Smart Heritage: Media for Realizing Cultural Heritage Conservation in The Smart City Era

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Abstract. Smart Heritage is a relatively new system and management media that initiated by INTACH Heritage Academy (2007) to answer the challenge that addresses the Cultural Heritage Conservation in the Smart City Era by using the advancement of Information Communication Technology (ICT). It has begun to be applied in a city that has implemented the concept of Smart City. This paper discusses whether Smart Heritage is relevant to the issue about sustainable cultural heritage within the scope of Smart City development along with the growth of a millennial generation, because that we are going towards to the Smart era that almost everything is ICT oriented.

1. Introduction

The Indonesian Ministry of Education and Culture (Kemendikbud) assesses cultural heritage in big cities on the verge of extinction because many are evicted for development. Indonesian Director of Conservation of Cultural Heritage and Museum, Surya Helmi said on 2012 there was 8,000 cultural heritage registered in the Ministry of Education and Culture, but much cultural heritage was on the verge of destruction, especially in big cities because many were evicted in the name of development. [1]. In fact, the director of Dutch Cultural Heritage Development, Cees van't Veen said that Cultural Heritage has an important role to see and understand the history of a city and what activities occur in it. The purpose is to reflect the past in critically as a basis for understanding the direction of the development of a city, in the future development of the city. Another thing that should be highlighted, cultural heritage authentic and uniqueness value make every city has a different identity and character that is not homogeneous [2]. The impact of globalization that occurs in the era of smart cities puts pressure on cities, residents, and developers to always adjust to global trends. Various innovations continue to be created without cultural assistance that has ever existed before. With the sophistication of ICT today, the impact of globalization will spread very quickly due to the rapid and massive circulation of information [3]. The fact is that the results of the 2018 survey conducted by the IDN Times to millennials, 70.4 percent accessed digital media to find out the latest news, 79 percent opened smartphones 1 minute after waking up, and 94.4 percent had been connected to the internet every day [4].

INTACH designed Smart Heritage by starting to study the initial effects of Smart City implementation that have been applied in various cities with a collection of studies and various experts from various disciplines [5]. Experts find the goal of Smart City is to encourage economic growth and improving the life quality of city residents by using the advancement of ICT that connected with

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Crowdsourcing, that will make it accessible to everyone. As a result, a network was created, which became a dialogue forum between local governments and residents in urban areas, to give and receive aspirations by the aim of resolving existing problems [6]. Crowdsourcing on a Smart City allows cities to use ICT to improve infrastructure and services. This way of development will improve the quality of life and towards a city that is inclusive of its people [7]. Based on a study before, INTACH creates solutions by using the advancement of ICT and Crowdsourcing to engage residents and cultural heritage expert team. The aim is to create conservation, management, archaeology, interpretation, and experience of heritage with the basis of mutual interests and decisions [8]. As quoted from Shubhada Kamalapurkar statement in the International Biennial of Art and Heritage Management, conservation of cultural heritage must be moved in two directions so that conservation goals can be provided for all [9]. The historical and cultural context of the city will help position its cultural heritage in the wider context of technology led urban development and a specific role that it can play towards local urban, social and economic development. So, what is the most important thing is to develop smart heritage system and management strategies that would integrate with the local smart city plans [10].

INTACH with Smart Heritage considers that utilizing ICT for the conservation of Cultural Heritage seems to have a big chance to gain success in realizing the goal, by referring to Smart City which is considered successful in supporting the development of the city. INTACH believes that the 'smart' approach will be able to make Cultural Heritage more familiar with the city community to instill the benefits of historical values for the future. Smart Heritage is a relatively new concept that has not been fully applied to a city. Therefore this paper will discuss the relevance of smart heritage with the current phenomenon and the chance to be applied in smart cities.

2. Method

This research carries out five stages. The first stage is to look at the phenomenon that occurs today in Smart Cities to then find issues and problems. The second stage is conducting a study of theory, history, and principles of preservation and Smart Heritage to be studied. The third stage analyzes the relevance of whether Smart Heritage media initiated by INTACH is relevant to the studies carried out in the previous stage as intended. The fourth stage is analyzing potential to find out more about the potentials owned by Smart Heritage to be applied in the Smart City era. This research concludes with the fifth stage as a conclusion.

3. Results and Discussions

3.1. Smart Heritage as a media to realize a sense of community ownership

As an initial hypothesis, the author analyze that the great impact of globalization has made people today unable to understand the important values offered by Cultural Heritage. This can be seen from the lack of a form of pride or ownership of the Cultural Heritage. The lack of taste also causes a lack of contributions from various parties in supporting the conservation of the Cultural Heritage.
The lack of public interest in the preservation of Cultural Heritage can be seen by the holding of a discussion forum by FTUI students called ‘diskantek’ with the topic of the struggle for the Cimanggis House Cultural Heritage Building to get its rights (to be preserved). The existence of this forum indicates that there are several parties who care and fight for the preservation of the Cimanggis House Cultural Heritage Building, which is currently in poor condition. But on the other hand, this forum held a material planting agenda on the importance of preservation by several community leaders such as the Head of Depok City Youth, Culture and Tourism Office, and Director of Preservation of Cultural Heritage and Museum of the Ministry of Education and Culture. This thing shows that the lack of public knowledge, especially students, on the importance of conservation. Ideally, as quoted from Shubhada Kamalapurkar’s statement expressed at the International Biennial of Art and Heritage Management program, the preservation of the Cultural Heritage must move in two directions. Whereas the phenomenon that is prevalent nowadays is that the expert teams carry out preservation due to unilateral push, or obligatory state law, not because of the people who need it. Public awareness will arise if they understand the importance of conservation. Planting conservation material by several community leaders as happened in the discussion forum in can be a solution (Figure 1). But on the other hand, with the high level of intensity of the use of ICT in the Smart City era, Smart Heritage must disseminate information about the values of Cultural Heritage to spread quickly so that they can help those who play a role in instilling awareness of the importance of conservation. Smart Heritage by utilizing ICT in the form of audio visual enables the catalyzing of interactive information dissemination through various available social media facilities.

3.2. Smart Heritage as a media to interpret historical values
The historical values possessed by Cultural Heritage must be interpreted well so that they can be accepted and realized by the community. Also, this is needed so that Cultural Heritage is not only seen as being (Figure 2).
The use of ICT media, such as smartphone, television, etc. that will be brought by Smart Heritage is relevant to the context of nowadays community which currently has a high intensity in the use of gadgets, as reported by the IDN Times on the theory described before. As one example, the Museum Bank Indonesia in Jakarta, it takes the right step by procuring ICT media facilities to interpret the values that are to be conveyed. Visually, physical elements can be presented through interactive videos to interpret data in a realist viewpoint, complete with a period of time. In audio, non-physical elements can be presented through narration, music, or environmental sounds. Interpretation through digital audio visual allows visitors to understand physical and non-physical elements at the same time so that it is easier to digest information. Besides that, digital forms can also be accessed anytime and anywhere by various groups so that the method of understanding can be said to be more universal.

Reporting from visitor reviews on the TripAdvisor site, visitors appreciate the interpretation facilities through various ICT media provided because it is very fun to use so that it indirectly fosters a sense of visitors always to want to know more about the historical value of the Cultural Heritage. Digital media through audio and visual can convey historical values accurately, even without a tour guide man.

3.3. Smart Heritage as a Media for Cultural Heritage Management

Management is needed so that the goal of Cultural Heritage conservation is always achieved. Reporting from the TripAdvisor site, many visitors appreciate authentic historical values. But they also regretted the poor management that caused the Maritime Museum (Figure 3) to look dirty, damaged, and neglected. The experience of the initially authentic space became impressively rundown and horrible. Especially because of the lack of attention and care in 2018, The Maritime Museum suffered a partial fire. This gives a bad review to the people who initially expected high historical value from the Maritime Museum. Negative reviews spread through social media massively eliminated people's interest in visiting this museum.
The landscape of the Fish Market, which has a close relationship with the Maritime Museum Cultural Heritage also looks not well managed. With this connection, it should be able to increase the attractiveness of visitors because they can see directly the phenomenon that occurs in the context. However, the Maritime Museum and Fish Market Area look like two things that stand respectively (Figure 4). The Maritime Museum is only seen as being. The seedy Fish Market is not well managed to be a negative review that visitors pose through TripAdvisor. The current condition of the Museum which is apprehensive (2019) should be able to be uploaded to the power or social media to move the hands of the Cultural Heritage Expert Team to collaborate in realizing preservation. Various ICT devices, such as smart phones that are owned by the community enable the realization of contributions by the community even if only limited to giving opinions or aspirations. Smart Heritage with Crowdsourcing can create a media that enables the realization of the Maritime Museum management by various parties, including the surrounding Fish Market community and Cultural Heritage Expert Team.

Conservation of Cultural Heritage that is inclusive of its community can increase the sense of pride in ownership by the community. As happened in the area of Langgar Tinggi Pekojan Mosque, North Jakarta (Figure 5), so far, many communities of historical lovers have visited Langgar Tinggi Pekojan. The momentum is used by the community to voice aspirations to the government. Until November 2018 Agus Suradika as Deputy Governor of DKI Jakarta for Culture and Tourism formed the Revitalization Team of the Langgar Tinggi Mosque in collaboration with the Cultural Heritage Conservation Office, the Office of Tourism and the Old City Area Management Unit (UPK).

3.4 Smart Heritage as a media promoting Cultural Heritage
Promotion is one of the requirements to create community interest in the conservation of Cultural Heritage. Promotion means introducing to the community. Authentic historical values must be promoted so that the community has a sense of concern for conservation. Smart Heritage, by utilizing Crowdsourcing enables collaboration between interpretation parties supported by digital media.
assistance, with the community as the subjects that promote it. Furthermore, this media must be supported by the government as a city manager to be promoted to the world or wider scope.

Promotions carried out by magazines in the Netherlands about the City of Venice that seemed dead due to preservation (Figure 6), actually caused interest in the eyes of the wider community. This phenomenon is the starting point for the emergence of the spirit of preservation of Cultural Heritage. Until now, promotions continue to be carried out by the media or the Venezuelan city government, such as those found on the Venezia Autentica site, Venezia Lines, Venezia Tourism, and many other world magazines. Massive information dissemination indicates a sense of pride in ownership of Cultural Heritage, and they believe that even though the Grand Canal died due to the preservation, it will still be able to exist in the Smart City era. Even the magazine offers tour guide service providers.

3.5 Smart Heritage as a system to realize conservation goals

Smart Heritage has the potential to be able to re-grow the existence of Cultural Heritage and can grow and develop with cities and communities through four stages in this scheme (Figure 7).

In the education point, Smart Heritage with interactive ICT media can be a method of education and education that is easier to digest for various groups. The high rate of dependence on digital technology by the millennial generation makes Smart Heritage more likely to be more familiar with it. Crowdsourcing facilities can be used simultaneously at one time for learning needs from museums to college institutions. Education that cultivates historical values can raise people's awareness and ownership to always support conservation process.
When public education is sufficient, a community will develop that understands the importance of conservation. At the community point, Smart Heritage makes it possible to become a forum for the aspirations of various communities to express ideas and input on conservation management. This makes development always occur in two directions. Thus will create new lives that have functions according to the context and common interests. Conservation that is inclusive of the community creates a sense of ownership and pride.

All ideas and input conservation management by the community can be taken into account for expert teams to determine the direction of conservation. Crowdsourcing facilities that allow the use of data by various parties to realize conservation goals that are by the vision of the people. Not only that, the Crowdsourced facilities can also be used by academics to develop consultants so that the direction of development does not rule out the historical values of heritage. Conservation that is supported by various parties making a high success rate can be realized.

When conservation is in line with the context of the community, the community will directly respect Cultural Heritage based on a sense of ownership. The community must use the Cultural Heritage that has moved towards 'smart' to improve the economy of the community. Authentic historical value is the most prominent factor. These values are unique and not owned by other regions. These values can be something that sells to improve the economy of the local community. Smart Heritage makes it possible to make the tourism sector a thing that can improve the economy of the local community. Understanding of the community regarding the Cultural Heritage and development that is inclusive of the community makes the community know what their uniqueness is and know what makes Cultural Heritage has a selling value to tourists. So that the community can popularize and introduce it through a variety of digital operational technologies that are already owned by the majority of people.

If the four stages are implemented well, it will show the success of Cultural Heritage conservation that can be felt by the community. If these four stages can be implemented continuously, it will create a sustainable conservation system and management.

3.6 Smart Heritage against design implementation to be applied in Smart City

![Diagram](image)

**Figure 8** Smart Heritage against Smart City system proposal (Personal Documentation)

Smart Heritage control room is needed in every Cultural Heritage to find out the latest conditions so that the management carried out is better controlled. The subjects who control this control room are those who have special expertise in each of the cultural heritage. The control room in each Cultural Heritage must also be connected with a wider range of management institutions. This aims to ensure that conservation will always be in line with the vision of the overall development of the city. Also, this kind of system will facilitate the integration of Cultural Heritage with Smart City, by utilizing the Crowdsourcing in the use of data together (Figure 8).
The diagram above (Figure 9) is a Smart City scheme that is commonly applied in the world. There are six main aspects, namely Smart Economy, Smart Mobility, Smart Security, Smart Education, Smart Living, and Smart Environment. According to the author based on the analysis that has been done before, Smart Heritage has the potential to be integrated at least into four of these six aspects. First, the smart environment aspect can be integrated, considering that the Cultural Heritage is a built environment or environment that has been built for a long time ago. Integration of these aspects makes the environment developed will be in accordance with the context. Second, the Smart Education aspect can be integrated because the values of Cultural Heritage must be studied by the community. The third aspect is Smart Security can be integrated so that Cultural Heritage is not threatened from damage and extinction. And the last one is the Smart Economy aspect considering that the Cultural Heritage with its authentic value can be an attraction for the wider community, improving tourism aspect in purpose to gain the economic income of a city or region.

4. Conclusion
Smart Heritage can be a media to answer the challenges of cultural heritage conservation in the Smart City era through three phases, Pre-conservation, Conservation, and Post-Conservation. Smart Heritage in the Pre-conservation phase aims to educate the public about the importance of understanding, studying and maintaining historical values to educate cultural heritage conservation goals. Smart Heritage in the Conservation phase makes it easy for the expert team to determine the direction of conservation of Cultural Heritage so that it will create two-way preservation and a sense of shared interest and ownership. Smart Heritage in the Post-Conservation phase makes the cultural heritage come alive with all interactive ICT operational media and raises new opportunities to improve the economy of the community through tourism. Now with Smart Heritage media that connects the community, government institutions, and a team of experts can help realize the preservation of cultural heritage that is inclusive of the community because Crowdsourcing can create a forum for communicating with each other to realize developments based on mutual community interests.
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