Digital Preservation Workflow User Guides

DELIVERABLE
Project title: Resurrection Lab
Convention IRSIB : RBC / 2016 PR 11
February 2019

Resurrection Lab project, a research collaboration by iMAL asbl and PACKED vzw

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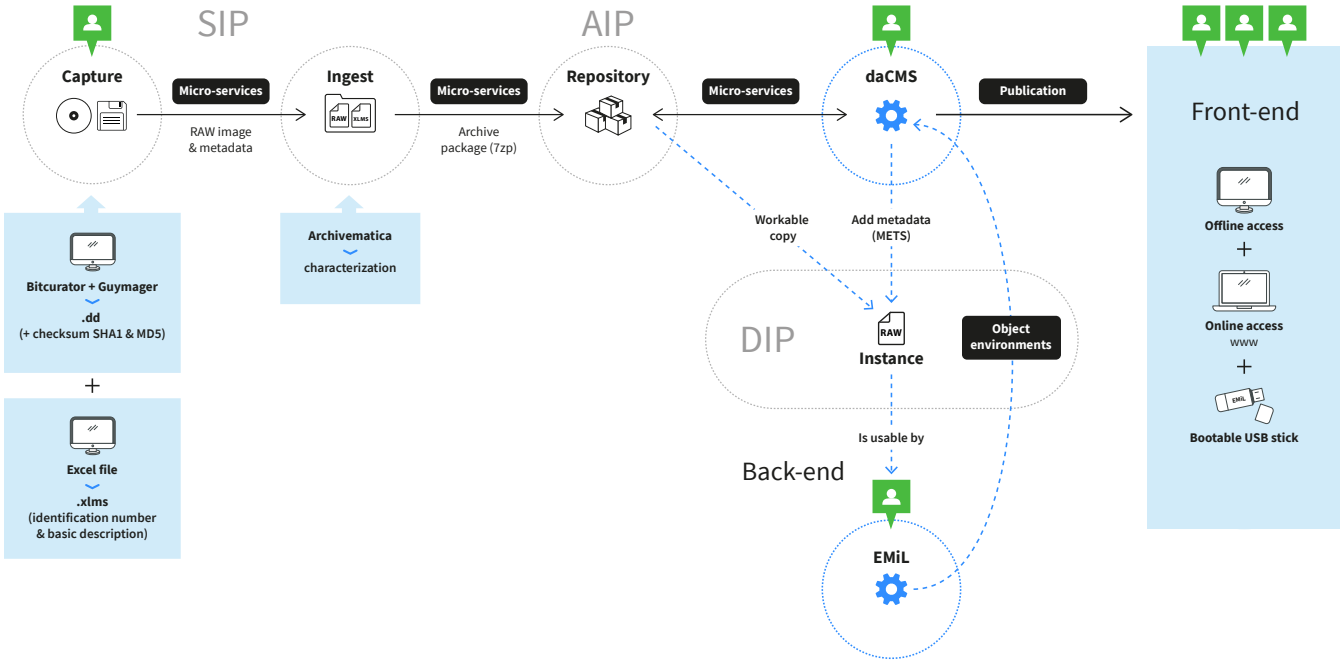
Digital Preservation Workflow



Following the conceptual framework recommended by the OAIS reference model, we've elaborated a quite similar architecture for the digital preservation workflow.

The specificity of the Resurrection Lab project is that the preservation concerns the software-based creations but also their emulations. That means that all the environments (native Operating System, emulator, additional software, versioning) requested to run the appropriated emulation has to be preserved as well. This entity is an associated actor of the data management because necessary to provide an access for the designated user community.

Quick tour

A non-exhaustive list of the main tasks performed during the digital archiving workflow.

How to make a disk image of a software-based creation

See *02. Capture workflow User Guide*

How to create a Digital Artefact

See *3.1 Repository (Sidebar), How to create a Digital Artefact*

How to manage and edit the Digital Artefacts profiles

See 3.2 Digital *Artefacts (Sidebar)*

How to describe the native software and hardware requirements

See *3.2.3.1 Original Physical Object, Glossary "Component"*

How to initiate the emulations from the daCMS

See *3. daCMS User guides, 3.2.3.3 Object environments*

How to handle the emulations

See *4. daCMS vs emulation User Guide*

How to edit an agent profile and link it to a Digital Artefact

See 3.3 Related resources (Sidebar), 3.3.2 Agents and *3.2 Digital Artefacts (Sidebar), 3.2.7 Agent profiles*

How to edit an exhibition profile and link it to a Digital Artefact

See *3.3 Related resources (Sidebar), 3.3.4 Exhibitions* and *3.2 Digital Artefacts (Sidebar), 3.2.6 Exhibitions*

How to quick build a collection

See *3.3 Related resources (Sidebar), 3.3.1 Collections* and *3.2 Digital Artefacts (Sidebar), 3.2.1 Management*

How to assign Tags

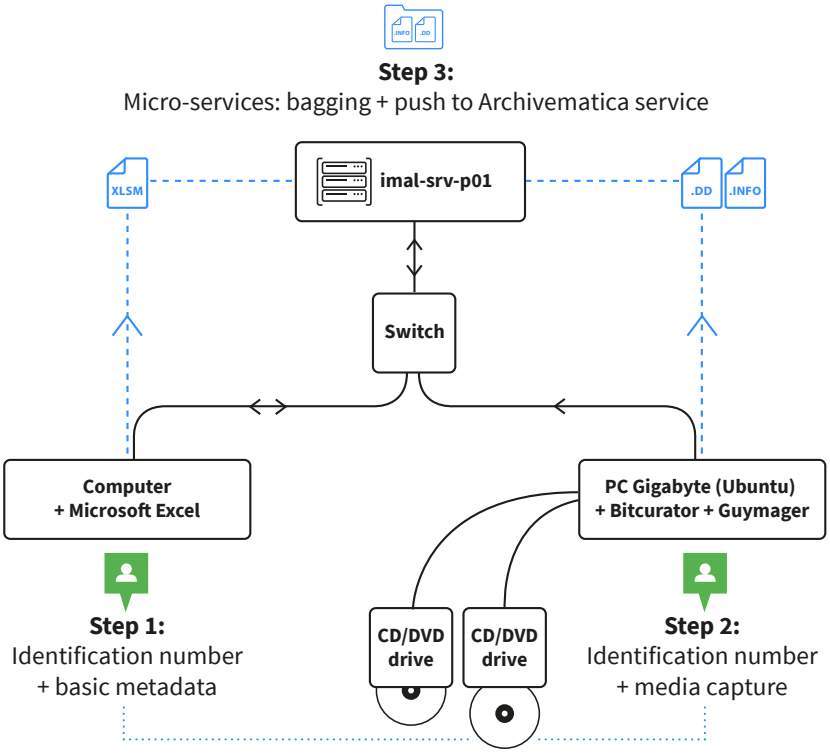
See *3.3 Related resources (Sidebar), 3.3.3 Tags* and *3.2 Digital Artefacts (Sidebar), 3.2.1 Management*

How to custom the publication platforms

See *3.5 Settings (Top bar)*

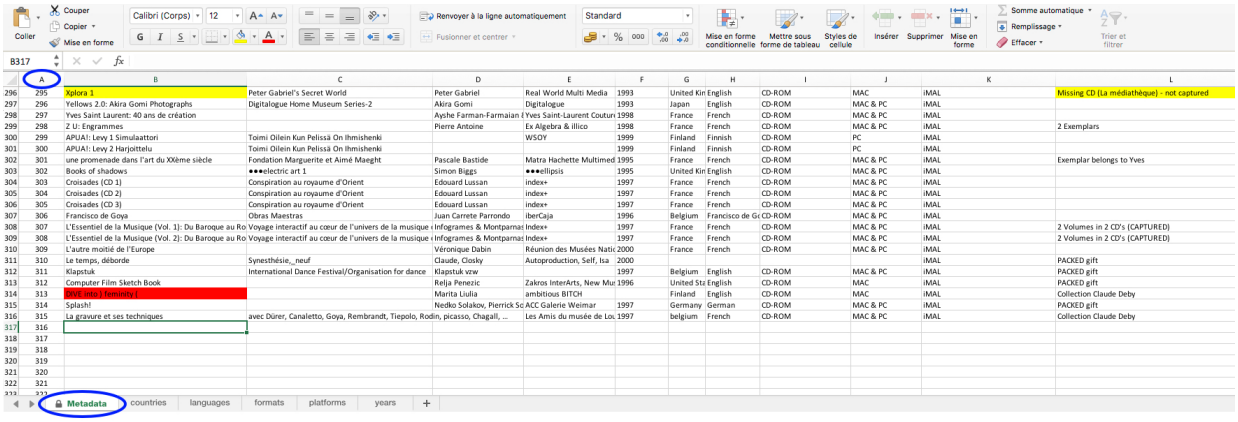
1. Capture Station User Guide

Station description & setup



The station - dedicated to the capture of generic CD-roms - consists in:

1. **One computer** with Microsoft Excel software installed.
2. **One Excel file: Collection_Ingest_MetaData.xlsm**



   a) **File location:** imal-srv-p01/ResLab Images/ingest-media/metadata/Collection_Ingest_MetaData.xlsm

   b) with a system of **identification number** (First column A) for each software-based creation. 1 row = 1 numeral identifier = 1 media

c) **file protection:** the first column is locked (A = ID numbers) to avoid errors of manipulation and rows deletion.
To unlock the column and extend the list of numbers, password is stored in the KeePassXC data base for the project

d) **with a color code:**
red = corrupted capture (damaged object, high number of bad sectors)
When the red color is applied on the rows of the second column (B) of the Excel file, the capture is stored but isn't bagged neither transferred to Archivematica

yellow = special cases: cd-roms or other carriers requiring special device and software for the capture: to be treat with an appropriated station.

Note: other colors in the existing Excel file doesn't matter neither have an impact.

3. **One workstation PC Gigabyte BRIX GB-BKi5HA-7200** (stored with the physical Cd-roms collection). Running on Ubuntu, with BitCurator & Guymager software installed: linux dd raw image capture.

4. **Two cd/dvd drives connected to the PC Gigabyte** (stored with the physical Cd-roms collection).
Note: it is quite possible to work with only one cd drive. The setup with both is in case of massive captures.

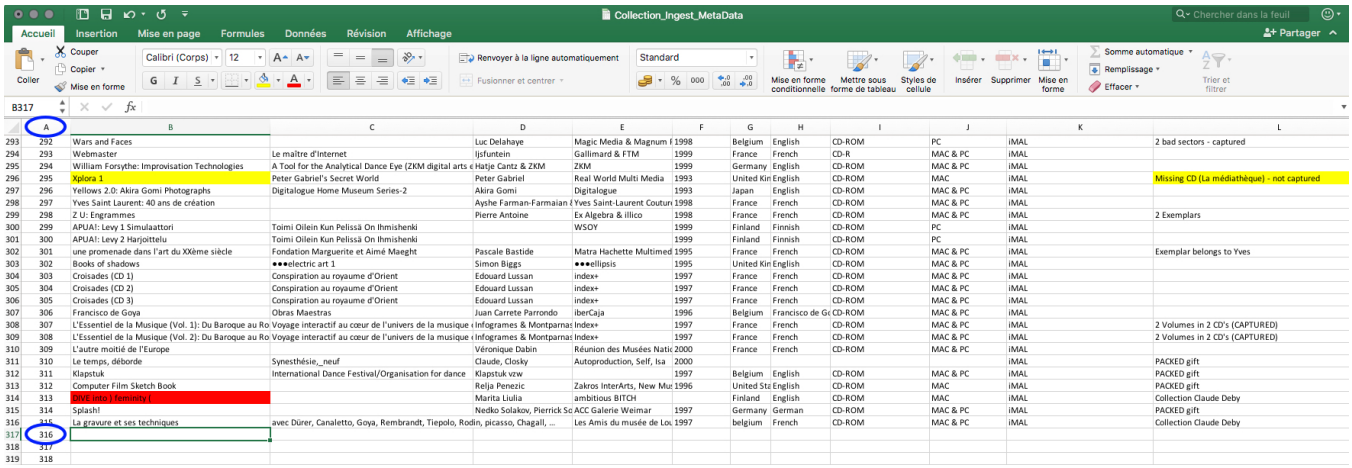
5. **One switch** for the connection of the 2 computers to the internal network/server (imal-srv-p01).

6. **Micro-services** executing the files transfers and bagging commands to prepare the media for the ingest executed by the Archivematica application.

2. Capture workflow User Guide

Workflow from BitCurator ingestion to Archivematica digital objects.
Detailed documentation about Bitcurator & Guymager: [BitCurator manual].

1. Preliminary step: identification of the software-based creation



	A	B	C	D	E	F	G	H	I	J	K	L
293	292	Wars and Faces		Luc Delahaye	Magic Media & Magnum I	1998	Belgium	English	CD-ROM	PC	iMAL	2 bad sectors - captured
294	293	Webmaster	Le maître d'Internet	Ijsfuntein	Gallimard & FTM	1999	France	French	CD-R	MAC & PC	iMAL	
295	294	William Forsythe: Improvisation Technologies	A Tool for the Analytical Dance Eye (ZKM digital arts c	Hatje Cantz & ZKM	ZKM	1999	Germany	English	CD-ROM	MAC & PC	iMAL	
296	295	Xplora 1	Peter Gabriel's Secret World	Peter Gabriel	Real World Multi Media	1993	United Kin	English	CD-ROM	MAC	iMAL	Missing CD (La médiathèque) - not captured
297	296	Yellows 2.0: Akira Gomi Photographs	Digitalogue Home Museum Series-2	Akira Gomi	Digitalogue	1993	Japan	English	CD-ROM	MAC & PC	iMAL	
298	297	Yves Saint Laurent: 40 ans de création		Ayshe Farman-Farmaian (	Yves Saint-Laurent Couturi	1998	France	French	CD-ROM	MAC & PC	iMAL	
299	298	Z U: Engrammes		Pierre Antoine	Ex Algebra & illico	1998	France	French	CD-ROM	MAC & PC	iMAL	2 Exemplars
300	299	APUA!: Levy 1 Simulaattori	Toimi Oilein Kun Pelissä On Ihmishenki		WSOY	1999	Finland	Finnish	CD-ROM	PC	iMAL	
301	300	APUA!: Levy 2 Harjoittelu	Toimi Oilein Kun Pelissä On Ihmishenki			1999	Finland	Finnish	CD-ROM	PC	iMAL	
302	301	une promenade dans l'art du XXème siècle	Fondation Marguerite et Aimé Maeght	Pascale Bastide	Matra Hachette Multimed	1995	France	French	CD-ROM	MAC & PC	iMAL	Exemplar belongs to Yves
303	302	Books of shadows	●●●electric art 1	Simon Biggs	●●●ellipsis	1995	United Kin	English	CD-ROM	MAC & PC	iMAL	
304	303	Croisades (CD 1)	Conspiration au royaume d'Orient	Edouard Lussan	index+	1997	France	French	CD-ROM	MAC & PC	iMAL	
305	304	Croisades (CD 2)	Conspiration au royaume d'Orient	Edouard Lussan	index+	1997	France	French	CD-ROM	MAC & PC	iMAL	
306	305	Croisades (CD 3)	Conspiration au royaume d'Orient	Edouard Lussan	index+	1997	France	French	CD-ROM	MAC & PC	iMAL	
307	306	Francisco de Goya	Obras Maestras	Juan Carrete Parrondo	iberCaja	1996	Belgium	Francisco de Gc	CD-ROM	MAC & PC	iMAL	
308	307	L'Essentiel de la Musique (Vol. 1): Du Baroque au Ro	Voyage interactif au cœur de l'univers de la musique (	Infogrames & Montparnas	Index+	1997	France	French	CD-ROM	MAC & PC	iMAL	2 Volumes in 2 CD's (CAPTURED)
309	308	L'Essentiel de la Musique (Vol. 2): Du Baroque au Ro	Voyage interactif au cœur de l'univers de la musique (	Infogrames & Montparnas	Index+	1997	France	French	CD-ROM	MAC & PC	iMAL	2 Volumes in 2 CD's (CAPTURED)
310	309	L'autre moitié de l'Europe		Véronique Dabin	Réunion des Musées Natic	2000	France	French	CD-ROM	MAC & PC	iMAL	
311	310	Le temps, déborde	Synesthésie,_neuf	Claude, Closky	Autoproduction, Self, Isa	2000					iMAL	PACKED gift
312	311	Klapstuk	International Dance Festival/Organisation for dance	Klapstuk vzw		1997	Belgium	English	CD-ROM	MAC & PC	iMAL	PACKED gift
313	312	Computer Film Sketch Book		Relja Penezic	Zakros InterArts, New Mu	1996	United Sta	English	CD-ROM	MAC	iMAL	PACKED gift
314	313	DIVE into) feminity (		Marita Liulia	ambitious BITCH		Finland	English	CD-ROM	MAC	iMAL	Collection Claude Deby
315	314	Splash!		Nedko Solakov, Pierrick Sc	ACC Galerie Weimar	1997	Germany	German	CD-ROM	MAC & PC	iMAL	PACKED gift
316	315	La gravure et ses techniques	avec Dürer, Canaletto, Goya, Rembrandt, Tiepolo, Rodin, picasso, Chagall, ...		Les Amis du musée de Lo	1997	belgium	French	CD-ROM	MAC & PC	iMAL	Collection Claude Deby
317	316											
318	317											
319	318											

1. Open the Excel file on the computer with Excel installed (enable macros).
   File location: imal-srv-p01/ResLab Images/ingest-media/metadata/Collection_Ingest_MetaData.xlsm.

2. On the empty row below the list, note the number displayed in the column "A" and fulfil the cells of the row with the requested metadata.

3. Make two stickers with the corresponding number and stick them on the packaging of the software-based creation. One of the sticker will be placed on the spine and the other on the back of the packaging.

In that way, the software-based creation gets its physical and digital identification number that will identify it along the process of archiving and preservation.
The metadata will constitute the basic description of the item and will be retrieved in the daCMS after the ingest process.

2. Capture with PC Gigabyte

On the PC Gigabyte, connect to mm.local with vnc

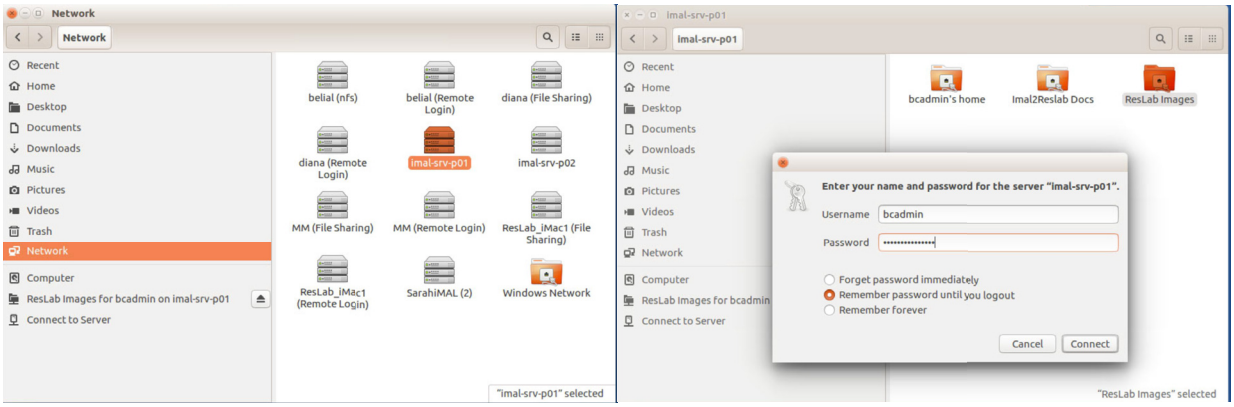
Open VirtualBox if it's not already open

1. Start BitCurator-1.x.x Virtual Machine if its state is stopped.
2. Set it in Full-screen mode

3. Bitcurator

In Bitcurator VM, open an access to the Archives server

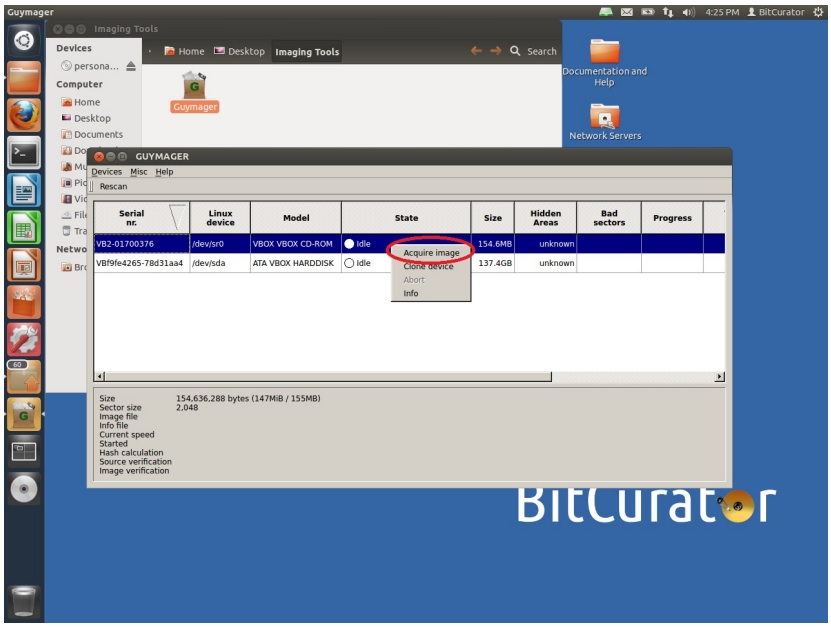
1. Open the folder
2. Select imal-srv-p01 in the Network window, connect to it with the user bcadmin ("Bitcurator User" credentials are stored in the KeePassXC data base of the project.)
3. Open the folder "Reslab Images".



The Bitcurator ingestion files will be moved to bitcurator-ingest

4. Guymager

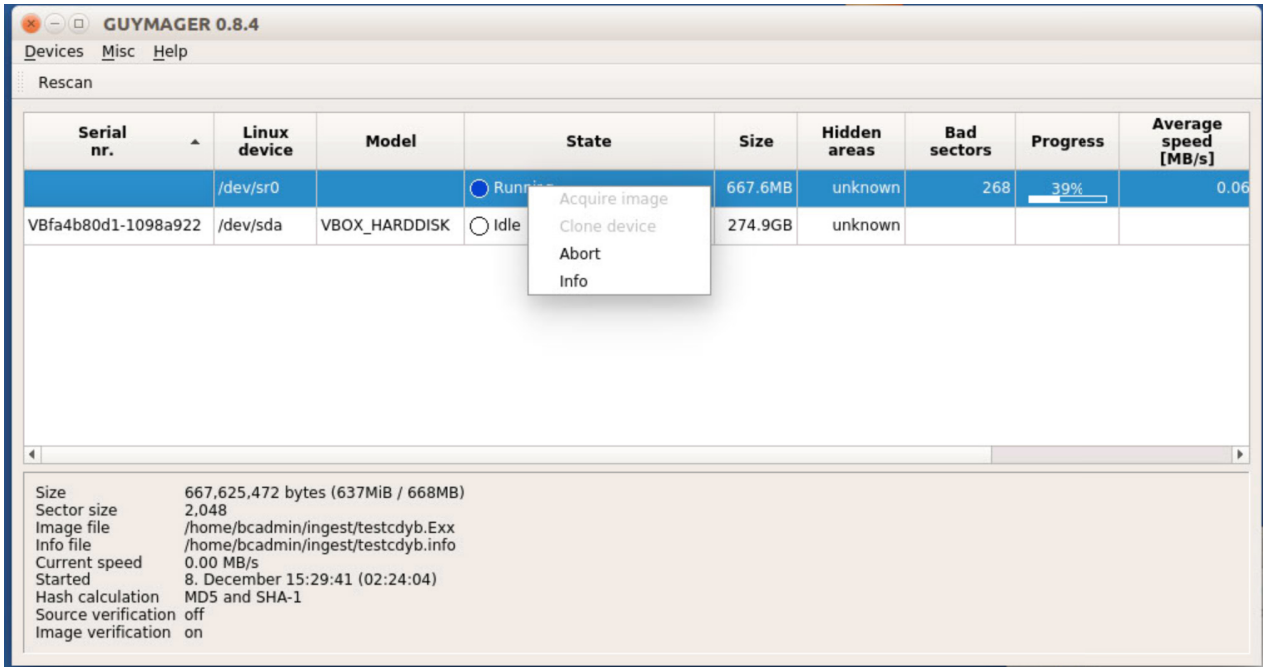
1. Open the folder "Imaging & Recovery" and click on Guymager application
2. Insert the media in one of the CD/DVD drives
3. Choose the corresponding device in the Guymager board and launch the acquisition



On opening of the pop-up window:

- Select the "linux dd raw image" option
- Unselect the "split image file" option
- Image directory: home/bcadmin/ingest-local
- Image file name: the **identification number** of the software-based creation: **column A of the Excel file** (very important)
- select "Calculate MD5"
- select "Calculate SHA-1"
- the other calculation/verification options must remain unselected
- valid with "ok"

When proceeding, you will get something similar to the following screen.
The process is completed when the progress bar shows 100%.



5. Files transfer

After the media acquisition, the new raw image is located in /home/bcadmin/ingest-local.

Micro-services will move the raw image (XXXXX.dd) and its associated acquisition log file (XXXXX.info) to the folder "ingest-media" located on the ResLAB Archive Server (imal-srv-p01.imal.intra).

This will be done only if the acquisition process is fully completed, meaning we have SHA1 checksum info for the raw image. Otherwise, it remains on the ingest server.

6. Archivematica services

Once the raw image and its associated acquisition log file have been transferred on the ResLAB Archive Server, another layer of micro-services will bag them in an appropriated format to be ingested and characterized by the Archivematica services. That become the SIP (Submission Information Package).

The role of Archivematica is to guarantee the integrity of the archive by executing its own sequence of micro-services. Mostly important of them: fixity check, virus scan, normalisation and format policies, OAIS compliant AIP (Archival Information Package) creation. The AIP is the true archive that will be preserved and stored on the digital repository. The born digital object is therefore declared compliant for archiving.

Once the AIP is created, daCMS micro-services will extract a copy of the raw image to make it workable by the EMiL services (emulation). That avoid to use and degrade the preserved digital archive. That is a part of the DIP (Dissemination Information Package).

All that process is full automatically executed and Archivematica application is operating in background mode. When the process is completed, the title of the software-based creation appears in the Repository list of the daCMS.

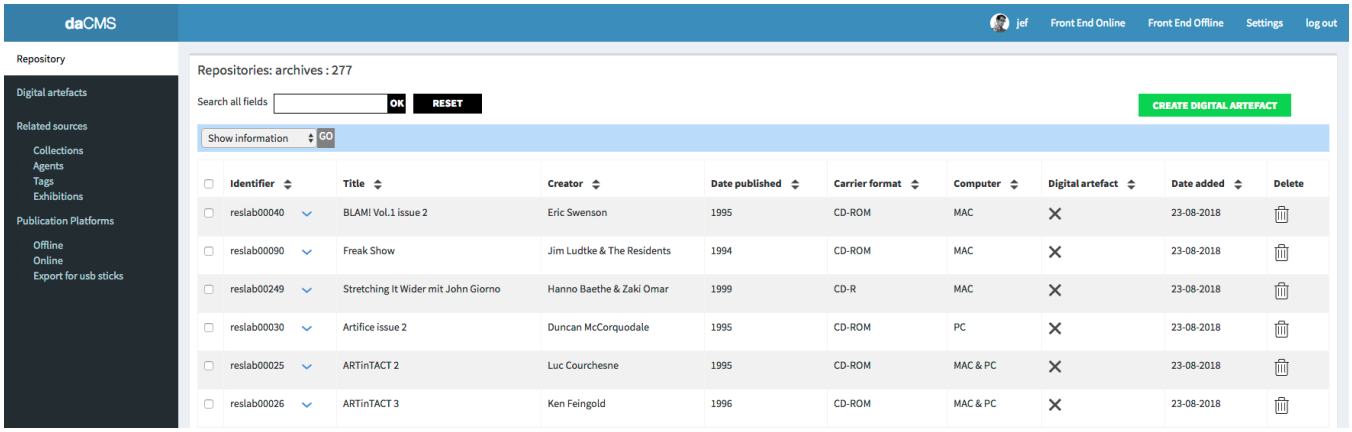
Note: it happens that Archivematica application doesn't execute the "Approve transfer" command in background task.

In this case (30 minutes after the capture, the software-based creation title doesn't appear in the daCMS)

1. connect to the interface of Archivematica (access and credentials are stored in the KeePassXC data base for the project)
2. in the ingest panel, click on "Approve transfer"

7. daCMS

After 15 or 20 minutes, the title of the software-based creation appears in the Repository list of the daCMS. You may now handle the next steps of digital preservation. (See *3. daCMS User guides.*)



3. daCMS User guides

The daCMS is the maestro of the digital preservation process.
It is the framework that runs in interoperability with the external APIs thanks to bespoke micro-services.

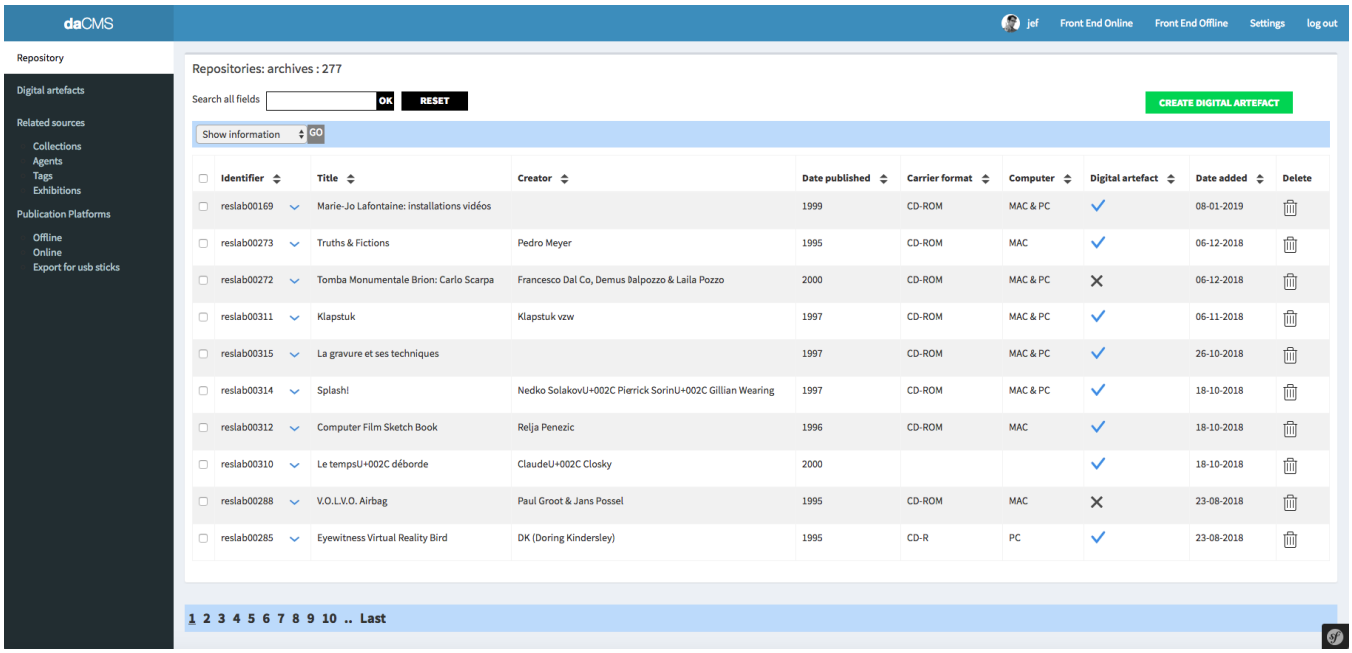
The web application allows to:

- edit and publish all the information concerning the software-based creations
- manage the publications on the two public access platforms (Offline and Online)
- manage the archived software-based creations - from the repository to the emulation display
- manage quantities of levels of description through a single workflow.

Its architecture and its way of description respect a custom data model that fits the standards recommended by the archivist committees: concepts of FBRB (Functional Requirements for Bibliographic Records) plus Premis, RDA, Spectrum, Dublin Core vocabulary.

The web application is structured in 5 main axes:

- Repository (sidebar)
- Digital Artefacts (sidebar)
- Related resources (sidebar)
- Publication platforms (sidebar)
- Settings (top bar)



Specs

Most important specs:

- Interoperability with external APIs thanks to bespoke micro-services (back end developments)
- Interoperability with the repository
- Retrieval and view on the repository of the metadata encoded during the archival process and metadata provided while the capture and ingest process (from Bitcurator and Archivematica)
- Management of the digital archives (AIP) stored on the digital repository
- Management and commissioning of copies of the captured disk images that will be workable for the emulation service
- Interoperability with the emulation service (bwFLA/EMiL)
- Retrieval and preservation of the metadata concerning the settings applied to run the emulations
- Specific functions developed to merge the archives in the case of digital editions that are running on multiple CD-roms
- Management of all the data and redistribution for the public access on the 3 types of channels:
  - Front-end offline
  - Front-end online
  - Bootable USB stick
- System developed and guided to be easy to use and manage even by persons who haven't archivist education thanks to user friendly interfaces and user guides.

Data base specs:

- A data base built on a custom data model (ontology designed by PACKED vzw) allowing to describe different types of software-based objects (CD-roms, floppies, programming code, net art …)
- The data model respects the recent archival models of description and libraries of standard vocabulary. In the goal to produce sharable descriptions and to preserve for the long term.
- Logical and algorithmic management of the dependencies concerning the relationships between the objects.

Standard specs:

- Symfony PHP framework as foundation and development in the respect of the standards W3C (HTML5, CSS3, Javascript)
- Modules permitting levels of documentation from basic metadata to scalable documentation: pictures, videos, articles, exhibitions, agents profiles …
- Modules permitting to categorize and filter the digital works displayed on the Front-end Platforms (collections & tags)
- Module permitting to customize the profile of the institution on the Front-end platforms (logo, about, contact)
- Search engine to browse and find easily all the items in the daCMS
- Secure system with login access
- Access from a computer machine and a web browser

3.1 Repository (Sidebar)

After the Log In and by default, the daCMS opens itself on the Repository Tab.

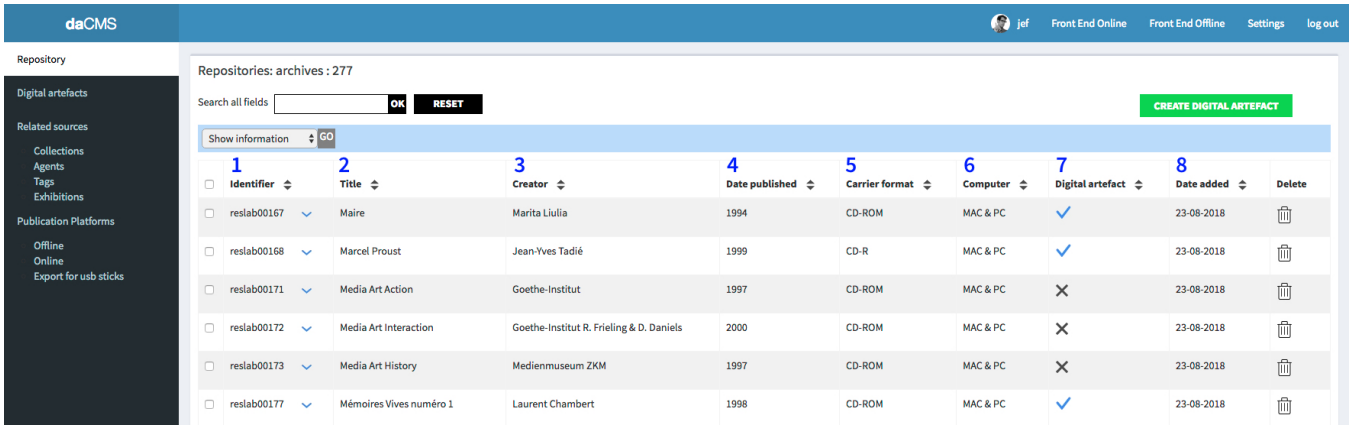
The digital repository is the storage location on the server that contains the captured disk images and their associated basic description metadata that have been recorded during the capture process *(See 2. Capture workflow User Guide).*

After the capture, each preserved media appears on the repository only after being characterized by the Archivematica application that guarantees a safe AIP (Archival Information Package). That is the content of the digital archive.

The repository User Interface gives a view and an access to the AIPs.
It allows to inspect the basic description metadata and allows also to retrieve metadata provided by Bitcurator and Archivematica (Checksum and UUID).

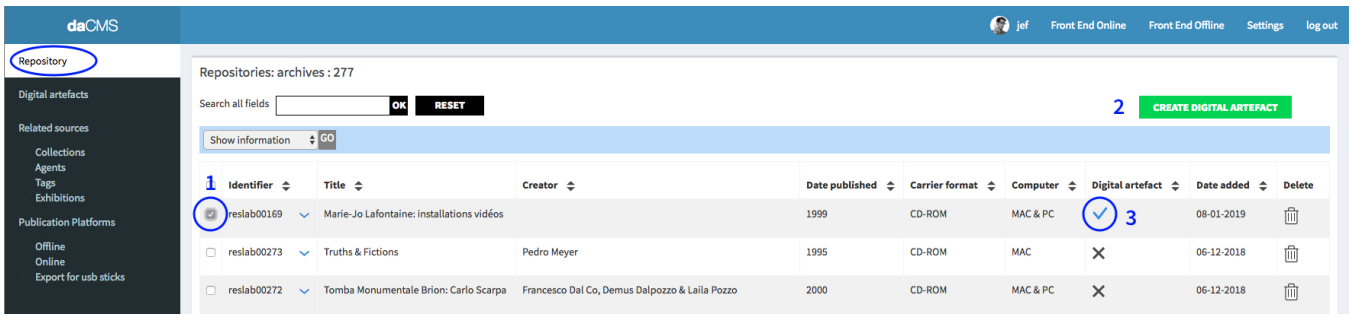
Mostly important: the Repository User Interface allows to generate the Digital Artefacts profiles, that will be the representations of the software-based creations for the public access platforms.

Repository: launch list



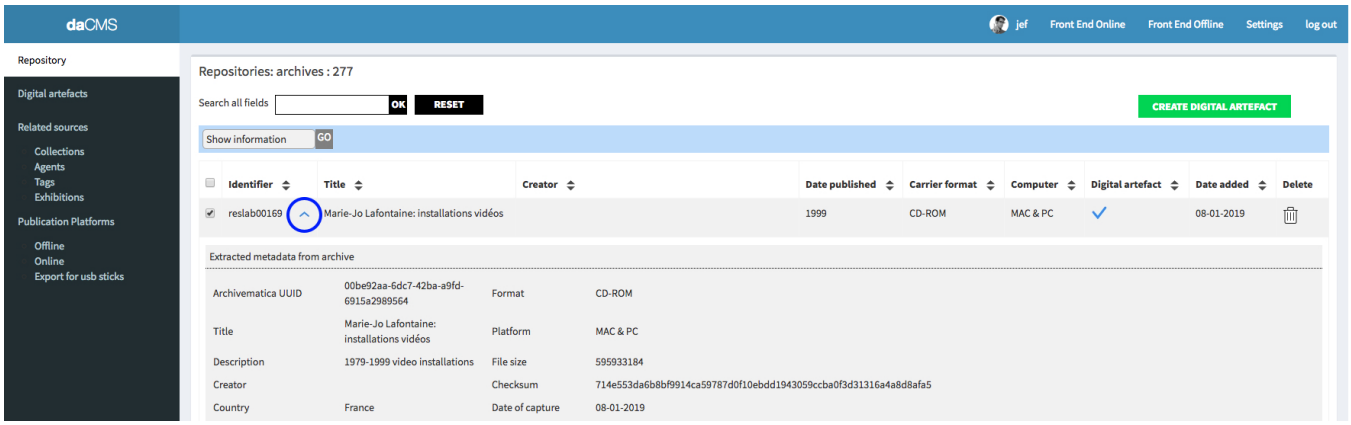
1. Identifier: the archive number attributed at the start of the archiving process
2. Title: the title recorded in the Excel file and retrieved by the daCMS
3. Creator: the creator(s) recorded in the Excel file and retrieved by the daCMS
4. Date published: the date of publication of the native software-based creation - recorded in the Excel file and retrieved by the daCMS
5. “Carrier format”: the type of removable media on which the native software-based creation was stored - recorded in the Excel file and retrieved by the daCMS
6. “Computer”: the native type of computer on which the software-based creation was running - recorded in the Excel file and retrieved by the daCMS
7. Digital artefact: blue checkmark indicates that the digital artefact has been created
8. Date added: daCMS function: when the archive has been transmitted to the daCMS

How to create a Digital Artefact



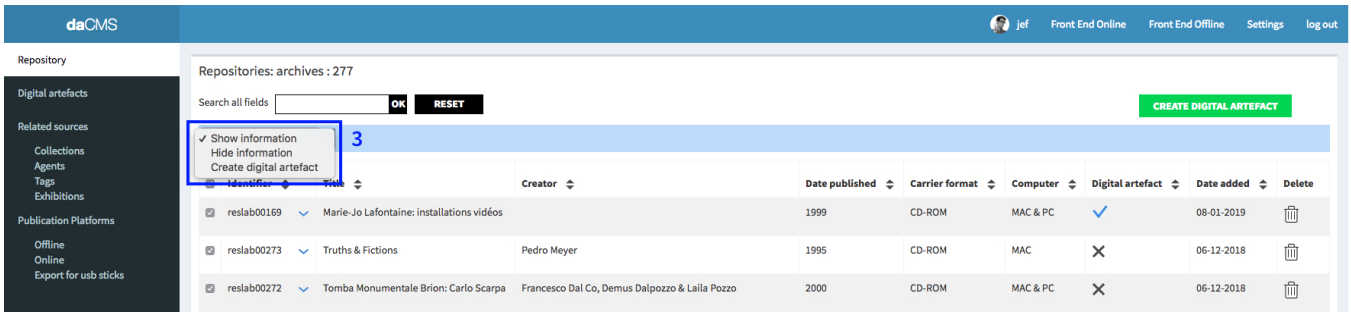
1. Click on the check box at the left of the identifier
2. Click on the “Create Digital Artefact” button
3. Blue Checkmark icon in column “Digital Artefact” indicate that the operation is done
4. Click on “Digital Artefact Tab” in the Sidebar to view and edit the new Digital Artefact

How to inspect the basic metadata



1. On click the arrow at the right of the Identifier: opening of the panel
2. On second click : collapse of the panel

Batch actions



1. Click the check box on the top of the column “Identifier”
2. Click on the select box
3. Select an action to be done
4. Valid and execute with a click on the "GO" button

3.2 Digital Artefacts (Sidebar)

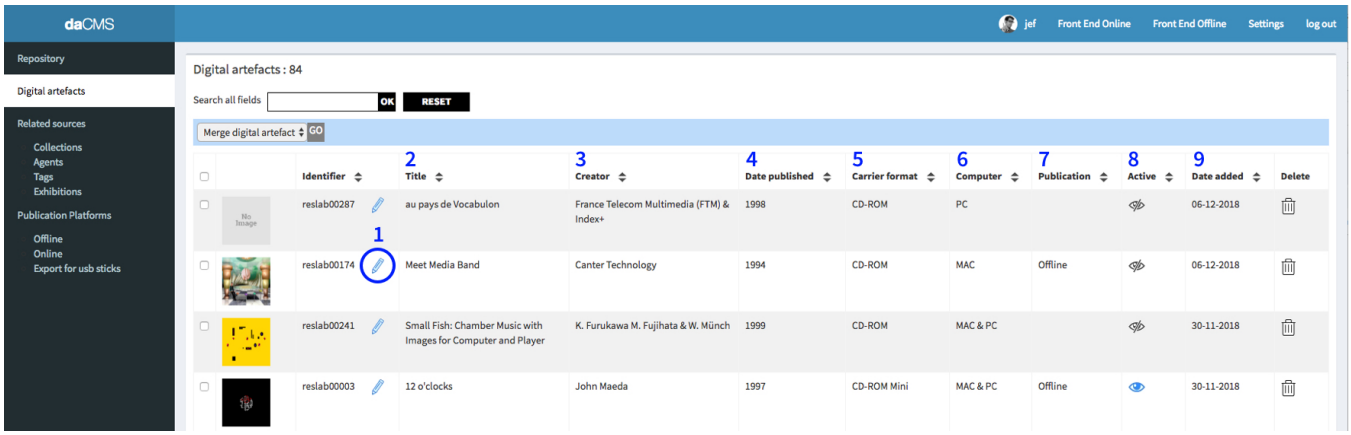
Digital Artefacts are the core business of the daCMS.

A Digital Artefact is the representation of a software-based creation and its descriptive content constitutes the preservation information published on the public access platforms (Publications platforms Offline & Online). Representation means textual description, visual description, documentation and emulation in the aim to restoring as well as possible the experience of discovering and using the software-based creations.

Digital Artefacts User Interfaces allow to manage and to describe the software-based creations.
Not to mention one of the essential points: the emulation service that is initiated and partly managed since the Items Tab.
In order to represent the software-based creations in a scalable way, Digital Artefacts management offers many levels of action: from basic description till extended documentation.

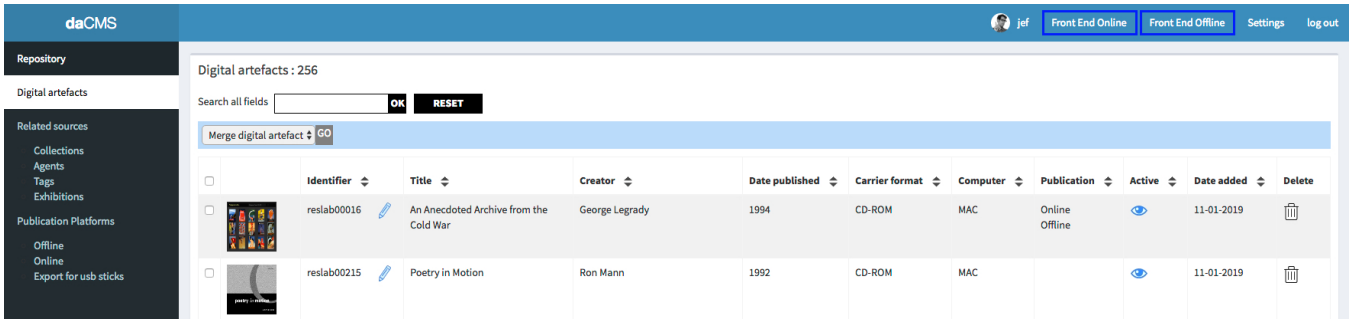
The global profile of a digital artefact is currently editable through 8 tabs (see sub-content points).
All the metadata recorded in the tabs are feeding the content that is distributed on the public access platforms (Publications platforms Offline & Online). *(See* 3.4 Publication platforms (Sidebar)*).*

Digital artefacts: launch list



1. Click on the pen icon: edit the profile of a digital artefact
2. Title: retrieved by the daCMS but now editable in the manifestation Tab
3. Creator: retrieved by the daCMS but now editable in the manifestation Tab
4. Date published: retrieved by the daCMS but now editable in the manifestation Tab
5. “Carrier format”: retrieved by the daCMS but now editable in the manifestation Tab
6. “Computer”: the native type of computer on which the software-based creation was running
7. “Publication”: the type of emulation available for the publication platforms
8. “Active”: blue eye: the digital artefact is visible on the publication platforms
9. Date added: when the digital artefact has been created in the daCMS

One tip: check the result

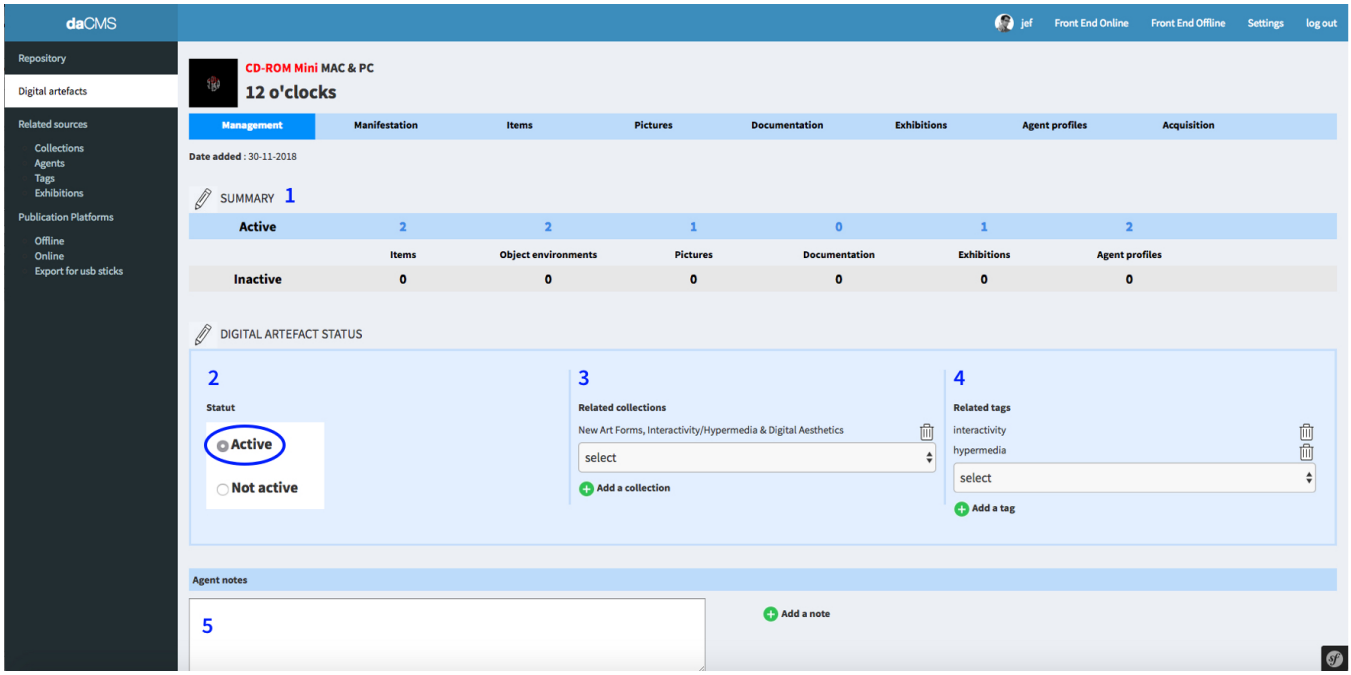


In order to verify the result of your actions while editing the profile of a digital artefact:

1. Top bar: click on Front End Online and/or Front End Offline
   The respective publication platforms will be opened in blank windows.
   Reload the Front-End pages after modifications in the daCMS to look at the results

3.2.1 Management

Overview

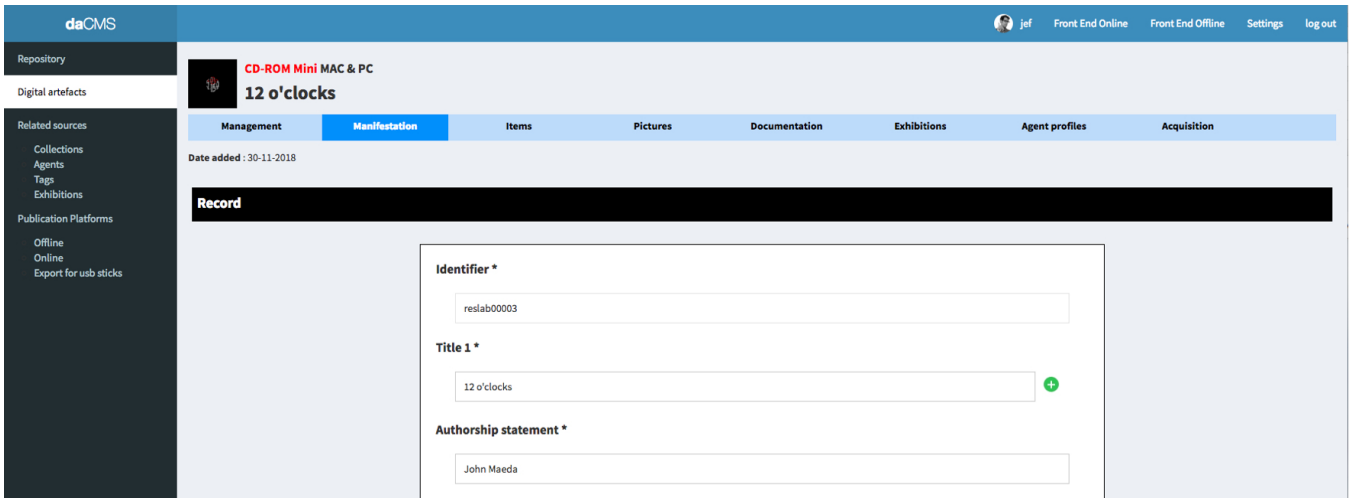


1. Summary is the count of the items that constitute the global profile of the digital artefact. (daCMS function/not editable).
2. Click on radio button “Active”: the digital artefact is published (and visible) on the publication platforms. Click on radio button “Inactive”: the digital artefact is editable but invisible on the publication platforms.
3. Related collections: link to one or many pre-created collections (thematic classification on the publication platforms)
4. Related tags: link to one or many pre-created tags (specific classification on publication platforms)
5. Agent notes: just for the daCMS user: keep comments or memo during the work process

3.2.2 Manifestation

RDA definition: A physical embodiment of an expression of a work.
The manifestation form concerns the description of the creation itself (above the single original physical object that is described in the Item tab).
It concerns all the intellectual information such creators, producers, publishers, subject, content type, etc. and the type of media on which the work is distributed.

Basic metadata import



While creating a Digital Artefact, the daCMS pre-fill the corresponding text fields with the metadata that have been pre-recorded in the Excel file, during the capture of the software-based creation.
Those same basic metadata are retrieved and displayed in the Repository interface and in the Items interface as well.

Concerning the manifestation form, those text fields are pre-filled:

- Identifier
- Title 1
- Title 2 (if existing)
- Authorship Statement
- Creator(s)
- Publisher(s)
- Date published
- Place of publication

Agents: creators & publishers

While creating a digital artefact, the daCMS automatically creates as many Agent Profiles as **creators** and **publishers** pre-recorded in the Excel file. The parse is done on the commas.
The whole profiles are editable from the “Agents tab” located on the sidebar and under the section title “Related resources”.
For each new creator, producer or publisher you will add in the form, the daCMS will generate a new profile as well.

After the edit of the manifestation form, and after the completion of the Agent profiles, you will have the opportunity to handle the display of the Agent profiles and to attach them to a Digital Artefact page on the publication platforms *(See* 3.2.7 Agent profiles*).*

One tip

Concerning the multiple choices list:

1. Cmd + click on the data to select one value
2. Keep holding the Cmd touch, scroll the list and select the next value you wish

Glossary

The list of vocabulary below is advising on the definition of the each of archival terms and are providing some examples:

Identifier	Automatic retrieval of the archive number attributed at the start of the archiving process. Not editable.
Title 1	A word, character, or group of words or characters that names a manifestation or a work embodied in it. May be completed with Title 2, Title 3, etc.: click the "+" green button on the right.
Authorship statement	The name(s) of the agent(s) responsible for the creation of a work that is/are printed on the cover of the packaging (in our case). To be checked in order to declare only the name(s) readable on the cover.
Creator(s)	An agent who is responsible for a work. A creator of work includes an agent who is jointly responsible for the creation of a work either by performing the same role as another agent, such as in a collaboration between two writers, or by performing a different role, such as in a collaboration between a composer and a lyricist.
Role	The function performed by the creator.
Contributor(s)	An agent who is responsible for a work. In our case, it concerns the “secondary roles” or collaborators such multimedia studio (if executor), translators, librarians, etc.
Role	The function performed by the contributor.
Producer(s)	An agent who is responsible for inscribing, fabricating, constructing, development, etc., an unpublished manifestation.
Publisher(s)	An agent who is responsible for publishing, releasing, or issuing a manifestation.
Date created	A timespan during which a unpublished manifestation is realised.
Date published	A timespan during which a published manifestation is published, released, or issued.
Subject	A term, phrase, topic that indicates what a work is about.

Content type

A categorization reflecting the fundamental form of communication in which the content is expressed and the human sense through which it is intended to be perceived.

Content type also reflects the number of spatial dimensions and the presence or absence of movement in which content expressed in the form of an image or images is intended to be perceived.

RDA content term - 336 $a	MARC codes for RDA terms - 336 $b	MARC Bibliographic Leader/06 code(s)
cartographic dataset	crd	e or f
cartographic image	cri	e or f
cartographic moving image	crm	e or f
cartographic tactile image	crt	e or f
cartographic tactile three-dimensional form	crn	e or f
cartographic three-dimensional form	crf	e or f
computer dataset	cod	m
computer program	cop	m
notated movement	ntv	a or t
notated music	ntm	c or d
performed music	prm	j
sounds	snd	i
spoken word	spw	i
still image	sti	k
tactile image	tci	k
tactile notated music	tcm	c or d
tactile notated movement	tcn	a or t
tactile text	tct	a or t
tactile three-dimensional form	tcf	r
text	txt	a or t
three-dimensional form	tdf	r
three-dimensional moving image	tdm	g
two-dimensional moving image	tdi	g
other	xxx	o or p
unspecified	zzz	

<table>
<tr><td></td><td>
https://www.loc.gov/standards/valuelist/rdacontent.html

Examples
In order to give real life examples you would first need to view the works on the CD-ROMS. But you can imagine that many of them contain for example computer program, performed music, sounds, spoken word, still image, text and two-dimensional moving image. [the music, spoken word, still images and moving images are ‘called’ and presented with the help of the computer program, but often you can also view and play the files separately].
</td></tr>
<tr><td>Language</td><td>A language used for the content of an expression.</td></tr>
<tr><td>Media type</td><td>
A categorization reflecting the general type of intermediation device required to view, play, run, etc., the content of a manifestation.

<table>
<tr><th>RDA media terms -337 $a</th><th>MARC codes for RDA terms - 337 $b</th><th>MARC media codes - 007/00</th></tr>
<tr><td>audio</td><td>s</td><td>s - sound recording</td></tr>
<tr><td>computer</td><td>c</td><td>c - electronic resource</td></tr>
<tr><td>microform</td><td>h</td><td>h - microform</td></tr>
<tr><td>microscopic</td><td>p</td><td></td></tr>
<tr><td>projected</td><td>g</td><td>g - projected graphic
m - motion picture</td></tr>
<tr><td>stereographic</td><td>e</td><td></td></tr>
<tr><td>unmediated</td><td>n</td><td>t - text
k - non-projected graphic</td></tr>
<tr><td>video</td><td>v</td><td>v - videorecording</td></tr>
<tr><td>other</td><td>x</td><td>z - unspecified</td></tr>
<tr><td>unspecified</td><td>z</td><td>z - unspecified</td></tr>
</table>

https://www.loc.gov/standards/valuelist/rdamedia.html

Examples
SPLASH! Nedko Solakov - Pierrick Sorrin - Gillian Wearing: Multimediale CD-ROM zur ACC-Sommerausstellung 1997 > computer; unmediated [because the CD-ROM requires a computer to view the content, but the included booklet not]
Le temps déborde > computer; unmediated [because the CD-ROM requires a computer to view the content, but the included booklet not]
KLAPSTUK 97 - INTERNATIONAL DANCE FESTIVAL / ORGANISATION FOR DANCE > computer [because the paper insert in the jewel case does not contain content that is part of the work, it only contains contact information and some system requirements]
Computer Film Sketch Book > computer [because the paper insert in the jewel case does not contain content that is part of the work, it only contains some installation instructions]
</td></tr>
</table>

Carrier type	A categorization reflecting the format of the storage medium and housing of a carrier in combination with the type of intermediation device required to view, play, run, etc., the content of a manifestation. https://www.loc.gov/standards/valuelist/rdacarrier.html **Examples** SPLASH! Nedko Solakov - Pierrick Sorrin - Gillian Wearing: Multimediale CD-ROM zur ACC-Sommerausstellung 1997 > computer disc; volume [because the jewel case contains beside a CD-rom also a booklet with content that is part of the work] Le temps déborde > computer disc; unmediated [because the paper box contains a beside a CD-rom also a booklet with content that is part of the work] KLAPSTUK 97 - INTERNATIONAL DANCE FESTIVAL / ORGANISATION FOR DANCE > computer disc [because the paper insert in the jewel case does not contain content that is part of the work] Computer Film Sketch Book > computer disc [because the paper in the jewel case insert does not contain content that is part of the work] CD-ROM > computer disc CD-R > computer disc DVD-R > computer disc Linear Tape-Open (LTO) > computer tape cartridge 5.25-inch minifloppy disk > computer disc cartridge 3.5-inch magneto-optical disc > computer disc cartridge 3.5-inch microfloppy > computer disc cartridge hard drive > computer disc Website > online resource USB flash drive > computer chip cartridge (?) Iomega Zip 250 > computer disc cartridge
Place of production	A place where an unpublished manifestation is inscribed, fabricated, constructed, etc.
Place of publication	A place where a published manifestation is published, released, or issued.
Description	A set of data that records and identifies an entity.
How to interact	A short explanation of the actions to do to experiment the software-based creation
Rights status	Rights of exploitation (generally known as "copyrights") and moral rights
Rights statement	Rights statement asserts two things: acts that the repository has a right to perform, and the basis for claiming that right.

3.2.3 Items

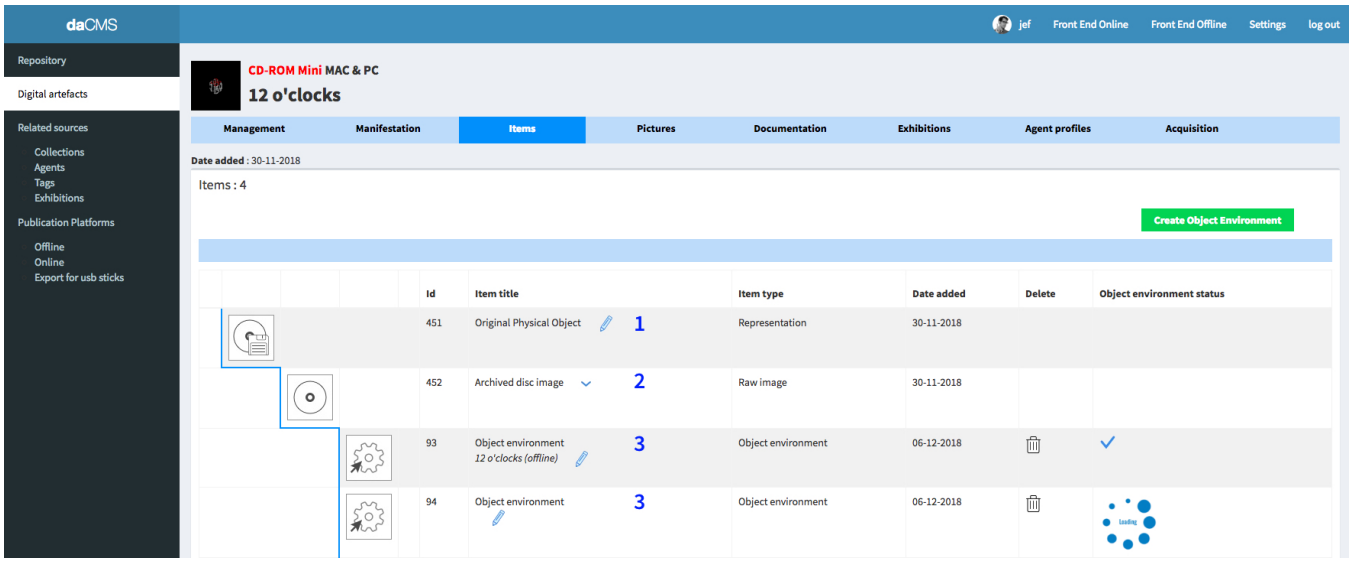
RDA definition: A single exemplar or instance of a manifestation.

This section deals with the physical aspects of the software-based creation.
It concerns the single original physical object and its representation by the way of emulation.

The interface shows the relationship and dependency between the original physical object, its preserved disk image and the emulations called "objects environments".

The emulations are elaborated from a copy of the captured disk image. The usable copy is automatically initiated after the transfer of the AIP (provided by Archivematica) on the repository. This method guarantees that the archive is safely preserved independently of the usage for the emulations.

Overview

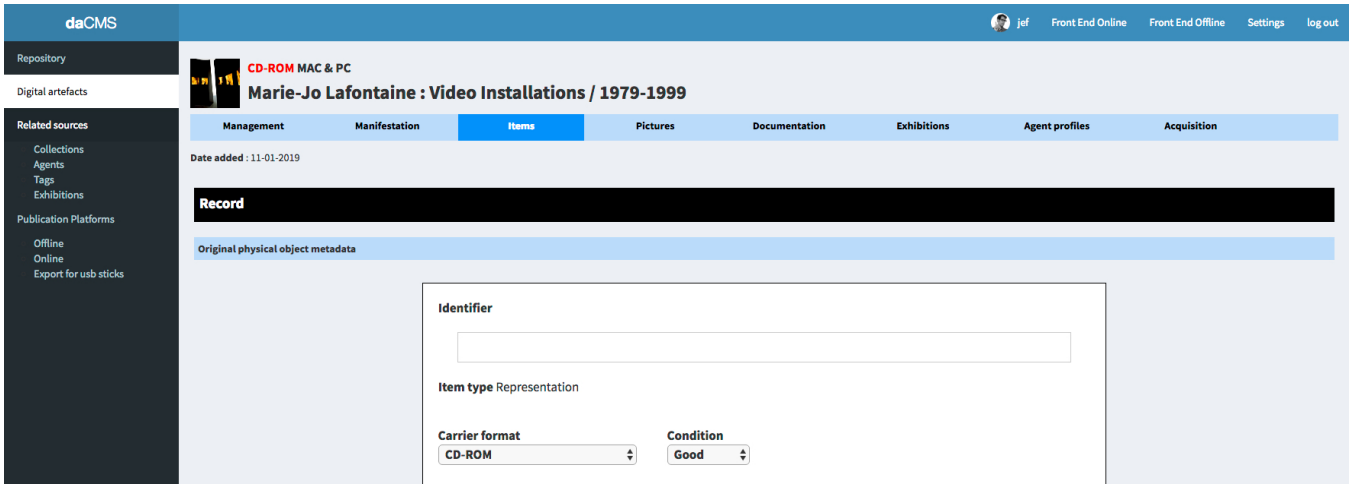


1. Original physical object
2. Archived disc image
3. Object environments

3.2.3.1 Original Physical Object

The form concerns the description of the native single exemplar of the manifestation.

Overview



Glossary

The list of vocabulary below is advising on the definition of the each of archival terms:

Identifier	Relates an item to a character string associated with an item that serves to differentiate an item from other items. In this case, it should be the ISBN number on the packaging if existing.
Item type: Representation	Digital or physical Object instantiating or embodying an Intellectual Entity. A digital representation is the set of stored digital files and structural metadata needed to provide a complete and reasonable rendition of the Intellectual Entity.
Carrier format	The type of removable media used for the data storage.

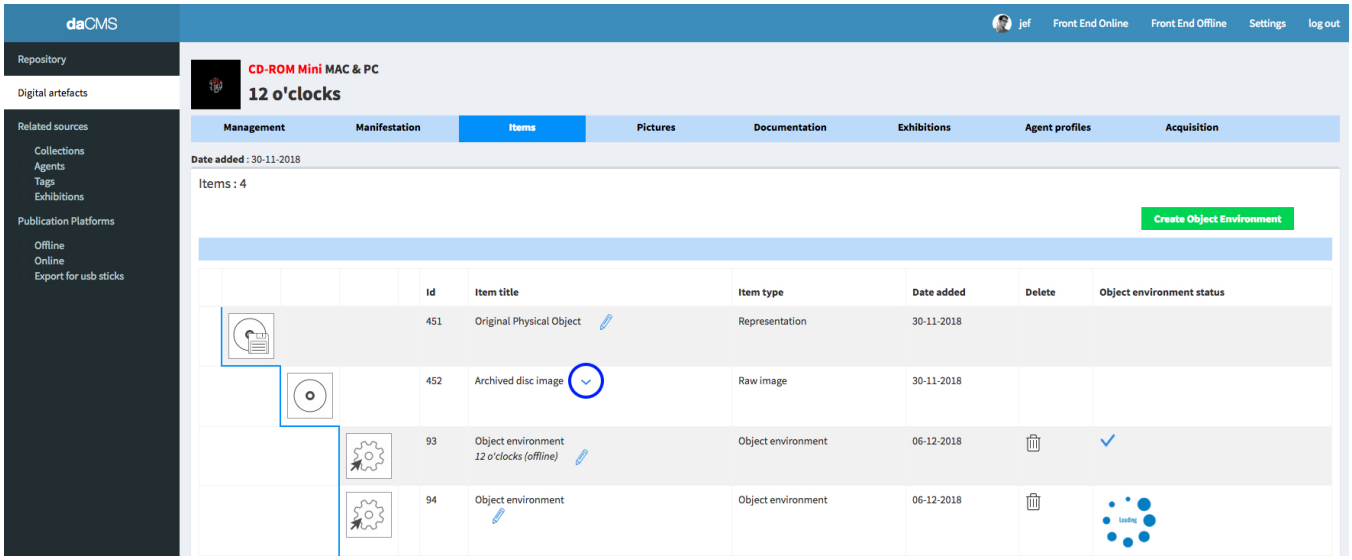
Condition	A single term describing the condition of an object. **Mint:** Perfect. No scuffs/scratches, unplayed - possibly still sealed. Insert/Inlay/Booklet/Sleeve/Digipak: No wear, marks, or any other imperfections. Idem for the data carrier. **Very Good:** An item that is used but still in very good condition. No damage to the packaging or item cover, no scuffs, scratches cracks, or holes. The cover art and liner notes are included. The box and instructions are included. The teeth of disk holder are undamaged. Minimal wear on the exterior of item. No skipping on CD/DVD. **Good:** An item in used but good condition. May have minor damage to packaging including scuffs or cracks, or to the item cover including scuffs, scratches, or cracks. No skipping on CD/DVD. **Acceptable:** An item with obvious and significant wear but is still operational. May have tears or holes in box. May have minimal skipping on CD/DVD but is readable.
Current location	The place within the organisation where an object is currently located.
Edition statement	A statement identifying the edition to which a resource belongs. An edition statement sometimes includes a designation of named revision of edition. An edition statement sometimes includes a statement of responsibility relating to edition and/or to named revision of edition. **Example:** Second edition edition of 300 copies Numbered copy x/100
Physical description	A note providing additional information about carrier characteristics that are specific to an item. **Example:** Cardboard box (142 x 124 mm), booklet, 120 mm optical disc
Instructions	Detailed information about how something should be done or operated. Information provided on the packaging and/or in the booklet.

Component	The native required hardware or software items necessary to run the native media. Information provided on the packaging and/or in the booklet. **Example 1:** function: computer manufacturer: Apple name: Power Macintosh 9600 version: note: 32 (64) Mb RAM **Example 2:** function: device manufacturer: generic name: 8-bit color monitor version: note: minimum 256 colors

3.2.3.2 Archived disk image

This function allows to have a recall of the metadata extracted from the archive.

Overview



1. On click the arrow: opening of the panel
2. On second click: collapse of the panel

3.2.3.3 Object environments

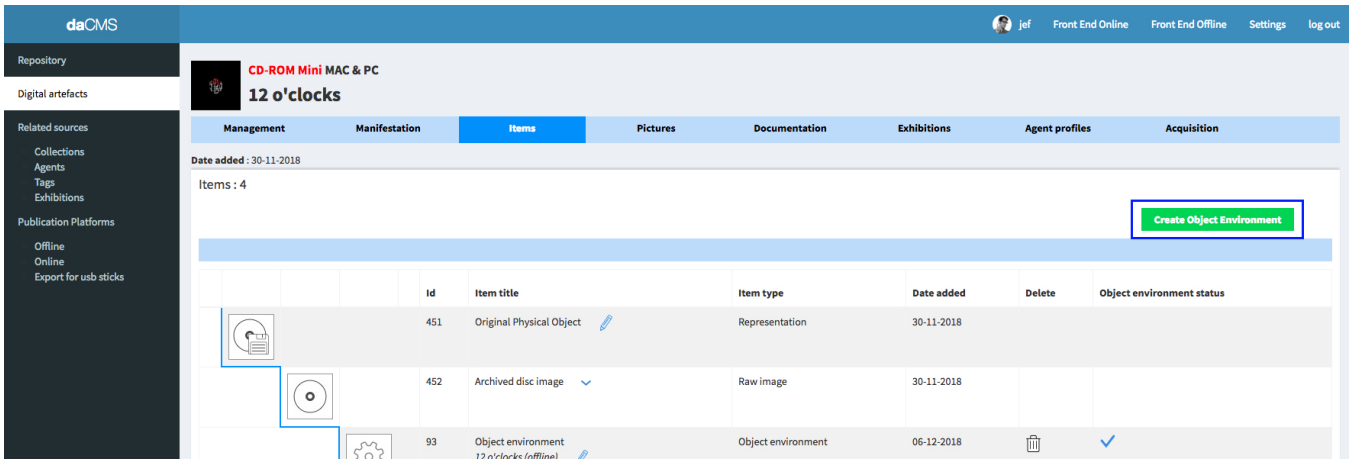
Object environments are the combination of three components allowing to run the emulation.
The three components are:

- a raw image
- a pre-set environment (“startup disk”)
- an emulator.

Emulation focuses on recreating an original computer environment, which is valuable because of its ability to maintain a closer connection to the authenticity of the digital object.
Emulation addresses the original hardware and software environment of the digital object and recreates it on a current machine. The emulator allows the user to have access to any kind of application or operating system on a current platform, while the software runs as it did in its original environment.

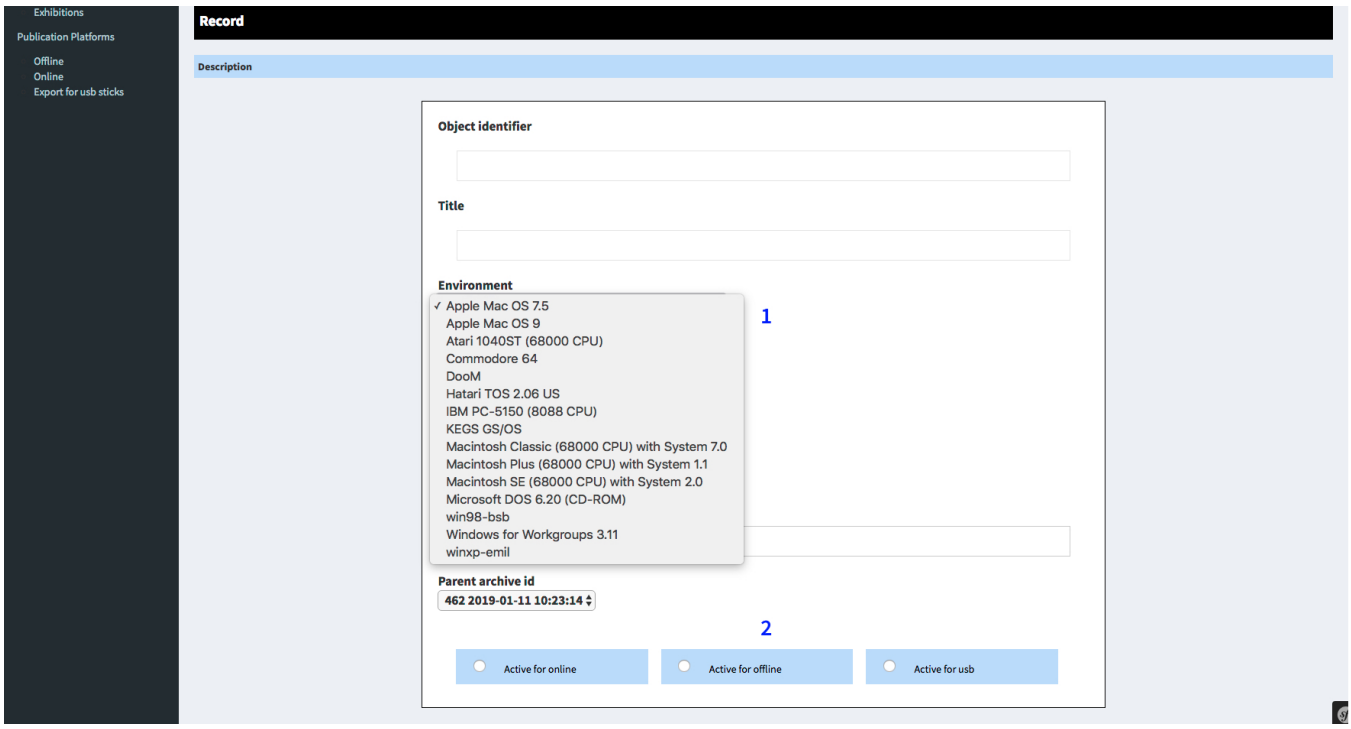
The object environments settings are handled on the EMiL development platform but have to be initiated from the daCMS.

How to create an object environment



1. Click on the "Create Object Environment" button.

How to pre-set an object environment



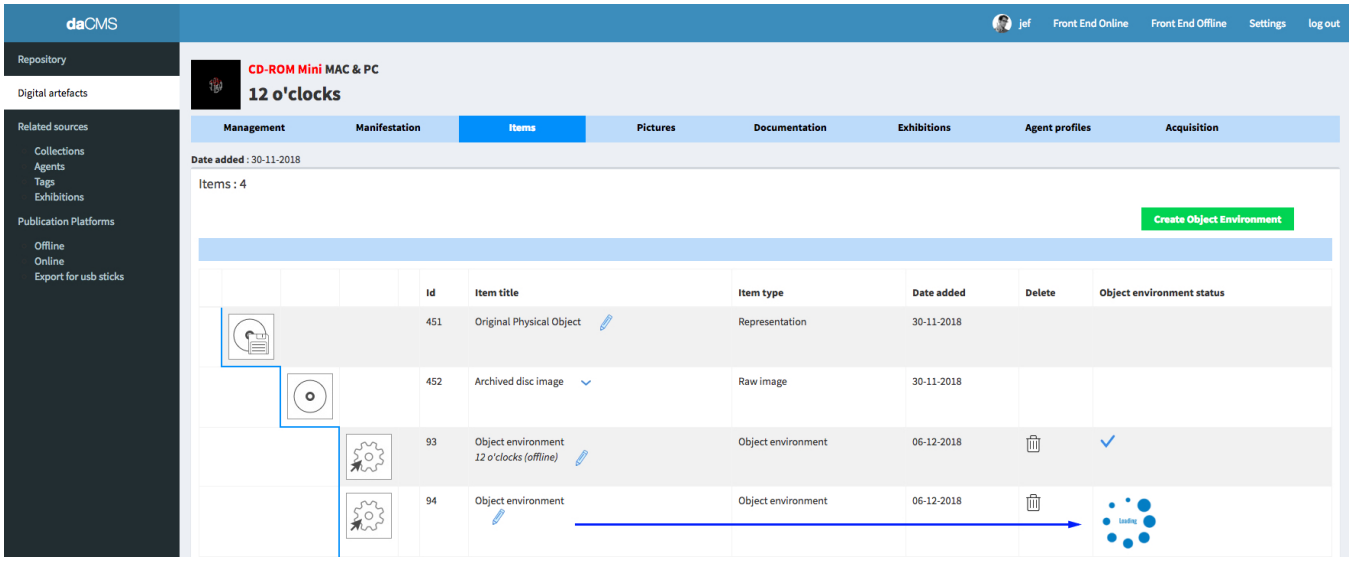
All the text fields excepted "Note" will be automatically filled by the daCMS services after the emulation process. You don't have to care on that.
Text field "Note" is just to keep comments or memo for the daCMS user.

1. Pre-set the environment that will be used to perform the emulation.
   This decision is important and the selection has **to match with the native operating system** (E.g.: Apple Mac OS 7.5 for the CD-rom developed for Apple computers early 1997).

2. Pre-set the platform for which the emulation will be configured. Offline or Online. USB is not functional yet. *(See 3.4 Publication platforms (Sidebar)).*

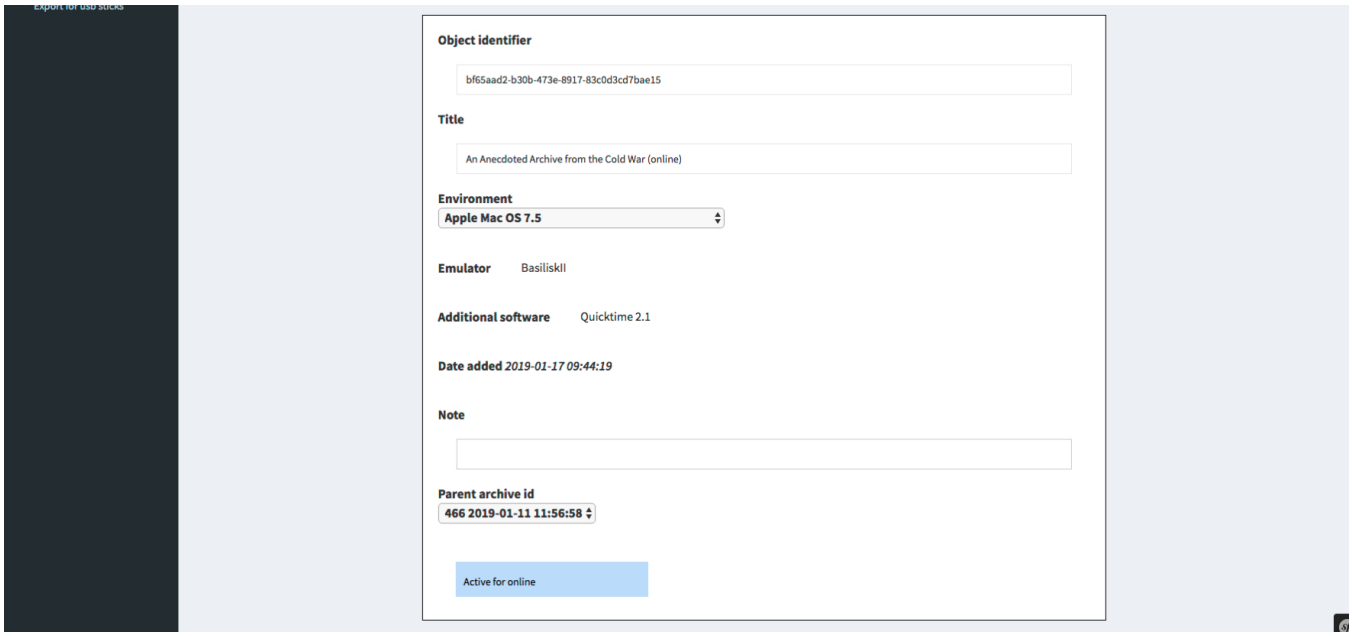
3. Click on "Save record".

Back to the items interface



1. daCMS shows that a new object environment is awaiting to be handled
2. Go to [eMIL Development platform]
3. Look at the 4. daCMS vs emulation User Guide

When the emulation is ready



The daCMS retrieves and preserves the metadata provided by EMiL. It allows to have a quick look on the parameters necessary to build and run the emulation.

3.2.4 Pictures

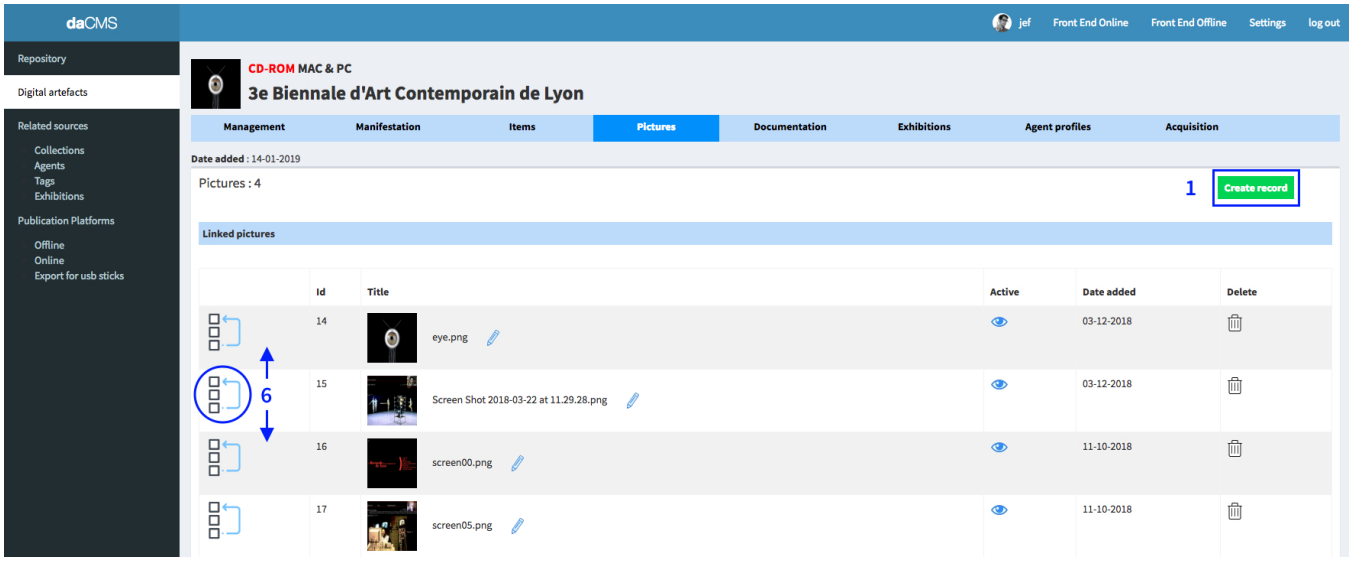
This interface allows to upload the pictures that will be displayed in the slide show on the top of the description page of the software-based creation.

The first picture is representing the software-based creation and is used as the thumbnail on the publication platforms (Online and Offline). It is also the first one of the slide show.

In the case of the CD-roms (and same kind of products), the first picture will be a screenshot of the main screen or a screenshot of an attractive visual.
Most important in your decision: it has to be representative of the content and value it.

The other pictures may be screenshots of interesting other interfaces, but also photographs of the packaging, booklet, goodies associated to the original physical carrier itself.

Overview



1. Click on the “Create record” button
2. On the new record page, click on the “Active” radio button if you are sure to publish immediately
3. Upload a picture
4. If requested fill the caption text field
5. Click on the “Save record” button
6. Back to the list, you may drag and drop the items to modify the order of display of the pictures

The new picture is registered and appears in the list. You can delete it by clicking on the trash bin icon.
You can also deactivate it and keep it for later or as an intern record.

3.2.5 Documentation

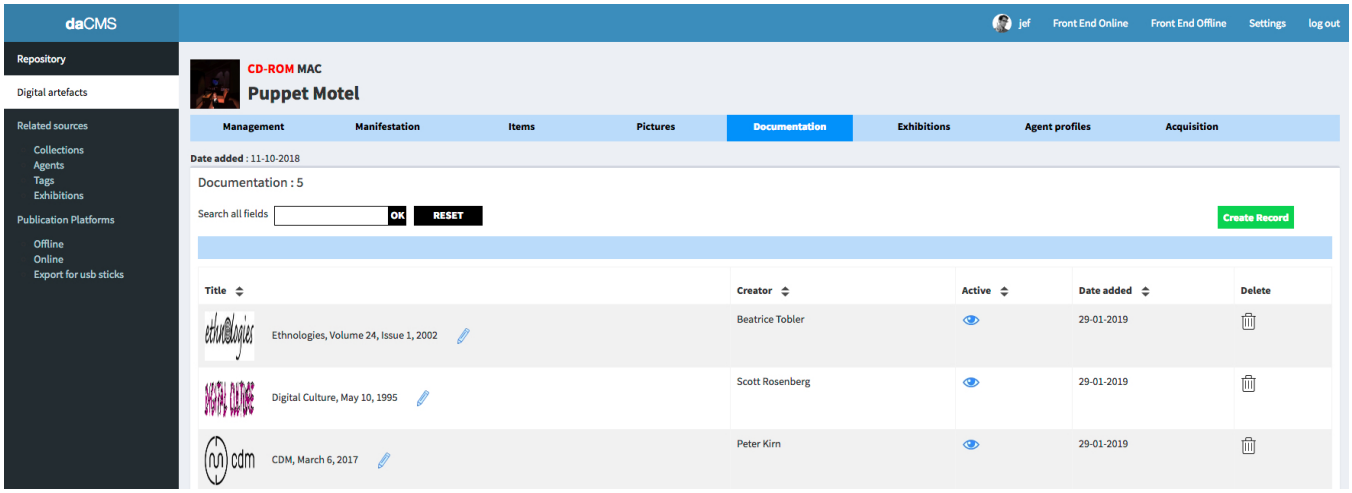
This interface allows to create and edit specific articles related to the software-based creation.

It may be press articles, writers articles, reviews, etc.
In summary, any kind of documents that may enrich the knowledge about the creation.

It may be composed of text, image and video, combined or isolated.

None of the values are mandatory, so you may articulate the presentation as you wish.

Overview



1. Click on the “Create record” button
2. On the new record page, click on the “Active” radio button if you are sure to publish it immediately
3. Fill the form at your convenience
4. Video: pay attention to the “how to” and follow the instructions
5. Picture: upload and delete allowed
6. Click on the “Save record” button

The new document is registered and appears in the list. You can delete it by clicking on the trash bin icon.
You can also deactivate it and keep it for later or as an intern record.

3.2.6 Exhibitions

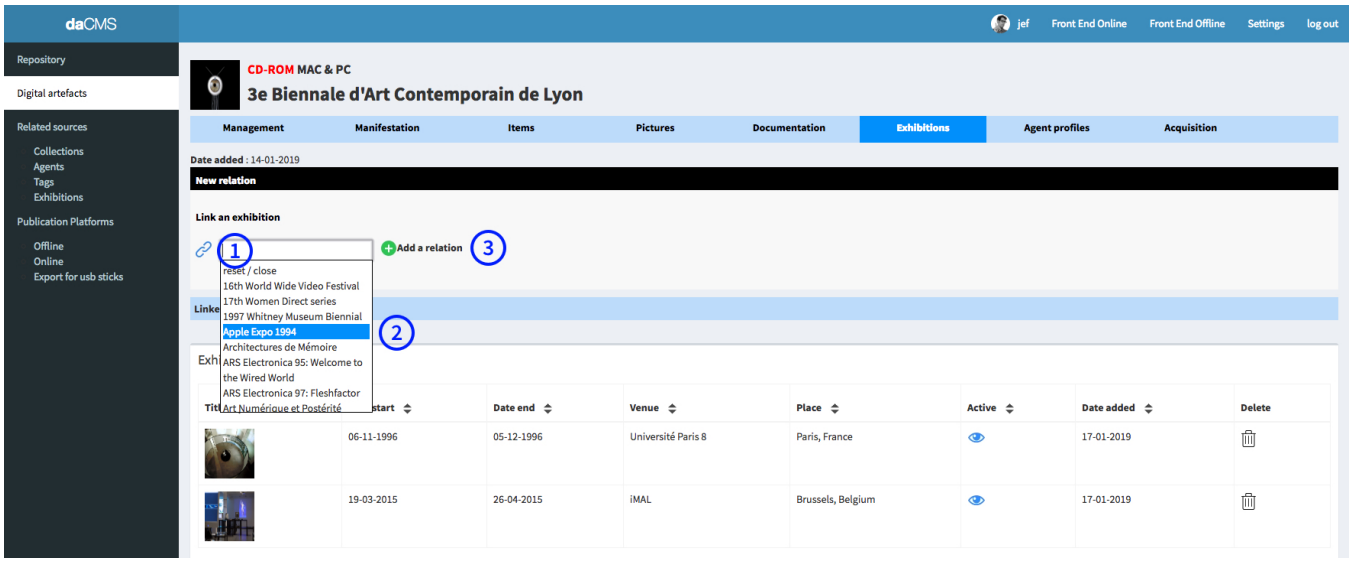
Exhibitions are the events and locations where the original software-based creations (or their emulations) has been shown or will be presented to the public.

The function of this interface is to link the profile of the collection to that of the Digital Artefact.

The profiles of the exhibitions may be pre-created and pre-edited from the “Exhibition tab” located on the sidebar and under the section title “Related resources”.

Only those beforehand recorded will be selectable from the current "Exhibitions" interface.

How to link an exhibition profile



1. Click in the text field. You can type the first 2 or 3 letters to go faster to the point.
2. Choose the desired profile among those displayed in the list.
3. Click on “Add relation”.

The selected profile appears in the list below. You can remove it by clicking on the trash bin icon.

3.2.7 Agent profiles

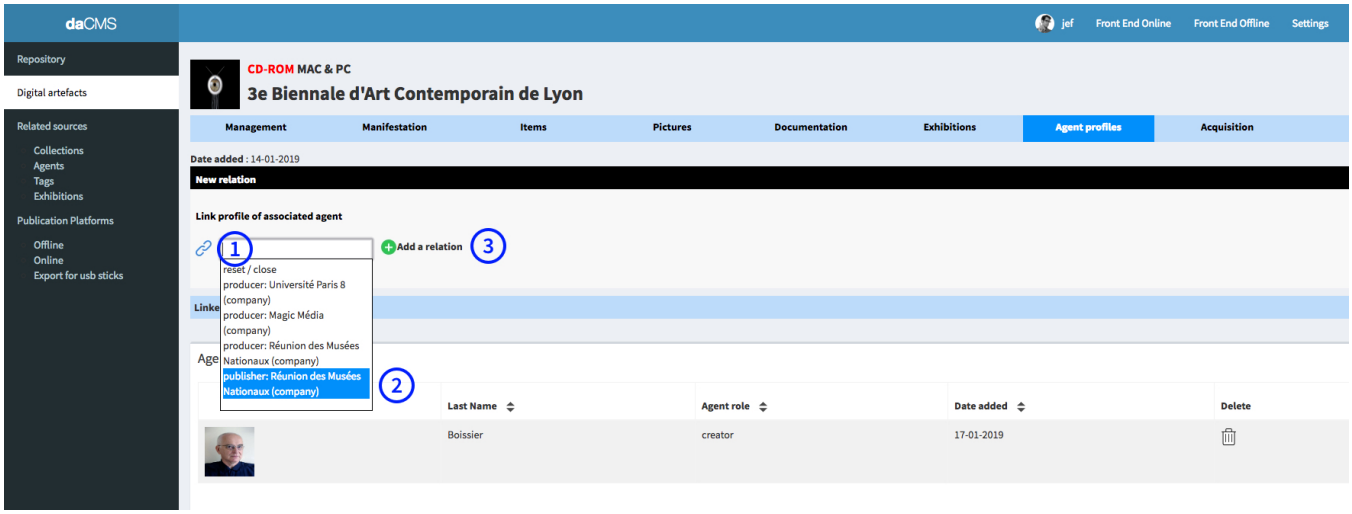
Agents are all the entities responsible for the making of a resource.

In our case, they are the main creators, the producers and publishers, who are directly involved in the creation or production of one or plus software-based creations.
It may be physical persons as well as firms or institutions.

The function of this interface is to select and display the profiles of the creators, producers and publishers on the front-end platforms.
According to the curator's policy, it allows to propose a resume of the activity of some of the people or organization whom are the major entities responsible for the existence of the software-based creation.

Creators, producers and publishers are the agents who are recorded in the manifestation form.
Only those beforehand recorded will be selectable from the current "Agent profiles" interface.
The complete profiles are editable from the "Agents tab" located on the sidebar and under the section title "Related resources". *(See*3.3.2 Agents *).*

How to link an agent profile



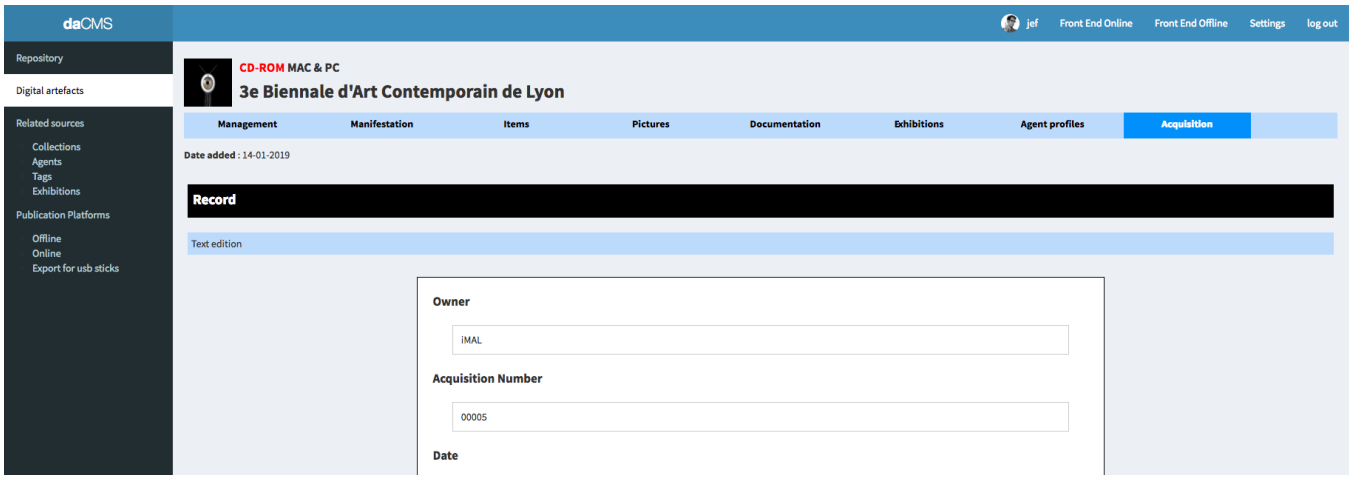
1. Click in the text field.
2. Choose a profile among those displayed in the list. You can type the first 2 or 3 letters to go faster to the point.
3. Click on "Add relation".

The selected profile appears in the list below. You can remove it by clicking on the trash bin icon.

3.2.8 Acquisition

This interface concerns the information relative to the process of getting the software-based creations. Excepting the “Owner” record, these metadata aren’t displayed on the Offline and Online platforms. Such types of information are only for the preservation record.

Overview



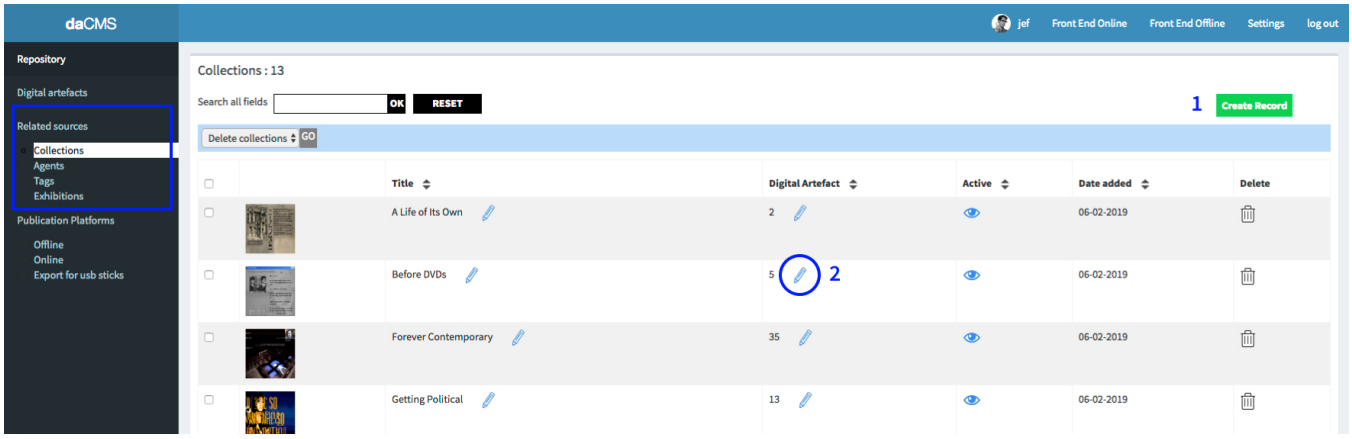
Glossary

The list of vocabulary below is advising on the definition of the each of archival terms:

Owner	Agent: People, Person or Organisation who is the current owner of the object.
Acquisition number	A unique identifying number for a transfer of title or acquisition event. It should serve as the reference to written documentation of a transfer of title or acquisition process. The number may be assigned to a transfer of title form.
Date	The date on which title to an object or group of objects is transferred to the organisation.
Method	The means by which title to an object is formally transferred to the organisation.
Source (as to be implemented)	The People, Person or Organisation from whom an object was obtained, if different from the Owner. The Acquisition source may be an agent or other intermediary between the acquiring organisation and the Owner.
Reason	The reason or justification for an acquisition.

3.3 Related resources (Sidebar)

Related resources are entities that are common and associated to multiple Digital Artefacts.



There are two types of related resources :

Category 1: Exhibitions & Agents
These are relative to the documentation of the Digital Artefacts. *(See* 3.2.6 Exhibitions *and* 3.2.7 Agent profiles*).*

Exhibitions are the events and locations where the original software-based creations (or their emulations) has been shown or will be presented to the public.

Agents are all the entities responsible for the making of a resource.
In our case, they are the main creators, the producers and publishers, who are directly involved in the creation or production of one or plus software-based creations.
It may be physical persons as well as firms or institutions.

Category 2: Collections & Tags
These are relative to the classification of the Digital Artefacts. They act as different systems of filters on the publication platforms. *(See* 3.2.1 Management*).*

Collections are intellectual containers that allow a thematic classification of the Digital Artefacts on the publication platforms (Offline & Online).

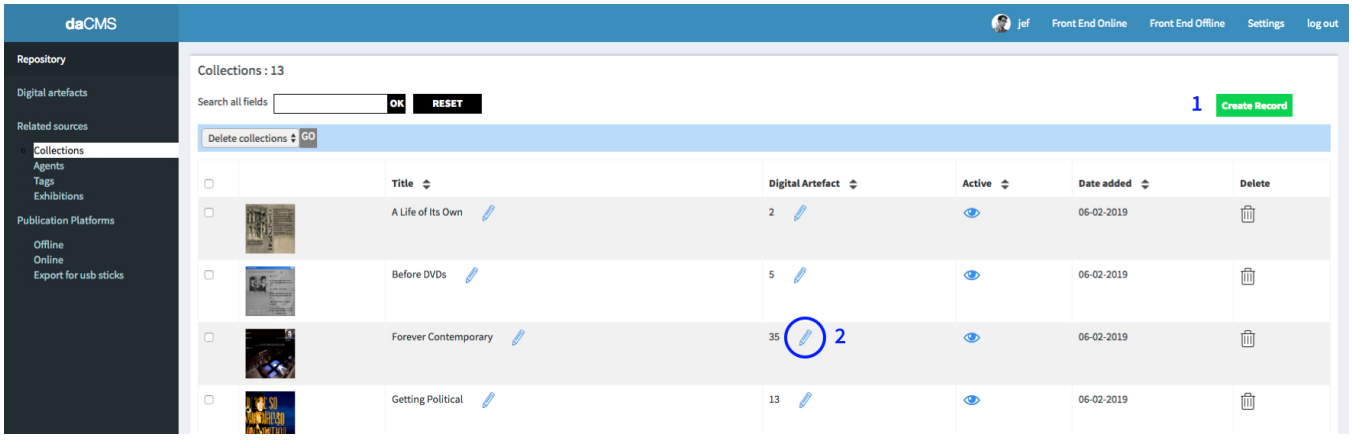
Tags are keywords that offer a specific classification and a lexical reading by informing on the type of contents that will be displayed in the descriptive page and in the emulation.

3.3.1 Collections

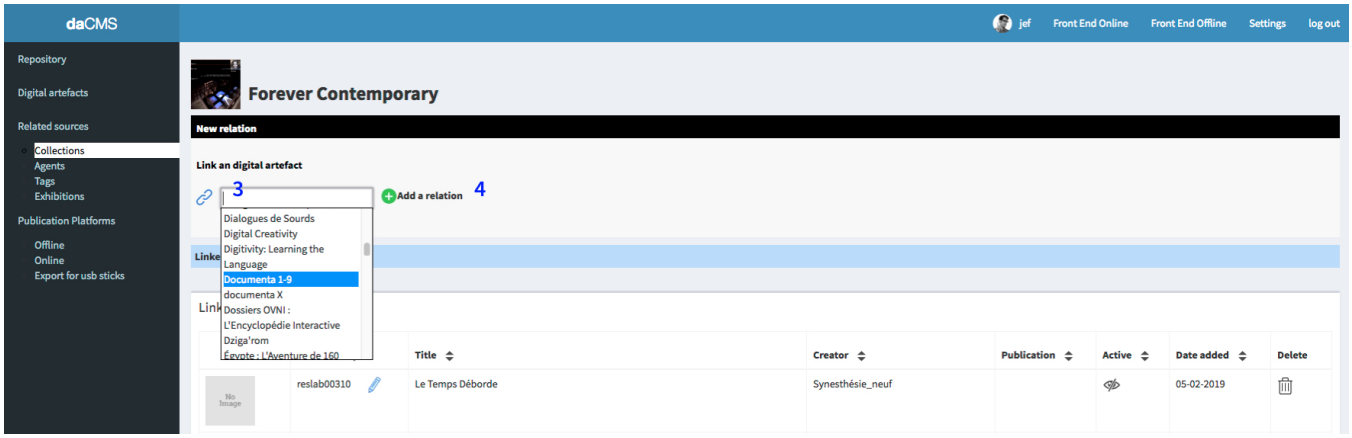
Collections are intellectual containers that allow a thematic classification of the Digital Artefacts on the publication platforms (Offline & Online).
All the active collections are displayed on the publication platforms and are accessible from the main navigation.

A collection consists of an attractive and representative thumbnail as well as a short explanatory text of the theme.

How to create a collection and link it to multiple Digital Artefacts



1. Create a new collection and fill its profile if it doesn't already exist.
2. Click on the pen icon on the 3rd column "Digital Artefact": edit the management of the related Digital Artefacts.



3. Click on the text field and select the desired profile among the titles of the Digital Artefacts displayed in the list. You can type the first 2 or 3 letters of the title to go faster to the point.
4. Click on "Add a relation"

The selected profile appears in the list below. You can remove it by clicking on the trash bin icon.
You can add as many Digital Artefacts as you like by repeating this action.

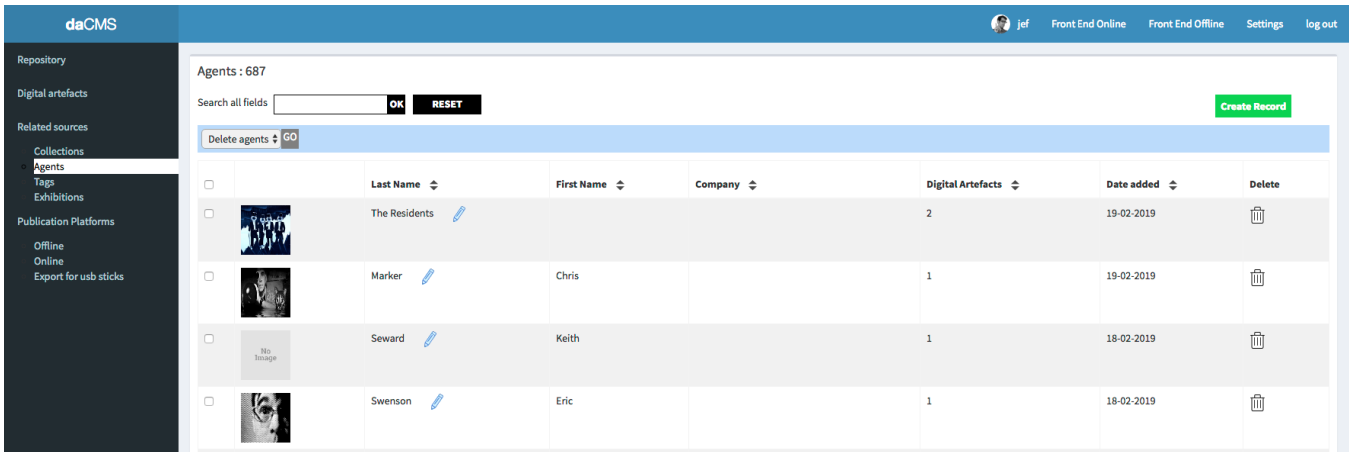
3.3.2 Agents

Agents are all the entities responsible for the making of a resource.
In our case, they are the main creators, the producers and publishers, who are directly involved in the creation or production of one or plus software-based creations.
It may be physical persons as well as firms or institutions.

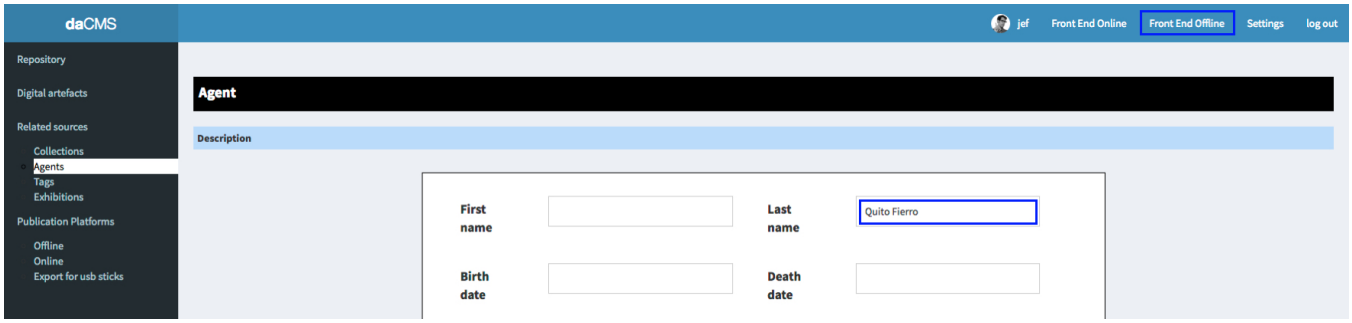
The function of these interfaces is allowing to manage and edit the profiles that are describing the agents.

After edition and fulfilment of a profile, it will be linkable to a Digital Artefacts and visible on the publications platforms (Offline and Online). *(See* 3.2.7 Agent profiles*).*

Overview



Pay attention to the names



At the creation of a Digital Artefact from the Repository, the daCMS retrieve the basic Metadata "Creator" and "Publisher" and creates as many profiles as names recorded (Parse is done on commas).

Same thing when some "Creator", "Producer" and "Publisher" are added in the manifestation form: the CMS creates automatically a new Agent profile for each new entry.

At the first edition of each Agent profile, and by default, the First Name, Last Name or Company Name are inset in the "Last Name" field.

Please, take care to split the names of the persons in the two fields "First name" and "Last name", and **move the names of firms, institutions, etc**. in the field "Company".

Glossary

The list of vocabulary below is advising on the definition of each terms and functions:

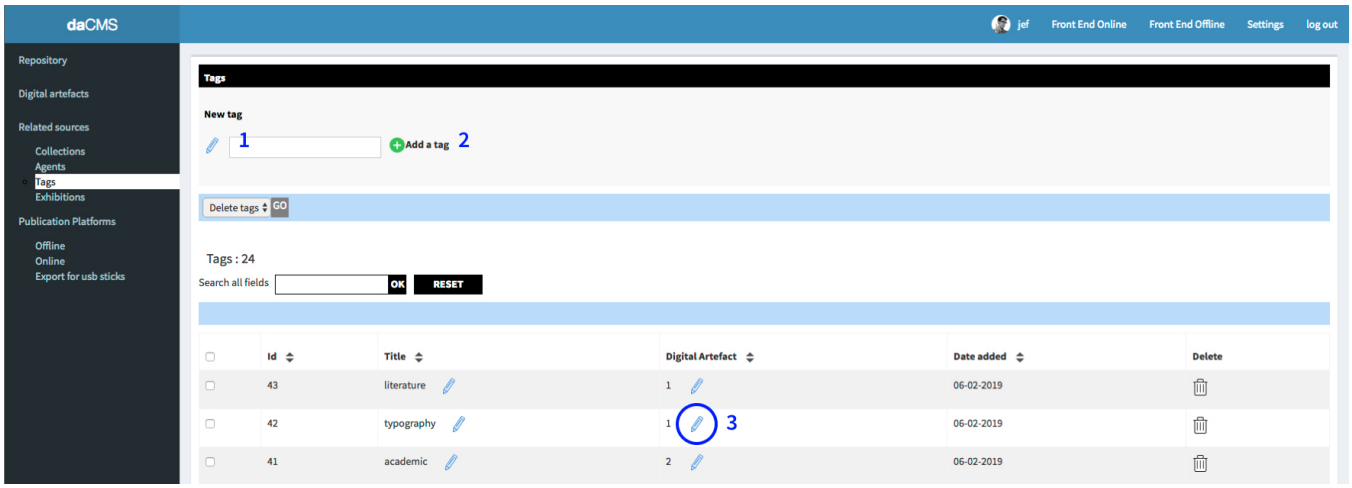
First Name	A personal name given to someone at birth or baptism and used before a family name.
Last Name	Family name
Birth date	The date on which a person was born.
Death date	The date on which a person was dead.
Company	The name given to an organisation by which people know the activity of. In our case it is a generic term for firms, institutions, or group of associated persons (e.g. music band)
URL	A link to a website allowing to get more information on the agent and its activities.
Contact information	That part is reserved to the archivist knowledge and will NOT be displayed on the publication platforms. It concerns all the relevant information that may be useful to contact the agent concerned.
Occupation	A sequence of short terms describing the main activities of an agent. **Example:** Documentary filmmaker, multimedia artist, photographer, writer, essayist
Biographical text	A short or middle text of presentation presenting the agent and explaining the main activities or events for that is renowned.
Picture	The portrait of a person (mostly used for creators).

3.3.3 Tags

Tags are keywords that offer a specific classification and a lexical reading by informing on the type of content that will be displayed in the descriptive page and in the emulation.

All the active tags are displayed on the publication platforms and are accessible since the top of the “Digital Artefacts” page.

How to create a tag and link it to multiple Digital Artefacts



1. Write a significant word
2. Click on "Add a tag". The new tag will be added in the list below.
3. In the list, click on the pen icon on the 3rd column "Digital Artefact": edit the management of the related Digital Artefacts

4. Click on the text field and select the desired profile among the titles of the Digital Artefacts displayed in the list. You can type the first 2 or 3 letters to go faster to the point.
5. Click on "Add a relation".

The selected profile appears in the list below. You can remove it by clicking on the trash bin icon.
You can add as many Digital Artefacts as you like by repeating this action.

3.3.4 Exhibitions

Exhibitions are intellectual containers that allow a thematic classification of the Digital Artefacts on the publication platforms (Offline & Online).

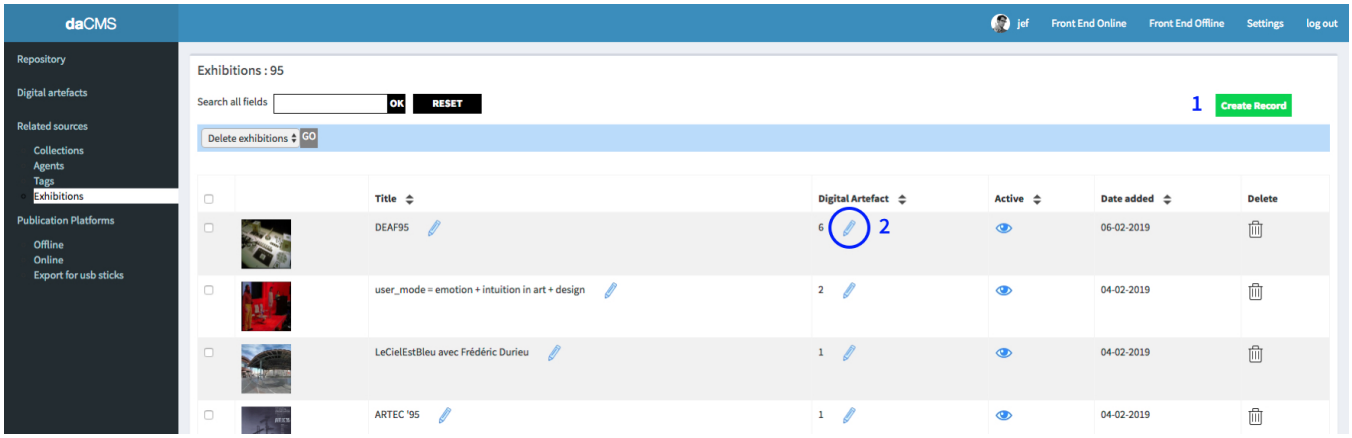
All the active collections are displayed on the publication platforms and are associated to the Digital Artefacts.

Glossary

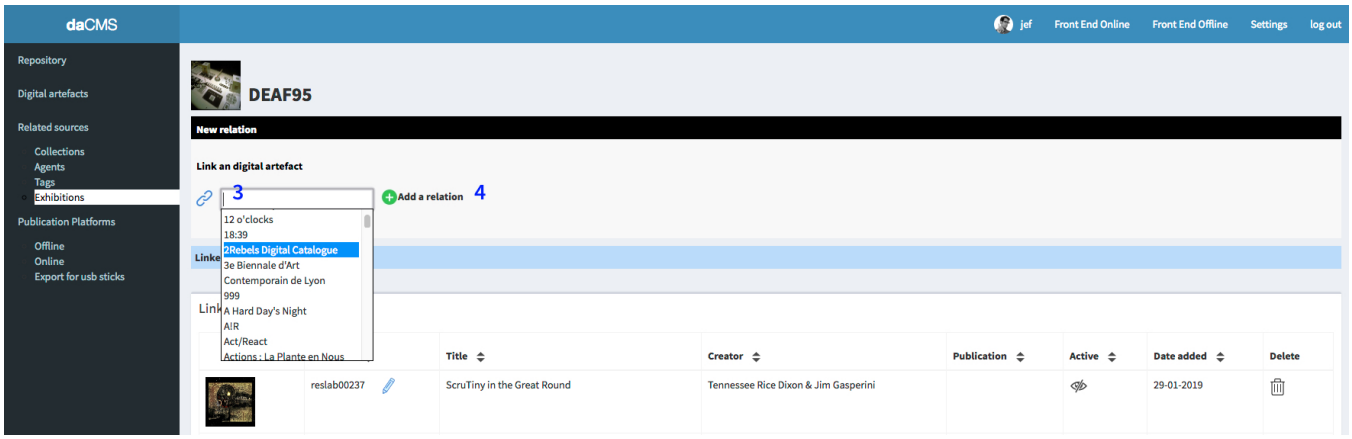
The list of vocabulary below is advising on the definition of each of archival terms:

Title	The name of a use event.
Date start	The date on which a use began.
Date end	The date on which a use ended.
Venue	The Place where a use takes place. It may be an institution, an art gallery, an art center, etc. It concerns the physical place.
Place	The location of the venue: city and country.
url	A link to a website allowing to get more information on the subject.
Description	A set of data that records and identifies an entity.

How to create an exhibition profile and link it to multiple Digital Artefacts



1. Click on the "Create Record" button to create a new exhibition and fill its profile if it doesn't already exist
2. Click on the pen icon on the 3rd column "Digital Artefact": edit the management of the related Digital Artefacts



3. Click on the text field and select the desired profile among the titles of the Digital Artefacts displayed in the list. You can type the first 2 or 3 letters of the title to go faster to the point.
4. Click on "Add a relation"

The selected profile appears in the list below. You can remove it by clicking on the trash bin icon.
You can add as many Digital Artefacts as you like by repeating this action.

3.4 Publication platforms (Sidebar)

Publication platforms are the output channels where the content generated in the daCMS will be made accessible to the public.

There are 3 types of publication platforms (or output channels):

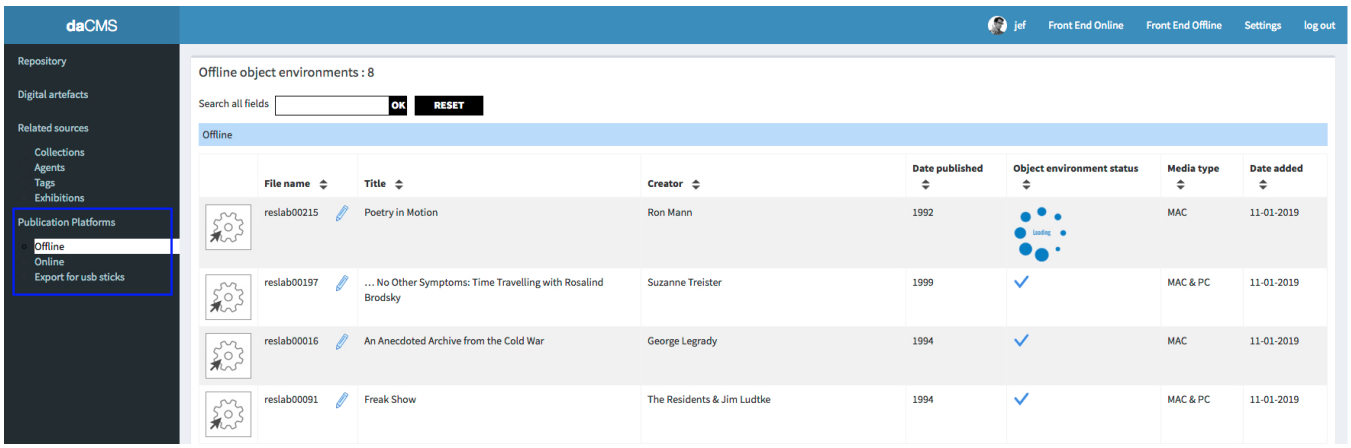
- Offline, or equivalent to an intranet output: a front-end accessible only from the Conservatory of digital cultures of iMAL because exclusively hosted in intern.

  As soon as a Digital Artefact is declared as "Active", it is visible on the Offline Platform - with or without emulation. *(See* 3.2.1 Management *and* 3.2.3.3 Object environments*).*

- Online, or equivalent to an internet output: a website accessible worldwide.
  To be published and seen on the Online platform, a Digital Artefact has to be declared as "Active" AND has to have a validated Online emulation. *(See* 3.2.1 Management *and* 3.2.3.3 Object environments*).*

- USB stick: a specific tool provided for exporting one or plus whole object environments (emulations) on a bootable USB stick. *(See* 3.2.3.3 Object environments*).*

Overview



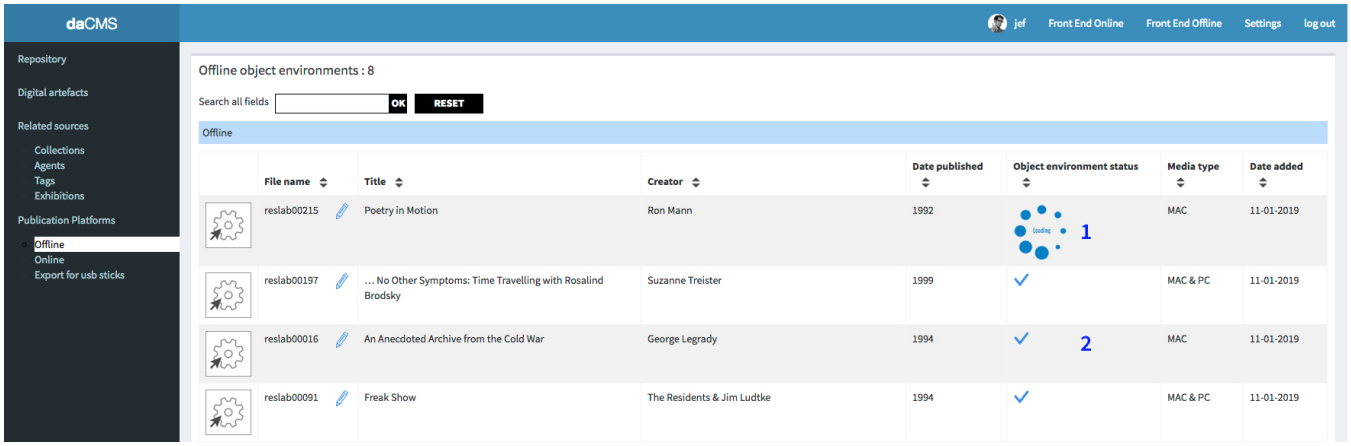
3.4.1 Offline

The function of the interface is to offer an overview on the Digital Artefacts that have completed or in progress emulations intended for the offline publication.

This type of emulations has been initiated from the Item Tab of the Digital Artefacts, with checked radio button "Active for Offline" *(See* 3.2.3.3 Object environments*)*.

The setting of the emulation itself is made in the framework EMiL.

Overview



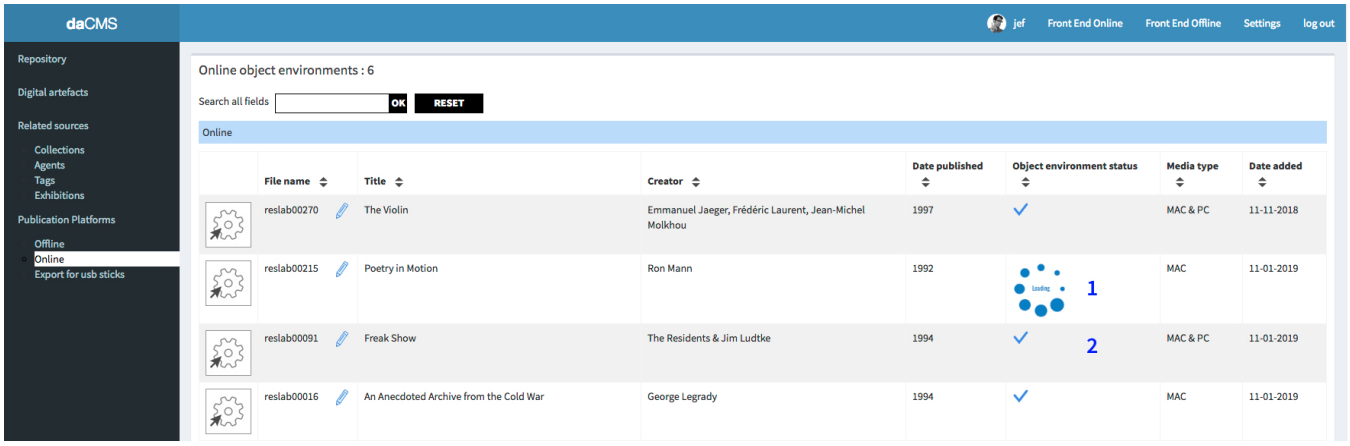
1. The progress wheel indicates that an "Offline emulation" has been initiated from the daCMS and is awaiting a return action to link definitely the completed emulation to its Digital Artefact.
2. The blue checkmark indicates that the "Offline emulation" is completed and is definitely linked to its Digital Artefact. And so, is playable from the offline front-end.

3.4.2 Online

The function of the interface is to offer an overview on the Digital Artefacts that have completed or in progress emulations intended for the online publication.
This type of emulations has been initiated from the Item Tab of the Digital Artefacts, with checked radio button "Active for Online" *(See* 3.2.3.3 Object environments*).*

Only the Digital Artefacts that have been declared as "Active" are visible in this list. Then they are displayed on the Online front-end only if the emulations are completed and linked to the respective Digital Artefacts.
The setting of the emulation itself is made in the framework EMiL.

Overview



1. The progress wheel indicates that an "Online emulation" has been initiated from the daCMS and is awaiting a return action to link definitely the completed emulation to its Digital Artefact.
2. The blue checkmark indicates that the "Online emulation" is completed and is definitely linked to its Digital Artefact. And so, is playable from the online front-end.

3.4.3 Export for USB stick

Caution: this function is under construction: developments have to be wrapped up.

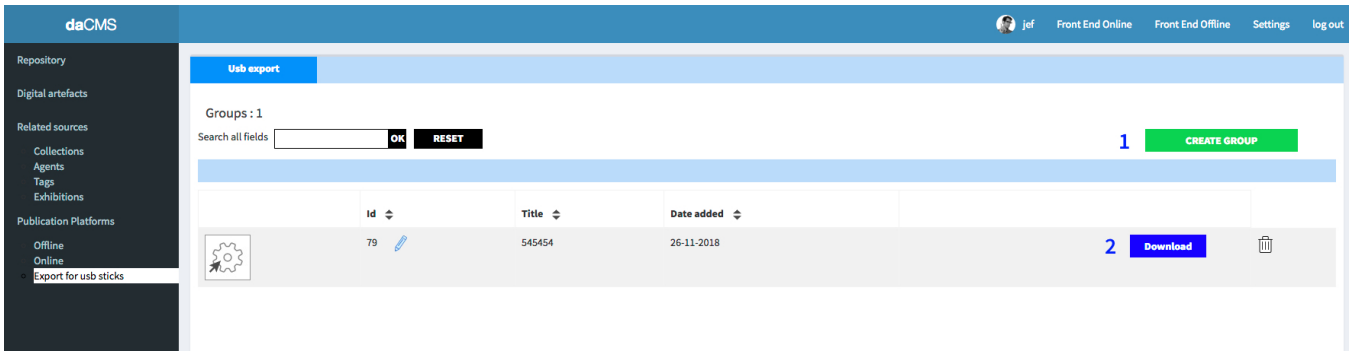
The function of the interface is to create an export of one or plus whole object environments (emulations) on a bootable USB stick.
The export allows to play the emulations outside of the 2 front-ends by packaging a self-contained live system.

This configuration allows to:

- run emulators locally (USB live system)
- make use of local hardware (CPUs)
- allows to connect external hardware components (e.g. gamepad, joystick, etc.)
- native full screen
- no (low) latency
- use with (mock-)hardware

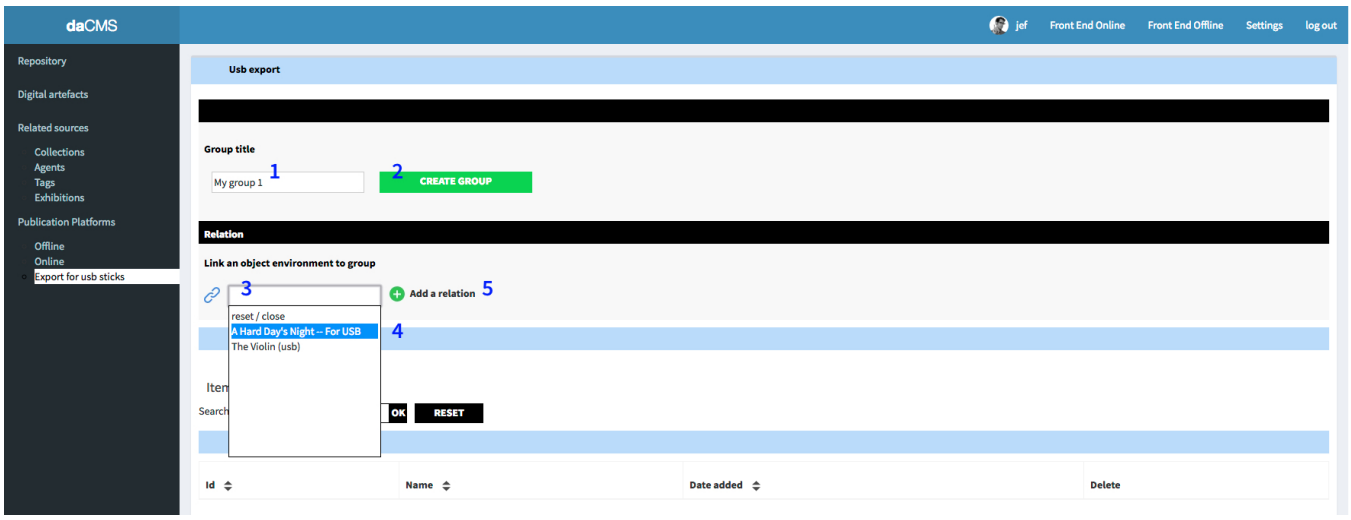
This type of emulations has been initiated from the Item Tab of the Digital Artefacts, with checked radio button "Active for usb" *(See* 3.2.3.3 Object environments*).*

How to create an export



1. Create a new group, even if it is only one object environment to export.
2. After the group setting (next step), click on the "download" button and copy the file on a USB stick

How to set up a group



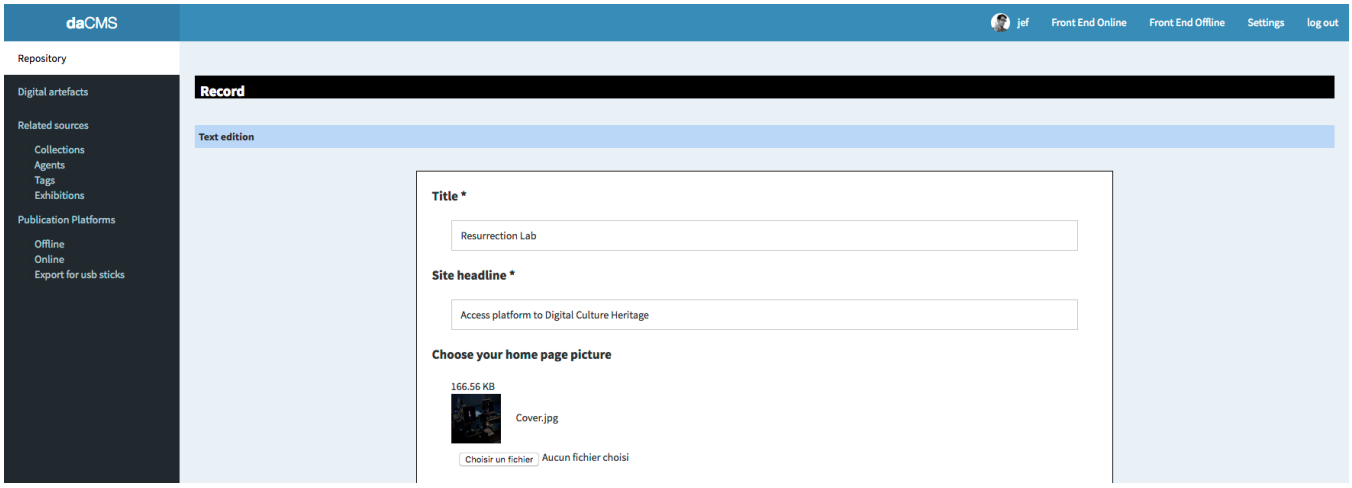
1. Assign a name to the new group
2. To valid the creation of the group, click on the "create group" button
3. Click in the text field. You can type the first 2 or 3 letters of the title to go faster to the point.
4. Choose the desired title among those displayed in the list.
5. Click on “Add relation”.

The selected title appears in the list below. You can remove it by clicking on the trash bin icon.
Go back to the management interface and click on the "download" button.

3.5 Settings (Top bar)

The function of this interface is to set up the appearance of the two front-ends platforms (Offline & Online) and to add some information about the project and about the institution that drive it.

In this first version of the daCMS, the options are pretty basic but it allows anyway to customize some obvious aspects.



Glossary

The list of vocabulary below is advising on the definition of each terms and functions:

Front-end customization	
Title	The name of the project.
Site headline	A short sentence explaining the purpose of the website.
Home page picture	The full screen picture that is displayed on the background of the home page.
Logo	The logo of the project itself if it exists.
About site	A text explaining the project.

Contact of the institution	
Institution name	The name of the institution that drives the project.
Logo	The logo of the institution.
Address	The location of the physical place where the public may visit the institution.
Zip code	The post code of the city.
City	The name of the city.

Country	The name of the country.
Phone	The phone number for the public access.
Email	The email address for the public access.
Website	The URL of the website of the institution itself.

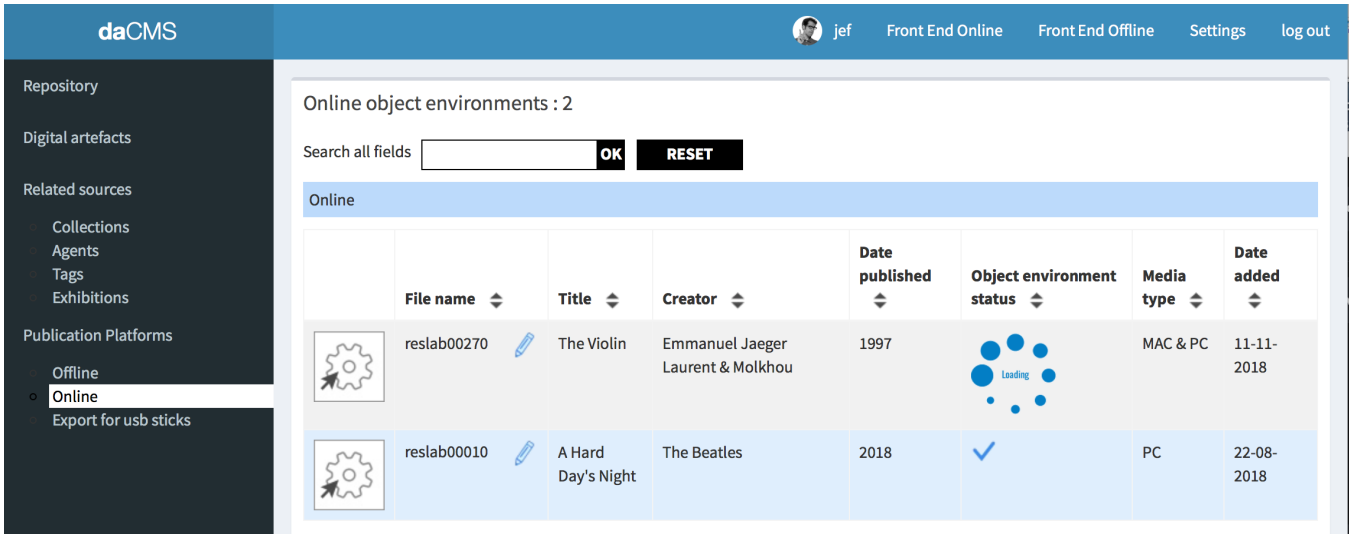
4. daCMS vs emulation User Guide

How to create an emulation and make it available in the daCMS

1. daCMS: awaiting emulation

List all waiting tasks in the section "Publication Platforms".

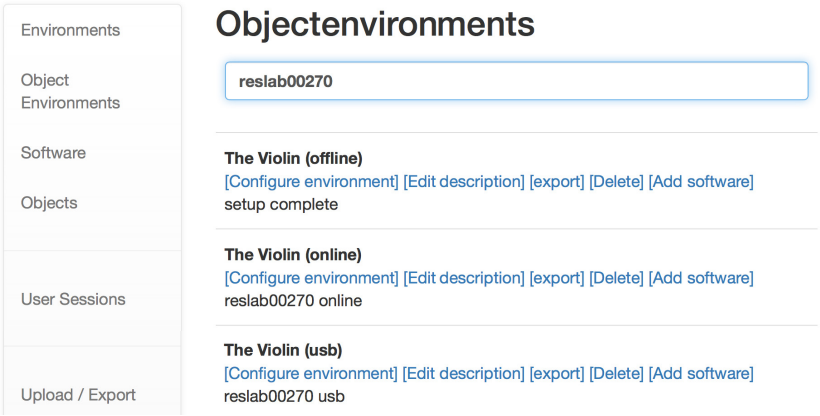
Here below is an example for the online platform where the reslab00270 item is waiting to be handled (Column "Object environment status": process wheel).
We will use this item to show how the workflow is implemented.



2. EMiL: emulation service

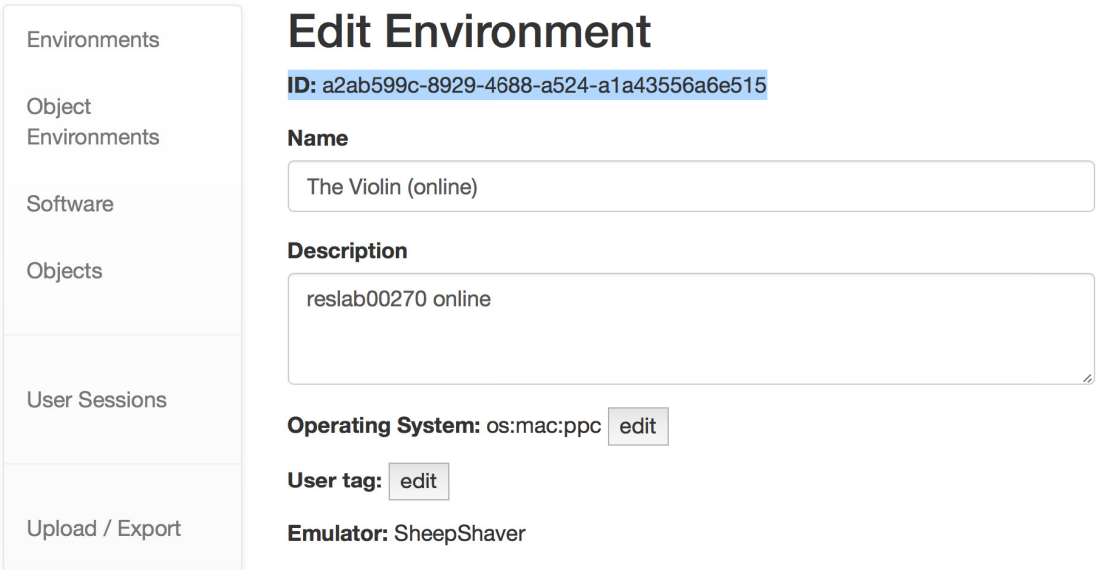
1. Go on the EMiL Development platform and click on the Object Environments Tab to prepare the emulation.

2. Find the to-be handled item
   Here the item "The Violin (online)" will be selected



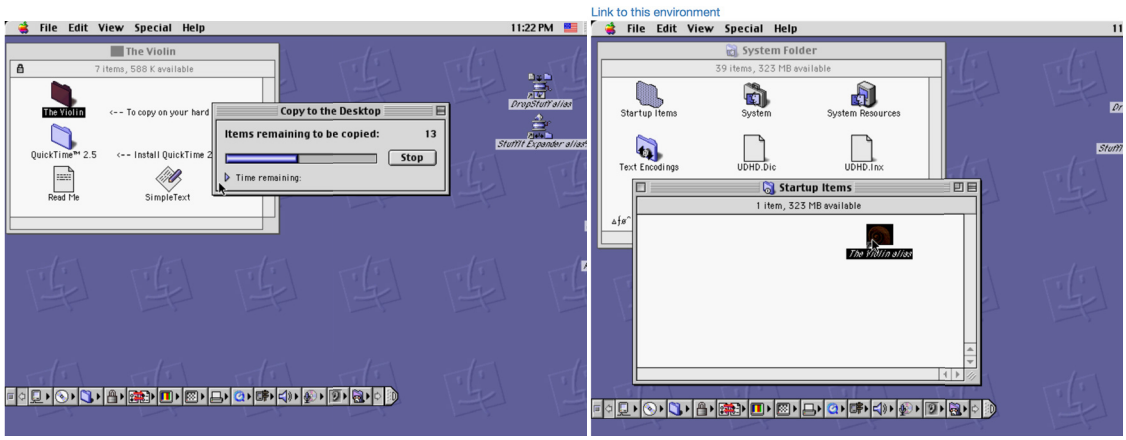
3. **Click on "[Edit description]" to note the Object environment id** (ID: a2ab599c-8929-4688-a524-a1a43556a6e515 in our example).

   Please pay attention to the fact that the ID sequence is the key to link the environment object to the daCMS data base. Copy and paste it safely aside during your work in the eMIL environment. You'll need it at the end of the process.

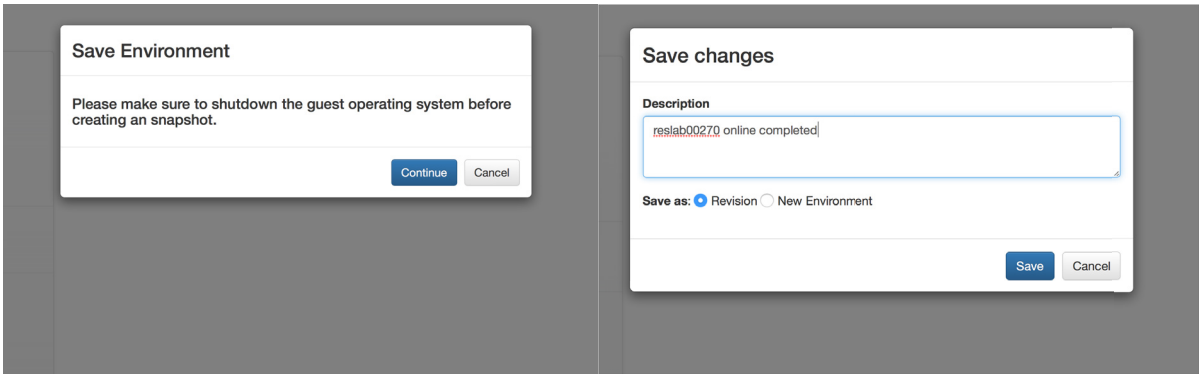


4. Go back to the Object Environment list and the to-be handled item.

5. **Click on "[Configure environment]" to setup the environment.**
   Here are some screenshots of different setup tasks.



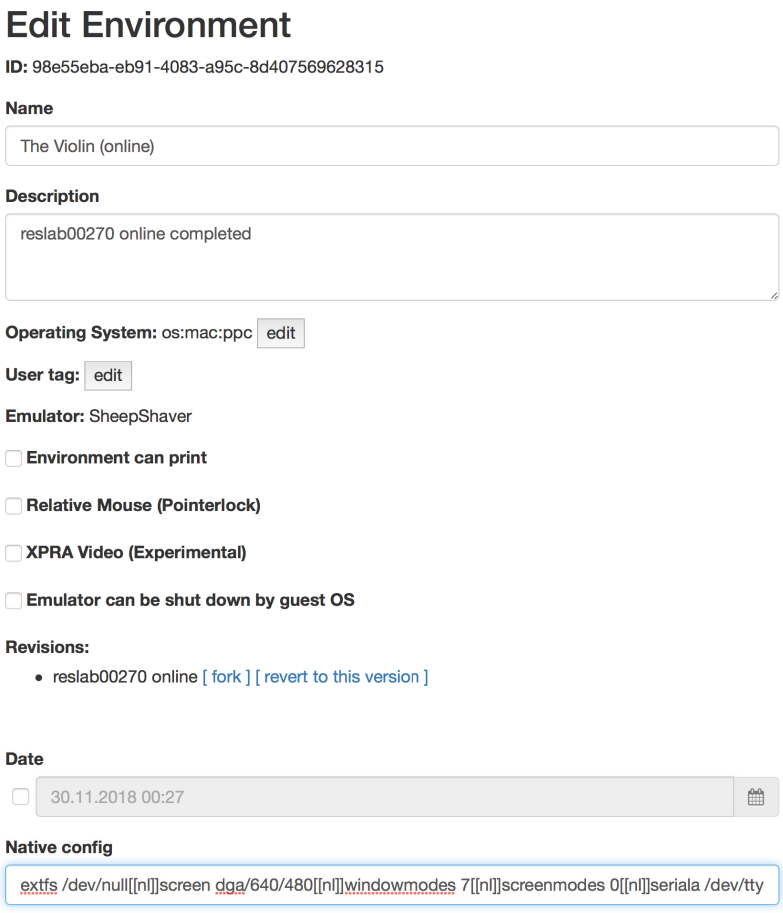
6. When all the environment is fully set up and the system is powered off, save the environment



7. Go back to the Object Environment list and the new handled item

8. **Click on "[Edit description]" to note the new Object environment id** (ID: 98e55eba-eb91-4083-a95c-8d407569628315 in our example).
Action similar as point 3 above.

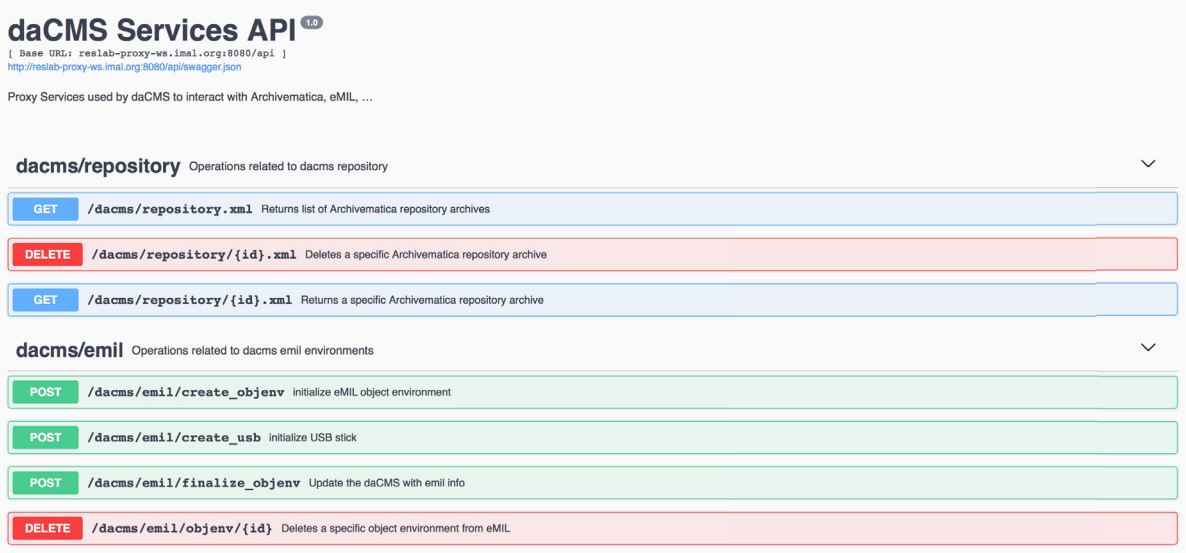
Don't forget to edit the native config to put the starting emulator screen size
screen dga/640/480 in our example



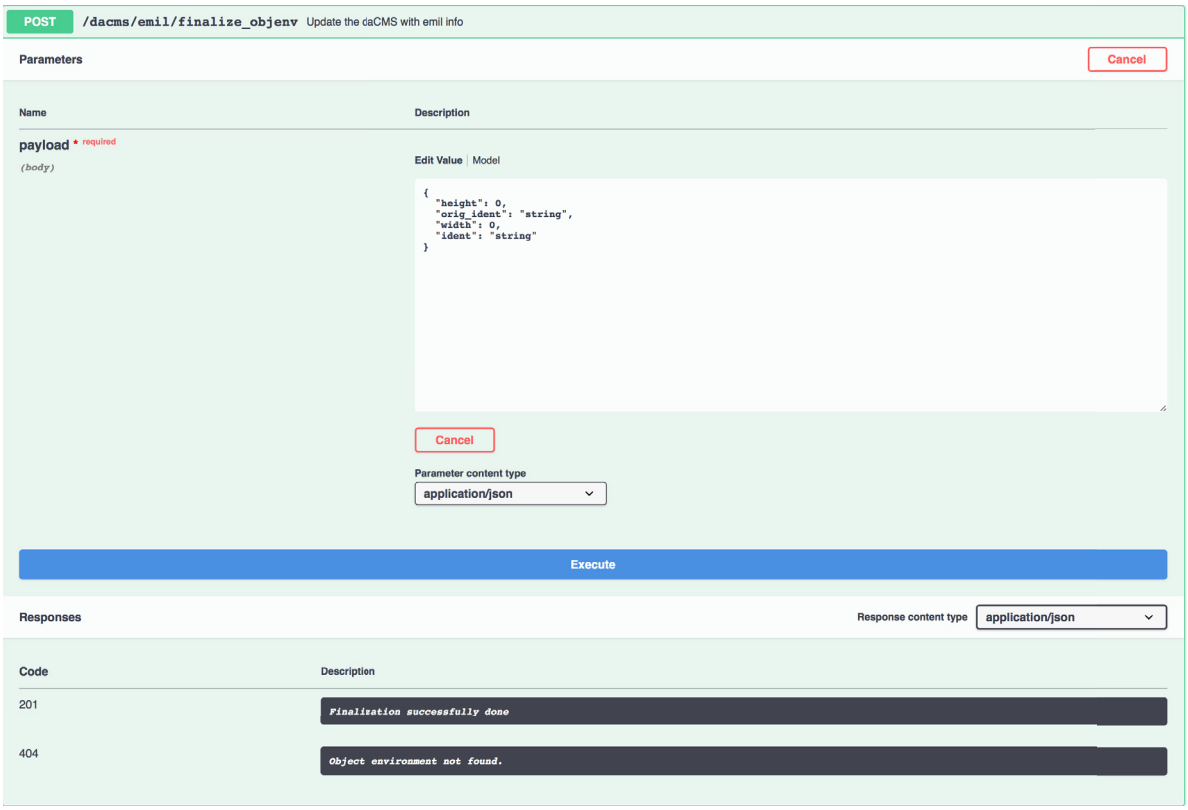
3. ResLAB Web Services on Bitbucket

Export the prepared object environment to both eMIL Production platform and daCMS.

1. Go on the [Reslab Proxy-WS API interface]



2. **Click first on /dacms/emil/finalize_objenv** and afterwards on "Try it out" to enter the working interface



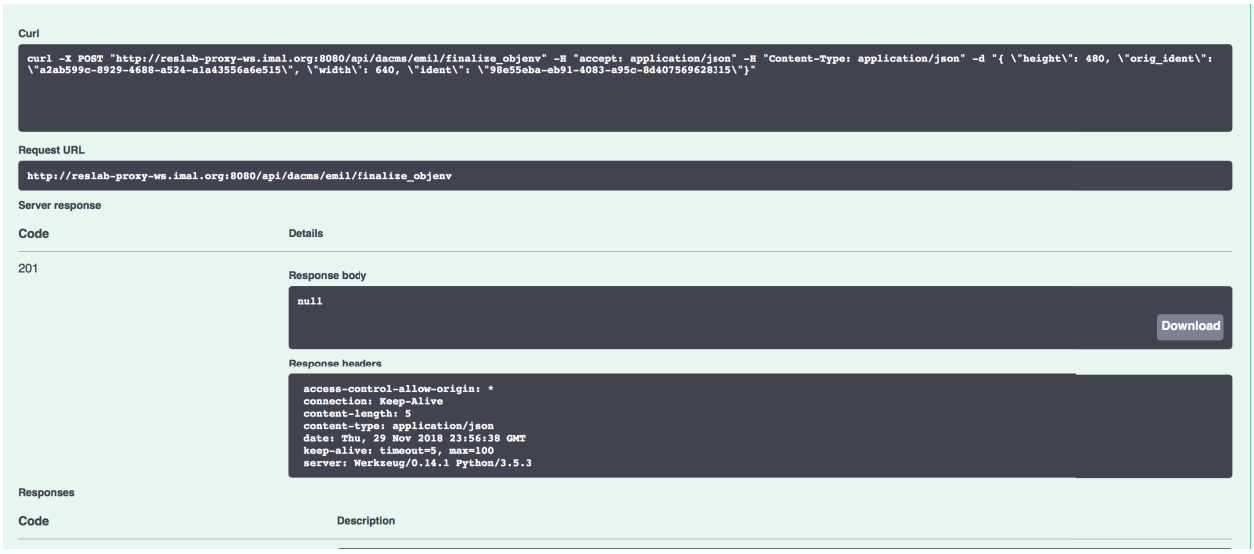
In the payload section, fulfil the service parameters:

height*	integer Screen default height
orig_ident*	string Object former environment ID
width*	integer Screen default width
ident*	string Object environment ID

Here is how it looks in our example:
orig_ident = the first ID that you've copied and pasted aside (Step 2, point c)
ident = the second ID that you've copied and pasted aside (Step 2, point e)

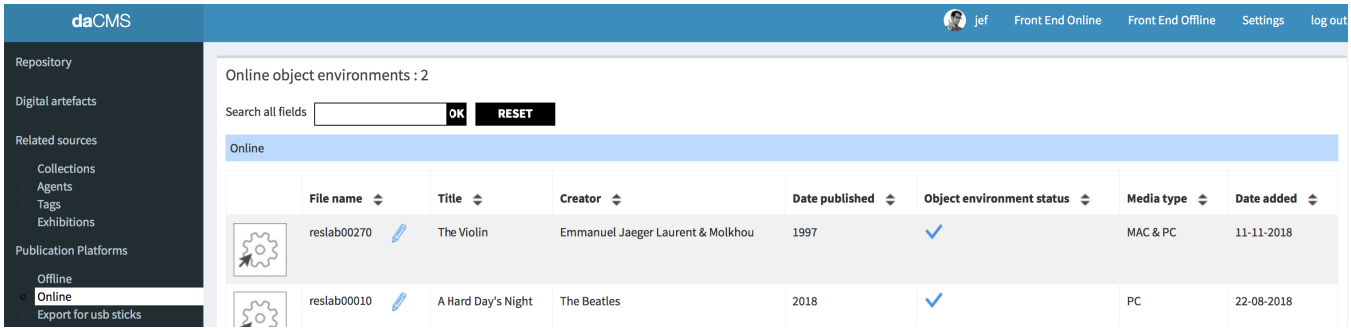
{
"height": 480,
"orig_ident": "a2ab599c-8929-4688-a524-a1a43556a6e515",
"width": 640,
"ident": "98e55eba-eb91-4083-a95c-8d407569628315"
}

3. **Click on "Execute" to synchronise**
You will see in the Response section the "executed curl command" and the return code which should be 201

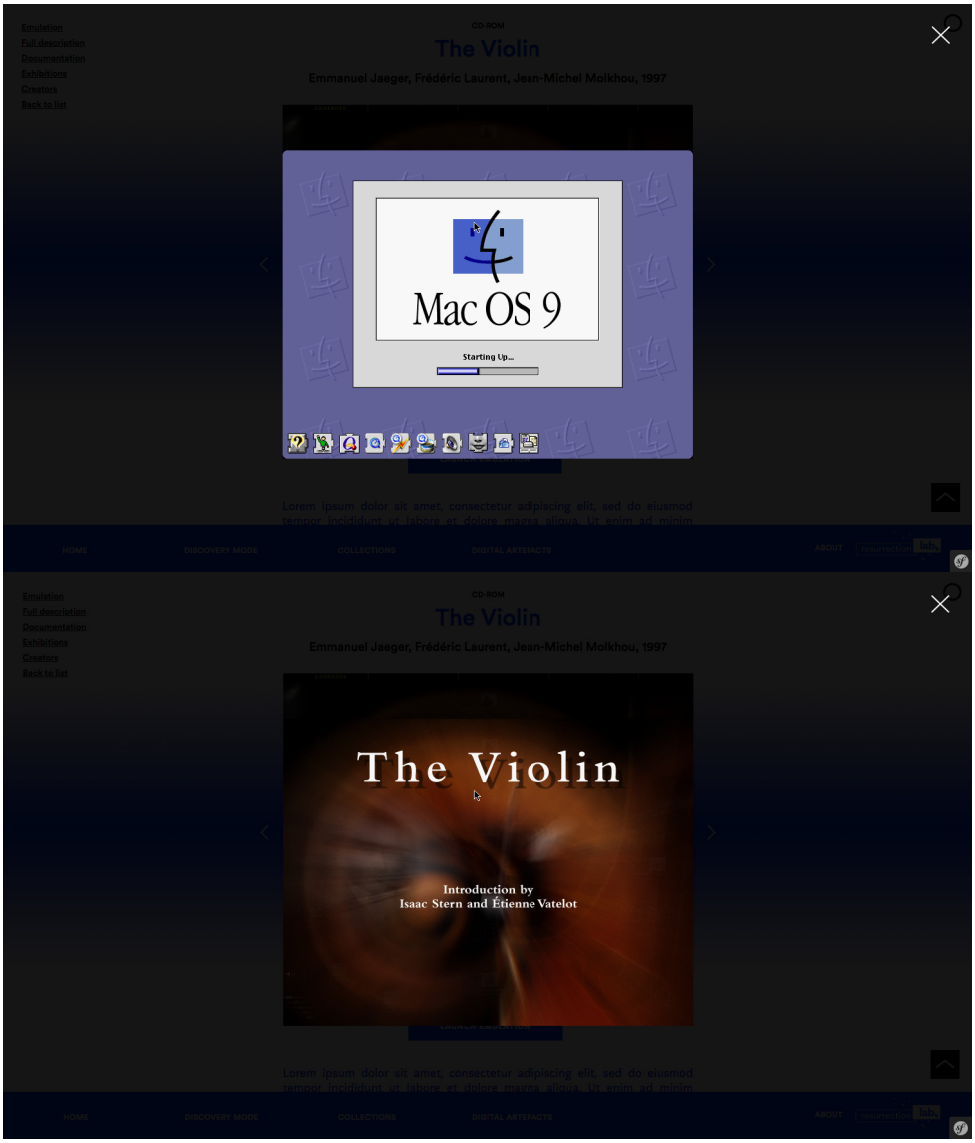


4. daCMS & front-end: check the result

Go back on the "Publication Platforms" previous menu in the daCMS and reload the page.
The object environment status has now changed to "valid" (Blue checkmark).



You can now go on the matching platform front-end site to view the emulation.
For our example, here's "The Violin" emulation on the Online front-end site:



Contact

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