

Interactive Tourism Website Balai Pemuda Surabaya with Spherical Cameras

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Abstract: Balai Pemuda Surabaya or now commonly called Surabaya square, is one of the historical buildings in the city of Surabaya. According to *Bappeko* Surabaya, this Balai Pemuda building began to be established in 1907 during the Dutch East Indies colonial period. The name of this building is *De Simpangsche Societeit*. In the Dutch colonial period, this building was used as a recreation center for Dutch people to dance and exercise, such as bowling. In 2011, the Balai Pemuda Building experienced a fairly large fire incident in the west side building which is usually used for parties, exhibitions, art performances, and weddings. Regional revenues decreased after the fire incident. In 2013, the Surabaya city government carried out revitalization and was completed in 2015. To increase the number of tourists who will visit this tourist spot, the idea emerged to make Interactive Tourism Website Balai Pemuda Surabaya with Spherical Cameras. The results of this study were obtained via a virtual tour of Gedung *Merah Putih* and the surrounding area. Data from spherical cameras and non-spatial data are uploaded to the virtual tour Balai Pemuda website. The final step was to calculate the usage rate for a website that had already been built by roughly 88.5%.

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Keywords: Balai Pemuda; Spherical Camera; Interactive Tourism; Website; Usability Testing.

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Introduction

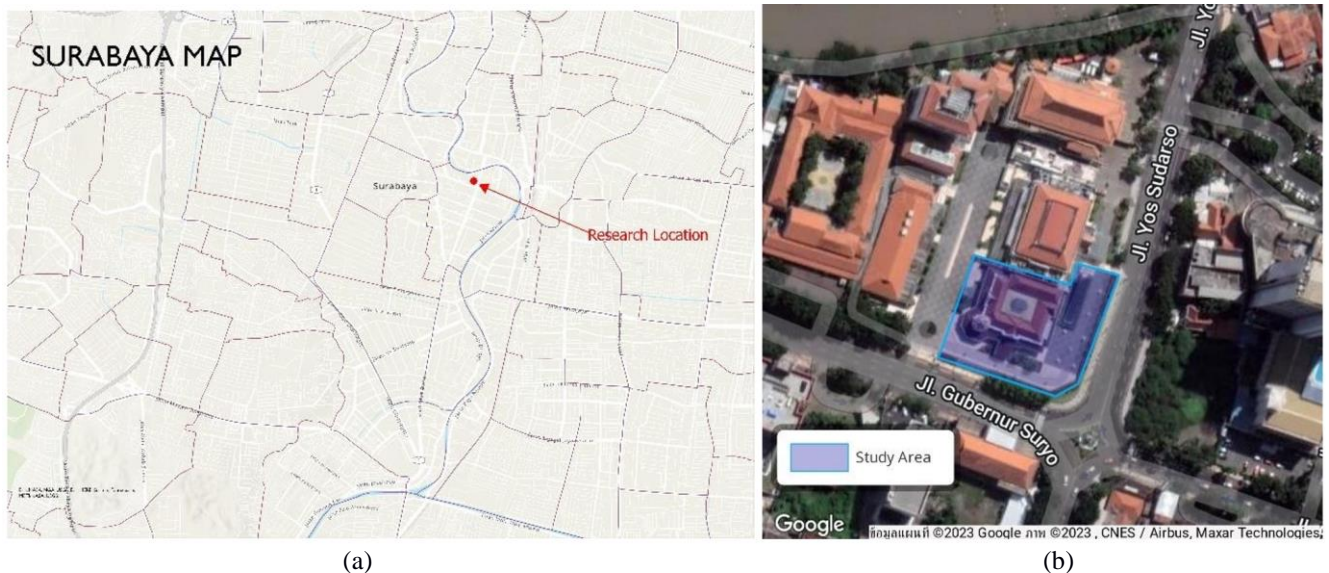
Balai Pemuda Surabaya or now commonly called Surabaya square, is one of the historical buildings in the city of Surabaya. According to *Bappeko* Surabaya, this Balai Pemuda building began to be established in 1907 during the Dutch East Indies colonial period. The name of this building is *De Simpangsche Societeit*. In the Dutch colonial period, this building was used as a recreation center for Dutch people to dance and exercise, such as bowling. This building uses eclecticism-style design, and mixed styles, namely neo-gothic, renaissance and *romanica classica*. According to the Tourism Office, this building in 1945 was successfully controlled by "Arek-arek Surabaya"; however, the Dutch took control of this building not long after that.

In 2011, the Balai Pemuda Building experienced a fairly large fire incident in the west side building which is usually used for parties, exhibitions, art performances, and weddings. Regional revenues decreased after the fire incident (Aridiana et al., 2021). In 2013, the Surabaya city government carried out revitalization and was completed in 2015. Currently Balai Pemuda has several buildings such as Balai Pemuda Building, Mosque, *Merah Putih* Building, Surabaya Art Building, and Basement Area. In the basement area, there are two rooms, namely the exhibition room and the area for skateboarding.

The Surabaya government has employed several strategies to entice travelers to visit Surabaya's tourist attractions, including sharing information via videos, local government websites, tourism offices, and Instagram (Aristyawan, 2021). However, more than sharing information like this is needed to pique tourists' interest in the region. Visitors can use technology to see the Balai Pemuda in its original condition. It gave new ideas Interactive Tourism Website Balai Pemuda Surabaya with Spherical Cameras.

Data and Method

The Surabaya Square or people also known as the Balai Pemuda, is the site of this research. The Location this building at *Embong Kaliasin, Kecamatan Genteng, Jalan Gubernur Suryo No. 15, Surabaya, East Java*. At $112^{\circ} 44' 43.1''\text{E}$ and $7^{\circ} 15' 49.8''\text{S}$, the place is situated. This building was picked as the study's subject because it has a land space that serves as a public space.



In this study using two buildings located in the Balai Pemuda area, namely the *Merah Putih* building and the basement area. For shooting in both areas, spherical camera is used. This image is obtained through direct data collection using the spherical camera in *Gedung Merah Putih* and Basement area that can be accessed by visitors to the Balai Pemuda Surabaya. In addition, measurements were made using a distometer and a roll meter. The distometer is used to measure the room's height from the floor and roll meter is used to measure the length of the side. In addition, Detailed Building dimensions data of Balai Pemuda Surabaya is used to identify the name and use of existing space. Non-spatial data is also used in this study so that website visitors can find out the detailed information contained in the room.

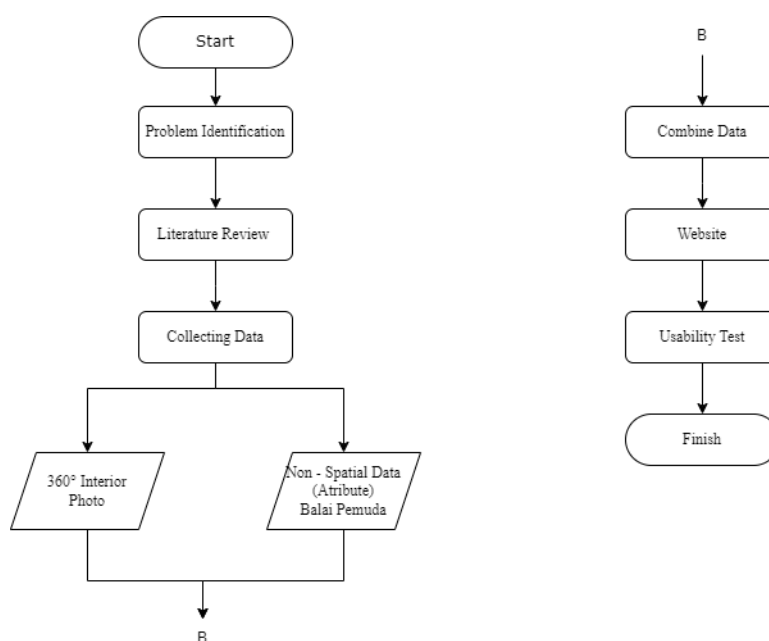


Figure 2. Research Stage Flow Diagram

In the first stage, problem identification is carried out. At the stage of identifying this problem, it is carried out to determine and limit the problems that will be solved in this study. Next is the study of literature. This literature searches for literacy sources/reference references used in this study. If, in this case, it is collecting data using a Spherical camera. The data collection stage is divided into two parts, namely data collection using spherical cameras and non-spatial data collection. At the stage of collecting camera photo data, it must be done to photograph part of Balai Pemuda building using a spherical camera. This shoot aims to overlap photos at least twice in the same room. In the later stage. At the same stage, non-spatial data collection such as room numbers and functions of the room are carried out. Next, data merging is carried out. Furthermore, a merger was carried out between spherical camera data and non-spatial data. After merging the data, the data is uploaded to the existing website. The final stage is to conduct a usability test using theory from the Nielsen model. The Nielsen model divides testing into five categories: Learnability, efficiency, memorability, errors, and satisfaction.

To answer questions on this survey, utilize the Likert scale. The Likert scale, according to Sugiyono in (Sulistiyani, 2010), is a method to gauge how individuals or groups of individuals view a situation. Assessment using weighting methods such as the following table:

Table 1. Calculation of test average. (Source: Kurniawan & Cahyono, 2016)

		Point	Total
Number of scores answered.	Strongly Agree	Total TA x 5	A
	Agree	Total A x 4	B
	Neutral	Total SA x 3	C
	Disagree	Total D x 2	D
	Strongly Disagree	Total SD x 1	E

$$\text{Total Score} = A + B + C + D + E$$

$$\text{Max Score} = \text{Total Respondents} \times \text{Number of questions} \times 5$$

$$\text{Usability Test Percentage} = \frac{\text{Total score}}{\text{Max score}} \times 100\%$$

Scale of Likert Five typical response options are listed in the table above: Totally Agree (TA), Agree (A), Simply Agree (SA), Disagree (D), and Strongly Disagree (SD). The researcher employs a research tool in the form of a questionnaire in order to provide the appropriate response. Additionally, the responses that have been gathered from respondents are examined in order to produce responses that are consistent with the research's objectives.

Results and Discussion



Figure 3. Result from Spherical Camera

The Insta360 One X2 camera creates images with a resolution of 6080 x 3040 Pixels using the photo data from the

spherical camera. This is in line with the requirements of the utilized camera. The Insta360 One X2 camera was used to collect data, and it was discovered that the output image was an equirectangular panorama. The snapshot shown in Figure 3 is one example of a picture taken with a spherical camera. Spherical panoramas show the condition of the image from the 180-degree vertical axis and 360-degree horizontal axis.

Shooting using a 360 camera is divided into the *Merah Putih* and basement buildings. Table 2 shows the total number of shots.

Table 2. Number of Photo

No	Area	Number of Photos
1	<i>Merah Putih</i> Building	80 Photo
2	Basement	104 Photo

After all room photo data is obtained, the process of combining data between photo data and non-spatial data can be carried out by the data combination process on the available website. Here is an image of the combination of non-spatial data and photo data in the field.

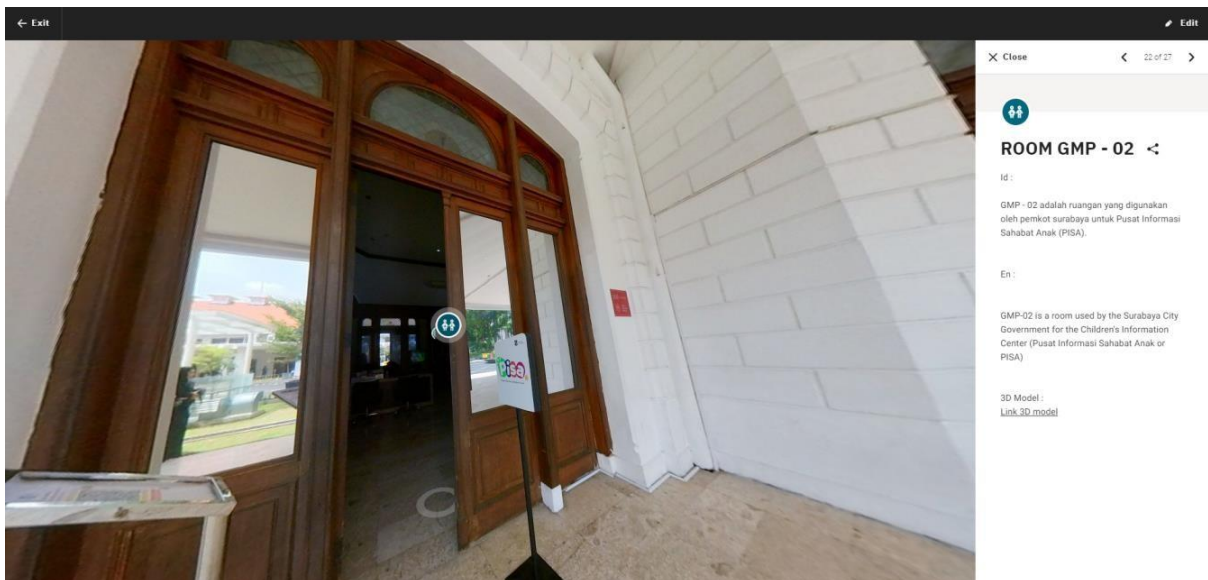


Figure 4. Result Combination Data *Merah Putih* Building

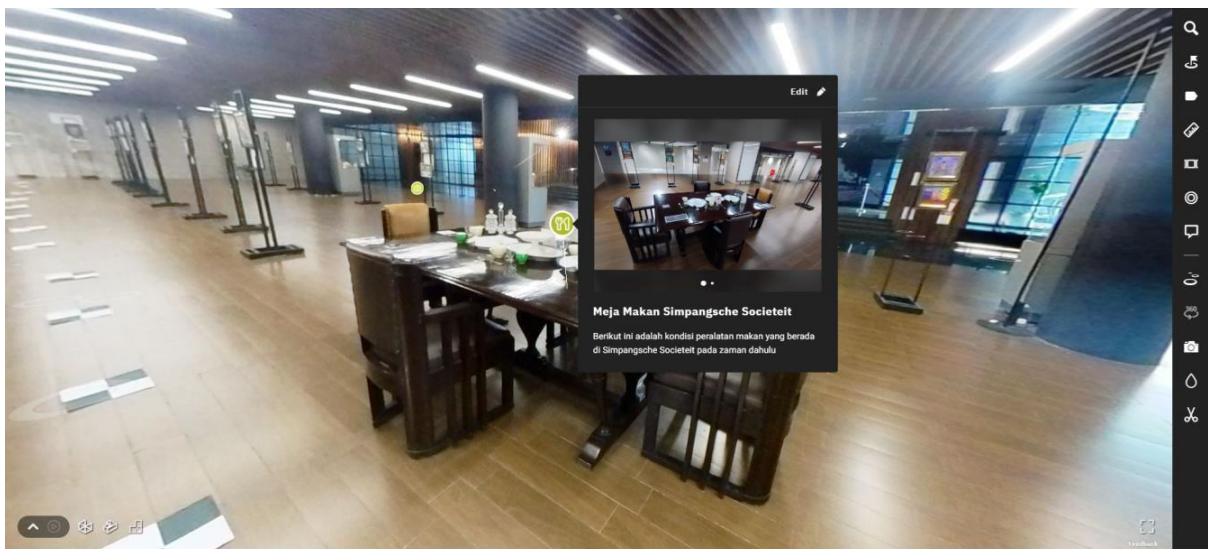


Figure 5. Result Combination Data Basement Area

This Building area is accessible to users for walking. Additionally, as shown in Figure 4, users can access information at the entrance of the space. There is no virtual tour available in the room since the image depicts a space that guests are not permitted to enter in the Basement. To look about from that position, move the image to the right or left. To advance or retracetheir steps, users can press the white circle on the floor. By tapping the icon in front of the display, users canview extensive information about the displays in the basement area.

Table 3. Number of icons

No	Area	Room Icon	Display Icon
1	<i>Merah Putih</i> Building	10	16
2	Basement	3	11

The total number of icons for each category is shown in Table 3. The *Merah Putih* Building contains the most room icons due to the large number of rooms in the area, while the basement has fewer due to a small wall separating the rooms from one another. Pressing the icon button will provide users with information such as the room number, room usage, and art display. Not all exhibits have iconic status. This is because the display is not permanent and can be changed after a specific amount of time. To make information more accessible tousers, the Balai Pemuda Tourism website compiles all the data that has been gathered and analyzed. The website for the Balai Pemuda Surabaya Virtual Tour is seen in the image below. Only the website's title and links to Balai Pemuda-related websites are present on this start page. For users to be aware of the website beingopened, this home page includes a photo of the Balai Pemuda building front view and the website title.



Figure 6. Website Balai Pemuda Surabaya

The Balai Pemuda Surabaya was built during the Dutch era, and its current purpose is explained in the following perspective on this website. Users can also access Balai Pemuda's social media accounts in this presentation, which seeks to combine all of the data into a single webpage. There is a page with a virtual tour. The top Balai Pemuda Virtual Tour and the basement Virtual Tour are bothavailable on this website. Users can select a virtual tour to encircle an existing structure or space. Users can view the area's surroundings and the information that has been added to this virtual tour.

Furthermore, to test the Surabaya Balai Pemuda website, Usability Testing was carried out. There were 67 respondents who had filled out the form that had been distributed. This test includes five categories, namely Learnability Test Efficiency Test, Memorability Test, Errors Test, Satisfaction Test. In total, 67 people answered the questionnaire, as shown in Table 4, and 88.5% of them indicated they wouldbe very likely to use this website to learn more about the Balai Pemuda Surabaya. Additionally, a portability test was performed to determine whether this website can be viewed using browsers on laptops and mobile devices (Table 5).

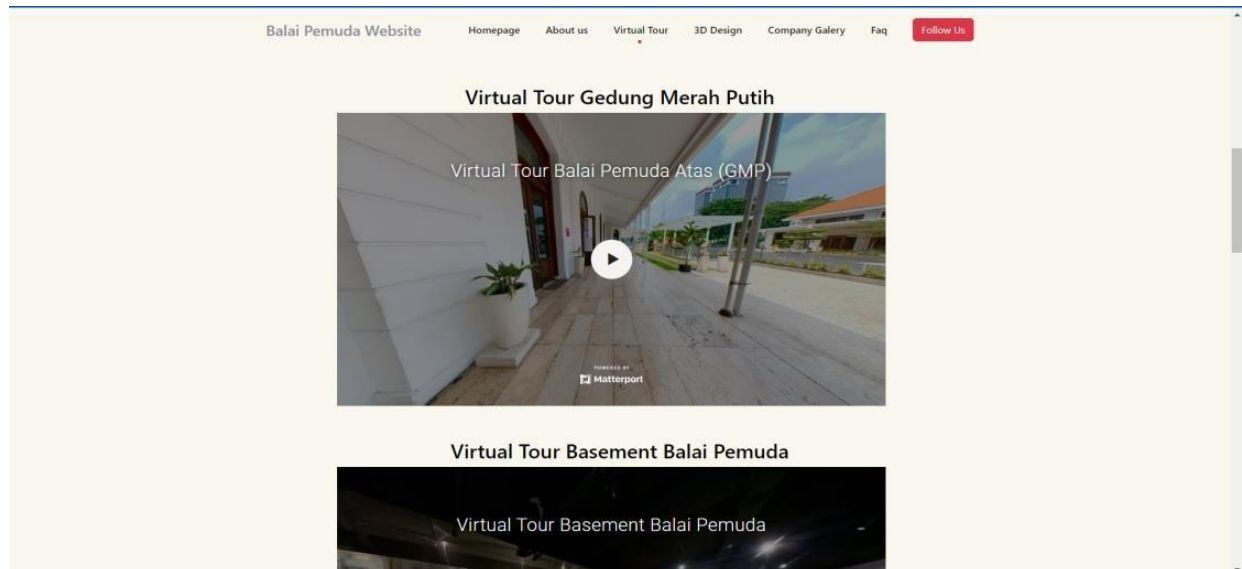


Figure 7. Combine Data Spherical camera and non-spatial data using Virtual Tour

Table 4. Results of the Usability Test

Description	5	4	3	2	1
	TA	A	SA	D	SD
Learnability Test	242	201	21	3	2
Efficiency Test	246	197	20	6	0
Memorability Test	215	221	32	1	0
Errors Test	163	146	23	3	0
Satisfaction Test	232	213	23	1	0
Total Answer	1098	978	119	14	2
Total Point	5490	3912	357	28	2
Total Score		9789			
Max Score		11055			
Usability Test Percentage		88,5%			

Table 5. Portability Testing

Device	Browser	Result
PC / Laptop	Google Chrome	Succeed
	Mozilla	Succeed
	Microsoft Edge	Succeed
Cellular	Google Chrome	Succeed
	Safari	Succeed
	Bing	Succeed

PC/Laptops and Cellular are the two devices used for portability testing. On a laptop, you can access websites using the Google Chrome, Mozilla, and Microsoft Edge browsers. The same goes for using Cellular to access this page with the Google Chrome, Safari, and Bing browsers.

Conclusions

The *Merah Putih* Building and the Basement regions comprise the two sections of the Balai Pemuda Virtual Tour. Visitors to the *Merah Putih* building area have access to a total of 80 points, and basement rooms have a maximum of 104 points available. There are 10 room icons and 16 display icons in the virtual tour of the *Merah Putih* Building; in the basement, there are 3 room icons and 11 display icons. Aside from that. The Balai Pemuda Surabaya website was subjected to usability testing using the Standard Nielsen Model, and the results fall into five categories: learnability, efficiency, memorability, errors, and satisfaction. A questionnaire that was completed by 67 respondents was utilized to obtain the data, and 88.5% of the respondents strongly agreed to use the website for virtual tours. Additionally, a test of mobile and laptop browser portability was done.

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