

## Conference Paper

# The ICT and Historical Conservation in Semarang

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## Abstract

Semarang has various historical relics and cultural heritages stretching from the Hindu-Buddhist period to contemporary times. The cultural heritage has a strategic meaning in shaping the identity of the city and community in Semarang. With the existence of cultural heritage, society is expected to be able to absorb the values and meanings implied in it. The value is the value of care for the environment and the culture around it. However, community knowledge about the cultural heritages in Semarang City is constrained when information about historical relics is not presented systematically, comprehensively, and easily accessible. Therefore, through this research we aim to: (1) analyze the needs of the community related to cultural heritage information in Semarang City; (2) identify and inventory the existing cultural heritage in Semarang City; (3) developing a model of cultural heritage information system in Semarang City; (4) to analyze the effectiveness of cultural heritage information system model in Semarang City.

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## 1. Introduction

Objects of cultural heritage are the cultural treasures of the nation that are important for the understanding and development of the history of science and culture, so it needs to be protected and preserved for the cultivation of awareness of national identity and national interests (Tjandrasasmita, 2010). In more detail, Tanudirjo (2003) describes that there are several dimensions in seeing the importance of cultural heritage, namely the dimensions of knowledge, ethics, esthetics, and the public. In the dimension of knowledge, cultural reserves serve as media pengajian and academic testing. In the ethnic dimension, cultural heritage plays as part of the national identity and background of a nation. In terms of aesthetics, cultural preservation is a testament to the results of art that is noble. Then in terms of public, cultural reserves have the value of education for the community, as a tourist attraction, as well as warana to gain economic benefits.

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One city that has a variety of cultural heritage is the city of Semarang. Semarang City has several strategic areas to be a conservation area. Old Town, Chinatown, Johar Market, and Kampung Sekayu are historical areas to be conserved (Hendro, 2015). In fact, based on Local Regulation of City of Semarang Number 14 Year 2011 about Spatial Plan of Semarang City Year 2011-2031, Semarang City has 14 cultural heritage area. The fourteen regions include, (1) the Old Town Region; (2) Petudungan area; (3) Kampong Kulitan area; (4) Kampung Batik area; (5) Chinatown Area; (6) Johar Area; (7) Kampung Melayu Area; (8) Kampong Kauman area; (9) Tugu Muda area; (10) Kampong Area Senjoyo; (11) Sam Po Kong Area, (12) PJKA Housing Area in Kedungjati; (13) Sunan Terboyo Cemetery Area; And (14) Kampong Sekayu.

However, based on research from Widiastuti (2014) there was a problem in the handling of cultural heritage in Semarang. In the old city, for example, the condition is now very poor, unkempt, and even seemingly slum, in the old city holds enormous potential both as tourism, learning resources and the development of science and culture. Based on the Bapeda study over the past ten years, 18 cultural heritage buildings have been lost

This problem becomes an important strengthening of conservation of cultural heritage in Semarang City. According to Law No. 11 of 2010, conservation is a dynamic effort to maintain the existence of the Heritage and its value by protecting, developing and utilizing it. Hendro (2015) stated that the conservation of the area is needed to provide protection of these areas from the incessant development of the city, including controlling the development of the area so as not to lose its cultural and historical identity.

In general, cultural preservation can be categorized into two groups. First, culture experience is cultural preservation by plunging directly at the scene. Second, culture knowledge is the preservation of culture by creating an information center on culture that can be functionalized in various forms. From both forms of preservation, cultural preservation in the form of culture knowledge is a more effective form of cultural preservation to be done. It is stated so because the scope of conservation is not focused on a single cultural preservation, and covers most of the cultures that must be preserved (Hastuti & hidayat, 2014).

One widely accessible documentation and publication strategy is the information system. Through the information system, various data about cultural heritage will be raised, so that people have sufficient knowledge of cultural heritage in Semarang City. Thus, the development of this information system is expected to give understanding to the community to participate in preserving the cultural heritage in the city of Semarang.

## 2. Literature Review

There are two major studies of previous studies as the state of the arts in this review. First, the study of the Heritage in Semarang City. Second, the study of information system development. These previous studies were used as a foundation for developing a conservation-based cultural conservation model.

The study of cultural heritage in Semarang City has been done by Tobing Warella & Purnaweni (2008). This study entitled Study of Policy Implementation Semarang City Government In Efforts To Preserve Heritage Buildings In Semarang City. The results showed that the implementation of Semarang City government policy in an effort to preserve the building of cultural heritage Semarang ran well. Therefore, it is necessary to have appropriate strategies for conservation in various dimensions, including through the provision of information and awareness of the community.

The second study on cultural heritage in Semarang City was conducted by Widiastuti (2014). In a research entitled Cultural Heritage Revitalization In Semarang City, it is described that Semarang is one of the city that has a cultural heritage area that quite a lot, so that Semarang city including one of the heritage city. However, today the old city area is very poor, unkempt, and even seemingly slums, in the old city it holds enormous potential both as a tourist, learning resource and the development of science and culture. By looking at the problem then the main problem in this research is about revitalization of cultural heritage objects in Semarang city especially old town area. The results of research that can be 70% of buildings in the Old Town area is not well maintained, because the existing buildings 75% owned by individuals. Therefore, it is necessary to endeavor to preserve various cultural heritage in Semarang City.

The third study was conducted by Hendro (2015) entitled Conservation Area Conservation in Semarang City. In his study, described that the City of Semarang has several strategic areas to be a conservation area. Kota Lama, Chinatown, Johar Market, and Kampung Sekayu are historical areas that must be conserved. This research uses observation method and conservation model development. The conservation of the area is necessary to provide protection of these areas from the incessant development of the city, including controlling the development of the area so as not to lose its cultural and historical identity. This conservation area is also a potential that can be developed into tourist destinations and attractions.

The three studies on cultural heritage in Semarang City reinforce the assumption that immediate conservation efforts should be made to the relics. One of the recommended things is the development of conservation models that involve the community. The main

step that needs to be done is to develop an information system that aims to build public awareness of the importance of conservation of cultural heritage.

The second study theme in this research is the development of information systems for cultural preservation. Several previous studies were conducted by Amin, et al (2011) under the title Repository Model for Intangible Heritage "The Malay Scenario". This study reveals that the preservation of cultural heritage-based information systems is very important to do. It is intended that the identity of the nation that is reflected in the cultural heritage is not extinct in time. This is in line with the study conducted by Hastuti & Hidayat (2014) in the study titled Purpupa Tangible Cultural Heritage Categories of Culture of Immortal Based Multimedia Databases. This study emphasizes Multimedia database information system that is devoted to the recording of cultural heritage data category tangible cultural heritage can be one of media solutions for cultural preservation.

In addition, the development of information systems need to be developed with the approach of geographic information system (GIS). This is similar to the research conducted by Meyer et al. (2007) entitled A web information system for the management and the dissemination of Cultural Heritage data. This study describes that GIS is an integral part of developing information systems.

### 3. Identification of Cultural Zone

Semarang is the capital city of Central Java province and currently serves as a center for command, industry, trade, education, and tourism. Geographically, Semarang is located on the north coast of Java Island and is located on the line of 6.30'-7.10' south latitude and 109.50'-110.35' east longitude and with an area of 373.73 km<sup>2</sup>. The average air temperature is between 24-32°C, with rainfall per year is about 2000 mm and moisture of 77%. The height of the land from the sea surface is about 0.75 m-350 m and is divided into two parts, namely Semarang Temple is located in the southern city of Semarang which is currently developing as a residence and Semarang downtown used as a trading area.

Based on its history, the city of Semarang has an area that existed in about the 18th century into a trading center. The area is now called the Old Town Region. At that time, to secure the people and their territory, the area was built fortress, which was named fort Vijhoek. To accelerate the connection between the three gates of the fortified then made the roads of transportation, with the main street named Heeren Straat. Currently named Jl. Let Jen Soeprapto. One of the location of the existing fortress to date is the Berok Bridge, called De Zuider Por.

The Old Town of Semarang is also called outstadt. The area is about 31 hectares. Seen from geographical conditions, it appears that this area is separated from the surrounding area, making it look like a city of its own, thus earning the nickname "Little Netherland". The Old Town area of Semarang is a silent witness of Indonesian history of the Dutch colonial period over 2 centuries, and its location adjacent to the economic area. In this place there are about 50 ancient buildings that still stand firmly and have a history of Colonialism in Semarang. The Old Town of Semarang is a historic area with many ancient buildings that are considered very potential to be developed in the field of economic culture and conservation areas.

Based on the Decree of Mayor NO. 646/50/1992 or Perda No.640 Year 2003 on RTBL of Semarang City, the heritage objects in Semarang city are 328 units covering social cultural buildings such as schools, health / hospital buildings, post office and service office, multipurpose building, Station, museum, others. In addition there are also religious buildings, such as mosques / mosques, churches, and pagoda. There are also buildings that are included in business buildings such as offices, factories and warehouses, hotels / inns, conference buildings, restaurants, and markets. However, many cultural heritage buildings are included in residential buildings as well as special buildings, such as reservoirs, gates, electrical substations, parks and so on. The buildings that are protected as cultural heritage objects and protected by the law are spread in several areas in Semarang City, such as the old city, Chinatown, Jalan Petudungan, Kampung Kulitan, Tugu Muda area, Diponegoro Park, PJKA Housing (Gergadji Woon-ing Park), Kampung Melayu, Kampung Kauman, Kampung Mlaten, Sompok Housing, Kampung Karangdara, Temple area, and so on.

Currently, the city of Semarang has 14 cultural heritage areas. The fourteen regions include, (1) the Old Town Region; (2) Petudungan area; (3) Kampong Kulitan area; (4) Kampung Batik area; (5) Chinatown Area; (6) Johar Area; (7) Kampung Melayu Area; (8) Kampong Kauman area; (9) Tugu Muda area; (10) Kampong Area Senjoyo; (11) Sam Po Kong Area, (12) PJKA Housing Area in Kedungjati; (13) Sunan Terboyo Cemetery Area; And (14) Kampong Sekayu.

## 4. Model Preservation of Heritage of Semarang City

### 4.1. Google maps-based app

Cultural preservation preservation model is done by integrating between text and application. In this case the Google Maps app is used. Google Maps is a web mapping

service developed by Google. This service provides satellite imagery, road maps, 360 ° panoramas, traffic conditions, and route planning for traveling by foot, car, bicycle (beta), or public transport.

Google Maps started as a C++ desktop program, designed by Lars and Jens Eilstrup Rasmussen at Where 2 Technologies. In October 2004, the company was acquired by Google, which was converted into a web app. After additional acquisitions from the company's visualization of geospatial data and traffic analysis, Google Maps launched in February 2005. The service uses Javascript, XML, and AJAX. Google Maps offers an API that allows maps to be included on third-party websites, and offers location bookmarks for urban businesses and other organizations in different countries around the world. Google Map Maker allows users to jointly develop and update service mappings around the world (Wikipedia, 2016).

Google Maps satellite view is "top-down". Most high-resolution images of the city are aerial photographs taken from aircraft at an altitude of 800 to 1,500 feet (240-460 meters), while most of the other imagery is from satellites. Most of the available satellite imagery is no more than three years old and updated regularly. [4] Google Maps uses close variants of the Mercator projection, and therefore Google Maps can not accurately pinpoint areas around the poles.

Google Maps for mobile was released in September 2008. As of August 2013, Google Maps is determined to be the world's most popular app for smartphones, with more than 54% of smartphone owners worldwide using it at least once. The preservation model intended in this study is an attempt to provide knowledge primarily about the existence of historical heritage and cultural heritage in Semarang City.

Inside Google maps, researchers provide information related to the marked heritage or cultural heritage. Here is an example of the depiction at the point of the sewage. Through the utilization of google maps expected the community more familiar and easy in accessing information related to historical heritage in the city of Semarang.

## 4.2. Android based app

The smartphone app is called "Sejarah di Dekatku (History Near Me)". This is an application that contains information on cultural heritage and cultural heritage collection spread in the area of Semarang City. This cultural heritage information contains the distribution of buildings and areas grouped by several categories, namely; Ownership, Periodization and Nursery Levels of the Reserve, each category is subdivided into sub categories. Namely in the category of ownership there are sub categories owned by the

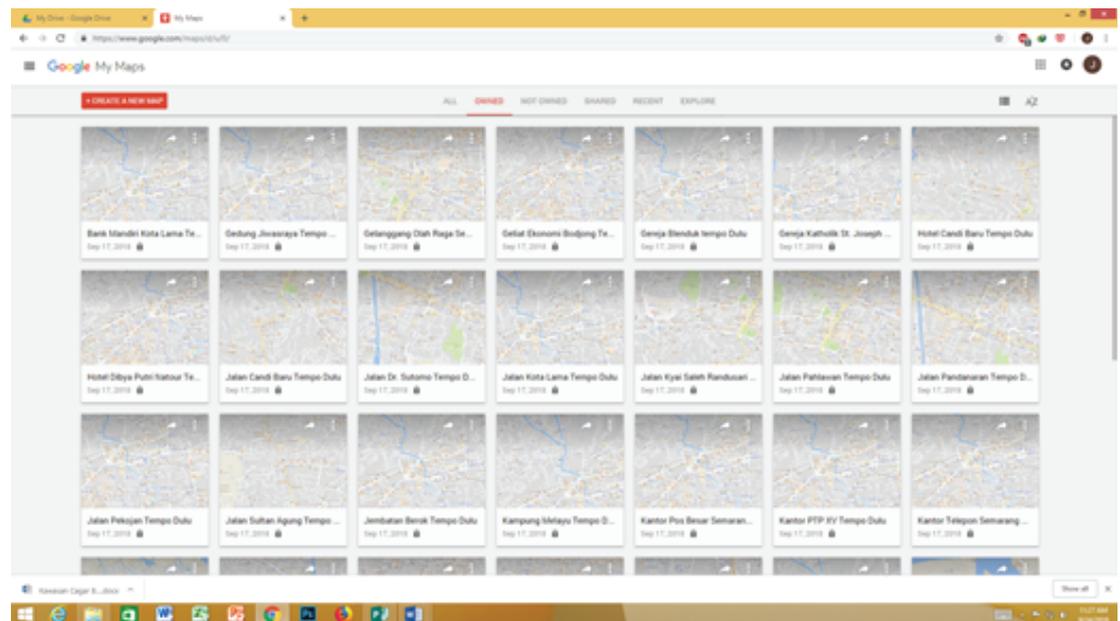


Figure 1: Google Maps for cultural heritage conservation.

government, private property, private property. In the category of periodization there are sub categories of colonial period, the period of movement, the post-independence period. While in the category of nursing level there are sub categories that contain the order of nursing level composed of the most maintained to untreated (symbolized by the star icon). The information displayed in each of the cultural heritage is the main photo of the building / area, the address of the cultural heritage site, the periodization, the ownership, the level of care, the building function of the past and present, the comparison photos of the present and the present, the historical description.

In the "Sejarah di Dekatku" application there are two systems that developed the first web server as a database for entering cultural heritage data. The second is the android-based application system. The development of both systems is intended to update the interest if there is a new cultural heritage that you want to enter into aplikasi. In addition, the use of these 2 systems allows users to access applications both online and offline because the data other than stored on the web server is also stored in the phone memory.

In the "Sejarah di Dekatku" app is made for smartphones with minimal Android operating system ICS version (4.0.1) to Nougat version (7.1.2). Making this app using Android Studio version 2.2. By utilizing various source code google among them Google Maps Fire which allows displaying maps along with location information that has been customized. The Google Maps Android API supports an unlimited number of users. In addition to using Google Maps Fire, in this application there is also an

integrated notification feature, if there is an update of a new cultural heritage or new information related to cultural preservation automatically all smart telephone installing this application will get the notification.

In this application feature users can also find out which buildings are closest to the location. So users can know the direction of the location of the cultural preserve by utilizing Google Maps application that has been integrated with the application "Sejarah di Dekatku".

## 5. Conclusion

Semarang city as many as 328 pieces include social-cultural buildings such as schools, health / hospital buildings, post office and service offices, multipurpose buildings, stations, museums, others. In addition there are also religious buildings, such as mosques / mosques, churches, and pagoda. There are also buildings that are included in business buildings such as offices, factories and warehouses, hotels / inns, conference buildings, restaurants, and markets. However, many cultural heritage buildings are included in residential buildings as well as special buildings, such as reservoirs, gates, electrical substations, parks and so on. Currently, the city of Semarang has 14 cultural heritage areas. The fourteen regions include, (1) the Old Town Region; (2) Petudungan area; (3) Kampong Kulitan area; (4) Kampung Batik area; (5) Chinatown Area; (6) Johar Area; (7) Kampung Melayu Area; (8) Kampong Kauman area; (9) Tugu Muda area; (10) Kampong Area Senjoyo; (11) Sam Po Kong Area, (12) PJKA Housing Area in Kedungjati; (13) Sunan Terboyo Cemetery Area; And (14) Kampong Sekayu.

The effort to develop conservation of cultural heritage model is done by strengthening the knowledge aspect of the community. Thus, conservation strengthening is applied with information-based literacy. This reinforcement is done by integrating historical information in the Google Maps app. The use of Google Maps is done so that people can easily access historical information and the importance of cultural heritage in Semarang City.

## References

- [1] Amin, dkk. 2011. Repository Model for Intangible Heritage "The Malay Scenario". Proceeding of the International Conference on Advanced Science, Engineering and Information Technology 2011 Hotel Equatorial Bangi-Putrajaya, Malaysia, 14 - 15 January 201.

- [2] Hastuti, Khafiizh & Erwin Yudi Hidayat. 2014. "Purwarupa Tangible Cultural Heritage Kategori Cagar Budaya Tak Bergerak Berbasis Database Multimedia". *Proceeding. Seminar Nasional Teknologi Informasi dan Multimedia*, Yogyakarta, 8 Februari 2014
- [3] Hendro, Eko Punto. 2015. "Pelestarian Kawasan Konservasi di Kota Semarang." *Jurnal Konservasi Cagar Budaya Borobudur*, 9(1). Hlm. 17-28
- [4] Tobing Warella & Purnaweni 200). Studi Implementasi Kebijakan Pemerintah Kota Semarang Dalam Upaya Melestarikan Bangunan Cagar Budaya Di Kota Semarang. *Dialogue*, 5(1).
- [5] Meyer, E, P. Grussenmeyer, J.P. Perrin, Anne Durand, Pierre Drap. A web information system for the management and the dissemination of Cultural Heritage data.. *Journal of Cultural Heritage*, Elsevier, 2007, 8 (4), pp.396-411.
- [6] Tanudirdjo, Daud A. 2003. "Warisan Budaya untuk Semua: Arah Kebijakan Pengelola Warisan Budaya Indonesia di Masa Mendatang". *Makalah*. Disampaikan dalam Kongres Kebudayaan V di Bukittinggi, 20-22 Oktober 2003.
- [7] Tjandrasasmita, Uka. 2010. "Pelestarian Benda Cagar Budaya dan Pemanfaatannya bagi Pembangunan Bangsa". *Suhuf*, 3(1). Hlm. 131-143.
- [8] Widiastuti, Eko Heri. 2014. "Revitalisasi Benda Cagar Budaya Di Kota Semarang". *Majalah Ilmiah Pawiyatan*, 21(2). Hlm. 1-11.