Cultural Mapping of the Heritage Districts in Medan, North Sumatra

I Fitri1,2 *, Ratna3, R Sitorus4, and M Affan4
1Department of Architecture, Faculty of Engineering, University of Sumatera Utara, Jl. dr. Mansur Kampus USU Medan 20155  
2PhD Candidate, Faculty of Built Environment, University of Malaya, 50603 Kuala Lumpur, Malaysia  
3Department of History, Faculty of Cultural Science, University of Sumatera Utara, Jl. dr. Mansur Kampus USU Medan 20155  
4Masyarakat Sejarahwan Indonesia (MSI), Faculty of Cultural Science, University of Sumatera Utara, Jl. dr. Mansur Kampus USU Medan 20155  

*isnen@usu.ac.id

Abstract. Medan as one of the historical towns in Indonesia is rich with architectural and urban heritages; however, there still has no integrated plan to safeguard them. This paper discusses the cultural mapping of the seven heritage conservation districts in the city of Medan. It focuses on exploring the process and challenges of the study from the initial step of data collections to the building of the cultural maps with web based GIS. Multi-method of data collection tactics or triangulation such as field survey, interviews was done to cover the cultural data resources including both tangible (or quantitative) and intangible (or qualitative). Participation of the local community is essential to identify mainly the intangibles one. Based on the preliminary analysis of the seven heritage districts in Medan city, Merdeka-Kesawan area had whole categories of the cultural assets and resources compared to other six heritage areas. Consequently, it influences the enhancement its cultural heritage significance. By using our methods, we emphasized the importance of the cultural mapping in preparing the conservation policies and strategies of the seven heritage districts in Medan.

1. Introduction
The concept of integrated conservation between heritage preservation and town planning that was developed since mid-1970s has not been widely applied in Indonesia. Therefore, the issue of gap between conservation of cultural heritage and the urban development remain unsolved, even after Indonesian government published new law on cultural heritage conservation in 2010. Medan, as one of the historic towns in Indonesia, is rich with architectural and urban heritages; however, there is still no integrated plan to safeguard them. Today, changes in land-use planning have become a serious threat to the preservation of cultural heritage in Medan. Besides, lack of policies and guidelines, mainly operational guidelines, have also caused the recent heritage conservation program difficult to achieve its objectives. Until now, the conflict between heritage preservation and urban development plan, especially in the city of Medan is growing increasingly and getting complicated. It seems that paradigm "heritage conservation versus development" was remained for many years in Medan.
Meanwhile, at international level, the concepts of integrated conservation have been developed in line with the evolving issues of urban planning. The International Committee of Historic Towns and Village (CIVVIH) in Naples in 2012 highlighted culture as a driver of social and economic development of historic towns, cities, and urban areas [1]. This meeting was intended to discuss the role of the integrated conservation for a creative, resilient and sustainable city as becoming a trending topic among planners and experts. Maistrou [2], an expert who participated in the meeting pointed out “core concepts of the creative city were cultural planning and cultural resources. Further, she explained that cultural planning was then viewed as integrated planning of urban cultural resources which are not only things like buildings, but also include historical, industrial and artistic heritages representing assets of architecture, urban landscape or landmarks, local and indigenous traditions of public life, festivals, rituals or stories, as well as hobbies and enthusiasm. Therefore, cultural planning should be based on a broad knowledge and understanding of cultural and ecological character of the area which can be obtained through a cultural mapping. The concept of modern cultural mapping was initially discussed from the 1960s onwards [3] and then much discussed among planners since late of 20th century to understand city as a single entity requires planning that emphasizes the identity and character of the place or town. Turner et al. [4] asserted that the term cultural mapping has gained popularities in recent years with multiple uses in modern contexts that include a wide variety of meanings. They recommended that cultural mapping as one of the tools for effective urban heritage management approach, which promotes comprehensive mapping of all heritage assets within an urban environment and its larger setting.

The concept and definition of cultural mapping have been viewed from an array of methods and approaches. A general definition of cultural mapping according to Clark and Young [5] is "cultural mapping involves a community identifying and documenting local cultural resources. Through this research cultural elements are recorded - the tangibles like galleries, craft industries, distinctive landmarks, local events, and industries, as well as the intangibles like memories, personal histories, attitudes, and values." The definitions of cultural mapping viewed from two aspects that recently popular among the researchers in architecture and planning are the community-based approach and mapping the cultural resources includes tangibles and intangibles. In regards to community participatory, most of the conventions, charters, declarations, resolutions and recommendations on the protection and preservation of the heritage which were published after the mid-1970s stated that community involvement in the protection and conservation of cultural heritage should be encouraged and enhanced. The need for sharing in the decision-making among community stakeholders has become a popular topic in the field of protection and management of cultural heritage until today [6]. While, mapping of the intangible heritage has been much studied by the scholars since publishing the UNESCO 2003 Convention on Safeguarding the intangible heritage. Crawhall pointed out over the past four decades; there has been increasing awareness that some important aspects of human culture containing the aspects of "intangible" cultural practice and knowledge systems. He then asserted cultural mapping is one way to change something that is intangible and invisible to be an instrument that can be applied to heritage management, education, and intercultural dialogue.

A comprehensive definition and approaches of cultural mapping explored by Duxbury et al. [7] in her prestigious book on Cultural Mapping as Cultural Inquiry "cultural mapping is a systematic tool to involve; communities in the identification and recording of local cultural assets, with the implication that this knowledge will then be used to inform collective strategies, planning processes, or other initiatives." Furthermore, she emphasized that cultural mapping provides new approaches to describe, account for, and come to terms with the cultural resources of societies and places. These resources are both tangible or quantitative and intangible or qualitative. Consequently, the methods of recording the tangible resources are differentiated from the intangible ones, with the same line being drawn between the quantitative and the qualitative methodologies.

Regarding its use and benefit, UNESCO also recommends cultural mapping to help in preserving the world heritage including intangible and tangible cultural assets. Recently, UNESCO uses a modern electronic and computer-based information technology such as Geographic Information System (GIS)
to support their works as informed on its website. As described by Crawn, since the development of computer mapping application in the early 1960s, the cartographers, geographers, and planners were used to operate GIS program for their projects in spatial analysis. Today, many people know that GIS allows users to analyzes, stores, manipulates, and visualizes geographic information on a map. Nevertheless, not everyone can access the GIS for several reasons, including its cost or able to operate it efficiently. Web GIS becomes cheaper and easier for disseminating geospatial data and processing tools [8]. Kraak [9] pointed out the rise of the Internet, particularly the World Wide Web was another stimulant to mapmaking and map use. Therefore, the Web has also brought specific changes and opportunities due to characteristics of this instrument. These changes are related to the look and function of maps and their dissemination. He further describes that Web GIS will potentially play a significant role, and then it offers GIS functionality in a Web environment.

In sum, cultural mapping embraces a broad definition of cultural resources which is recommended to use a modern electronic and computer-based information technologies such as GIS during its process. In general, it helps increase awareness of resources both for residents and visitors, build networks and stronger collaboration across a broad range of cultural groups and activities and improve the base of information on cultural assets in a city to inform a wide range of planning decisions. This paper discusses the cultural mapping of seven heritage conservation districts in Medan. It focuses on exploring the process and challenges of the study from the initial step of data collections to the building of the cultural maps with web-based GIS. The research covers cultural data resources including both tangible or quantitative and intangible or qualitative through a multi-method of data collection tactics or triangulation, such as field survey and interviews.

2. Method

This research is a part of the serial study in preparing conservation policies and strategies of the heritage districts in Medan. It is a continuation of the studies that have been done previously in 2014 and 2015. Based on the compilation previous inventories of cultural heritages in Medan conducted in 2014, it was found approximately 1225 cultural heritage properties. Most of them are the immovable heritages. A further investigation carried out in 2015 has found thirteen historic areas and then seven of them completely documented and analyzed its cultural heritage significance. All these resources were combined to create a foundation of information on cultural assets. For the purpose of the study, it referred to Cultural Resource Framework or CRF identified by Statistics Canada into six categories of various cultural assets, ranging from cultural heritage, natural heritage, festivals and attractions, cultural enterprises, community cultural organization, as well as cultural spaces and facilities as shown in Figure 1.

![Diagram of six categories of cultural resources](image-url)

**Figure 1.** A Diagram of six categories of cultural resources
2.1. Case Study
Selection of the case studies in this research was related to the previous studies as mentioned above. This study was prioritized the seven heritage areas, namely Merdeka-Kesawan, Deli Sultanate, Polonia, Kampung Madras, Pulo Brayan, Labuan, and Belawan. Discussion on the delineation of those heritage districts has been done in the previous study and their level of significance as shown in Table 1.

| No. | Name of The Heritage District | Level of significance |
|-----|--------------------------------|------------------------|
| 1   | Merdeka-Kesawan                | ✓                      |
| 2   | Kesultanan Deli                 | ✓                      |
| 3   | Polonia                         | ✓                      |
| 4   | Kampung Madras                  | ✓                      |
| 5   | Pulo Brayan                     | ✓                      |
| 6   | Labuhan                         | ✓                      |
| 7   | Belawan                         | ✓                      |

2.2. The phases and methods of the cultural mapping on the seven heritage districts in Medan
The study was divided into three phases: data collection, database creation, and map making process with web-based GIS system. Publishing the maps online through the internet will be excluded as it is still in the process. Cultural mapping included six categories of various cultural assets as previously mentioned. Each category was divided into a range of sub-categories or disciplines that collectively create the base for a framework for tangibles and intangibles cultural assets.

The data collection applied several tactics of quantitative and qualitative data collection. Collecting data at the initial stage, such as secondary data from books, previous inventories, the database of the institutions, the Internet were to obtain both types of data, quantitative and qualitative data. Then, the data was compiled and stored in every sheet provided using a simple computer program i.e. Microsoft Excel. Then, it was followed by conducting a survey to determine the latitude and longitude coordinates of every cultural asset. In short, collecting data in the fieldwork, in addition to obtaining the coordinates of the objects, it was also used to update primarily the data of cultural properties provided by the previous inventory accomplished two years ago. It was more of the quantitative data. Along with the fieldwork, the face-to-face and semi-structured interviews with open answers were carried out to ten informants of each heritage area. As a result, 70 local people selected at the time of interview by recommendation of the key leader in the heritage areas participated in the study. The purpose was to collect qualitative data about the ritual activities, festivals, attractions, and cultural group or organizations.

The third step was creating a database. It consisted of cultural resources according to six categories as mentioned above with its coordinates. While the coordinates of the intangibles were determined by the location and route of the festivals, attractions, and ritual activities, the cultural group or organization was identified by the site of the secretariat or administrative office. The last step was building the cultural maps with web-based GIS system, and then its process will be explored in the following section.

3. Results and Discussions
This section explores the challenge of the process and the potential method applied during creating of the cultural map of the seven heritage districts in Medan. It also gives a preliminary analysis of the seven cultural maps.
3.1. The challenges during the process and the potential methods for data collection

The study went according to plan at the initial step of data collection. The challenges have been started at the fieldwork. Due to constraints of time and budget, it is necessary to manage the data collection during the fieldwork to be done effectively and efficiently. The first challenge was providing tools used for catching the coordinates of the objects. Then, the second challenge was how to record the coordinates of the abundant of objects within the schedule. The third was how to select the enumerator for the fieldwork and interview section. It needed strategy and management. The biggest challenges of this process were ignorance of the enumerators of the areas surveyed and the social conditions. The most difficult was the ignorance of enumerators of the objects to be recorded and the mapping tools used. An initial briefing to enumerators becomes a necessity before the fieldwork. Also, it was suggested to assign an enumerator who comes from the area surveyed so that they would greatly assist the effectiveness and efficiency during the data collection.

The fieldwork was basically to extract data latitude and longitude coordinates of the objects using a Geographic Positioning System (GPS) device. Even though the enumerators are familiar using the GPS device, it was better to have several briefings before fieldwork to avoid ineffectiveness during the fieldwork. Today, almost all smartphones have a GPS device, and it is advisable not to use GPS devices from smartphones as the level of its accuracy less reliable. For example, when finding the coordinates of a shop house located at the shop houses area like Merdeka-Kesawan area. Due to the accuracy of GPS smartphones is low, it will mess up the process retrieval coordinates data. This matter will, of course, impact to disrupt the map to be created. Meanwhile, for some large object or relatively easy to spot, catching the coordinates by remote sensing via Goggle Earth Pro application. The Google Earth Pro application can assist the process to find the coordinates and reduce the workload of the fieldwork from ten to fifty percent depending on the objects to be mapped. For the cultural mapping project in Medan, the objects iconic of built heritage properties have often included in Google Maps, so it was unnecessary for data collection in the fieldwork. However, despite the fact that particular objects can be found its positions through Google Map application, it was still necessary a crosscheck confirming whether its accuracy is reliable or not. Google Map also occasionally show inaccuracies of the coordinates of an object map.

The interview was conducted along with the fieldwork, after making the appointment with informants previously. The conducting interview was more to obtain the intangible cultural resource. The challenges started from identifying the local participants to arranging the communication and time during the interview. To anticipate it, firstly, it needs to discuss with the key leader of each heritage area to find the significant informants who can participate in the study. Secondly, semi-structured interview with open answers was preferred allowing both the interviewer and the informant being interviewed have conversational, two-way communication and the flexibility to go into details when needed. Unfortunately, it consumed more time than using the structured interview with the close answer.

![Figure 2](image_url)  
**Figure 2.** Involvement the local people in indentifying the cultural assets

After finishing data collection in the fieldwork, it was followed by creating a database. All the tangibles data source, such as historic buildings, schools, religious monuments, street market, food
bazaar, and others could be inputted based on its category. The challenges we faced were when to input the coordinates of intangibles that are movable or have a route like the attractions, festivals, and ritual activities. In this case, we need to record arrays of the coordinates of that intangible according to its route. Fortunately, such intangible data source was only a few. All the data on the coordinates of objects consisted of six categories of cultural resources have been stored in a database. The next step was map-making process based on the database. For this reasons, the processing of data for creating cultural maps used the GIS application, such as ArcGIS or QGIS. The study used QGIS to process the data and to design the map as it is lighter and simpler, based on open source as well. QGIS also has a powerful tool called Print Composer that allows us to take our GIS layers and package them to create maps. The following step after accomplishing the database was building a cultural map with web-based GIS application. It used leaflet plugin QGIS. Plugins in QGIS becomes useful features to the software and leaflet is a popular open-source Javascript library for building web mapping applications.

3.2. The Preliminary Analysis of the cultural maps
Based on preliminary data compilation that has been obtained through inventories, field surveys, and interviews, the statistics data of cultural assets of seven heritage districts in Medan will be shown as below.

![Figure 3. The statistic data of cultural resources of seven heritage districts in Medan](image)

As shown in Figure 4, it seems that Merdeka-Kesawan and Polonia area had complete cultural assets and resources compared to six other heritage areas. Consequently, this will influence to strengthen its cultural heritage significance. Merdeka-Kesawan area is the heart of Medan. The nickname is not excessive because the Dutch colonial government itself put the zero point of the city to this region. Nienhuys Fountain built around 1915 in front of the Post Office Medan is the zero point. As the heart of the city, this area that covers approximately 62 hectares is rich with built heritage properties which are estimated to have more than 200 buildings. However, because of limited time and funds, it has not been recorded entirely in this mapping. That number makes this area becoming the most significant heritage area in the city of Medan. Besides, most of the landmarks as the icon of Medan are located at this place. For example, Old City Hall, Bank Indonesia Office, the General Post Office, Railway Station along with its Titi Gantung (connecting bridge), London Sumatra building previously known Harrison and Crossfield building, Tjong A Fie Mansion, and the Esplanade or Merdeka Square. Based on this preliminary analysis, it does not seem exaggerated if Merdeka-Kesawan area is proposed as cultural heritage registered at the municipal, provincial, and national level. The dissemination of cultural assets is critical for analysis spatial region and become inputs in preparing the Technical Guidelines and Plan for Building and Environment.
Figure 4. Cultural Map of the seven heritage districts in Medan
4. Conclusions
The planners and heritage professional as an essential instrument and technique in conserving the cultural heritage have recognized cultural mapping. It encompasses an array of methods and technical approaches from community-based participatory data collection to sophisticated mapping using GIS. In term of its definition and concepts, a cultural mapping is perceived to involve the local communities in identifying and documenting their cultural resources and assets. Therefore, it is necessary to conduct a cultural mapping to help in preserving the cultural heritage.

Conducting cultural mapping of the seven heritage districts in Medan fostered some challenges. Therefore, effective and efficient strategy and management are needed to face some challenges during the fieldwork. The study intended to use triangulation or mix methods to cover both the tangibles and the intangibles of cultural resources and assets in the context of developing the conservation policies and strategies. Based on the preliminary analysis of the seven heritage districts in the city of Medan, Merdeka-Kesawan area had whole categories of the cultural assets and resources compared to other six heritage areas. Consequently, it influences the enhancement its cultural heritage significance. Therefore, Merdeka-Kesawan area is feasible proposed as a heritage conservation area registered at the municipal, provincial, and national level.

The research will be continued by publishing the cultural maps of the seven heritage conservation areas of Medan through the internet and the local newspapers. Then it is followed by a discussion forum by inviting community that represents of each district participated in the workshop. Those activities purpose to develop a comprehensive understanding of the unique local resources that can help in the preparation of conservation policies and strategies for the heritage areas in Medan.

Acknowledgments
The authors gratefully acknowledge that the present research is supported by Ministry of Research and Technology and Higher Education Republic of Indonesia. The support is under the research grant scheme of BP-PTN USU of Year 2016 Contract Number 41/UN5.2.3.1/PPM/SP/2016.

References
[1] Colletta T 2013. The role of the integrated conservation of cultural heritage for a creative, resilient and sustainable city. Acta of the ICOMOS-CIVVIH Symposium Naples 2012 (Milano, Italy: Francoangeli) p 13
[2] Maistrour E 2013 The role of the integrated conservation of cultural heritage for a creative, resilient and sustainable city. Acta of the ICOMOS-CIVVIH Symposium. Naples 2012 ed T Colletta, (Milano: Francoangeli) p 47
[3] Crawhall N 2008 The role of participatory cultural mapping in promoting intercultural dialogue - ‘We are not hyenas’. (Paris. Unesco).
[4] Turner M and Singer R 2015 Reconnecting the City The Historic Urban Landscape Approach and the Future of Urban Heritage ed F Bandarin and R v Oers (Oxford: Wiley Blackwell) p 305-6
[5] Clark I, Sutherland, and Young G 1995 The Cultural Mapping Sym. and Workshop (Adelaide).
[6] Fitri I, Ahmad Y, and Ahmad F 2015 J. Procedia - Social and Behavioral Sciences 184C 71 – 78
[7] Duxbury N, Garrett-Petts W F, and MacLennan D 2015 Cultural Mapping as Cultural Inquiry. (New York: Routledge) p 2
[8] Alesheikh A, Helali H and Behroz A 2002 Proc. Sym. on Geospatial Theory, Processing and Applications vol XXXIV (Ottawa)
[9] Kraak, M J 2004 J. Geographical System 6 83-93