



meemoo: digitalisering van nitraatfilms

Negotiation Procedure without Notification

Background document

Non-binding English translation of the Dutch original

Disclaimer

Transparency and knowledge sharing are core values for meemoo. That is why we share our main tender dossiers in the fields of digitisation and archiving. This way, everyone can see how we work or find inspiration. However, we would like to draw attention to this warning and disclaimer.

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1. Digitisation at meemoo

1.1. Vision

A suitable digitisation serves as an answer to the classic archival challenges concerning access and preservation. On the one hand, the analogue part of the Flemish audiovisual heritage is threatened by preservation problems such as the physical deterioration of the carriers or the obsolescence or disappearance of the playback technology. If we want to save this part of our heritage, we need to digitise it. On the other hand, digital access to archival content creates many new possibilities. Therefore, it is necessary that sufficient digital content is available. Today audiovisual content is largely born digital, but analogue content from the past needs to be digitised first.

Although very worthwhile projects have already been carried out, the digitisation of the audiovisual heritage in Flanders requires a sustained effort. This operation is not only vast, but also very technical and (therefore) expensive. This cost can be significantly reduced by coordinating the operation centrally and thus achieving economies of scale. This role is taken on by meemoo, by bringing the parties together, issuing digitisation tenders and also by managing the digitisation projects themselves.

Based on a general survey on the collections from the Flemish media and cultural heritage sector, meemoo selected films with cellulose nitrate as a carrier type for its next digitisation wave.

1.2. Meemoo and its partners

Meemoo believes that mass digitisation can be combined with high quality. It therefore emphasises the importance of a professional and transparent project management, a good communication and understanding between the content providers managing their collection, meemoo as a commissioner of the digitisation task and the service provider doing the digitisation. In digitisation project of meemoo, the partners are typically:

1.2.1. The 'content partners'

The institutions managing the Flemish cultural heritage (the content partners) can be considered meemoos customers. meemoo provides them digitisation, sustainable storage and access as a service. Meemoo sets up platforms for different target groups to access the content, always with full respect for the ownership, copyright, commercial and/or ethical rights. In this digitisation project the group of content providers involved consists of about 15 cultural heritage institutions, archives... This group can be expanded during the course of the project with other institutions.

Meemoo leads this digitisation project for them, but the content partners remain the owner and conservation manager of the material. Meemoo is therefore committed to them and has a responsibility towards them. In the selection of a digitisation partner (service provider), meemoo will take this responsibility into account by involving the content partner extensively in the decision-making process and by choosing a high-quality offer.

1.2.2. The 'advising partners'

Centres of expertise and interface organisations provide advice at the various stages of the project

and thus put knowledge at the service of a decent implementation and results. For this project, meemoo works closely with Cinematek, the Royal Belgian Film Archive.

1.2.3. The ‘service provider’

The executor of the digitisation, usually chosen through a tendering procedure. Further named as the service provider (SP).

2. Description of the films to be digitised

2.1. In general

In this digitisation project the films listed belong to heritage institutions that are acknowledged within the Cultural Heritage Act, city archives or art organisations from the Flemish performing arts sector. All the materials were preserved in very different circumstances, both in the heritage institutions as in the archives of the creators of the materials.

Initially an estimated quantity of 75 à 85 films will have to be digitised, presenting between 350 and 430 minutes circa.

The films to be digitised are very diverse in several respects:

- in terms of genres, these concerns (parts of) documentaries, educational films, commercials, reports and news items
- In terms of production stage, they include both (parts of) finished material and rushes. The vast majority are prints (77), a few films are original positive (2) and original negative (5).
- In terms of film gauge, only 35mm films are involved.
- In terms of colour, there is black-and-white material (+/- 57-65) and tinted material (+/- 10 - 15).
- The lengths of the films vary between 2 and 6 minutes, with an average of 4 minutes, amounting to a total of approximately 350 to 430 minutes.
- About 50% of the films do not have sound. Of the approximately 50% of films with sound, 75% have comopt variable area sound, 25% are comopt variable density.
- The playback speeds vary: ca. 3 films at 18 frames per second, 5 films at 20 frames per second, 57 films at 24 frames per second, 19 films with unknown playback speeds.
- The films have been recorded on a variety of film stock.

The registration of the films by Cinematek, the royal Belgian Film Archive, will be completed before the beginning of the digitisation. As **Annex 7** to this Negotiation Procedure, an overview file is attached with all available information per film obtained from this registration, so that the service provider has a clear view of the heterogeneity of this collection. Individual films can still be omitted or added from this file.

2.2. State of the material

In this Negotiation Procedure without Notification, it is only required to digitise film material that has nitrate, or to be more precise cellulose nitrate, as film carrier. Cellulose nitrate is subject to degradation by chemical decomposition of the carrier. Approximately one in three films of the material to be digitised is affected to a greater or lesser degree by chemical decomposition or other deterioration phenomena.

The deterioration phenomena that occur most frequently among the films to be digitised are:

- about 20% - 30% have damaged edges (unknown if this is one or double sided)
- approximately 40% - 60% is medium to heavily scratched
- about 20% - 30% have damaged perforations
- about 0% - 5% have broken splices

In **Annex 7**, it can be checked in what percentage of cases chemical decomposition or other deterioration phenomena will occur. A technical report (XML) will be delivered before the start of digitisation. Together with this technical report, meemoo will supply the target format and the resolution to be achieved.

In this technical report the technical condition of the film is recorded. This is indicated on a scale of 1 to 5. In principle, only films scaled 2 or higher have to be digitised. All films registered up until now are in this condition (see also 4.3.1.):

Condition statement	Number of films
<u>0 - Film is lost</u> : The film is no longer usable, caked or in such a state of decomposition that it was destroyed.	0
<u>1 - Film is not usable</u> : The condition of the film is considered too poor and cannot be digitised with current technology. The entire film is soft and compressed into a single mass, the surface may be covered with a toxic foam and give off a strong rotten smell. The film mass will further decompose into a shock-sensitive brownish sharp-smelling powder.	0
<u>2 - Film is in very poor condition</u> : The film is badly degraded, distorted or seriously damaged. Excessive mechanical restoration needs to be done to the film. Parts of the film are soft, contain gas bubbles and give off a rotten smell.	9
<u>3 - Film is in poor condition</u> : The film has some deterioration phenomena, several splices need to be repaired, the film needs to be thoroughly cleaned. Emulsion becomes tacky but can be rinsed off and film tends to stick together when unrolled. Weak rotten smell. There are large areas where the perforation cannot be restored.	14
<u>4 - Film is in good condition</u> : The film is generally in good condition, has few deterioration phenomena, only here and there splices need to be repaired. The film can be easily digitised. Film has an amber discolouration with fading of the image. Weak rotten smell. Some perforations need to be repaired.	44
<u>5 - Film is in very good condition</u> : The film is generally in very good condition. Little or no splices need repair. The film can be easily digitised.	3

In attachment, candidates can find some examples of deterioration phenomena with photo illustrations. These deterioration phenomena can occur in varying degrees in the collection offered for digitisation.

During registration, an estimate was also made of the expected preparation time for each film, which on average is 34 minutes per film.

2.3. Project phasing

PHASE 1: PROJECT PREPARATION - January 2022 to March 2022

This phase includes the preparation and selection as well as an investigation of the digitisation specifications.

PHASE 2: PROCUREMENT - April 2022 - June 2022

The second phase is the tender procedure. This enables meemoo to find the suitable contractor. In preparation, we conduct a market survey, refine the digitisation specifications and write up the tender documents.

PHASE 3: DIGITALISATION & DELIVERY OF FILES - July 2022 to November 2022

In the third phase, we create and deliver the digital files. Once the production phase is underway, the digital files are delivered on a regular basis and checked for quality by meemoo. To this end, meemoo sets up a quality control process. The files delivered are permanently archived in the meemoo infrastructure. The digitised films are made available to the connected content partners.

PHASE 4: ESTABLISHMENT, DEVELOPMENT, COMMUNICATION - November 2022 to December 2022

In the final project phase, the (approved) digital files will be unlocked and made available for reuse.

3. Business case: the digitisation process from start to finish

Below is explained what the digitisation process from start to finish in regular cases looks like, to make it clear for the applicants at which stages and in which context the work of the service provider will take place.

3.1. Registration

All carriers that have to be digitised will be registered by Cinematek in a database. This registration means the input of both content and technical characteristics of the film: for instance, the physical state of the material, the length, duration ... In this registration an estimate is given for the preparation time to make the film ready for scanning. Since the registration was completed before the start of digitisation, it is possible to give exact figures per film.

Meemoo estimates that about 75% of the quantity to be digitised will fall into Category A (0 - 30 min preparation time per film). The average preparation time per film is around 30-34 min.

	Category A	Category B	Category C
Estimated preparation time per film in minutes (the average duration of a film is estimated to be 5 minutes)	0 - 30 min	31 - 90 min	90 - 240 min
Estimated volume in the collection to be digitised	75%	18%	7%

In addition to the registration, conservation operations were also carried out on the nitrate films (see also 4.3.1):

- replacing all film containers and applying new labels
- films are wounded on cores and leader tape will be attached where there is none

The following digitising operations therefore still need to be carried out:

- replacing old splices
- fixing parts that have become loose or nearly loose

Each carrier is provided with a barcode, which is applied to the outside of the film container, and to the leader tape of the film. Related documents that are found in the old packaging are scanned and stored separately. So, these will not be physically delivered to the service providers. Meemoo provides digital scans (jpg and pdf files) to the service provider, who must then write these onto the LTO tape so that everything can be uploaded to Meemoo's servers in one go.

Meemoo facilitates this work by providing a registration database, clear instructions, barcodes and so on. If possible, use is made of existing data from the collection management systems of the content partners.

3.2. Packaging

Most films are packaged in new, vented film containers by the content partners or Cinematek. Each film container receives a barcode that is identical to the film reel inside so that meemoo, Cinematek and the content partners can always track down the location of the film.

3.3. Transport of the carrier to the service provider

The carriers that have to be digitised will be transported from Cinematek to the service provider.

The different transports are scheduled by meemoo in collaboration with Cinematek, the content providers and the service provider to ensure that all parties at all times know where the films are and when they may be expected to return.

3.4. Digitalisation

The service provider will carry out a thorough inspection, cleaning and possible repair of splices and cracked perforations for the purpose of the scanning. Because of the fragile state, archival film should always be treated in a clean workplace, free from dust and mess. Eating, drinking and smoking are not allowed in the areas where film is handled, to avoid damage to the originals.

After inspection, cleaning and possible repair, the service provider digitises the material and also creates the secondary files needed for long-term storage, quality control by meemoo and the content partners and reporting on the digitisation processes, such as XMLs and checksums. The service provider will have access to the data about the carriers that is created during registration, the technical report and the objectives in terms of file format and resolution. Identification is possible by means of barcodes. The service provider creates the reporting files according to the guidelines provided by meemoo (based on PREMIS) and in the format requested by meemoo. The service provider also creates the reporting files not only per film, but also for the total volume.

3.5. Delivery of the mezzanine files for quality control

After digitisation the service provider gives access to the mezzanine files. Quality control will be done on these files before the film carriers return to Cinematek and the data tapes are delivered to meemoo. Therefore, the films don't need to be transported needlessly in case of irregularities. If within twelve months after the final delivery of the files meemoo states that the requested quality is not delivered, the films will be transported back to the service provider and re-digitized at the expense of the service provider.

3.6. Transport of the carriers from the service provider

The service provider will return the carriers in the same boxes to the place where they were collected. The different transports are planned by meemoo in cooperation with Cinematek and the service provider, so that all parties involved are informed at all times of where their carriers are located and when they are expected back.

3.7. Transport of the digital files to meemoo

The service provider delivers all files (the essence, XMLs, MD5s, quality control reports) to the meemoo data centre. For this meemoo has set up a specific routine. Meemoo initially checks all expected files for their presence. The service provider also stores all files on its own servers as a safety copy for 120 days after the final delivery of all the files. If necessary, these backup files can be delivered to the meemoo data centre by the service provider quickly and at no extra cost to meemoo. The service provider shall contact meemoo to delete this backup.

3.8. Ingest and quality control on meemoo's storage infrastructure

Meemoo transfers the files to its own storage infrastructure. The quality control procedures (such as file integrity checks) are carried out using the XMLs and MD5s as created by the service provider. From this moment on, the content partners can also download a copy of their own files for storage, if they wish. If, during the internal quality control by meemoo, errors in the digitisation are noticed (which cannot be attributed to the condition of the carrier itself), the carrier is returned to the service provider for a new digitisation. The authority to approve the files always lies with meemoo and the content partners.

3.9. Annotation

Through the meemoo Media Asset Management (MAM) system the files are further segmented and edited when needed. If available, the metadata from the content partners' databases are exported and connected to the files to which they belong in the meemoo MAM. Further metadata can also be created directly in the MAM of meemoo. Use can be made of the metadata that was present on the old packaging, or in the related documents that are filed separately during registration.

4. General technical and project requirements

This is a detailed description of the project approach as expected from the tenderer. A number of minimum requirements are listed with which the tenderer should agree in the document 'price matrix' (**Annex 6**) indicated as ME - followed by a number.

A number of minimum requirements ask for "Clarifications" with each project step. They are indicated as VD - followed by a number corresponding to the sequence number of the corresponding minimum requirement.

The clarifications are the basis for the assessment of the quality of the tender (cf. section 6.2.3. of the Overview Document).

4.1. Overall project management

The applicant should explain extensively how he intends to tackle the general project management and which quality he guarantees in this matter. Since the material can be protected by ethical rights, commercial rights and/or copyrights, the service provider has to pay particular attention to this issue by preventing the digitised files to be accessed by parties not involved in this assignment.

4.1.1 Insurance of the carriers

As minimum requirement ME01 applies: that the carriers are insured against loss and/or damage during these processes at the service provider and during the transport there and back. The applicant has to indicate an insurance value of minimum € 100 per carrier, or a total insurance value of € 10.000 per number of carriers that are simultaneously present at the service provider's premises. The proof hereof must be provided as a concluded agreement. **To clarify VD01** more details should be given about the insurance policy in the candidate's response.

4.1.2 Project management

As minimum requirement ME02 applies: that meemoo can visit the digitisation infrastructure during working hours without prior notice.

As minimum requirement ME03 applies: that a one-on-one structure is set up for communication between the project managers on both sides (meemoo and Service Provider). Meemoo prefers as few switches between project managers as possible. In case of changes, meemoo needs to be informed at least two weeks in advance.

As minimum requirement ME04 applies: that the project manager of the service provider offers proof of at least three years of experience in project management (by means of an attached curriculum) through strict project methodology. **To clarify VD04** specifications must be given in the answer about how the communication between the project managers will be set up in a structural manner.

As minimum requirement ME05 applies: that prior to the pilot phase, a test phase will be set up in which a small number of carriers will successfully complete each individual step of the process before proceeding to a next step. A description of the test phase can be found in the outline below:

- Checking of the container and codec: the service provider supplies a test file, typically one or a few minutes of digitised film. On this basis, meemoo checks the containers and codec for the archival master file and the mezzanine file.
- XML-control: meemoo delivers a METS XML as an example with the corresponding XSD. The service provider sends a completed METS of a test carrier back to meemoo.
- Visual quality control: the service provider provides a longer test file. Meemoo monitors the quality on the basis of a test-ingest in the MAM system and for the mezzanine copy a check with QCtools (Quality Control Tools for Video Preservation).

Once the steps are completed successfully, a ramp-up will be organised. The service provider delivers in the first instance one or a few digitised films. When the automated ingest is successful, systematically more digitised materials can be delivered to ingest.

Meemoo will check the delivered files (especially the DPX files and mezzanine) throughout the production process. Part of this check consists of the systematic and automated control of the delivered assets. Another part of the control is done manually. If errors are discovered during this inspection (such as incomplete or incorrect XML files, missing files, failing MD5 checks ...) this can create the possibility to a new supply of the entire asset and / or re-digitisation of (a part of) the carrier, for a period for up to twelve months after the provisional acceptance by meemoo.

One or more site visits, including checking of equipment, may be part of the testing phase. The check takes into account, but is not limited to:

- the control of the film,
- the preparation of the film,
- the cleaning of the film,
- the scanning,
- capture of the audio,
- the post processing

As minimum requirement ME06 applies: that prior to the production phase of the digitisation a pilot phase is set up in which a small number of carriers will successfully complete each individual step of the process before proceeding to a next step.

As minimum requirement ME07 applies: that he provides constant monitoring and professional processing of all carriers, with respect for their cultural and historical value. **To clarify VD07,** he must elaborate on how he will do this, and with which (software) systems. Meemoo expresses its preference for a system that is automated and specially developed for this purpose (no spreadsheet system).

As minimum requirement ME08 applies: that none of the commercial rights, ethical rights (privacy) and / or copyrights of the materials are violated by video and / or audio material that would get out in the open through the digitisation process. **To clarify VD08** specifications must be given on how to achieve the above.

4.1.3 Subcontracting

Meemoo accepts that part of the service would be carried out through subcontracting, with **these minimal requirements:**

As minimum requirement ME09 applies: the candidate shall disclose in the most transparent manner possible which part of the contract the applicant is planning to subcontract to third parties, including the identity and details of the subcontractors.

As minimum requirement ME10 applies: the main contractor retains sole responsibility to guarantee the proper execution of the contract and he guarantees that the subcontracting does not raise any

additional obstacles concerning the project management, logistics, quality control or any aspect of the general project approach.

As minimum requirement ME11 applies: the main contractor will always remain the single responsible point of contact in the communication with meemoo.

4.2. Logistics

4.2.1 Transport and storage of the carriers

Meemoo will prepare the transport by winding the films on new cores and packaging them in new film containers. One film container shall contain only one film reel. That way the film container should be able to withstand the normal digitisation operations with the service provider. If the film container is damaged and needs to be replaced, the service provider needs to contact meemoo, to recover the applied numbers on the film container.

As minimum requirement ME12 applies: that the transport is organised in such a way, that the integrity of the carriers is guaranteed. Particular attention should be paid to the special physical characteristics of nitrate. The transport must take place in climatized conditions. **To clarify VD12** further details should be given in the answer about:

- The transport means, the duration of transport and the climatisation. Meemoo expresses a preference for transportation in closed, rigid transport containers, provided with identification through a barcode. These transport containers need to be provided by the service provider himself, and need to be provided at the pick-up location for both the test and the production phase. The empty transport containers may be delivered upon pick-up of the carriers, but the service provider must then be aware that the packing of the carriers in the transport containers can take some time.
- The specific safety measures concerning fire protection.
- The executor of the transport. Meemoo expresses a clear preference for transport to be carried out by persons with proven experience in film transport.
- The duration of the transport.

The service provider must pick up and return the carriers (including the carriers of the test phase) at Cinematek.

Meemoo will agree in advance with Cinematek and the service provider on the date and place of pickup and return, but the service provider is expected to call Cinematek at the latest on the day of pickup and / or return to agree on the exact time of arrival.

The service provider will be responsible for the administrative clearance of the nitrate transport.

4.2.2 Internal storage at the service provider

Between the transport to the digitisation itself, and later between the digitisation and the transport back, the carriers must be stored by the service provider in a controlled and air-conditioned location, adapted for the preservation of nitrate film and the specific risks involved.

As minimum requirement ME13 applies: that the carriers are stored by the service provider at a location where the temperature and humidity are controlled and stable, and which is suitable for the storage of nitrate film. **To clarify VD13:**

- the attached calamity matrix (**Annex 8**) must contain details of how the risks mentioned will be mitigated at the levels stated,
- further details should be given in the answer about the (control on the) temperatures, humidity and maximum fluctuations in the storage location of the service provider and the used equipment. As an example, a printout should be given of the last week of the data logger, to get an impression of the logging system that is used for the temperature and humidity.

4.2.3 Internal logistics at the service provider

As minimum requirement ME14 applies: that the passage of each carrier is monitored through all the processes in a professional manner with respect for the cultural and historical value. Meemoo expresses a preference hereby for using a barcode scanning system. Especially in view of fire safety, the films cannot be left uncovered or on the scanner for longer time durations such as lunch pauses, after the working hours or during the weekend. Because of the fragile nature archival film has to be treated in a clean environment at all times, free of dust, trash and fire or sparks. Eating, drinking and smoking has to be forbidden at all spaces where the film is manipulated, to prevent damage to the originals. **To clarify VD14** must be specified in the answer how it is ensured that the carriers will not be lost or damaged during the processes.

4.2.4 Identifying and arranging the carriers

Meemoo will provide each film carrier and its film can with a barcode to facilitate the identification of the carrier. Meemoo will also supply the service provider with a list (registration database) of all carriers, with about fifty characteristics. These characteristics are summarised below, an indicative list can be found in the XML attached.

- Administrative: e.g. name of the content provider, barcode of the film reel, Cinematek ID, batch ID, PID (Persistent Identifier) of the film ...
- Content metadata: e.g. title, cast, crew, genre ...
- Technical: e.g. carrier type, size, brand, production date, duration, deterioration phenomena ...
- Physical state: e.g., physical state of the image reel, specific problems with this film: torn perforations, scratches in the emulsion, shrinkage
- Additionally, meemoo also provides the objectives in terms of resolution and file format for the digital file per PID.

These characteristics are entered in the database and support the processes of selection, logistics and digitisation, and are thus useful for both meemoo, the content partners and the service provider. The data in this list can be updated until the carriers are transported to the service provider.

The service provider must name the files based on the name as contained in the registration database (PID or Persistent Identifier). The DPX files must be numbered sequentially. For more information on this topic, please refer to section 4.4.

4.3. Delivery of the files

4.3.1 Delivery of the mezzanine files for quality control

After the digitisation, the mezzanine files should be delivered to meemoo. Meemoo will do the quality control on the mezzanine files (Apple ProRes/MOV). Only after approval, the films can be transported back to Cinematek.

As free option VO01 applies: the candidate may offer to create and deliver a quality report for the mezzanine file from a quality control system.

4.3.2 Delivery of the files

After the digitisation, the files must be delivered to the storage infrastructure of meemoo in Oostkamp, Belgium. Meemoo has set up a specific routine for this purpose. Meemoo will ingest the files in its own storage infrastructure and store it sustainably via its Media Asset Management system.

The transport costs to and from the meemoo data centres are always at the expense of the service provider for the first copy and for all copies due to errors by the service provider. This includes the delivery of the files from the test and pilot phase. Transport costs in case meemoo would ask for the delivery of a back-up copy are at the expense of meemoo.

As minimum requirement ME15 applies: that the digital files can be delivered on LTO6 tapes in LTFS format. All files must be written directly in the root directory, without any folder structure. See also section 4.4 on the delivery of the Submission Information Package (SIP). The required amount of empty LTO tapes for the whole project will be delivered to the service provider by meemoo.

4.3.3 Temporary safety copy of the files

For safety reasons, meemoo asks the service provider to keep a backup copy of all files during a certain period of time after the delivery of the files to meemoo.

As minimum requirement ME16 applies: that a safety copy of all the files will be saved during 120 days at the service provider, counting from the delivery of the files to meemoo. After these 120 days the candidate will delete all safety copies of the files. Meemoo must be informed before this takes place.

As minimum requirement ME17 applies: that the backup copy can be delivered within four working days after request by meemoo, at no additional cost for meemoo, on the same type of carrier and in the same format as the delivery of the original files (LTO6 tapes in LTFS format).

4.4 A/D-conversion

4.4.1 Preparation of the films

During the registration (see also 3.1.) a technical report is prepared with the following fields per film:

- **technical characteristics of the film:** gauge, material type (positive/negative/print...), colour/black and white...
- **technical condition of the carriers:** indicated on a scale of 0 to 5. In principle, only films with a technical condition of value 2 or higher should be digitised:
 - 0 - Film is lost: The film is no longer usable, caked or in such a state of decomposition that it was destroyed.
 - 1 - Film is not usable: The film is in too poor a condition and cannot be digitised with current technology. The entire film is soft and compressed into a single mass, the surface may be covered with a toxic foam and give off a strong rotten smell. The film mass will further decompose into a shock-sensitive brownish sharp-smelling powder.
 - 2 - Film is in very poor condition: The film is badly degraded, distorted or seriously damaged. Excessive mechanical restoration needs to be done to the film. Parts of the film are soft, contain gas bubbles and give off a rotten smell.
 - 3 - Film is in poor condition: The film has some deterioration phenomena, several splices need to be repaired, the film needs to be thoroughly cleaned. Emulsion becomes tacky but can be rinsed off and film tends to stick together when unrolled. Weak rotten smell. There are large areas where the perforation cannot be restored.
 - 4 - Film is in good condition: The film is generally in good condition, has few deterioration phenomena, only here and there splices need to be repaired. The film can be easily digitised. The film has an amber discoloration with fading of the image. Weak rotten smell. Some perforations need to be repaired.
 - 5 - Film is in very good condition: The film is generally in very good condition. Little or no splices need repair. The film can be easily digitised.
- an estimate of the duration in order to make the film ready for scanning
- notation of the brand of pellicule
- a list of **possible deterioration phenomena** such as shrinkage, warp, wear, ... For examples we refer to the photobook attached.

Except for the attachment of leader tape and the repackaging no further preparation will be done on the film, before it is transported to the service provider. Any further mechanical preparation of the film for the purpose of digitisation is to be done by the service provider.

As minimum requirement ME18 applies: that the films are cleaned mechanically or manually, depending on the requirements in the technical report that is provided per film. Cleaning is understood to include the removal of dust and adhesive residues before the actual scanning and keeping the film from dust to the point of the actual scanning. Therefore, measures should be taken which ensure that between the cleaning and scanning no new substance can end up on the film.

To clarify VD18 more details should be given in the answer about how the films will be cleaned and kept clean until the moment of scanning (manually or by machine, if so which machine and which solvents). At least the answer should contain the cleaning equipment and / or cleaning products the candidate provides.

As minimum requirement ME19 applies: that, if splices or perforations have to be restored, this should be done with respect for the cultural and historical value of the material. Any materials necessary hereby are at the expense of the service provider. **To clarify VD19** more details should be given in the answer about how torn perforations and broken splices will be restored, with which adhesive.

4.4.2 The scanning of the films

Meemoo asks for the digitisation of the entire film. Where a film is composed of multiple reels, they must be edited together digitally. The order in which this should be done will be clearly stated in the XML that will be delivered. Before digitising, each carrier must be mounted correctly on the scanner.

Meemoo asks for the creation of one digitised file in DPX format, and a derivative mezzanine copy in an Apple ProRes 422-format (Standard).

The following output specifications are requested:	Archive Master file	Mezzanine file
Minimal requirement ME20: Output container:	DPX + WAVE	MOV
Minimal requirement ME21: Output codec:	uncompressed LPCM	Apple ProRes 422 (Standard)
Minimal requirement ME22: Output specifications:	10 bit logarithmic; RGB; no colour subsampling; sound as 24bit, 48kHz; image resolution as described below	variable bitrate (VBR); colour coding 4:2:2; 25fps; sound as 24bit, 48 kHz; Full HD (1920 x 1080), with pillar boxing or letterboxing if necessary to retain the original analogue film resolution.

The following image resolution is requested (this will be communicated to the service provider for each film before the start of the digitisation):

- **35mm to 2K (2048 x 1556 px)**
- **35mm to 4K (4096 x 3072 px)**

As minimum requirement ME23 applies: that the digitisation happens without any mechanical damage to the original, through a sprocketless scanning, but an alternative solution where no damage is caused to the film, may be proposed. **To clarify VD23** more details should be given in the answer on:

- how the actual digitisation process will go,
- how the candidate foresees to deal with degraded material.

As minimum requirement ME24 applies: that the digitisation is done without loss of information and without the creation of new artefacts in comparison to the original analogue. **To clarify VD24** more details should be given in the reply about which film scanning equipment the candidate provides for this assignment and what measures and / or actions are built into the process to prevent loss of quality and the creation of new artefacts. The candidate needs to provide information about which kind of sensor its scanner uses (area based, bayer pattern or other) and about the signal path from the sensor to the DPX.

As minimum requirement ME25 applies: that during the transcoding from the DPX to the mezzanine files no new artefacts are created such as, but not limited to, blocking artefacts resulting from the film grain. **To clarify VD25** more details should be given in the answer about:

- In his offer, the candidate must explain how he will convert images with different playback speeds (18fps, 20fps, 24fps ...) to the requested number of frames per second in the mezzanine files. The intended result should be an image with as little visible jumps as possible (so frame copy / duplication is not allowed). Offering an equally priced choice between several solutions is hereby permitted, meemoo will confirm the chosen solution during the test and pilot phase in consultation with the service provider.
- which equipment will be used for the transcoding of DPX to the mezzanine files.
- how the necessary settings for the conversion will be made, such as colour space and gamma.

On the one hand, meemoo attaches great importance to strict compliance with the mandatory profiles of the mezzanine files and stipulated DPX profile. On the other hand, even detailed output specifications can never adequately exclude any potential incompatibility problems in advance. Therefore, meemoo and its advisory partners will test all files in the test phase.

As minimum requirement ME26 applies: that the film reels are delivered back as they were picked up, this is in a rewind state, with the barcode on the outside of the reel.

4.4.3 Scanning of the sound

From the total number of **75-85** films, **50%** are combined sound reels (comopt variable density or comopt variable area).

As minimum requirement ME27 applies: that for the sound a WAVE file is created for the sound according to the specifications provided. No new artefacts may be created, and the sound has to be in sync with the DPX sequence and the mezzanine file. **To clarify VD27** more details should be given in the answer about which equipment is going to be used for sound scanning.

4.4.4 Quality of the scanning

As minimum requirement ME28 applies: that digital improvement of the quality of the image on the DPX files is not accepted, with the exception of stabilisation of the image. Meemoo expresses its preference for *diffused light* as a method to deliver a better quality. This method may be offered in the tender, but is not a requirement. **To clarify VD28** the candidate should put in his answer which set of non-digital processing he provides during the digitisation.

As minimum requirement ME29 applies: that the image is delivered stable (measured towards *reference edge perforation*) both in the archive master file as in the mezzanine file, both vertically and horizontally. Camera-instability does not have to be corrected. The image stability will be approved by meemoo in the testing phase. **To clarify VD29** the candidate should explain in the answer how he foresees the stabilisation of the image.

As minimum requirement ME30 applies: that there will be no quality loss when converting the bit stream to 10bit in the scanner. **To clarify VD30** the candidate should put in the answer how the conversion happens.

As minimum requirement ME31 applies: that, in the chain from the point of the scanning up to the production of the mezzanine files, the use of video signals is excluded to make the DPX-file.

As minimum requirement ME32 applies: that clipping of white and black values is not allowed and

that the image is preserved as a DPX log, complying to the reigning principles of the industry in the code value span (black: CV 95, white – 90%: cv 685, white – max: cv 900). **To clarify VD32** the answer should explain how this is controlled during the scanning and how this is set for the several kinds of film (positive, negative...).

As minimum requirement ME33 applies: that the candidate, during the test phase together with meemoo, will determine, within the standard for the different types of film, the optimum characteristic for the capture of the image information and one or more Lookup Table(s) (LUT). These LUT's must also be supplied to meemoo for the production phase, along with the specifications of the colour space of the proposed scanner(s).

As a minimum requirement ME34 applies: it is not allowed to do any digital improvement for the production of the digital audio files, and there may be no loss of quality in comparison to the original carrier.

4.4.5 Editing

As an end result, meemoo expects a digital version of the film where no further editing work is to be done, in other words, where all available parts of the same film are digitally edited together in the right order.

As minimum requirement ME35 applies: that the sound, if present, is synchronised with the image in the final digital result (DPX / WAVE and the mezzanine file).

As minimum requirement ME36 applies: That films that consist of different reels, should be delivered as a single digital file. If any reels are missing in a series of reels, meemoo should be contacted and a solution will be agreed upon. **To clarify VD36** the candidate should state in his answer how he plans to deliver films that consist of different bobbins, as a single file.

4.4.6 Post processing

Meemoo asks the archival master record as a raw file, with the exception of cropping the image. Because of accessibility reasons meemoo asks to create a mezzanine file as well, to which a first contrast adjustment must be applied, without necessarily proceeding to a full *colour grading* shot by shot.

As minimum requirement ME37 applies: that the image is delivered (both the DPX as the mezzanine files) without any loss of image, but not beyond the edge of the image, and in the original aspect ratio. The cropping to be applied will be approved by meemoo in the testing phase.

As minimum requirement ME38 applies: that the resolution after cropping respects the required output resolution, without digitally upscaling the resolution of the image. **To clarify VD38** the candidate should put in his answer exactly how this is ensured for the different analogue image formats, and how, with the proposed equipment, the above-requested specification is reached.

As minimum requirement ME39 applies: that *colour grading* is done on the mezzanine file, based on an average of 10 points in the entire film. This limited colour grading must respect the colour and lighting of the original material. In the case of colour fading meemoo asks that the colour balance is brought back into balance. **To clarify VD39** the candidate should explain in his response how he will perform this colour and contrast adjustment. The applicable colour and contrast adjustment will be approved by meemoo in the testing phase.

As minimum requirement ME40 applies: that the dynamic range of the audio on the analogue original is respected, without creating new overshoots. The highest peak will be placed at -9 dB. Exceptionally mild overruns are authorised to -8 dB.

4.4.7. Profile to be used for the mezzanine format

Mezzanine-file
MOV
Apple ProRes 422 (Standard)
variable bitrate (VBR); colour coding 4:2:2; 25fps; sound as 24bit, 48 kHz; Full HD (1920 x 1080), with <i>pillarboxing</i> or <i>letterboxing</i> if necessary to respect the original analogue film resolution.

4.4.8. Profile to be used for the DPX files

The profile to be used for the production of the DPX-files is the following:

SMPTE Standard 268M -2003 for File Format for Digital Moving Picture Exchange (DPX), Version 2.0

With the following settings:

- RGB
- 10 bit
- log (also refer to ME27)
- resolution in accordance with the instruction per film
- optional: infrared information (cfr. VO02)

4.5 Reporting

Meemoo wants to deliver a quality digitisation for its content partners. Therefore, meemoo wishes information about the digitisation process to be saved at PID level. The collecting of this information goes as follows:

- Before the transport of the films, meemoo delivers an XML-file deriving from the registration database to the service provider, with data coming from the registration, such as for instance the technical report, the output resolution and file format (please refer to 4.2.4 Identification and arranging the carriers).
- The service provider loads the data from this file into its own monitoring system.
- During the digitisation, the service provider further supplements the data for each carrier with data about the process steps and the results of the logistics and digitisation. This is done in the fields and terminology proposed by meemoo. The PREMIS standard is used as a guideline.

As a guiding, non-binding example to these documents, the appendix “example file” is attached to this tender with in the PID.complex a mets.xml with a number of fields from a previous digitisation project:

- Fields filled with sample data from the registration database.
- Empty fields provided for filling in reporting data by the service provider. These fields are rather indicative of the structure of the XML and non-binding. In the test phase, these fields will be further defined in consultation with the service provider.

Meemoo asks that the information provided by the service provider be delivered in a so-called Submission Information Package (SIP). These are all the files that are the result of the digitisation of one film.

As minimum requirement ME41 applies: that the SIP as described below are supplied to meemoo on an LTO tape. The files need to be organised on the tape as described below. In consultation with the service provider, this format can still be changed. The following example should allow the candidates to sufficiently estimate the complexity:

FILM 1/

- o t14th8df5w.complex/ (no .zip extension, only pid.complex)
 - § t14th8df5w_mets.xml => file in a METS-structure.
 - § pdf/
 - t14th8df5w_0001_pdf.pdf
 - t14th8df5w_0002_pdf.pdf
 - § jpg/
 - t14th8df5w_0001_jpg.jpg
 - t14th8df5w_0002_jpg.jpg
 - § dpx/
 - t14th8df5w_001_0000001.dpx (keep the original filename as in the bag) => sample frame 1
 - t14th8df5w_001_0000101.dpx (keep the original filename as in the bag) => sample frame N
 - t14th8df5w_001_0000203.dpx (keep the original filename as in the bag)
 - t14th8df5w_002_0010002.dpx (keep the original filename as in the bag)
 - t14th8df5w_002_0005002.dpx (keep the original filename as in the bag)
 - § mov/ => mezzanine copy
 - t14th8df5w_mezanine.mov
 - § zip/
 - t14th8df5w_zip.zip
 - o bag-info.txt
 - o bagit.txt
 - o data
 - § dpx
 - t14th8df5w_0000001.dpx
 - t14th8df5w_0000002.dpx
 - ...
 - t14th8df5w_0904543.dpx

§ audio

· t14th8df5w.wav

- o manifest-md5.txt
- o tagmanifest-md5.txt

- The pid is the persistent identifier delivered by meemoo.
- pid.mets.xml: A METS XML (<http://www.loc.gov/standards/mets/>) containing:
 - o A description of the supplied essence files in the </fileSec> and <structmap>
 - o The MD5 checksums of the DPX files and an MD5 checksum on bag level.
 - o The supplied metadata from the registration, together with at least the following fields (the exact nature and values will be established in consultation with meemoo):
 - Technical metadata from the digitisation chain:
 - o Container
 - o Codec
 - o Bit-depth
 - o Colour coding
 - o Number of audio channels
 - o Length of the entire movie
 - o Number of DPX files
 - o Number of audio files
 - preservation metadata from the digitation chain (the exact nature and values to be delivered will be established in consultation with meemoo):
 - o For each stage of the digitisation: date and time, result, remarks and name of the person that is digitising.
 - o Digitisation equipment: brand and type of each device in the chain
 - o Status of the digitisation (successfully or not successfully completed)
- The pid_0001_pdf.pdf and pid_0001_jpg.jpg are scans of old film scans or additional information provided to you by meemoo at the beginning of a batch, via FTP.
- Pid_0000001.dpx (and the following) are sample frames (copies) from the DPX files. For each film, at least one such frame is provided, from the middle of the film. Per 10 minutes of film, an extra DPX needs to be delivered. (ie 11-20 minutes of film = 2 DPX files, etc.).
- The pid_mezzanine.mov is the mezzanine file.
- The pid_zip.zip is a compressed folder containing a 'bag'. Such 'bag'-structure can be created with Bagit 1.0 RFC8493, a free tool with several libraries. See <http://en.wikipedia.org/wiki/BagIt> for more information.
- The 'bag' must be lossless compressed using gzip or zip, the compression level will be between 4 and 5.

In the 'bag' meemoo asks for an MD5 checksum per DPX, and an MD5 checksum on 'bag' level.

Meemoo will validate the MD5 on the bag level at the moment of ingest, not the individual DPX files. If the MD5 authentication (or any other control) fails on the 'bag', meemoo will escalate this to the service provider who must check in which DPX an error occurred. The service provider will have to redeliver the integral file structure as described above after correction of the error.

The candidate must keep into account the implementation of this reporting when making his offer.

To clarify VD41 the candidate must indicate how he can produce this XML, and what further parameters he can report on, if any. The answer must explain with which tools and with which measures and/or actions in the process the above specifications will be reached. Meemoo expresses a preference for a validation of the XML via a XSD that can be delivered by meemoo, to make the process less error-prone.

The tenderer must provide this information after completion of the batch in two ways to meemoo: per carrier and per batch.

4.5.1 Reporting per carrier

As minimum requirement ME42 applies: that the candidate must deliver a single XML file containing the SIP as mentioned above per carrier to meemoo, delivered on the LTO tape, written in the root.

4.5.2 Overall reporting

As minimum requirement ME42 applies: that the candidate must deliver a single XML file containing for each carrier in that batch only the pid.xml, delivered per mail to support@meemoo.be. This reporting per batch will be imported by meemoo in the database for registration and logistics, so that the content partners get first feedback on the progress of the digitisation.

4.6 Maintenance of the equipment

Meemoo acknowledges the importance of a good condition of the digitising equipment and the consequences of this for the result of the digitisation. Since this request for proposals is about films with nitrate as a film carrier, a correct maintenance of the equipment is particularly important. Further deterioration of already degraded films should be prevented as far as possible and the necessary safety measures must be observed.

As minimum requirement ME44 applies: that the equipment from the digitisation chain is checked after each film and, if necessary, cleaned. **To clarify VD44** the candidate should put in his answer how he provides proper preventive maintenance of the digitisation equipment, and how he will be kept informed of the status of the equipment during the digitisation process (*health check*).

4.7 Timeline and schedule of the digitisation project

Meemoo wants to work in the greatest transparency for this digitisation project towards its content partners. To be able to do this, a timeline is created for the project, which should be respected as much as possible.

4.7.1 Cycle of the carrier

As minimum requirement ME45 applies: that the carriers are to be returned to the place where they were picked-up after completion of the digitisation per batch, within a reasonable time and without delay. **To clarify VD45** the candidate should put in his answer the maximum amount of time he expects it would take for one carrier to go through the full digitisation workflow from the pick-up to the return delivery to the place of collection; in other words, how long the carrier would be away from the content partner.

4.7.2 Timeline of the project

As an indication, the planned timing that meemoo would like to keep to is given below:

- First week of July 2022: first consultation with the service provider.
- First week of July 2022: start of the preparation phase.

- Last week of july 2022: start of the test phase.
- Second week of september 2022: start of the production phase.
- 31 oktober 2022: end of the production phase.
- 30 november 2022: deadline for the final delivery of all files.

As minimum requirement ME46 applies: that the candidate can complete the project within the set timing except in case of force majeure and / or delays caused by meemoo. **To clarify VD46** the candidate must give a schedule in which the capacity of the equipment and personnel is elaborated, taking into account the expected amount of films that have to be digitised and the timeline of the project.