

E-HERITAGE SEMARANG CULTURAL AS THE EFFORTS THE DOCUMENTATION DIGITAL PRESERVATION CULTURAL IN CENTRAL JAVA

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Abstract— Electronic Heritage (eHeritage) is a form of cultural legacy product documentation (analog) into digital format. Designing electronic-Heritage (eHeritage) in the form of digital documentation of cultural Heritage Semarang done to preserve one of the culture in central Java through the application of computer technology for the preservation and publication.

Semarang cultural heritage in the form of digital documentation was made because it is one unique town, there are 101 ancient buildings / historic sites in the city of Semarang are still to be protected, where many of the amount was being torn down by the owner, or damage, and subject to change functions. So it is necessary to store information about cultural heritage as one of the cultures in Central Java, as the nation's cultural heritage.

The final result of this research is the digital documentation of historical objects obtained from field surveys, results of on-line digital objects existing which has been uploaded and Documentation is done using Cloud Computing technology.

Keywords — *e-heritage, digital documentation, Semarang cultural heritage, cloud computing technology.*

I. INTRODUCTION

Cultural heritage could be lost and destroyed because of natural conditions, war, climate change or due to human negligence. According to UNESCO, the legacy can be seen as what we inherit and what we leave behind. There are approximately 101 ancient buildings / historic sites in the city of Semarang that should be protected, of which many have been demolished or damaged even experience replenishment due to lack of maintenance. So we need the storage of information on cultural heritage as one of the cultures in Central Java.

Heritage recognized as a cultural heritage for the word heritage better known relics of cultural heritage in ancient times, generally because the connotations have value that should be maintained or preserved its existence. While the `digital` itself over the foundation of digital technology, the form of data that is processed in such a way that humans can apply it with a computer. Electronic Heritage (eHeritage) is a form of cultural legacy product documentation (analog) into digital format.

Designing electronic-Heritage (eHeritage) in the form of digital documentation of cultural heritage Semarang done to preserve one of the culture in central Java through the application of computer technology in conservation efforts and publications.

Documenting Cultural Heritage (Ikeuchi and Miyazaki, 2008), it is possible to generate 2-dimensional and 3-dimensional digital data. Permanently recording forms objects of cultural products in digital form using 2D and 3D visualization models (Levoy, et al, 2000; Beraldin et al, 2002; Stumpf et al, 2003; Guidi et al, 2004; Gruen et al, 2005; ment Guidi et al., 2006; Ikeuchi et al, 2007; El-Hakim et al, 2008; Remondino et al, 2009a).

Digital documentation of cultural heritage Semarang done by:

- a. Data retrieval shooting is done in two ways, namely shooting data 2 Dimensions and mobile data in the form of video.

- b. Data captured grouped and are classified according to criteria in the department of tourism for sharing historic buildings in the city of Semarang.
- c. Search on-line retrieval system techniques, if there are data uploaded by other people then grouped in a single storage of historical objects.
- d. visualization and presentation of results to later be distributed to other users that allows retrieval of data through the Internet or online databases.
- e. Utilizing cloud computing services as data storage e-heritage that can be accessed by everyone

Classification of Historic Buildings in the city of Semarang by:

a. Ancient Buildings

Some photos document the ancient building, which can be used as a comparison, the changes in the function of the ancient building and the building now.

b. Historic Buildings

In the Dutch colonial period, the city of Semarang has developed quite rapidly. Dutch to build facilities in order of importance of infrastructure such as the roads, rail transportation, buildings of worship, markets and so forth. Various ancient buildings of heritage development of Semarang is still much to be found through European architecture buildings and settlements are scattered in various parts of the city which is a cultural heritage as an asset for the people of Indonesia, which must be preserved as a result of creativity, taste, initiative and work special. The city's history should be demonstrated continued physical and visual through ancient the relics historic buildings still exist in Semarang.

II. RESEARCH METHODS

2.1. Construction System Design

Building a Cultural Heritage Electronic-System Architecture Semarang in the form as follows:

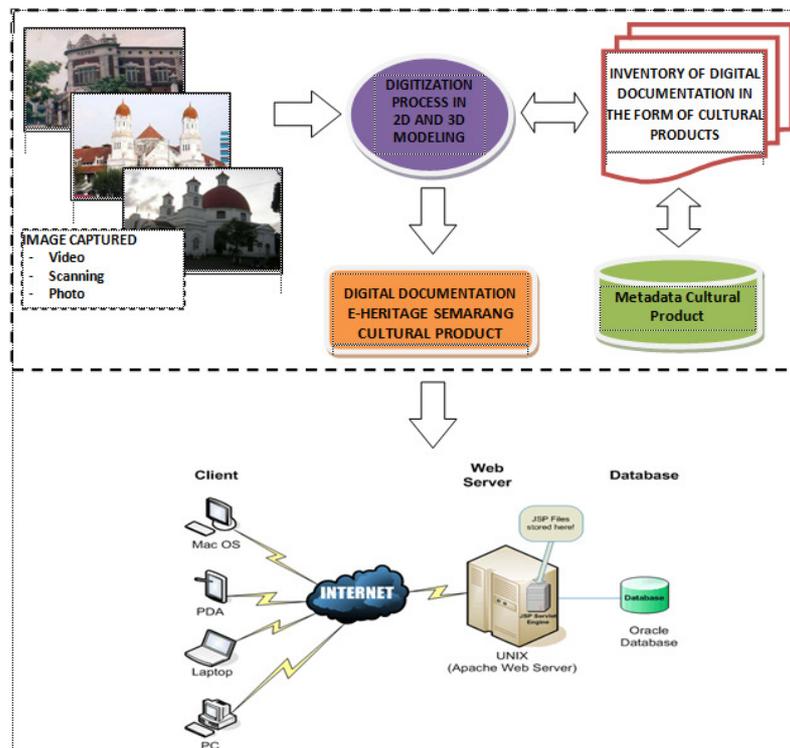


Figure 1. The system architecture of e-heritage cultural heritage semarang

2.2. Conceptual Design

Build eHeritage software aimed for researchers, koservator, documentation specialists, museum curators, and the public can access information neighbor heritage of a region ("Anything, Anybody, Anytime, Anyhow, Anywhere") that can be accessed anywhere and work same cultural heritage sector are struggling to preserve heritage together.

2.3. Design System and Action Plan

There are seven stages of the process to build the documentation eHeritage namely (PREMIS, May 2005):

- a) Resource Content Research
- b) Digitization
- c) Evaluation
- d) Data Management
- e) Contents and Publishing
- f) Metadata Design and Input
- g) 7.&8. Academic Research Use + Release

Each phase of determining the relevant standard, the standard format, quality requirements, and the required information includes:

a) Resource Content Research

Cultural property tested and recorded in detail. This information is a source for digital data in the digital heritage. Some of the metadata standard used to record and describe the material culture and information given in the category of "electronic resource", "libraries", "archive", and "museum".

Under this category helps identify the data based on the appropriate standard format. Types of cultural property to be considered by the media to record the object with the properties that do not materialize as sound or movement, form a fixed object such as a map, or a painting, with a solid object such as a statue, and the object of the film.

Where digital data is created using the appropriate type of devise with any physical object original source.

Documentation of data encompasses information not only from the general profile of data, but also the profile for each input, and the input devise and color management profiles.

b) Digitization

Stages for making key data dijitasi for the first time from the pristine cultural property. Input devices can use your camera digital video, scanner, digital camera, 3-D scanners, digital audio recording, colimeter, colorimeter, etc. Where digital data is created using the appropriate type of devise with any physical object original source.

Documentation of data encompasses information not only from the general profile of data, but also the profile for each input, and the input devise and color management profiles.

c) Evaluation

At this stage of evaluating the data that has been created. Only covers visual data.

d) Data Management

At this stage the standard for managing digital data primary and secondary data were created from digital master data. Five process undertaken for Data Management are:

- 1) The selection of data format
- 2) The selection of storage media
- 3) Selection of the storage environment
- 4) Documentation of data storage
- 5) Data backup

e) Content and Publishing

Method of publication is determined by selecting the method and format fit for purpose. Multiple types of content such as virtual reality theater format, edited and compiled as a package of digital data collection.

f) Metadata Design and Input

At this stage in respect of standards for organizing and mendokumentasi all profile information as metadata, aka, data on digital data. Profiles were collected at each phase of the above. Information about each item profile must be documented and stored in a single machine in a form that can be understood and displayed scheme for modeling RDF or XML.

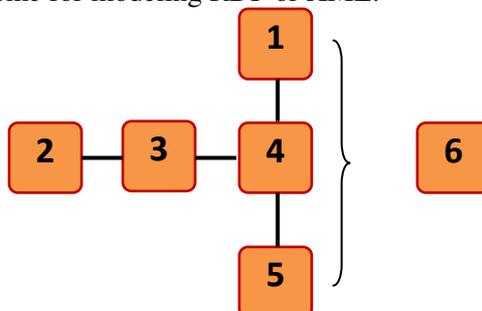


Figure 2. Correlation metadata in every phase of Digital Documentation Process.

g) Academic Research Use + H. Release

By building a digital heritage through the steps up until the previous phases, it is possible to use the accumulated data for purposes requiring a stricter equivalence or authority, such as not only academic research but also conservation and repair of cultural properties. Reproducibility is thus ensured.

2.4. E-heritage data processing with cloud computing technology

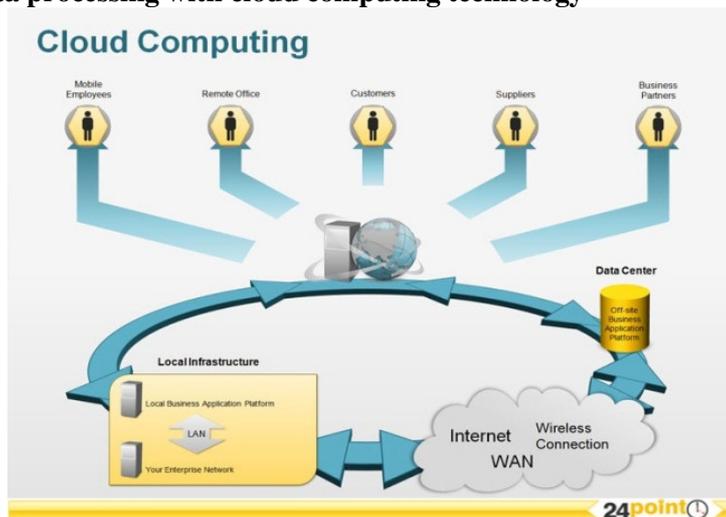


Figure 3. Cloud Computing Architecture
 (source: flickr.com)

Cloud architecture consists of:

- a. Node servers are interconnected and communicate or exchange data through internet-based network protocol,
- b. Communication on a cloud infrastructure communication between several components of the cloud (cloud controller, node controller) using the local network or a private network.
- c. The role of TCP / IP is very important to support the exchange of data.

Can be viewed at the above cloud position is in the middle of a website which cloud was instrumental in the web interface. With cloud computing, the operating system along with its applications and storage can be done directly via the Internet, so will save you a great physical computer procurement for corporate or personal needs.

2.5. Data Processing System E-Heritage Architecture

Ancient Buildings / Historic Sites in the city of Semarang Documentation

Historically, the city of Semarang has an area that is at about the 18 th century as a trade center. The area is now referred to in the Old Town area.

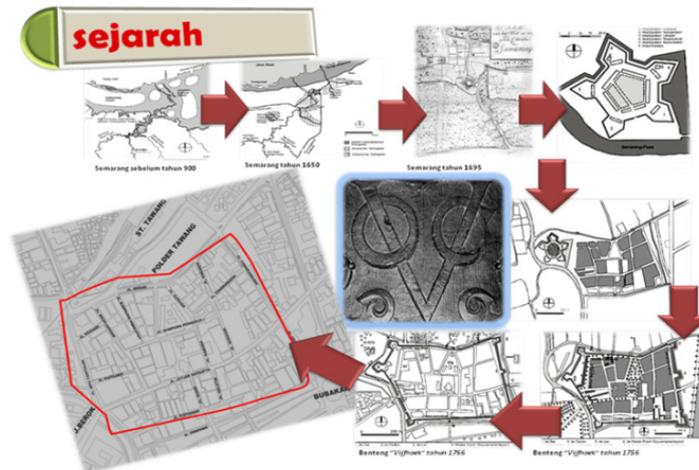


Figure 4. Old town area

(Source: layout plan of the building and the surroundings of the old town Semarang in 2003)

2.6. Digital Data Object

Digital data obtained from ground surveys to shoot if deemed data obtained from the tourism department does not exist or less, data from the Development Agency, as well as data from the search results in on-line and in literatur no and if deemed needed detailing object.

Data retrieval shooting is done in two ways, namely shooting data 2 Dimensions and mobile data in the form of video. Data captured and then grouped and classified according to the criteria in the department of tourism for sharing historic buildings in the city of Semarang.

Some photos document building of the past, which can be used as a comparison for use change for the ancient building and the building now.



**Ancient buildings
 In 1906**

**old building converted
 into a restaurant In 2008**

**Figure 4. Example photos of Semarang
 Ancient Buildings (source: www.semarang.nl)**

2.7. Construction Documentation System Design E-Heritage

In Figure 5 describes the architecture of the system as a whole is to be built from e-heritage cultural Semarang

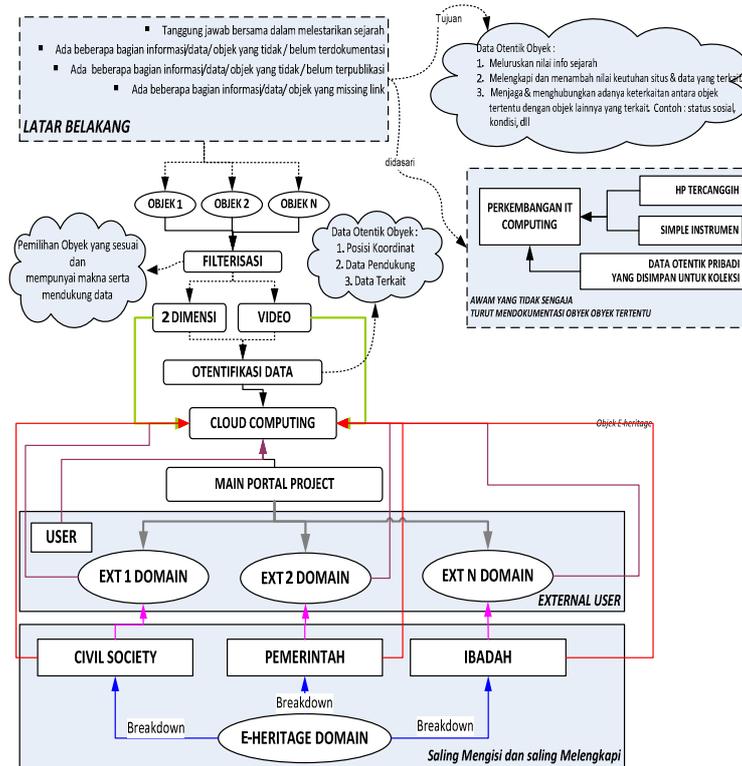


Figure 5. Architecture of e-heritage cultural Semarang

III. RESULT

The final results of this study in the form of digital documentation of historical objects obtained from the field survey data are not available and the search for on-line if it is already uploaded data and grouped together according to the theme of the history of each object.

Digital data obtained from ground surveys to shoot if deemed data obtained from the tourism department does not exist or less, data from the Development Agency, as well as data from the search results in on-line and in literature no and if deemed needed details object.

Data retrieval shooting is done in two ways, namely shooting data 2 Dimensions and mobile data in the form of video. Data captured and then grouped and classified according to the criteria in the department of tourism for sharing historic buildings in the city of Semarang.

Classification of Historic Buildings in the city of Semarang by:

- a. Old building
- b. Historic Buildings

3.1. Directory Structure

All images in the form of documents either field surveys and videos are stored in a single directory and has managed in accordance with the name of the building or road to facilitate access. Management of files in a directory can be used to download the document to several on-line storage and are used for various applications. Storage virtually done with the concept of cloud computing berkenanaan with the maintenance documents are not dependent on local storage.

If the server is deemed inadequate due to the amount of data it is possible to further development with the use of server rental system.

3.2. Document Storage Services Cloud Computing With Flickr

All images in the form of documents, field survey, either photos or video, are stored in a single directory and managed in accordance with the name of the building or roads to facilitate access.

Management of files in a directory, can be used to download the document to several on-line storage and are used for various applications.

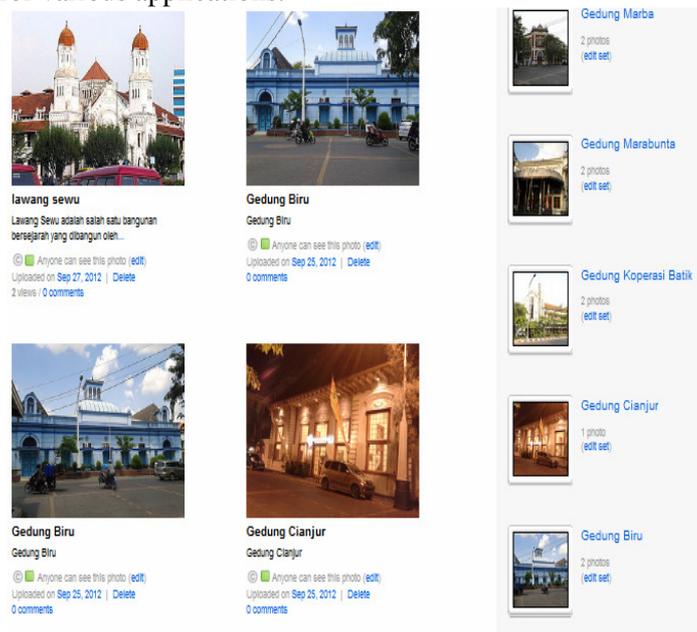


Figure 6. Storage in the cloud service

3.3. Retrieval process result of online heritage object

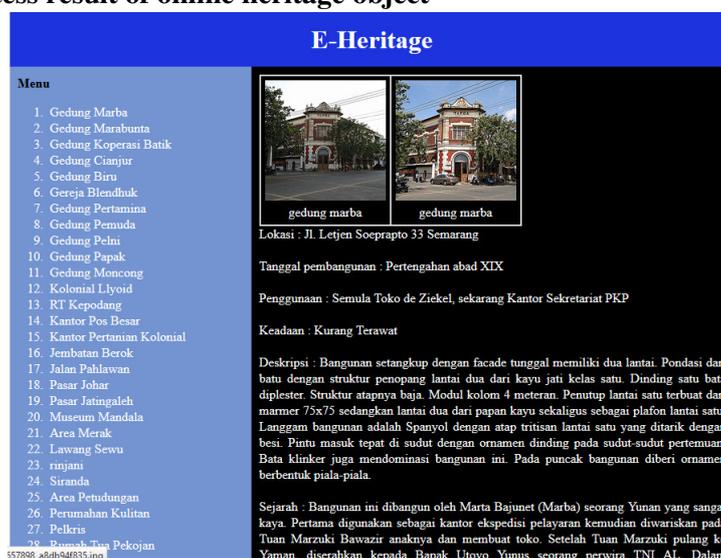


Figure 7. object retrieval result

3.4. Utilizing Web Document Storage

All documents are generated and stored using cloud computing services flickr with consideration of the stored data is not private but the data can be shared by all those in need for the sake of cultural preservation. Flickr service selection with consideration of more structured, where the data is stored more easily classified.

IV. CONCLUSION

- a. Digital documentation of historical objects obtained from field surveys for the data that does not exist according to the criteria of the department of tourism Semarang region and search on-line if it

- has no data is uploaded and grouped together according to the theme of the history of each object to be stored into one portal Culture in Semarang,
- b. Semarang digital documentation of cultural heritage in the form of ancient buildings and historical buildings take advantage of cloud computing service Flickr.
 - c. Utilization of Cloud Computing Technology as a place to store digital documents with storage considerations can be made directly via the Internet and accessible to all who need data about the cultural heritage of Semarang and procurement could save a great physical computer for storage and maintenance of documents that do not depend on local storage.

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