



Wikisource Loves Manuscripts (WiLMa) Guidelines

Edited by:
Ilham Nurwansah
Abdullah Maulani
Muhammad Nida' Fadlan
Lilis Shofiyanti

Pusat Pengkajian Islam dan Masyarakat (PPIM)
UIN Syarif Hidayatullah Jakarta
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Indonesian Manuscripts

Indonesia has a vast diversity of cultural heritage, one of which is the huge number of manuscripts stored in various locations. This indicates the richness of Indonesian civilization. Indonesian people have been recording different types of information and knowledge in these manuscripts, which is relevant even today.

In addition to describing a wealth of intellectual heritage, manuscripts in Indonesia also play an important role as a recording medium for the diversity of languages and scripts which are a part of the nation's identity. According to Chambert-Loir and Fathurahman (1999) there are at least 18 languages that are recorded and used in manuscript texts in Indonesia, ranging from Acehese, Arabic, Balinese, Batak, Dutch, Bugis, Javanese, Makassarese, Malay, Minangkabau, Sasak, Sanskrit, Sundanese, to languages spread across East Indonesia, Kalimantan and South Sumatra. This is in line with the scripts used in the manuscript writing tradition in Indonesia which are no less diverse, ranging from Javanese, Sundanese, Balinese-Sasak scripts, Arabic scripts and their derivatives such as Jawi, Pegon, Serang, Buri Wolio, to scripts which developed in eastern Indonesia such as the Lontara script, and so on.

In general, manuscripts in Indonesia have been made from various types of paper, such as European paper, tree bark paper, and lontar, nipa palm, and also written on other durable materials such as gold, silver, copper, bamboo, wood, buffalo horn, and so on. Thousands of these manuscripts are stored in various places, ranging from private or public collections that are passed down from generation to generation, to special institutions that are concerned with preserving written tradition artifacts in Indonesia such as libraries, museums, galleries, and religious institutions such as boarding schools, churches, mosques, temples, and so on.

However, despite the large number and abundant educational potential, manuscripts in Indonesia are in a dire need of preservation. Several factors such as Indonesia's geographical condition which is prone to natural disasters, low awareness and human resources in the care and preservation of manuscripts, lack of access, and limited studies that are conducted using available manuscript sources make manuscripts in Indonesia prone to damage and extinction. Therefore, there is a need for systematic, sustainable efforts involving the participation of different stakeholders in the preservation of manuscripts in Indonesia.

The Urgency of Digitizing Indonesian Manuscripts

One of the important efforts made in the preservation of manuscripts is digitization of manuscripts. In the context of preserving manuscripts, digitization is interpreted as an activity to preserve the content or text of manuscripts that are threatened with extinction through its transfer to digital format media.

The benefits of digitalization in preserving manuscripts include opening the widest possible access to the content of manuscripts, preventing the extinction of information contained in manuscript texts, and facilitating the study of the contents of manuscript texts for the sake of scientific development.

By digitizing, the owner of the manuscript will keep the original manuscript without worrying about losing its contents. A digital copy of the manuscript will be provided to the owner of the manuscript. In addition, digitized results are also stored in several places and published online in the Wikisource Loves Manuscripts (WiLMa) digital archive.

Wikisource Loves Manuscripts in Indonesia

The potential for the development of manuscript-based science in Indonesia cannot be ignored. Hundreds of thousands of manuscripts containing the cultural diversity of the Indonesian nation make it important for all parties to save intellectual artifacts without exception.

One of the efforts to support the preservation and use of manuscripts in Indonesia is the Wikisource Loves Manuscripts in Indonesia program. This program was initiated by the Center for Islamic and Community Studies at UIN Syarif Hidayatullah Jakarta in collaboration with the Wikimedia Foundation to develop a digital ecosystem for manuscripts in Indonesia starting in 2022.

Wikisource Loves Manuscripts is a call-to-action to Indonesian GLAM professionals to revitalize endangered archives on the Wikimedia platforms. Manuscripts will be digitized and transcribed on Wikisource to develop digital resources in local Indonesian languages. In 2020-21, the Wikimedia

Foundation funded two projects that helped create a new Wikisource in the Balinese language. One of the projects focused on creating technology to support the transcription of handwritten palm leaf manuscripts on Wikisource while the other focused on scanning and digitizing more manuscripts from archives and individual collectors. Since the launch of the new Wikisource, we have seen active contributors grow through its use in the Balinese Language Program at Udayana University. We believe this can be a replicable strategy for engaging with culture and heritage across the world.

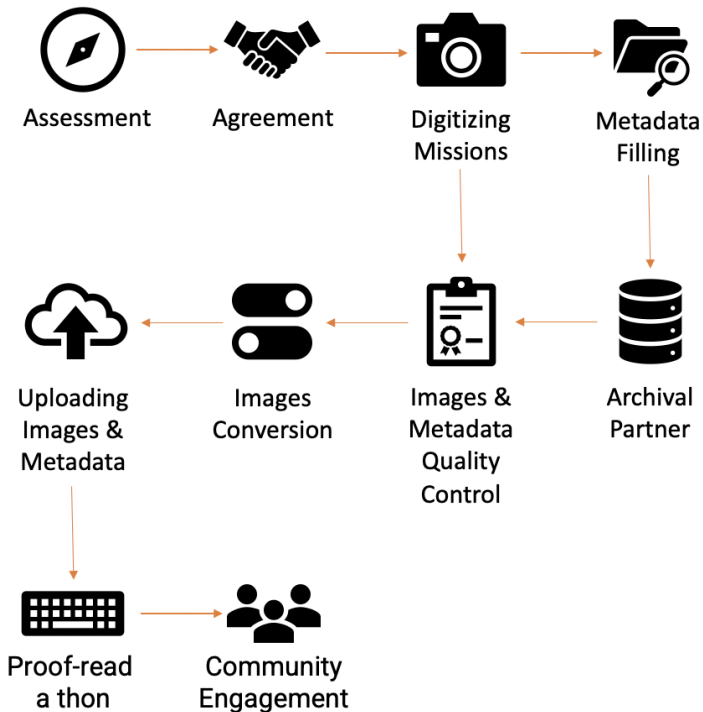
PPIM will work closely with the Wikimedia Foundation, Wikimedia Indonesia, the Nusantara Manuscripts Society (Manassa), and community-led WikiLontar to develop a call to action for libraries, archives, and universities in Indonesia:

1. Rescuing discarded and undocumented ancient manuscripts in Indonesia through digitization.
2. Revitalize indigenous knowledge in local languages by facilitating the public to copy manuscripts on Wikisource.
3. Facilitate academic research using manuscript sources.

PPIM will invite stakeholders to contribute Indonesian manuscripts and metadata to the Wikimedia platform for free access to the world. They will help us partner with universities and other research institutions, which can provide students with the opportunity to collaborate on our projects.

Wikisource Loves Manuscripts Workflow

In general, the process and workflow of the Wikisource Loves Manuscripts program in its efforts to preserve manuscripts in Indonesia are as follows.



1. Assessment and Agreement

The first step that must be taken in efforts to preserve manuscripts is assessment. This activity includes identification and initial research on the potential for a manuscript collection in a certain area. It aims to map the initial conditions of a collection, the necessary action plans, and the urgency of digitizing the manuscripts of a collection.

In addition, it also aims to obtain permission from the owner of the manuscript collection. Permission must be obtained with a sense of mutual trust between the researcher or assessor and the owner of the manuscript. It is important to emphasize that the Wikisource Loves Manuscripts program will not transfer ownership of the physical collection. The entire series of digitization activities is carried out at the place where the manuscript collection is kept by the owner. Permission from the owner of the manuscript collection is indicated by a statement of willingness to digitize and open access to the manuscript.

2. Digitizing Mission

After permission for manuscript digitization activities and open access has been issued by the owner, the team can start converting the manuscript media into digital format. Each page of the manuscript is photographed in accordance with the procedures stated in this book.

3. Metadata Filling

In the digitization process, capturing the metadata, both physical and manuscript text, is an integral part. The manuscript metadata of a collection is captured by an academic expert who understands the character of the manuscript collection and its cultural background. This is done so that the accuracy of the manuscript data presented is guaranteed and makes it easier for readers to do further research.

4. Digital Manuscripts Distribution to the Owners

After all manuscripts have been transferred to digital format and the metadata is complete, the digitized copies can be distributed to the owner of the manuscript collection. In addition, this program also works with local manuscript preservation communities. This is done with the aim of creating synergy between the digitization team and manuscript owners to jointly care for the collection through digital files and optimize their utilization. This also shows that basically the Wikisource Loves Manuscripts program is an effort to help manuscript owners to be able to care for and preserve their manuscripts so that all the digitization results that have been carried out can also be obtained by the manuscript owners and the community around the collection.

5. Images and Metadata Quality Control

An equally important process in digitizing manuscripts is quality control. This work is carried out by two parties, namely the digitization team in the field and the Wikisource Loves Manuscripts data manager team in Jakarta. This activity is carried out to ensure that there were no errors while scanning the manuscripts and adding the metadata.

6. Images Conversion

After confirming the validity of all digitized manuscripts and metadata, images from .JPG/.RAW files are converted so they could be adapted to the Wikimedia Commons platform. This conversion process is carried out by the Wikimedian-in-Residence or a community member.

7. Images and Metadata Uploading

The next step is uploading the resulting digitized manuscript images and metadata to Wikimedia Commons and Wikidata. After the file upload process is complete, digital manuscripts and their metadata can be accessed openly by all groups via the Wikisource Loves Manuscripts web page.

8. Proof-read a thon and Community Engagement

Good digitization results must of course be supported by optimal use by all stakeholders as well. Therefore, one of the efforts to campaign for the importance of preserving manuscripts and their

utilization in the Wikisource Loves Manuscripts program is Proofread-a-thons. This is to ensure that the Wikimedia community and manuscript activists are engaged to participate in developing digital manuscript-based research infrastructure by transcribing these digital manuscripts.

Wikisource Loves Manuscripts Project Assessments

One of the early stages in implementing the digitization of manuscripts in Indonesia is an assessment activity aimed at collecting initial data and understanding the condition of manuscripts in a collection. Several things that need to be considered in WiLMA assessment activities are as follows.

A. Collection Location Mapping

In an effort to save manuscripts, mapping of collection locations is very important. Assessors who wish to review a collection should know and carry out simple research and collect as much information as possible using available sources related to the location and the collection. All information obtained is very useful for establishing communication with the owner of the manuscript collection to be addressed in digitization activities.

B. Application for access permits and digitalization activities

After obtaining information regarding the intricacies of the collection and the environment around it, the assessor is advised to build a relationship with the owner of the manuscript collection or people who

can connect the assessor with the owner of the manuscript collection. After good relations and communication are established, the assessor submits an application for permission related to the activity of saving the manuscripts of a collection to the owner.

Applications for permission to the owner of the manuscript collection must consider the aspects of a humane approach without the slightest coercion or intimidation towards the owner of the manuscript. The assessor is also prohibited from promising something in the form of unrealistic material or other things outside the assessor's authority to the owner of the manuscript to avoid unwanted confusion in the future.

Some important things that need to be conveyed in the process of submitting an application to rescue manuscripts by Wikisource Loves Manuscripts in Indonesia are as follows:

1. The Wikisource Loves Manuscripts in Indonesia activity is an effort to document manuscripts in Indonesia by digitizing manuscripts into digital photo formats with the aim of opening the widest possible access to information regarding manuscripts in a collection.
2. Wikisource Loves Manuscripts in Indonesia does not take or transfer ownership of digitized manuscripts to certain parties.

Ownership of the manuscript remains in its original condition.

3. All collection owners who wish to participate in the rescue of the manuscript collection organized by Wikisource Loves Manuscripts in Indonesia are entitled to a copy of the digitized collection.

C. First Handling on the Collections

After the owner of the manuscript collection allows access and digitization activities, the assessor is required to carry out an initial inventory of the collection and perform first aid for the manuscripts if they are in an alarming condition such as carrying out simple cleaning, separating manuscripts damaged by termite or insect invasions, providing additional materials that can repel paper-destroying insects, and grouping manuscripts to be digitized.

D. Assessment and Agreement Form

In the assessment activities carried out, the assessor is required to fill out a form containing data on a brief description of the collection, the number of collections, and the background of the owner of the manuscript. The forms that have been filled in according to the results of the assessor's visit will be used as a reference in the manuscript rescue and digitization activities by Wikisource Loves Manuscripts in Indonesia of the manuscript collection. The assessment form can be accessed via the following link:

- Printed form: bit.ly/WMForm1

- Online forms: bit.ly/WMForm2

After completing the assessment form, the assessor is required to submit a signature request to the owner of the manuscript in the document of willingness to digitize. This document states that the owner is willing to fully digitize his collection of manuscripts and the results can be accessed open to the public (open access) through the Wiki platform. The draft of agreement letter for digitization can be accessed via the following link.

- Agreement letter: bit.ly/WMForm3

Basically, the entire series of assessment activities for a collection of manuscripts is carried out with the aim of opening up the involvement of all parties in the preservation of manuscripts through an approach that prioritizes human aspects so that awareness and responsibility for preserving manuscripts can be carried out collectively, continuously, and the information contained in these manuscripts can be sustainable and spread benefits to society.

Tools and Equipment for Digitizing Manuscripts

In order to support manuscript digitization activities that demand the best image quality, of course, the best technical equipment is also needed. According to the Wikisource Loves Manuscripts digitization standards, each digitizing team will carry one set of instruments which includes the following items.

Camera and Lens

The camera is a device for taking and storing pictures in digital format. The recommended camera type is a DSLR (the Digital Single Lens Reflex) camera. This is because the type of DSLR camera has advantages in terms of framing, focus and exposure. In addition, this type of camera also fully supports control from computer devices, making it easier for photographers to check the quality of each image produced.

The recommended camera for digitizing WiLMA manuscripts is a DSLR camera. In its implementation, the Wikisource Loves Manuscripts

team was equipped with a camera with the following specifications:

Camera: Canon EOS 6D Mark II

- 26.2MP Full-Frame CMOS Sensor
- DIGIC 7 Image Processor
- 45-Point All-Cross Type AF System
- Full HD Video at 60 fps; Digital IS
- 3" 1.04m-Dot Vari-Angle Touchscreen LCD
- Dual Pixel CMOS AF and Movie Servo AF
- Native ISO 40000, Expanded to ISO 102400
- 5 fps Shooting; Time-Lapse & HDR Movie
- Built-In GPS, Bluetooth & Wi-Fi with NFC
- Dust and Water Resistant; SD Card Slot



Canon EOS 6D Mark II. Photo: Abdullah Maulani CC BY 4.0.

Lens: Canon EF 50mm f/1.4 USM

- Aperture Maximum: f/1.4 Minimum: f/22
- Two High Refraction Lens Elements

- Ultrasonic Autofocus Motor
- Manual Focus Override
- Focal length 50 mm
- Minimum Focus Distance 1.5' (45 cm)



Canon EF 50 mm Ultrasonic. Photo: Abdullah Maulani CC BY 4.0.

Lighting unit

In the world of photography, light plays an important role in producing the best images. This also applies to the digitization of manuscripts which demands the best image quality to make it easier for users and provide comfort in reading and accessing these manuscripts. Therefore, maximum lighting is absolutely necessary in digitizing manuscripts. Wikisource Loves Manuscripts in Indonesia uses flash photography techniques in manuscript digitization activities. One tool that can be used is

the Godox Mini Pioneer Studio Flash package with the following specifications.

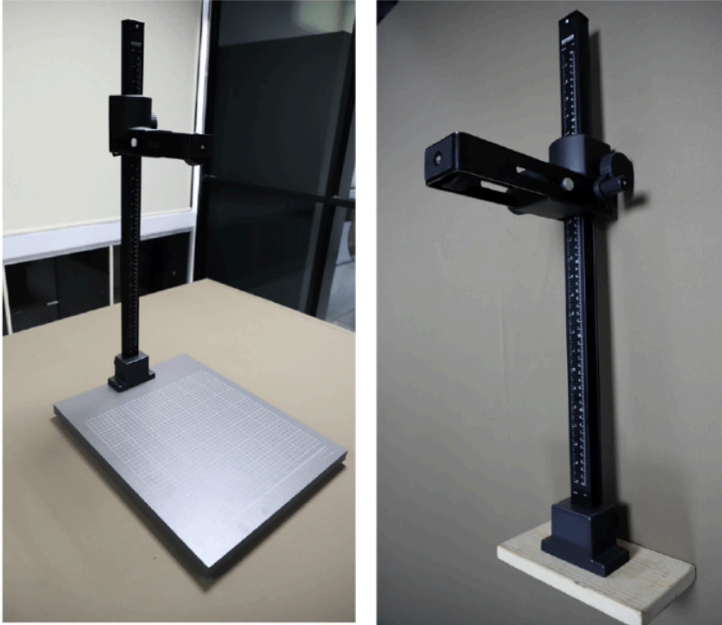
- Flash Output: 160 WS
- Guide Number (ISO 100): 43
- Color Temperature: 5600±200K
- Power Voltage: AC220V 50HZ / AC100-120V 60HZ
- Flash Power Control: Stepless
- Modeling Lamp: 75W
- Recharging Time: 0.5-2s
- Flash Triggering Method: Sync cord, Slave, Test button, Flash trigger
- Triggering Voltage: 5V / DC
- Flash Duration: 1/2000-1/800s
- Fuse: 5A



Godox Mini Pioneer Studio Flash. Photo: <https://www.godox.com>.

Copy stands and Tripod

The use of copy stands aims to provide camera stabilization in the digitization process. It also has horizontal arms that can be adjusted according to the position of the object. Copy stands with a 70cm column combined with a 50mm macro lens in a DSLR camera will cover an area of 5 x 7.5 cm up to 28 x 42 cm.



Kaiser copy stands. Photo: Abdullah Maulani CC BY 4.0

Computing Devices

In the activity of digitizing manuscripts, a capable computing device is absolutely necessary to control the camera and process the resulting images. Therefore, the recommended computer equipment is a device that supports the specifications of an image processing software with the following minimum conditions.

- OS: 64-bit Windows 10 or equivalent
- Processor (AMD): Athlon X4 880K @4GHz or equivalent
- Processor (Intel): Core i3-6100 @3.7GHz or equivalent
- Memory/RAM: 4 GB
- Graphics card (AMD): Radeon HD 7850 or equivalent
- Graphics card (NVIDIA): GeForce GTX 660 or equivalent
- Hard-drive space: 50 GB

The computer equipment used in digitizing Wikisource Loves Manuscripts is as follows.

Laptop: HP Pavilion Gaming 15

- OS: 64-bit Windows 11
- Processor (Intel): Core i5-11300H up to 4.4 GHz
- Random Access Memory: 8 GB
- NVIDIA® GeForce RTX™ 3050 Laptop GPU (4 GB GDDR6 dedicated)
- Internal hard-drive space: 1000 GB



Hp Pavilion Gaming 15. Source: <http://www.hp.com>

A laptop with gaming specifications was chosen because it is equipped with specifications with the ability to process large files with consideration of components such as integrated VGA card, latest processor generation, optimized cooling system, and storage with good capabilities.

Color checker

As one of the activities involving the world of photography, the images produced in digitizing manuscripts must also have high color accuracy. One tool that can be used to measure the desired level of accuracy of digitized images is a color checker. Wikisource Loves Manuscripts in Indonesia, in this case, uses the QPCard 101 color checker, which has been customized in size so that it doesn't take up too many fields in an image.



Color checker QPCard 101. Photo Abdullah Maulani CC BY 4.0.

Storages

To store digitized manuscript data, three storage devices are needed, such as 1 (one) SD Card used for DSLR cameras, 2 external hard drives with a capacity of 2TB (terabytes) each. The Wikisource Loves Manuscripts team is equipped with a storage device with the following specifications.

Sandisk Extreme Pro SDXC UHS-I U3 V30

- 64 Gigabytes storage
- Read Up To 170MB/s/ Write Up To 90MB/s
- Video Speed Class V30
- 4K Ultra HD (3840 x 2160p); Full HD (1920 x 1080p)
- Compatible with SDXC and SDXC-I (UHS-I) enabled host devices
- Shockproof, X-ray proof, and Waterproof



Sandisk Extreme Pro V30. Photo: Photo: Abdullah Maulani CC BY 4.0.

2 external hard drives Western Digital (WD)

- Capacity - 4TB
- Connectivity
 - - USB 3.0
 - - USB 2.0
- Format exFAT (Windows and Mac)



WD Elements 2Tb with USB 3.0. Photo: Photo: Abdullah Maulani CC BY 4.0.

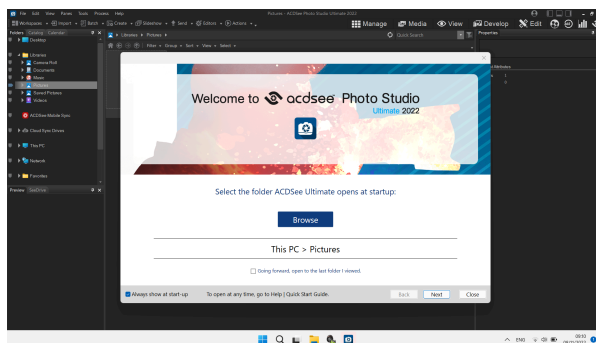
Software

In operating the camera and processing images digitized from manuscripts, at least two main software are needed, namely the remote shooting application and image processing according to the camera brand used. If you are using a Canon camera, you need the Canon Digital Professional Plus 4 and EOS Utility apps installed on your computer, and if you are using a Nikon camera, you must have the Camera Control Pro 2 application installed on your computer.



Digital Photo Professional 4. Screen captured by: Abdullah Maulani
CC BY 4.0.

Apart from the applications that are included in the purchase of each camera brand, both Canon and Nikon, applications that must be installed are mass image processing applications such as ACDSee Photo Studio. It is highly recommended to install the application in the latest version.



ACDSee Photo Studio Ultimate 2022.
Screen captured by: Abdullah Maulani CC BY 4.0.

This mass image processing application is used to manage files in large quantities efficiently and optimally. In addition, these two applications have detailed metadata information from images produced during the process of digitizing manuscripts.

Cleaning equipment

In addition to the tools mentioned above, the team is also equipped with the following tools for cleaning manuscripts.

1. Microfiber cloth
2. Soft brush
3. Gloves and Masks
4. Hazelnut paste
5. Lemongrass oil (Cymbopogon citratus oil)
6. Mini-USB dust removal



Micro fiber cloth and soft brush. Photo: Abdullah Maulani CC BY 4.0.



Mask and gloves. Photo: Abdullah Maulani CC BY 4.0.



Tireh or hazelnut paste. Photo: Widyaksara Nyurat Lontar.



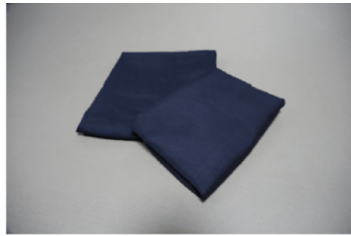
Dust removal mini vacuum USB. Photo: Zikra Fadilla.

Supporting tools

Digitization activities often reach areas that have difficult terrain. The team faced a situation that was not ideal but a rescue mission for manuscripts in a

collection had to be carried out immediately. Therefore, the equipment carried must anticipate things that hinder the course of manuscript digitization activities. In addition to the core tools, the Wikisource Loves Manuscripts team is equipped with the following tools.

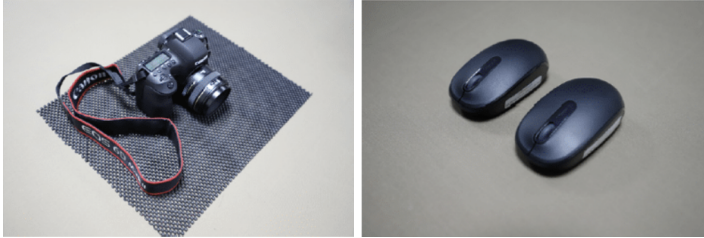
1. Pinset
2. Black cloth
3. Clear nylon thread
4. Sponges
5. Duplex
6. Extension cables
7. LED box
8. Measuring tape



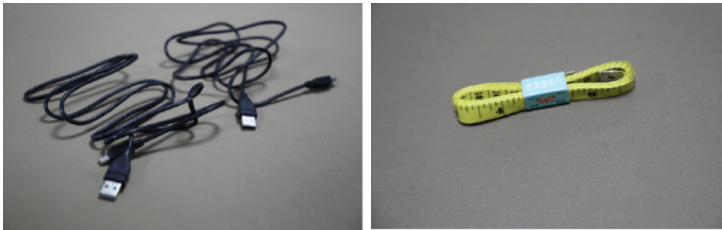
Pinset and black cloth. Photo: Abdullah Maulani CC BY 4.0



LED box and cable extension. Photo: Abdullah Maulani CC BY 4.0.



Camera base and mouses. Photo: Abdullah Maulani CC BY 4.0.



USB cables and measuring tape. Photo: Abdullah Maulani CC BY 4.0.

Preparing Manuscripts

In general, there are three types of materials commonly used in writing manuscripts in Indonesia. First, manuscripts made from paper such as tree bark paper, European paper, lined paper, etc. Secondly, manuscripts made from leaves such as palm leaves and *gebang* leaves ([*corypha utan*](#)). Third, texts written on wooden materials such as bamboo, rattan, and the like.

Before digitizing, the team had to carry out an inventory or sort the manuscripts in a collection based on their condition, especially in the field of text. This aims to separate manuscripts that have been damaged from manuscripts that are still in good condition. In addition, this separation also aims to prevent more damage from a collection

Before starting digitization, the team must ask the owner for permission to move the manuscript from the repository to the digitization room. Make sure manuscripts are carried with extreme care. Not all existing manuscripts can be digitized. Apart from having to obtain permission from the owner, the team also had to select the feasibility of digitizing a manuscript based on its content and physical condition. Team members should select those manuscripts that contain important points. The criteria that can be considered are:

1. It has local value;
2. It have a significant academic impact;
3. It is unique compared to similar texts;
4. Other considerations that can be accounted for.

Apart from the contents, the team also needed to consider the type of manuscript to be digitized. Make sure the manuscript is written by hand, not printed (lithograph), and comes from the period before the printing era.

The condition of the manuscript also needs to be taken into consideration. In consideration of its merits, Wikisource Loves Manuscripts will only digitize manuscripts that are in good condition and are at risk of damage. As for manuscripts that have been damaged, they do not need to be digitized.

Manuscript-Paper handling

After the manuscript is brought to the digitization site, clean all manuscripts from dust and dirt from all parts of the manuscript. Manuscript cleaning is done using a soft brush. Everyone in the room or in the closest position to the manuscript cleaning activity must wear a mask. For those in charge of cleaning manuscripts, they are required to wear gloves. This aims to minimize the adverse effects of dust from cleaning manuscripts on breathing and skin irritation.



Cleaning dust using a soft brush. Photo: Abdullah Maulani.

Manuscript-Palm leaf handling

Traditionally, writing text on palm leaves uses a small knife with a sharp tip and scratches on the surface of the palm leaves. The strokes that form certain texts are then smeared with black roasted candlenut so that they fill the pores of the scratches.

The handling of manuscripts made of palm leaves or gebang is different from the handling of manuscripts made of paper. Often manuscripts made from lontar are found in a moldy condition as a result of being stored in damp places and ink that is no longer visible on the surface of the lontar leaves. Over time and improper storage, the black ink from the roasted hazelnut fades.

Therefore, the steps for handling manuscripts made from palm leaves are as follows:

1. Separate the lontars which are damaged from those which are in good condition and suitable for digitization;
2. remove the palm leaf string if it still has the wooden cover and binding strap;
3. After being separated from each other, the palm plates are cleaned of dust or mold on the surface using a soft brush or microfiber cloth;
4. After cleaning from dust, apply the paste of roasted candlenut to blacken the text on the surface of the palm leaves again;
5. Prepare enough citronella oil. Then wet the microfiber cloth with the citronella oil and gently apply it to the surface of the palm leaves that have been blackened with the roasted candlenut paste;
6. After smearing with citronella oil, dry the palm leaf plates without exposure to sunlight;
7. After the palm leaf plates have dried and the faded text is clearly visible, digitization can be done.



Palm leaf manuscripts before and after cleaning.
Photo: Muhammad Nida' Fadlan CC BY 4.0.

Identifying Physical Metadata of Manuscripts

After the manuscript is cleaned, the next step is to carry out a codicological analysis of the physical manuscript. Physical analysis of manuscripts is to be carried out by academic experts and their assistants by filling out available metadata forms either printed or digitally. Guidance on filling in physical metadata will be explained in a separate chapter.

Counting Manuscript Pages

Before being digitized, the team members were tasked with counting the number of pages of the manuscript along with its cover. Then, make sure that the number matches the number of digital images produced. The team also had to determine the order in which the manuscripts would be photographed, and mark the start or end of the different texts (if more than one text in them), to be digitized.



Counting the pages of the manuscript..
Photo: Muhammad Nida' Fadlan CC BY 4.0.

For this reason, Wikisource Loves Manuscripts in Indonesia has provided manuscript identification numbers to determine the sequence of manuscripts that must be photographed. Paste the manuscript identification number sticker on the cover of the manuscript.

Studio Setup for Digitizing Manuscripts

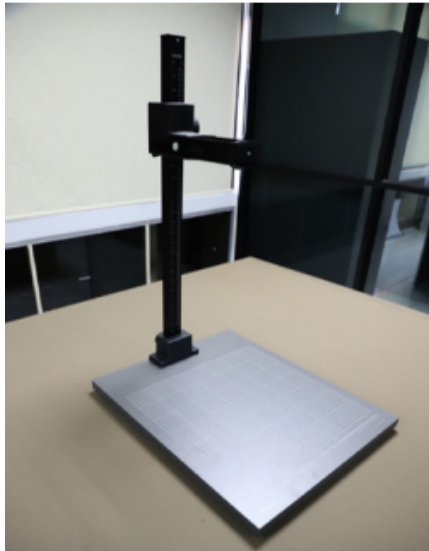
After preparing all the devices needed in digitization activities, the next step is to understand how to install these devices. The steps that must be passed are the installation of copy stands, lighting equipment, cameras, camera software, and camera settings.

Copy Stands Installation

Mount the stand camera on board specially and use screws to lock it.



Make sure the seat camera is locked correctly and straight. Avoid uneven surfaces.



Flash Lighting Unit Installation

Open the flash mount by turning the screw on the bottom of the mount. To extend the stand, open it stand and pull it up to match the height camera mount.



Insert the flash into the socket.
This work must be done with care as it may break.



Place the flash on the end of the mount, securing it with the screws.



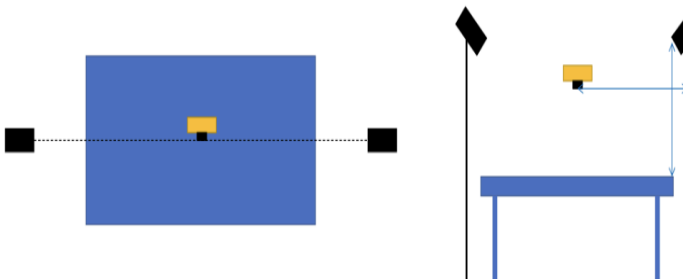
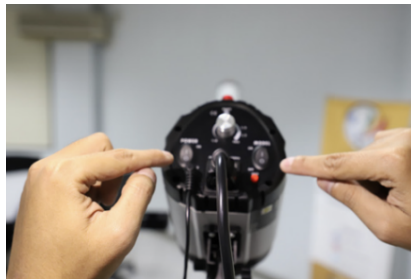
The tilt of the flash head is 45 degrees. You can use the “Clinometer” software on your smartphone. Attach the power cable to the lamp head.



Attach the power cable to the lamp head.



Press the power button on the back of the light head to turn on the flash light unit.



The procedures for setting the distance between the lights, camera, and manuscripts are carried out by referring to the image above.

Camera Installation

Open the Canon EOS 6D Mark II body camera cover.



Open the Canon Lens EF 50mm lens cover.



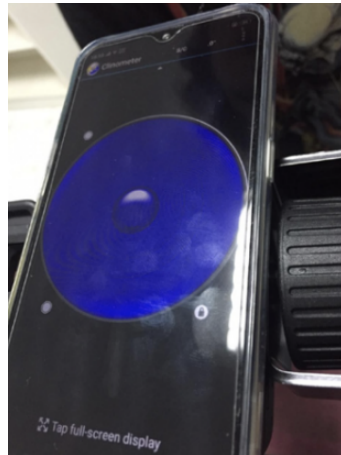
Connect the lens 50mm with the body of the camera by connecting the two red dots on the lens and camera, rotating it clockwise and arriving at the 'click' sound. And press black button before rotating the lens anti-clockwise to take it off.



Place the camera on the camera mount, secure with the supplied screw. Make sure the position of the lens is facing down and aligned with the camera mount. Wrap the camera strap over the camera mount.



Use the "Clinometer" software to make sure the camera position is not tilted.



Lay out the black cloth under the camera.



Connect the camera and laptops.



Attach the flash trigger to one of the lighting heads and attach the other flash trigger to the camera, tucked into the hot shoe of the camera. Then connect the power cable to the power source.

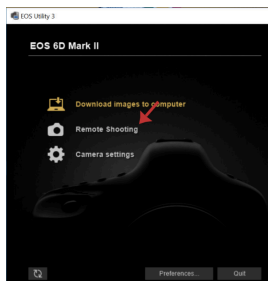


Camera Software Installation

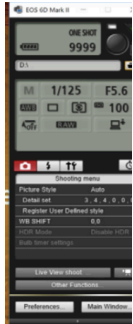
1. Turn on the flash light.
2. Turn on the Laptop.
3. Open Windows Explorer.
4. Open the folder provided by the Wikisource Loves Manuscripts Team in Jakarta. Within each manuscript folder there are three sub-folders (RECTO, VERSO, IDENTITY).
5. Turn on the camera. Turn the camera mode to 'M' by pressing the black button in the middle of the menu.



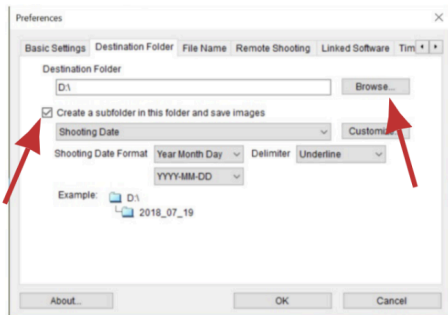
6. Open the “Digital Photo Professional 4” app.
7. Click ‘Remote Shooting’ on the menu.



8. After the 'Remote Shooting' window is launched, a display like this will appear on the right of your screen.

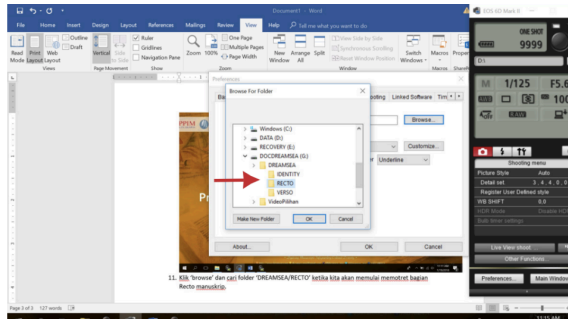


9. Click 'Preferences' and 'Destination Folder' will appear in the following display. Uncheck 'create a subfolder in this folder and save images'. Then, click 'Browse'.

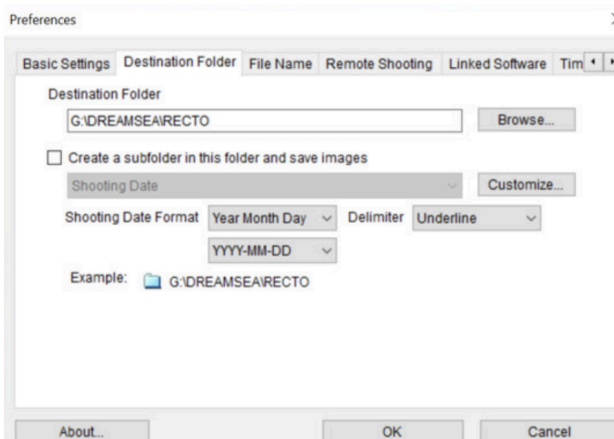


10. Specify the destination folder. Look for the WiLMA > MANUSCRIPT FOLDER > RECTO folder. If you are going to start shooting the

'recto' part of the manuscript, change the destination folder when you are going to shoot the 'verso' and 'identity' sections, then click 'OK'.

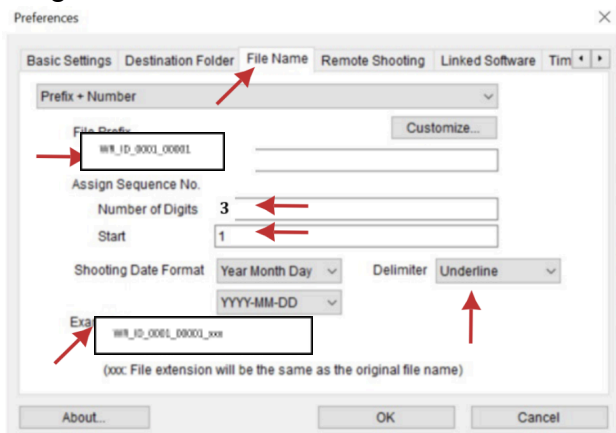


11. Make sure the destination folder looks like the following image:

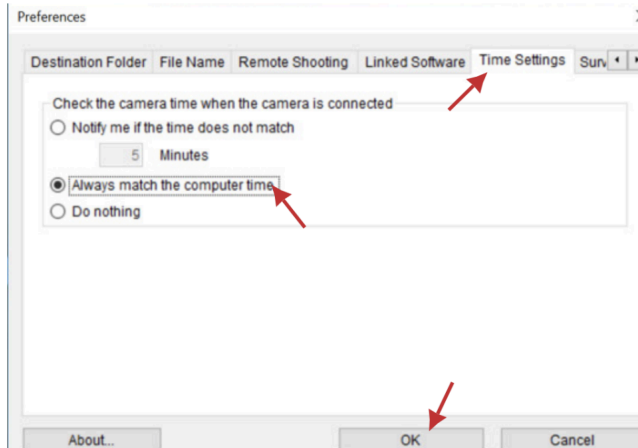


12. Click 'file name' and change the file name to 'Prefix + Number'.

13. Fill in 'File Prefix' according to the project numbering, for example WR_ID_0001_00001 for the first manuscript, WR_ID_0001_00002 for the second manuscript and so on. For the systematics of file and folder numbering, see the section: Folder and File Numbering Techniques.
14. Fill 'Number of Digits' with '3' and 'Start' with '1'. Make sure to change the 'Delimiter' to 'Underline'.
15. See the 'Example' section to ensure the numbering system is appropriate for the needs of Wikisource Loves Manuscripts. Steps 12 to 15 are shown in the following image:



16. Click 'Time Settings' and select 'Always match the computer time'. Click 'OK' to finish setting 'Preferences'.



Camera Setting



1. Shutter Speed choose 1/100
2. Aperture choose F18. Usually, the inverted position is F18 or F20. The higher the F

value, the less focused it is. However, this depends on the lighting conditions in the field.

3. White Balance Setting: color temperature setting. Select K (referring to degrees Kelvin) then set '5600' to '6200'.
4. ISO Setting: The sensor sensitivity is set to 100. This section will produce the best image quality.
5. Image Output: Set the resulting image to RAW+Large/Fine JPEG.

How to Start Digitizing Manuscripts

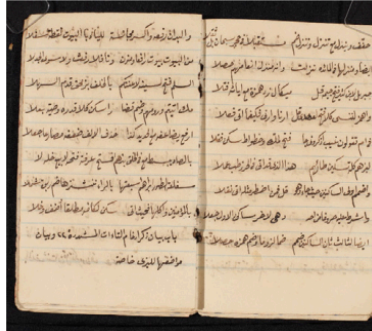
After the tools for digitizing manuscripts, both software and hardware, are properly installed, digitization activities can be carried out. However, before doing so, this section will explain the principles of digitization that comply with the provisions of the Wikisource Loves Manuscripts.

Basic Principles of Digitization Techniques

1. One Shoot/One Page and One Shoot/Two Pages

The basic principle of the digitization technique adopted by Wikisource Loves Manuscripts is One Shoot/One Page. This means that the photographer only shoots one page in one camera shot so that the number of digital images produced is directly proportional to the number of manuscript pages. This principle applies to manuscripts in the form of books and paper.

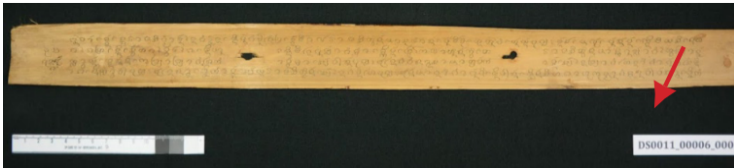
If the size of the manuscript is too small so that the camera lens cannot reach it, then the principle used is One Shoot/Two Pages. The consequence of this principle is that the recto-verso folder system does not apply. However, these two principles will not be applied if the object is a non-book manuscript.



One shoot one page and one shoot two pages.
 Photo by Abdullah Maulani CC BY 4.0.

2. Project Numbering Card

To ensure that the digitized manuscripts match the predetermined numbering, the project numbering card is placed on the cover page. If the manuscript is made of palm leaves, cards are placed on each page side by side with the QP Card.



The placement of project numbering cards in digitizing lontar manuscripts.
 Photo by Abdullah Maulani CC BY 4.0.

3. Using QP Card

The QP Card is a card that functions to calibrate the colors produced by digital manuscripts. Every time a photograph is taken, the photographer must place it at the bottom of each manuscript page. If the object is made of palm leaves, then it is placed

on the bottom-right of the manuscript side by side with the project numbering card.

In addition to having three colors and field size indicators, the QP Card also has a small arrow. This mark indicates the top of the manuscript, not the orientation of the text.

Taking Shots

1. Put the project number above the manuscript you want to photograph. This aims to facilitate the identification and filling of metadata.



Identifying manuscripts with project numbers.

Photo by Abdullah Maulani CC BY 4.0.

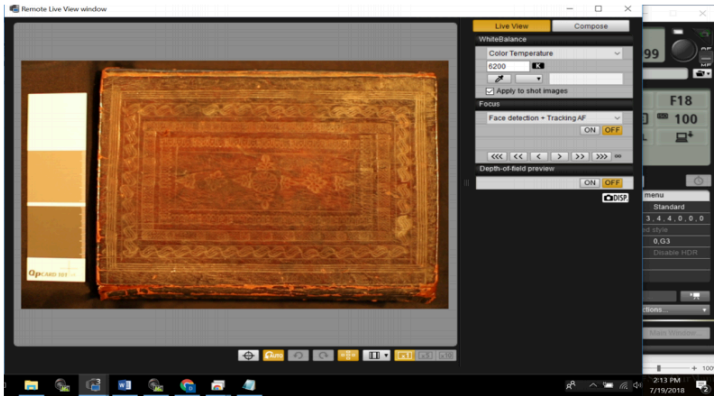
2. Fill in the physical metadata of the manuscript on the 'metadata' form.

3. Place the manuscript and QP Card under the camera. Make sure the QP Card position is aligned with the thickness of the manuscript. If the manuscript is too thick, the QP Card must be placed on cardboard that is stacked as high as the thickness of the manuscript and covered with a black cloth.



Manuscript, QP Card, and camera position.
Photo by Abdullah Maulani CC BY 4.0.

4. Click the 'live view shoot' menu on the camera remote. Make sure the position of the manuscript fills all parts of the image field. Don't have too many blanks. Manuscripts must be straight and symmetrical.



"Live view shoot" in Canon Remote Shooting.
Captured by Abdullah Maulani CC BY 4.0.

5. You can drag up and drop down the position of the camera attached to the copy stands by rotating the pulley to adjust the scope of the object.

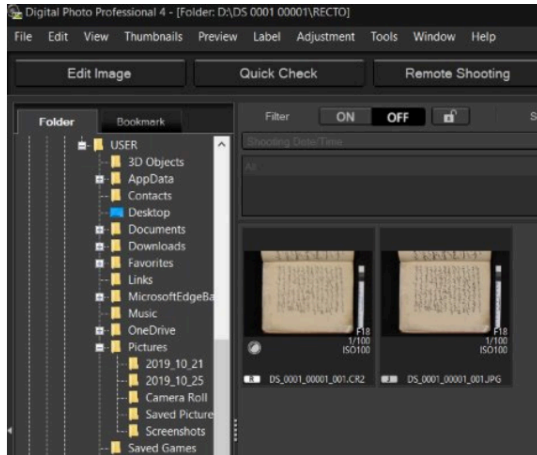


6. Once the manuscript is in perfect position, close the 'Remote Live View Window'.
7. Point the mouse cursor on the remote camera shutter. Pay attention to the 'Beep' sound which is a sign that the camera focus is working properly. After that click the 'shutter' button to start shooting.



Shutter remote camera button on Canon Remote Shooting app.
Captured by Abdullah Maulani CC BY 4.0.

8. Open 'Digital Photo Professional 4', to view the manuscript photo results. Make sure there are no objects blocking the object photo.



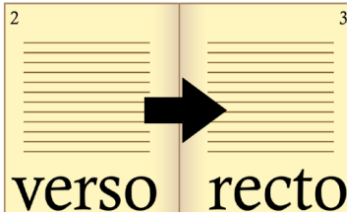
Capture results on Digital Photo Professional 4 app.
 Captured by Abdullah Maulani CC BY 4.0.

9. One shot will produce two types of image files, namely .CR2 and JPG.
10. Continue shooting until finished.

The sequence of photo shots of the manuscript parts

Photographers must digitize in the following order:

1. The part that was first photographed was 'Identity'. All photos are stored in the 'Identity' folder. Here is the order:
 - Front Cover
 - Back Cover
 - Front Pastedown
 - Back Pastedown
 - Watermark
2. After all the 'Identity' parts have been photographed, the next step is to shoot the 'Recto' part.



Manuscripts are read from left to right. For example, manuscripts in Latin, Javanese and Lontaraq scripts.



Manuscripts that are read from right to left are like Arabic, Jawi, Pegon, and Serang scripts.

3. After the 'Recto' part is taken in its entirety, the 'Verso' part is taken and put in the "Verso" folder.

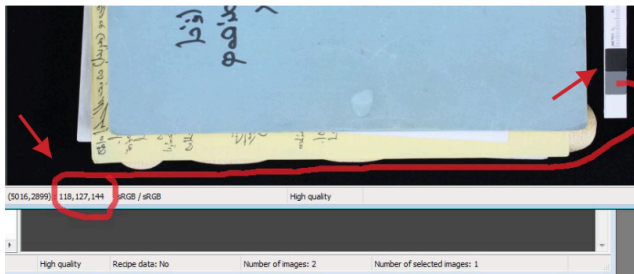
Important Things in Digitalization

In digitizing, the photographer must pay the attention to the note some of the following:

1. Before shooting as a whole, make a sample of the photos to check the level of color balance (calibration).
2. Check the framing of the image.
3. Image results must be proportional, not concave/convex.
4. The distance between the QP Card and the manuscript is approximately 1 cm.
5. Check the resulting image at 100% zoom level.
6. Check the focus.
7. In "View", select "grid lines" to ensure the position of the image is straight and angled.
8. Check the image quality after every 20 shots.

Color Calibration

As previously stated, the photographer must take a sample photo to measure the level of color balance. If the portion of the color has been declared balanced, shooting can be continued.



Digital Photo Professional 4 on calibrating color images.
Captured by Abdullah Maulani CC BY 4.0.

Here's how to measure the color balance of the digitized result:

1. After making a sample, open the digitized results through the 'Digital Photo Professional' application. Double click on the JPG image and hover over the gray color on the QP Card.
2. Pay attention to the red, green, and blue color channels (Red, Green, Blue, RGB) as shown above. The number 118 indicates the red (red) color channel, the number 127 indicates the green (green) channel, and the number 144 indicates the blue (blue) channel.

If a discrepancy is found in the results, you can pay attention to the following provisions:

1. The difference in RGB values must be ensured to be within the range of 7 points. That is, the difference between the highest and lowest values on the three channels cannot be more than 7 points (< 7).
2. If the difference is more than 7 points, the photographer can adjust the temperature or color temperature in the camera settings.
3. Hint: If the B (Blue) value is too high, set the color temperature (degrees Kelvin) to a higher number and try until it fits. If R (Red) and G (Green) are higher than B (Blue), set the temperature to a lower number (example: 5500).

If the gray balance has been obtained, the next step is to check the white balance. Point the mouse at the white color found on the QP Card. Then pay attention to the RGB color balance adjusted according to the following conditions:

1. The value of all three channels must be in the range between 230 & 239.
2. To change the values of the three color calibration channels, you can adjust the intensity of the flash light.
3. The intensity level of both flash lamps must be the same.

Photographing Watermarks and Paper Countermarks

If paper identity is found in the form of watermarks and countermarks in the manuscript, the steps are as follows:

1. Prepare the LED lighting board and connect it to the provided USB Hub. Press the power on button so that the LED lighting board lights up.



LED lighting board and its connection..
Photo by Abdullah Maulani CC BY 4.0.

2. If there are many [watermarks](#) or [countermarks](#) in one manuscript, look for a sheet of the manuscript that has a watermark or countermark with the most intact image as a sample to take a picture of.
3. Turn off the flashlight.
4. After it lights up, place the LED lighting board onto the sample manuscript sheet that has a watermark or countermark.



Paper position on LED lighting board for watermark shooting.
Photo by Abdullah Maulani CC BY 4.0.

5. Set the camera's ISO from 100 to 2500. You can adjust the conditions until the watermark results are clearly visible.
6. Click the camera shutter button in the 'Remote Shooting' dialog box.
7. Make sure the image file goes into the 'IDENTITY' folder.



Sample shot of European paper watermark.
Captured by Abdullah Maulani CC BY 4.0.

8. Shooting of more than one watermark in one manuscript is allowed.

Special Techniques: Damaged Manuscripts

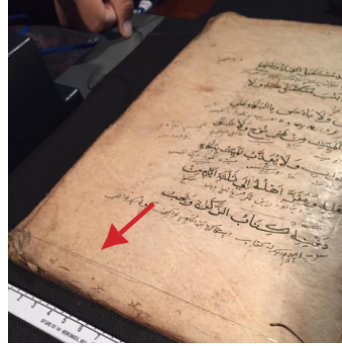
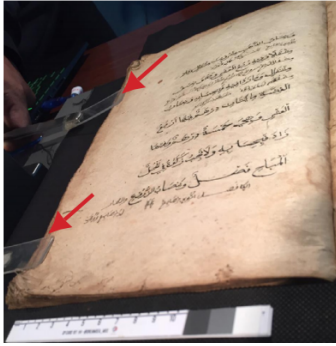
If the condition of the manuscript has holes or tears, then place a black cloth on the back of the page to be photographed. This is done so that the part of the page that is behind the hole is not photographed. In addition, this is done so that the text on the back of the page with holes or tears does not interfere with reading the text on the previous page.



An example of a photo shoot of a manuscript paper with holes and tears.
Captured by Abdullah Maulani CC BY 4.0.

Special Techniques: Thick Manuscripts

Thick manuscripts usually cause problems when captured. The surface of the manuscript is unstable and uneven, resulting in photos that tend to be convex and have the potential to interfere with reading. To overcome this, the photographer can overlap the part of the page to be captured using mica tweezers or nylon thread.



The use of tweezers and the use of nylon thread to smooth the surface of the manuscript. Captured by Abdullah Maulani CC BY 4.0.

Special Techniques: Non-Paper, Folded, or Rolled Manuscripts

The way to photograph folded manuscripts or those made of bamboo, wood, or scrolls is to adjust the range of the camera lens. The direction and sequence of shooting also follow the orientation of the text. The consequence is that folderization no longer uses the recto and verso system.



Bamboo manuscript. Captured by Abdullah Maulani CC BY 4.0.



Some examples of non-paper and folded manuscripts.
 Captured by Abdullah Maulani CC BY 4.0.

Special Techniques: Palm Leaf Manuscripts

Digitization of palm leaf manuscripts uses the principle of one shoot/one page on the first and last leaf. However, from the second leaf the principle of one shoot/two pages is applied. No recto and verso system needed.



Shooting position for palm-leaf manuscripts.
 Captured by Abdullah Maulani CC BY 4.0.

Folder and File Management

Folder and File Management

In the effort to digitize manuscripts, folder management is crucial. Good folder and file management will minimize unexpected things like data loss, data corruption, and others. The steps that must be followed by the photographer team are as follows:

- Create 3 (three) folders consisting of 1 (one) 'Master data' folder, 1 (one) 'Data Renaming' folder, and 1 (one) 'Final Backup' folder.
- Save the 'Master Data' folder to a separate hard drive.
- Always apply the file changes in the 'Renaming' folder. When there is an error in file management, you can retrieve it from the 'Master Data' folder.

The provisions for naming folders and files are as follows:

Numbering and Naming Folder

WiLMa ID 001 0001

1. Use spaces to separate the numbering codes.
2. WiLMa: Wikisource Loves Manuscripts.

3. ID: ISO 3166 code for Indonesia
4. 001: manuscript owner code (3 digits).
5. 0001: Digitized manuscripts code (4 digits).

File Renaming

WiLMa_ID_001_0001_001r

WiLMa_ID_001_0001_001v

1. Use underline (_) to separate the numbering codes.
2. WiLMa: Wikisource Manuscripts.
3. ID: ISO 3166 code for Indonesia
4. 001: manuscript owner code (3 digits).
1. 0001: Digitized manuscripts code (4 digits).
2. 001: manuscript page
3. r/v: recto/verso

This numbering is done automatically using the ACDSee Pro 8 software which is already installed in a special laptop for digitizing Wikisource Loves Manuscripts.

This software is used to assist the numbering system which cannot be done automatically by the camera. Another thing to note is that this numbering is only used for manuscripts that use the

recto-verso folder system. As for the 'identity' folder, the numbering is done manually. Following are the numbering technical stages:

1. Click the icon on the laptop's taskbar to open ACDSee Pro 8. Select the manuscript folder where you want to change the number. Start from the recto folder, then continue with the verso folder.
2. Select all files (both CR2 and JPG types) in the folder by pressing Ctrl and A simultaneously. Then, right click and select 'rename'. Then it will appear like this:
3. Next we will do the file numbering settings. Select the tab: Templates. Checklist: Use Template to rename files.
4. Write a prefix in the form of a numbering code, followed by ### and ending with 'r' for recto or 'v' for verso.
5. Select: Start at: Fixed value 1. Notice the new numbering preview in New Name. Make sure the photographer refers to the file numbering system mentioned above.
6. If everything is in accordance with the provisions, click Start Rename. The numbering process is complete. Apply to all folders.

If the recto and verso numbering is complete, the next step is to change the numbering in the 'identity' folder. As previously stated, file numbering in this folder is done manually. Here are the conditions:

Manuscript pages	Numbering code
Front cover	WiLMa_ID_001_0001_f c
Back cover	WiLMa_ID_001_0001_ bc
Front pastedown	WiLMa_ID_001_0001_f p
Back pastedown	WiLMa_ID_001_0001_ bp
Watermark*	WiLMa_ID_001_0001_ w
* If there is more than one watermark, use the code w1, w2, w3, and so on.	

Quality Control

Photographers are required to check digitization results regularly. In addition to monitoring image quality every 20 shots, checks are also carried out every time a bundle of manuscripts is photographed. This is done for time and cost efficiency rather than conducting the inspection after the digitization mission has been completed.

The first element to look at is image quality. This includes the display quality of digital images and color balance. Software such as Digital Photo Professional 4 and ACDSee Pro 8 (or later versions) can be used for this check.

The quantity of images also needs to be considered. Make sure the number of digitized files matches the number of original manuscript pages. If shooting uses the One Shoot/One Page principle, the number of files in the Recto and Verso folders must be the same (identical). The following are some of the problems that are often found in digitizing manuscripts:

Problems	Troubleshooting
Image missing/no photo taken	Detect on the missing pages. Then shoot the missing page and name

	the file according to the sequence by giving the letter 'a'.
Image captured more than once.	Erase images in both the CR2 and JPG versions. Adjust with proper numbering.
Image is out of focus	Reshoot the problem page.
Another object is photographed	Reshoot the problem page.
Disproportionate image	Reshoot the problem page.
QP Card not visible or touching the manuscript	Reshoot the problem page.
A part of the image section is missing and out of the photo	Reshoot the problem page.

Fill out the Quality Control Data Management Form

In addition to submitting digital manuscript files, photographers are also required to fill out a Data Management Check-Sheet. Filling in this form is intended to ensure that all stages of digitization have been carried out properly.

This form is filled out each time a photographer completes a photo shoot of a bundle of manuscripts before moving on to the next photo shoot. This form can be downloaded online via:

http://bit.ly/WMdata_images

Make a Backup

This is the final stage of the digitization activities, namely making a copy (backup). This stage aims to ensure that all digitized files are safe when reported to Wikisource Loves Manuscripts Data Manager in Jakarta. Copies were made three times, namely on an Academic Expert laptop, a photographer's laptop, and an external hard drive.

Packaging Digitization Equipment

All digitization equipment must be brought intact, without damage, and reported to the team in Jakarta. This excludes single-use equipment such as masks and gloves. To ensure completeness, check the equipment according to the list provided.

Manuscripts Metadata

In the manuscript digitization activity, each team will be given a metadata form that must be filled in by the Academic Expert. Therefore, it is very important to study this guide before going into the field to minimize errors in filling out metadata forms.

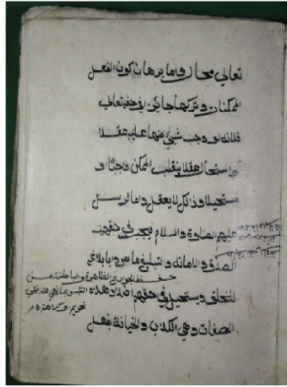
Metadata can be filled in manually in digital files that have been provided by the Wikisource Loves Manuscripts team in Jakarta. In addition, make sure the numbering of manuscripts is done by referring to the applicable provisions.

Once the metadata for all manuscripts has been added, the Academic Expert must copy (back up) all the data and put it in three places; Academic Expert laptop, Photographer laptop, and hard drive.

Metadata Filling Guidelines

1. Wikisource Loves Manuscripts Number
Fill in the manuscript numbering code according to the provisions of the Indonesian Wikisource Loves Manuscripts (WILMA) program.
2. Regency/City
The city where the manuscript collection is located.

3. Province
The province where the manuscript collection is located.
4. Country
The country where the manuscript collection is located.
5. Storage
Private collections or institutions that store these manuscripts.
6. Manuscript Owner
Write down the name of the person or institution that stores this manuscript.
7. Conditions
Select “Good, Poor, or Damaged” to state the general condition of the manuscript. Use the following illustration to help your decision.



Kondisi: Good

Tulisan terbaca dan jilidan masih kokoh.



Kondisi: Poor

Sobek atau berlubang namun tulisan tidak rusak dan masih terbaca.

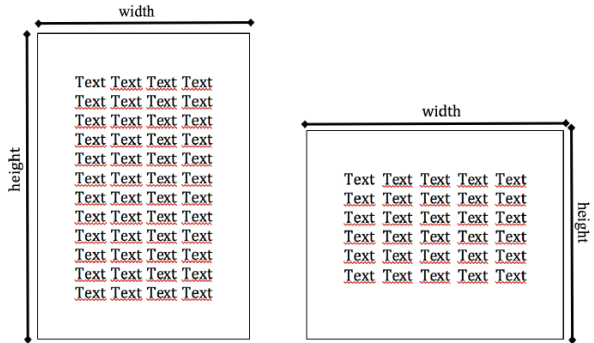


Kondisi: Damaged

Tulisan rusak meskipun kondisi jilidan masih kuat.

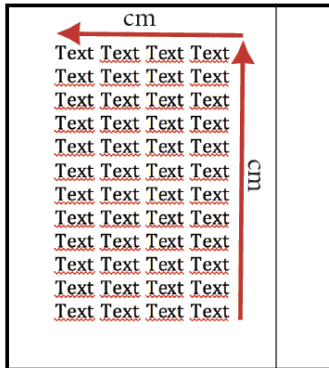
8. Manuscript Size

Write down the height and width of the manuscript in centimeters.



9. Text Size

Enter the height and width of the text in centimeters.



10. Number of Manuscript Pages

Fill in the number of manuscript pages (must be the same as the number of photos).

11. Number of Lines

Fill in the number of lines on each page of the manuscript.

12. Language

Write down the type of language used in writing the manuscript.

13. Script

Write down the type of script used in writing the manuscript.

14. Manuscript Material

The type of material used for manuscript writing.

15. Form

This is a categorization of literary fields based on the contents of the manuscript; in this case, use the most dominant literary field contained in the text.

16. Calendar

The date of copying as stated in the manuscript. Write in year, month, date format.

17. Colophon

If there is a colophon, write it in Latin script.

18. Author

Information about the author's name is usually found on the cover page, the beginning of the text, the end of the text, and the colophon. Sometimes this information is also known from other sources (not included in the text). If the author's name is unknown, write Anonymous.

19. Copier

Information about the name of the copyist of the manuscript.

20. Summary of the content of the Manuscript

Summary of the contents of the manuscript, a maximum of 100 words (3-5 sentences).

21. Bindings

Select "Yes" if the manuscript has bindings.

22. Watermarks

Select "Yes" if the manuscript has a watermark.

23. Countermarks

Select "Yes" if the manuscript has a countermark.

24. Rubric

[Rubric](#) ink color. Select "Yes" if the manuscript has rubrics. Then, state the color of the ink used.

25. Illumination

Select "Yes" if the manuscript has illumination.

26. Illustration

Select "Yes" if the manuscript has illustrations.

27. Other Notes

Write down other important notes contained in the text, either directly or indirectly related to the contents of the text, especially those related to history and its function in society.

Academic experts are requested to fill out this form in offline format or with a .docx file extension. After all manuscript metadata is filled in, the expert must send the metadata form to the Wikisource Loves Manuscripts data manager in Jakarta to assess whether it has been filled in correctly or not and the quality of the metadata.

