: https://www.tripadvisor.com/

Further, the composition of the Content planning committee shall consist of heritage experts from related multi-disciplines of each heritage site, a professional in Heritage Interpretation, Experts in technologies such as 3D art designing, AR development, User Interface (UI) designing/ App development, etc. Creativity is an essential competency in these implementations. "*No AR or VR development will be successful without a creative mind" (Interviewee T2, 2020).*

Moreover, it is suggested to have an order of prioritization. Sites like Anuradhapura, Polonnaruwa, Sigiriya, and Galle, which are of large dispersal, can obtain heritage experts' consultation and recommendations in selecting sites and prioritizing the contents to be developed first (phased development strategy). In addition, the **places with access restrictions** within these CWHS shall be interpreted with suitable media through these proposed apps (i.e., Black Fort of Galle (which is currently under the Department of Police), inside of the two-story Tooth Relic chamber building of Kandy, circumambulatory passage of Tivanka Image house in Polonnaruwa, upper stories of Tivanka and Thuparama image houses in Polonnaruwa, ruins of the shrine beneath the Siva Devala No. 01 in Polonnaruwa).

Furthermore, **audio listening features**, **sign language videos,** and **subtitles** are also to be included when and where necessary to cater to the visually and auditory impaired visitors respectively, following the universal accessibility principle. To avoid barriers to cultural accessibility such as language issues, the study recommends making available the proposed apps in the three languages of Sri Lanka (Sinhala, Tamil, and English) and the United Nations (UN) official and working languages: Arabic, Chinese, French, Russian and Spanish. Moreover, it can be extended according to the visitor demographical trends, for instance, by enabling the Dutch language for Galle WHS App. In addition, each technique shall carry **in-built pop-up notifications about the nearby heritage sites**, so that visitors may give a thought and adjust their itineraries to visit them as well. For instance, the Dambulla app shall carry a pop-up notification of the Ibbankatuwa heritage site.

(ii) Organizational Adaptability

Today, irrespective of their discipline, industry, services, or businesses, many organizations and institutes are getting adapted into the digital environments where the fusion of technologies and industries happens. As cited by Wimalasuriya (2018), the World Economic Forum (2016) has described this digital revolution as *'the fusion of technologies, blurring the lines between the physical, digital and biological sphere'*. The 'Acceptance of Change', 'Driving the Change', 'Employee

Adaptability', 'Workforce Competency', and 'Organizational Flexibility' are the key success factors that make organizations transform into the new ecosystem through the adoption of digital technologies (Wimalasuriya, 2018). Accordingly, the main heritage management authorities/ institutions in Sri Lanka shall have some adaptability in their institutions in this regard.

Therefore, it is suitable to set up an **'IT Division'** in the said heritage management institutions in parallel with the other operational units which enables the institutes in achieving the core scope of these institutions. Furthermore, competent human resources are required in the proposed IT Division to carry out the roles of Application Management, Database Management, System Administration & Operation, Information Security and Technical Maintenance, etc. Since these institutions do not generally possess these competencies, either some internal staff shall be trained or new staff shall be recruited for the said purpose. In addition, the organizational hierarchy of the IT division and associated site coordinators' roles have to be assigned with proper responsibilities, accountabilities, and the respective job descriptions for their roles. Clearly defined responsibilities ensure uninterrupted and smooth service to the visitors to make them delighted.

In the meantime, the proposed Mobile apps have to be hosted on web servers. However, since hosting a web server is out of the range of the heritage management institutions, it is suitable to outsource the web server/cloud computing services for the proposed apps, but the operation shall be handled by the IT divisions of the respective institutions. However, selecting a cloud computing service shall be reliable as well as scalable with high bandwidth connectivity. Moreover, upon the agreement with the digital developers, the staff of the heritage institutions shall have trained not only to operate the basic functions (operation management) but also to perform the maintenance of the systems (periodic software version upgrades, fixing of bugs/errors found in the apps, server and hardware devices maintenance) and content revisions of each digital solutions at each site, which may depend on the partnership agreement if any.

(iii) Policy Changes

Since digital interpretation techniques were developed in recent times, no notion is mentioned in this regard in any archaeological act or ordinance of the country. However, clause 4.5 of 'National Archaeological Policy of Sri Lanka (2008)' mentions that the "*internet and other communication mediums shall be used to enhance heritage knowledge among the general public*". Since, the legal provisions that are available at present, the use of digital techniques for on-site interpretation in cultural heritage sites in Sri Lanka is not illegal and does not violate any regulatory condition prima facie.

However, at the same time, it implies the timely necessity of having proper regulations for the use of digital techniques in interpreting the heritage of Sri Lanka. Since new technologies are developing daily upon the research and developments in technology fields, the clauses in the heritage legal frameworks of Sri Lanka also needed to be updated accordingly. Although digital techniques can be used for advanced interpretations of heritage, if any misinterpretation happens, the impact will also be immense. Therefore, proper guidelines shall be adopted and regulated properly. However, they shall not be too rigid which would make private entrepreneurs and researchers discourage. Therefore, the present study highlights the need for having **a Digital Heritage Policy for Sri Lanka** and the necessary amendments for the existing heritage legal framework in this regard.

Furthermore, to make the best use of these digital developments, having a **National Heritage Tourism Plan for Sri Lanka** is important, which will then continue Dr. Roland Silva's vision of making Sri Lanka a Heritage Tourist destination in the world. In addition, since Sri Lanka does not have appropriate **Data Protection and Privacy Legislation** (UNCTAD, 2020) at the moment, being adhered to the General Data Protection Regulation (GDPR) by European Union (EU) is an essential requirement as these developing digital interpretation services are catered to the foreign visitors. However, as a country, there is an utter need for a Data Protection Policy for Sri Lanka, which shall be addressed by the relevant authorities.

Moreover, it has to be developed a **Data Access Authority and Ownership Policy** along with each of these digital interpretation development projects by the heritage institutions.

(iv) Partnerships and Promotion

In today's world, partnerships have become a key factor that could lead an organization to more success with sources, knowledge, skills, and technology. Likewise, the heritage management institutions shall enter into partnerships [Public-public partnerships (PuP) and Public-private partnerships (PuP)] when and where necessary, especially in these kinds of Digital Interpretation developments (i.e., PuP of DoA and ICTA, Sri Lanka regarding the 'Heritage Sri Lanka Mobile App'). Accordingly, depending on the institutions' capacity to finance, operate and maintain the digital interpretation experiences, they can enter into partnership models like *'Design-bid-build', 'Build-own-operate', 'Design-build', 'Design-build-finance', 'Design-build-finance-maintain',* etc. Moreover, it is suitable to enter into partnerships with the Internet Service Provider (ISP) in Sri Lanka, to provide Wifi facility (currently provided in Kandy WHS) and enhance the mobile data quality, to let the visitors enjoy high-quality digital interpretation experiences in the proposed Mobile apps.

In addition, the external awareness/marketing strategy to promote these new interpretation experiences among foreign visitors and the local public should be very effective. Thus, it is suitable to have partnerships with Sri Lanka Tourist Development Authority (SLTDA), Tour operator companies, and Media channels. Furthermore, hoardings, X-stand displays, digital displays, leaflets, etc. can be kept in places where foreign tourists mostly visit, such as Airports, Hotels, Museums, etc. In addition, the use of digital marketing means such as Search ads, Display ads, and Email marketing are also possible strategies that could be used in this regard.

Social Media management shall also be paid much attention to as social media itself can create a huge impact on anything nowadays (Facebook, Twitter, Instagram, YouTube, Blogs, Vlogs, etc.). In addition, the comments, recommendations, and ratings by travelers on travel apps like 'Trip Advisor', 'Google Reviews', 'And guides by lonely planet' also can create a huge impact/influence in the field of tourism.

Moreover, academic conferences and lectures where domain experts, academics, researchers, and enthusiasts from different disciplines (both local and international) gather, are suitable platforms to demonstrate the developed solutions of each CWHS and to convince them how it can be utilized for their research and other academic purposes. Moreover, stalls can be set up at the exhibitions, book fairs, and events happening at the local, national and global levels to make the public aware of these new experiences provided at the CWHS of Sri Lanka.

(v) Post-Implementation Evaluation and Extended Uses

Evaluation is a critical quality assurance measure in heritage interpretation to be executed during the project period and the post-implementation as well (Department of Conservation, Wellington, 2005). Once the mobile apps are implemented, it is important to have a periodic evaluation to further optimize the service rendered. Thereby, several aspects such as 'Visitor Experience', 'Technical System', 'Cost and Revenue', and 'Impact' can be periodically evaluated for its optimization and eventually for sustainable operation. Herewith the present study proposes some data collection methods to evaluate the Visitor Experience of the proposed Mobile apps (Table 1).

Proposed Technique	**Suggesting Data Collection Methods for Visitor Experience Evaluation**	
	Indirect Methods (Visitor behavior)	**Direct Methods (Visitor Responses)**
AR-enabled Mobile apps	- Analytic tools like Google Analytics and Flurry	-In-app Visitor Feedback options -Link to Google Reviews and Trip Advisor apps -Feedback options on the main website and social media pages of the site

Table 1: *Suggesting Data Collection Methods for Visitor Experience Evaluation of the proposed Mobile apps*

Source: Developed for the present study based on the collected data

Further, during this research, it was identified that some CWHS do not have sufficient heritage information concerning certain heritage values which is essential to go for in-depth interpretations. Hence, to obtain such information, except for the chronical literary sources, the sites have to be extensively researched and more scientific research has to be carried out on different aspects (heritage values).

Moreover, the information collected to prepare content for these Mobile apps will be useful in Heritage Management, especially in Heritage Conservation and Documentation. For instance, a 3D scanned data set (3D model) of the Sigiriya fresco pocket captured to create a virtual reconstruction can also be used to analyze the deterioration of the paintings and to make decisions on further preservation. Besides, the heritage information collected or created for these mobile apps shall be a Heritage Documentation project of the site at the same time.

In addition, the digital interpretation content (Digital Heritage) will become a heritage asset of the country once it is developed. Accordingly, the content of these mobile apps shall be made used for Heritage Education of the country, which will become a great asset and a resource for extensive educational purposes. For instance, they shall be shared with the universities, academic institutions, and schools, or any other individuals for further studies and research purposes.

Most importantly, it is important to link all these into one website (web portal). According to an interviewee, it was said that the ICTA is expecting to create such a web portal under the e-Heritage Sri Lanka project *(Interviewee T3, 2020)*. If so, the proposed six apps shall be linked to it, which will serve as the ***'National Heritage Tourism front portal'***.

Conclusion, Recommendations, and Acknowledgement

Given the condition of the six CWHS of Sri Lanka are in higher need of a Heritage Value-based interpretation and of a high level of interpretation strategy which should level up with its World Heritage status, rather than following the conventional approach of interpretation, it is more suitable to plan the site interpretation based on the site's heritage values irrespective of the manual or digital interpretation techniques. Since digital interpretation techniques allow to delivery of more information and features than manual techniques, they can easily be used for effective interpretation to make visitors understand and appreciate the sites from the perspective of their OUV and/or other heritage values.

However, that does not mean that every heritage site requires digital interpretation techniques. That decision shall be made based on what information needed to be conveyed. However, Mobile apps come in handy to be used for any heritage, even for sites that are small in dispersal. In planning content for the proposed six Mobile apps for each CWHS, it is of vital importance to get along with the existing interpretation strategies on the site. The content of the proposed Mobile apps shall not be a repetition of the content of existing interpretation strategies (especially of the informative panels) but an extra step beyond and address what is lacking at the site already. As cited by Rahaman (2018), Tilden (1977) also reminds us that, *'Interpretation should aim to present a whole rather than a part and Interpretation is conceptual and should explain the relationships between things*.

Adopting digital techniques for heritage interpretation is a long and complex process, which needs to evaluate multiple social, technological, environmental, financial, and legal factors and to plan in broad the implementation, operation, and sustainability stages of the project life cycle. Hence, the present study recommends to future researchers explore more potential techniques/ interpretation strategies for cultural heritage sites as the enhancement of heritage site interpretation is a continuous journey that never ends. Given that, the present study believes the composite outcome of this study could be followed as a reference in enhancing the existing level of on-site interpretation at the CWHS of the country but is not limited.

Finally, the present study would like to thank all the individuals who participated in the in-depth interviews and visitor survey questionnaires in the process of primary data collection. Further, the study would like to acknowledge and thank all the authors of the secondary materials used for this study as the reference section of this paper contains only selected ones out of a long list.

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