

Resurrection Lab

How to preserve >20 years old born-digital arts and their complex web of history

iMAL team: Yves Bernard, Isabel Debry, Patrick Vander Linden

Resurrection Lab

1. Genesis

- iMAL's collection
- Exhibition "Welcome To The Future!" (2015)

iMAL's collection

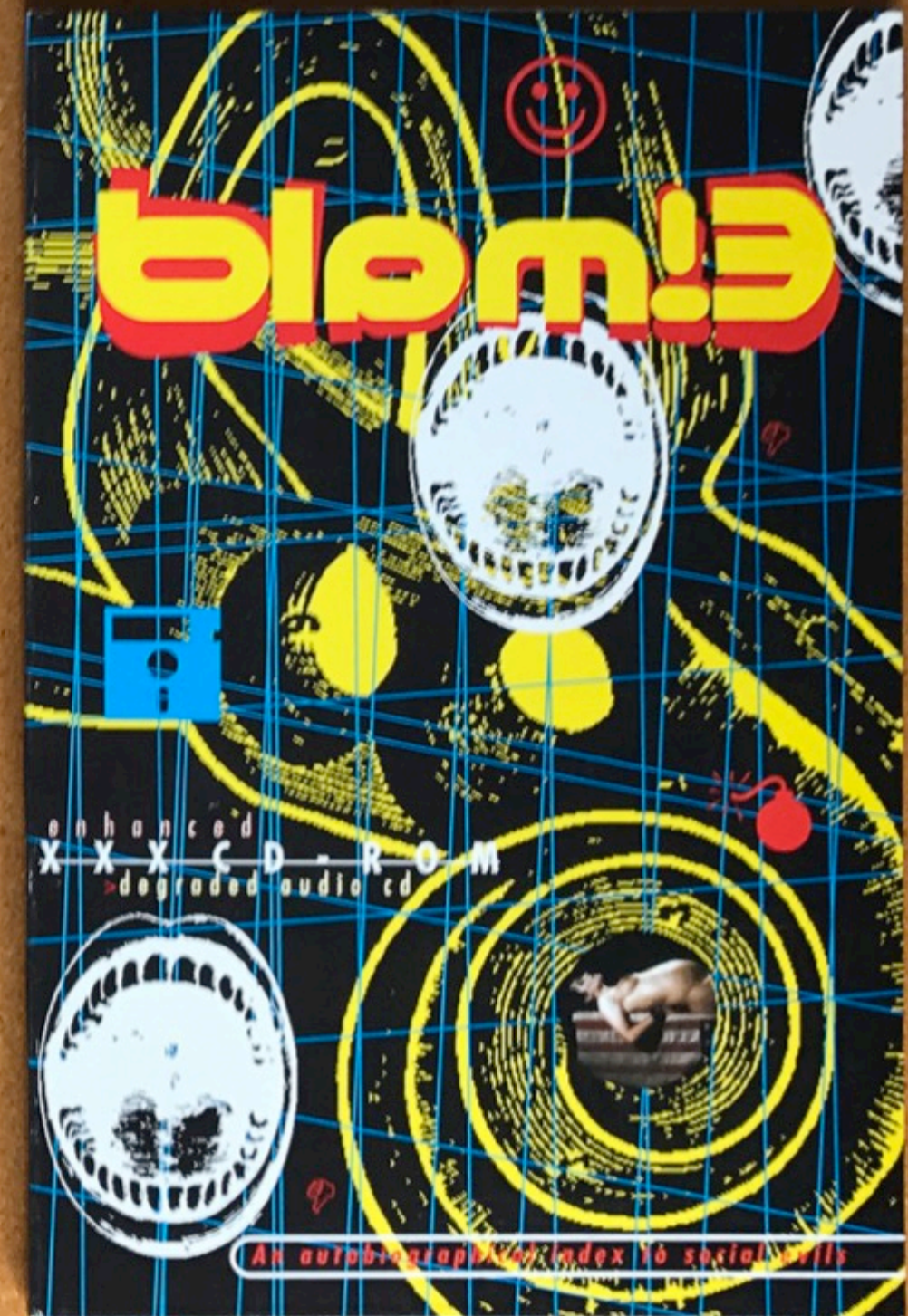
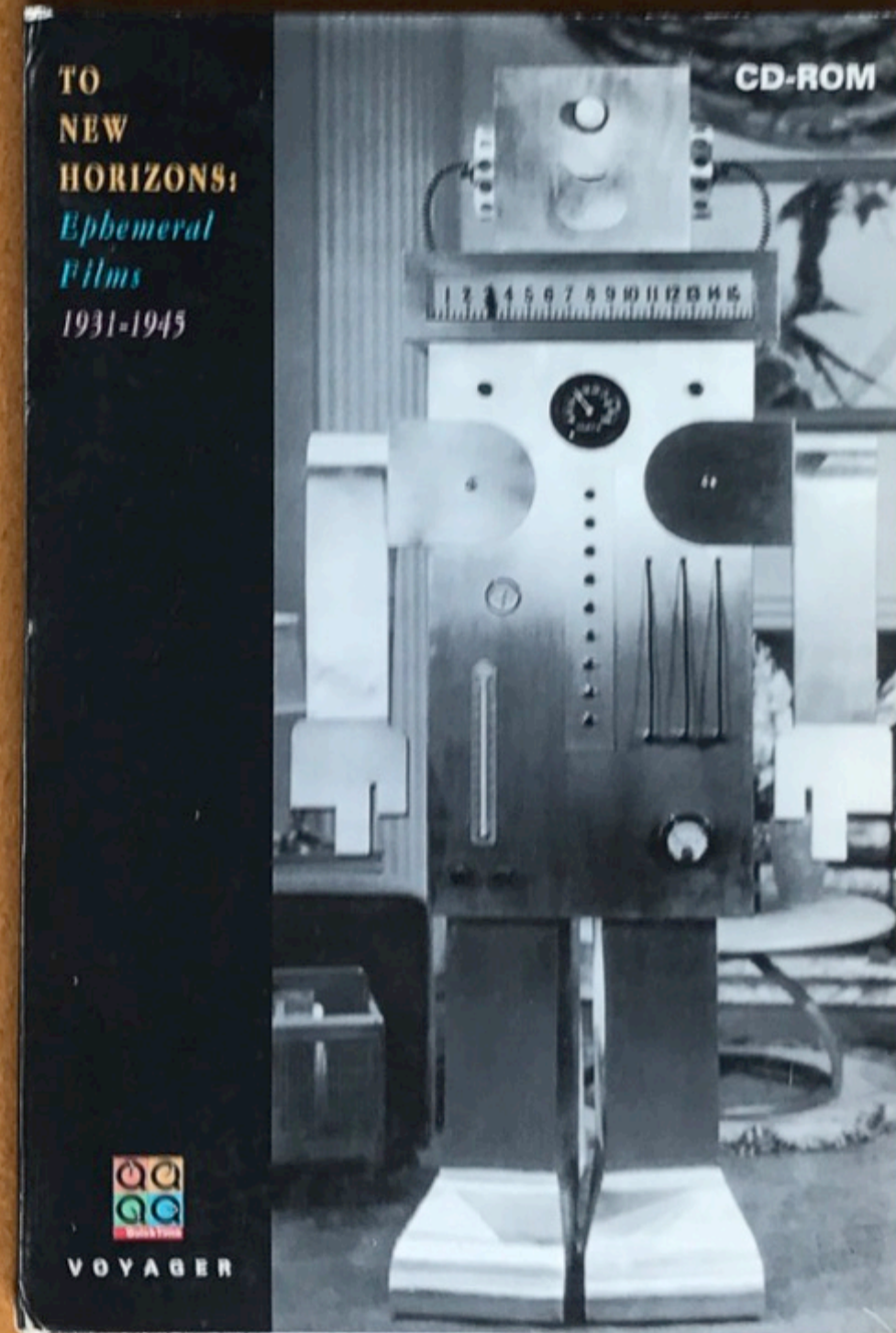
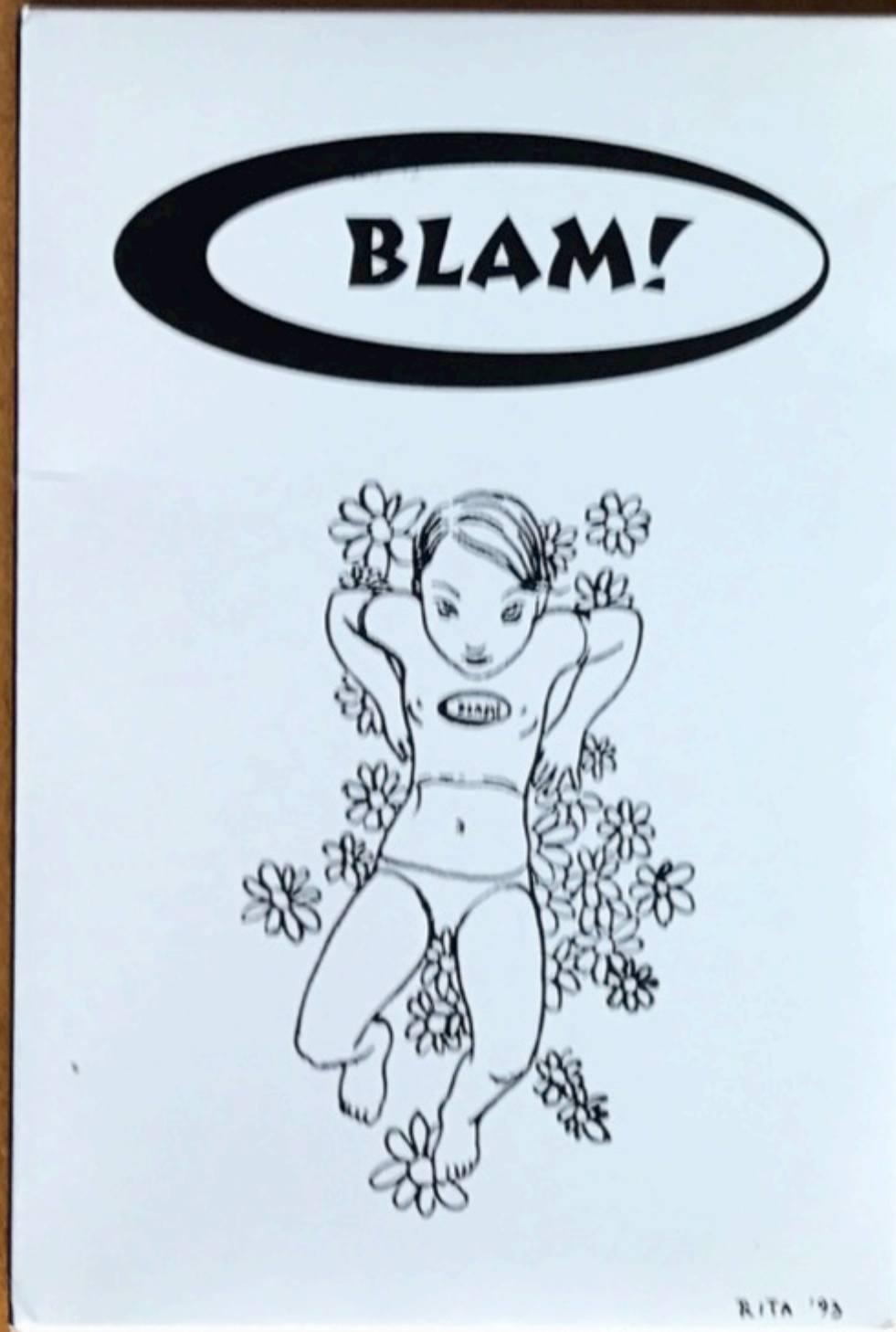
Around 300 born-digital artworks from the 90's, from EU, Asia and US, mainly published on floppies and cd-roms.



A precious heritage of artistic experimentations from the new era of multimedia, interactivity, electronic publishing and digital network



A huge variety of contents and topics of the emerging digital world:
Visions, Utopias & Politics, New Art forms, Digital Aesthetics, Cyber & Pop Cultures,...



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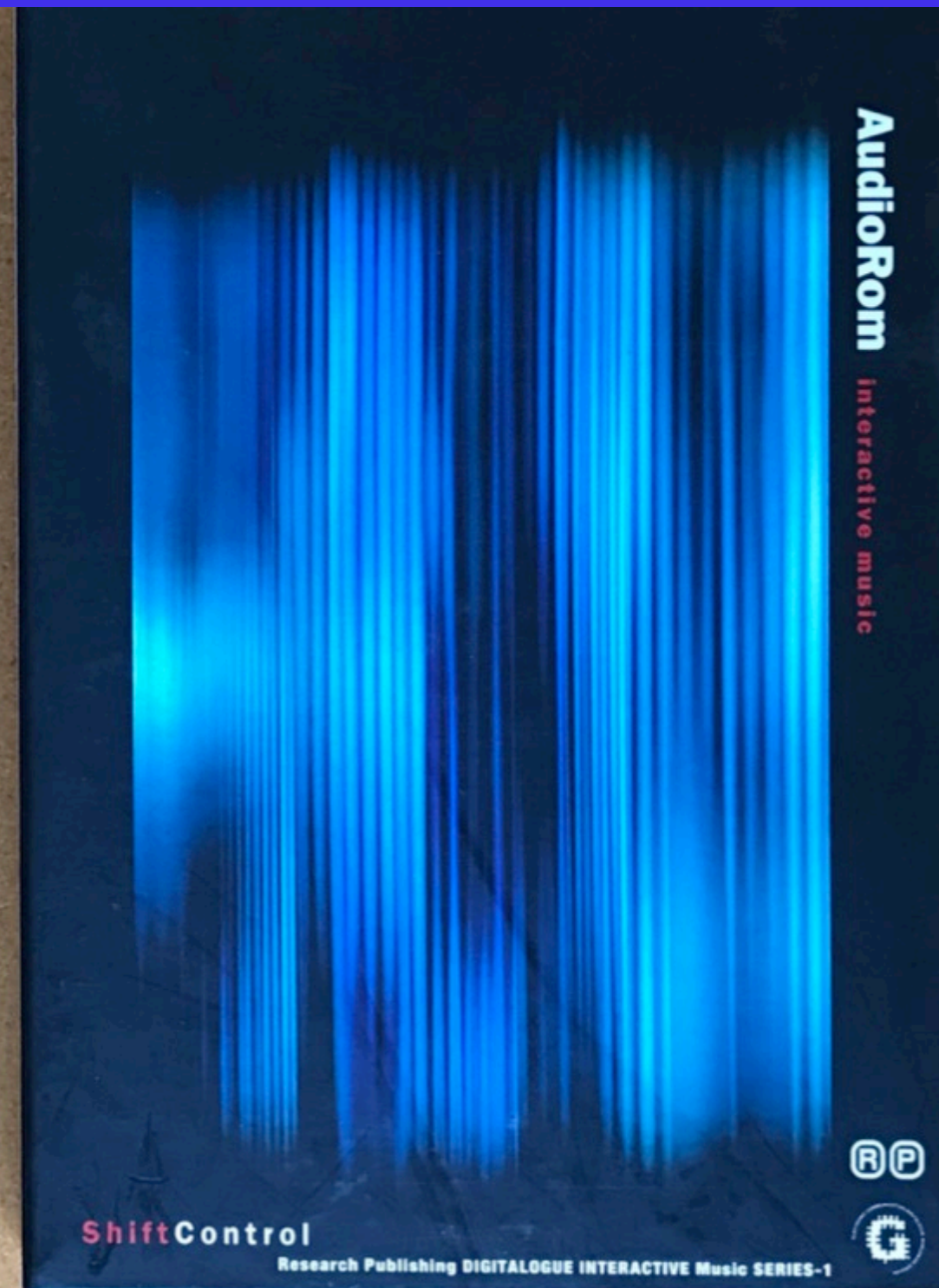
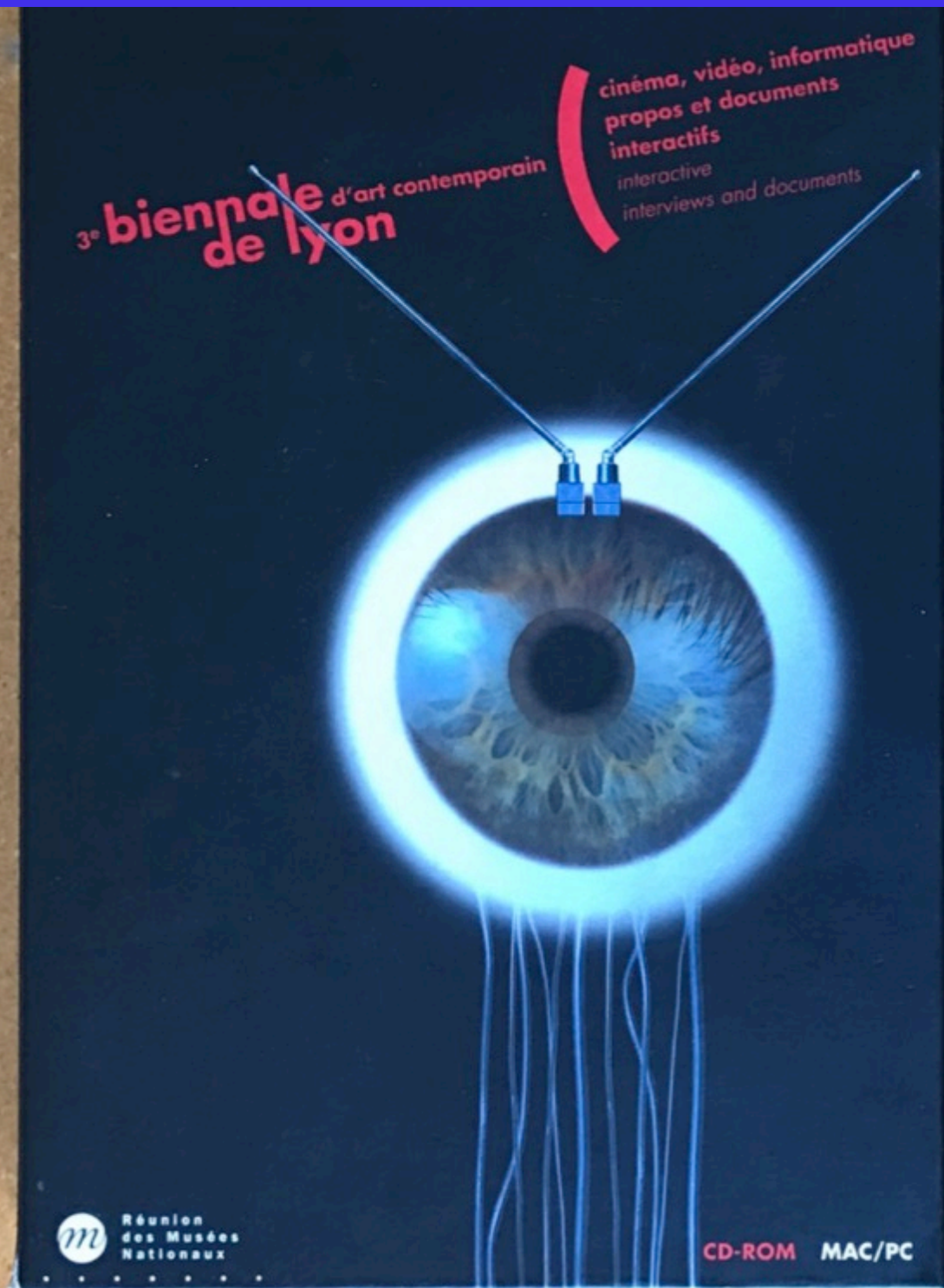


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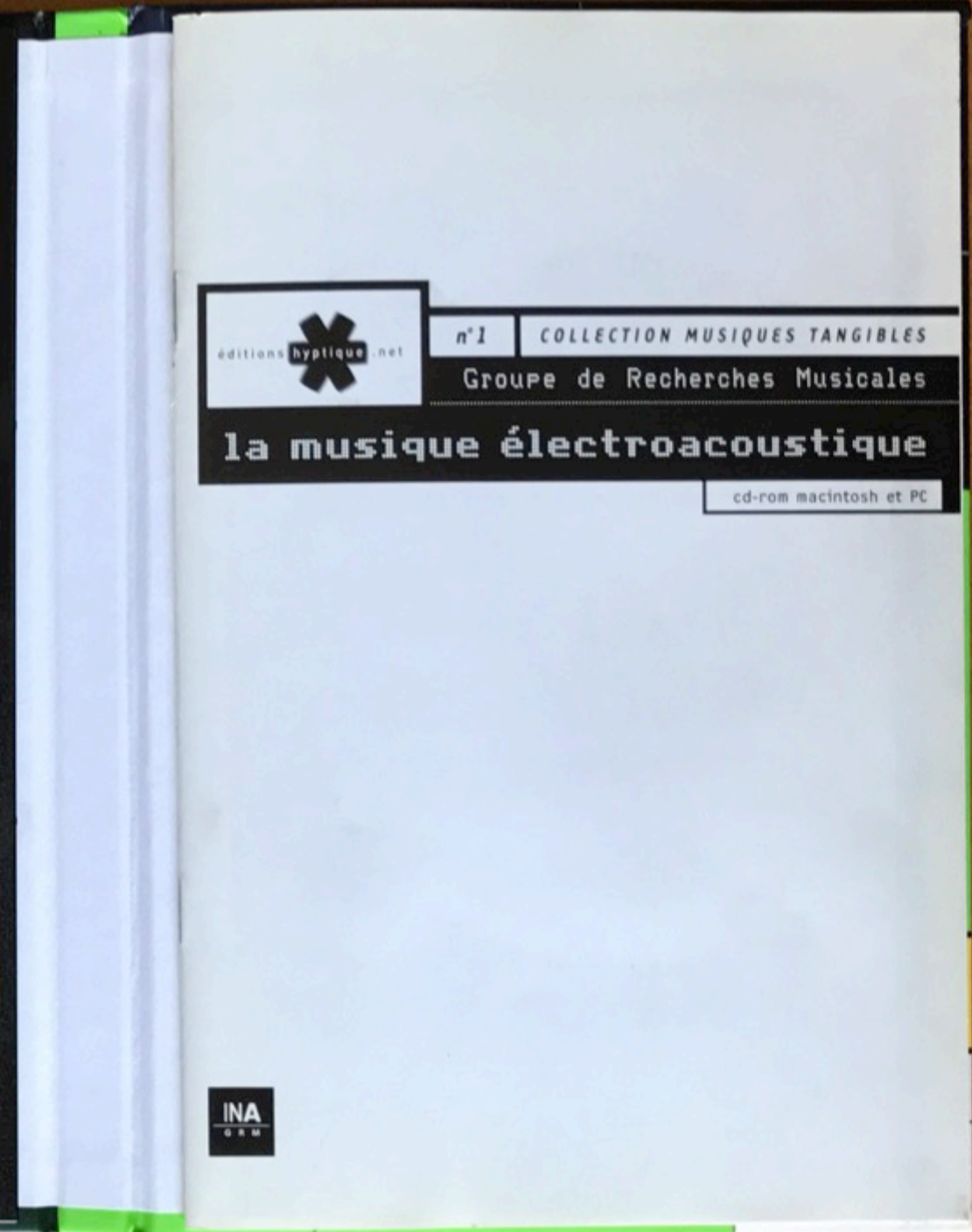
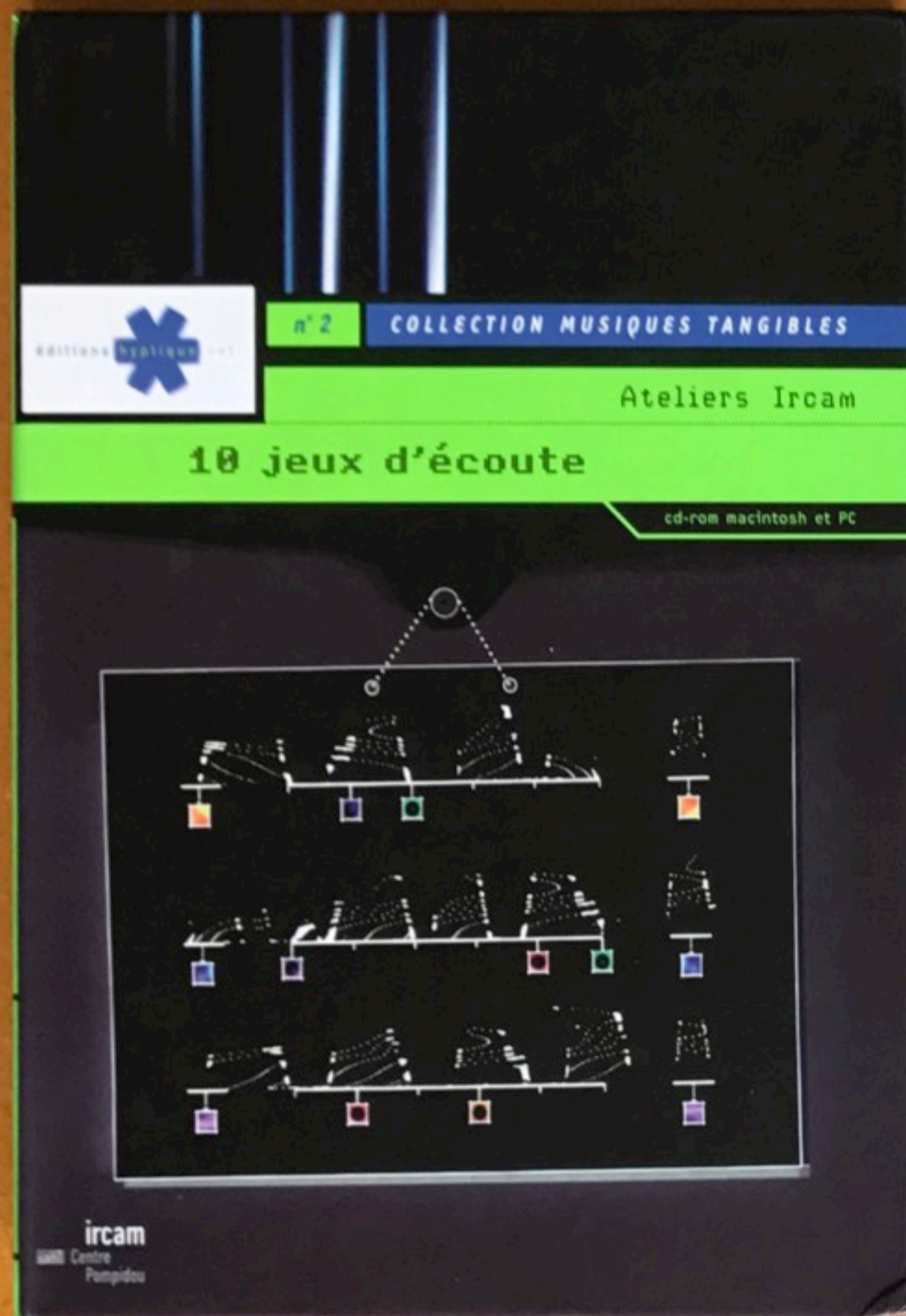
A very huge variety of contents and topics:

... Documenting Contemporary Art, New Art Forms, Interactivity and Digital Aesthetics.



A cultural heritage no longer accessible

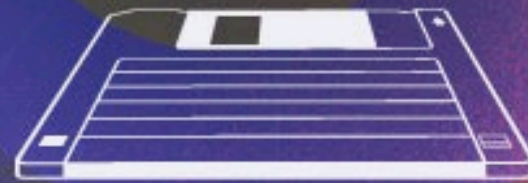
Due to the fast evolution of the technologies, native computers and software became obsolete over a decade (or less).



Exhibition “Welcome to the future!”, 2015

Curated by Yves Bernard (iMAL) and Dirk Paesmans (jodi.org),
in collaboration with Emmanuel Lorrain (PACKED).

THE
FLOPPY CD-ROM
REVOLUTION



Early pioneering works in new media and digital arts, conveying many visions and utopias around the upcoming digital world



Early pioneering works in new media and digital arts, conveying many visions and utopias around the upcoming digital world



A temporary approach to give access to this heritage to the public

A selection of 100 cd-roms and floppies (including some rare items), presented with their original packagings.



A temporary approach to give access to this heritage to the public

Collecting vintage computers (40 Mac & PCs).

Contacting authors, producers, developers and publishers.



An encouraging success and a young audience very much interested to discover the roots of digital culture



An emergency operation before it's too late

Raising awareness on preserving this born-digital culture heritage.



Conclusions

The exhibition raised fundamental problematics:

- the floppies and cd-roms are short life and fragile carriers
- hardware will gradually stop working and become rare
- software (OS and apps) is as prone to obsolescence than hardware
- an exhibition is a temporary event for a local audience
- Long-term solutions are needed for permanent public access to born-digital cultural heritage

Necessity of methods and tools:

- in order to preserve – on a long term basis - the digital artworks, independently from their original carriers
- in order to make them accessible for a large public, today but also in the distant future

Resurrection Lab

The project : 2014-2016 (POC phase)

- Experimentation with emulation and bwFLA/EaaS
- First “future library” prototype during WTTF! (2015)
- First tests of online publishing

Experimentation with emulation and bwFLA/EaaS



Home

Emulation as a Service

Use Cases / Demos

Publications

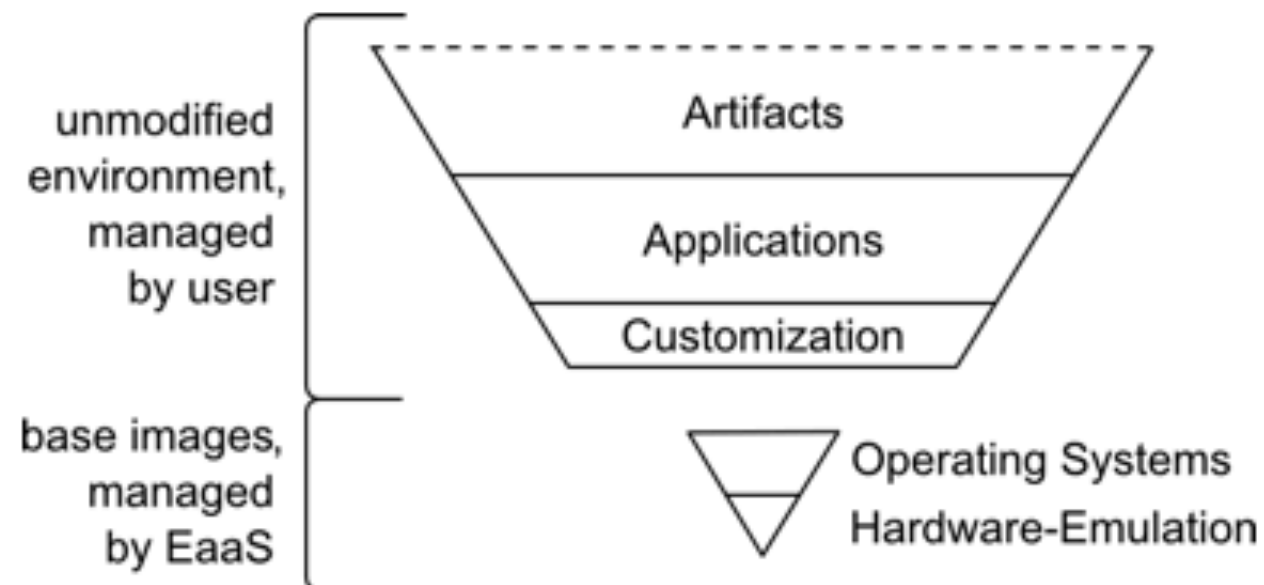
twitter

blog

bwFLA — Emulation as a Service

Functional Long-Term Archiving

Digital data is highly volatile, the processes and systems that make use of it even more so. Initially creating data and establishing workflows is very costly, in an ever-changing technological environment the upkeep presents a long-term challenge. To fulfill their designed purpose over a long period of time or for making research results, documents and decisions of today verifiable in the future, efficient and authentic access is required.



Experimentation with emulation and bwFLA/EaaS

← → ↻ 🏠 www.imal.org/yves/RSRRZ0.html ★ 🔍 ☰

iMAL floppy and cd-rom demo on bwFLA A beta resurrection zone for dead media arts

Instructions

- you need a good, fast and low latency Internet access; avoid wifi and prefer cable ethernet.
- it only runs in **Chrome google browser**.
- use a fast modern computer (at least bi-processor), quit all other applications to give maximum cpu to Chrome.
- after clicking on the url, be patient, it may take 1 or 2 minutes for the virtual machine in the cloud to start, and then for the startup screen of old Classic Mac or old Windows to be displayed in Chrome.
- if nothing happens, or an error message, or it freezes in the emulated OS, close the Chrome window and retry later (this may happen when too many people are accessing the same url).
- most cd-roms will just auto start once the OS is booted.
- due to Internet communication, there is some latency: when you click or drag the cursor, it may take 0.5 sec or more for the effect to be displayed or heard. This is also why you need a good Internet access...
- **do not disclose the url of this page and these links**, they are not public!

Here we go...

When many links for one title, the **one in Bold** usually gives the rendering nearest to the original work.

By order of upload (most recent first):

Kaos 3 / Action Poétique, revue éditée par J-P Balpe - 1992 (Mac - 7.6): <http://hdl.handle.net/11270/80839b90-3828-432b-b939-3c4053e13623>

Meet MediaBand by Marc Canter, the creator of MacroMind Director - 1994 (Mac - 7.6): <http://hdl.handle.net/11270/bec58475-5767-4915-99c4-3a69b25b68bf>

MediaMix Interaktiv, the first EU cultural magazine - 1992 (Mac - 7.6): <http://hdl.handle.net/11270/cd888043-e75b-437d-ae27-6c7852583266>

alire, le salon de lecture électronique/Ph.Bootz&al (l'intégrale DOS/Windows) - 1989-1995 (Win98): <http://hdl.handle.net/11270/48a72537-86ee-4b0e-9466-6eaf07f2c1d6>

An eyewitness account of the landing of a Martian by GPS - 1998 (Mac - 7.6): <http://hdl.handle.net/11270/f74b2af8-c4c6-4370-b3b1-a8b361ed0758>

Rosalind Brodsky Memorial Tour by Suzanne Treister - 1999 (Mac - 7.6): <http://hdl.handle.net/11270/c47598d6-80c0-4bdf-beb8-0dec37604a92>

Small Fish (Furukawa,Fujihata,Münch / ZKM) - 1999 (Win98): <http://hdl.handle.net/11270/4969a6cb-9a42-46f5-8c9a-b852b2c31be4>

Difficult due to latency / Now released by ZKM on iTunes for iOS devices

Neuf Jouets Optiques (Pierre Bastien) - 1999 (Win98): <http://hdl.handle.net/11270/23e5da26-f01e-45ee-b681-5322c8873c48>

Advent (Clive Gillman/Ellipsis, Electric Art 3) - 1997 (Mac - 7.6): <http://hdl.handle.net/11270/d24b54b9-33f9-4d19-bd15-f56eb87353d9>

Passagen (G.Ellard & S.Johnston/Ellipsis, Electric Art 2) - 1997 (Mac - 7.6): <http://hdl.handle.net/11270/a2c0c7ea-7c84-4851-a4a1-92dba0b65a48>

Book of Shadows (Simon Biggs/Ellipsis, Electric Art 1) - 1996 (Mac - 7.6): <http://hdl.handle.net/11270/4b3f29b5-17a6-4ab2-865c-ac7f7f389271>

Digitivity, Learning the New Language (M.Edwards/Ellipsis) - 1995 (Mac - 7.6): <http://hdl.handle.net/11270/39e7362c-3a60-4a7a-b6fb-f6643383f96e>

Machines à Écrire (Antoine Denize / Gallimard) - 1997 (Mac - 7.6): <http://hdl.handle.net/11270/1fc75754-4471-4cbe-8c9a-0091ae8b8817>

18h39 (S.Bilous, F.Lagny, B.Piacenza / Flammarion) - 1997 (Mac - 7.6): <http://hdl.handle.net/11270/2cbe1c8e-c953-4b3e-acfd-175e7466a855>

Just from Cynthia (Alberto Sorbelli / Centre Pmpidou) - 1995 (Mac - 7.6): <http://hdl.handle.net/11270/7a4077bf-36d4-47df-aac7-7add715b99df>

GasBook 7 (Enlightenment) - 1999 (Win98): <http://hdl.handle.net/11270/db41b895-7b77-45bc-b9bf-bf9668e7ab82>

GasBook 6 (Visual Exhibition) - 1999 (Mac - 7.6): <http://hdl.handle.net/11270/9c6dce64-ee29-41fc-ad28-6a3987d96bbd>

First “future library” prototype during WTTF! (2015)

offline library with local EaaS server and public access client stations

WTTF

10-4

DIGITAL COLLECTION

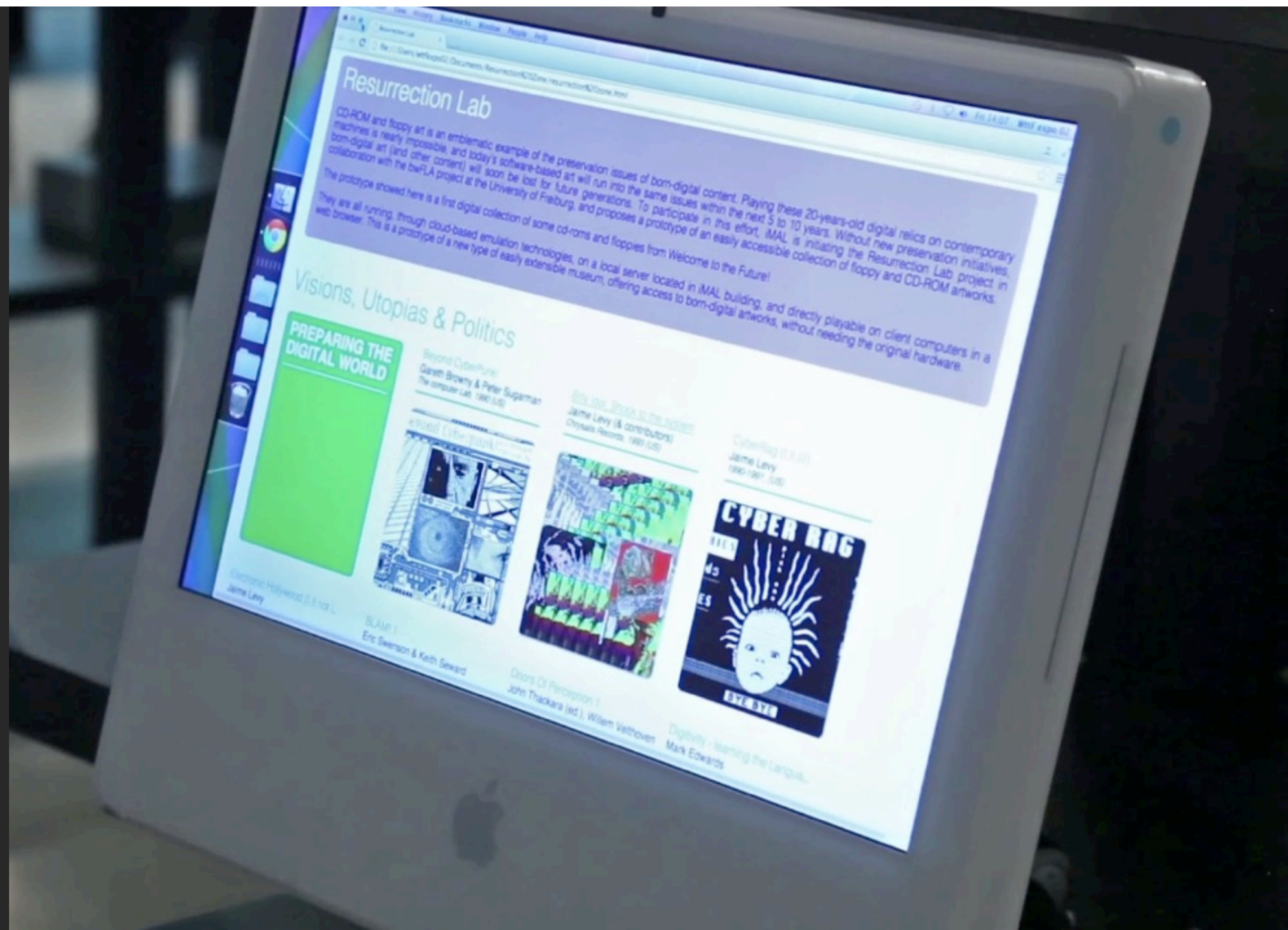
MUSEUM OF THE FUTURE

CULTURAL HERITAGE

CD-ROM and floppy art is an emblematic example of the preservation issues of born-digital content. Playing these 20-years-old digital relics on contemporary machines is nearly impossible, and today's software-based art will run into the same issues within the next 5 to 10 years.

Without new preservation initiatives, born-digital art (and other content) will soon be lost for future generations.

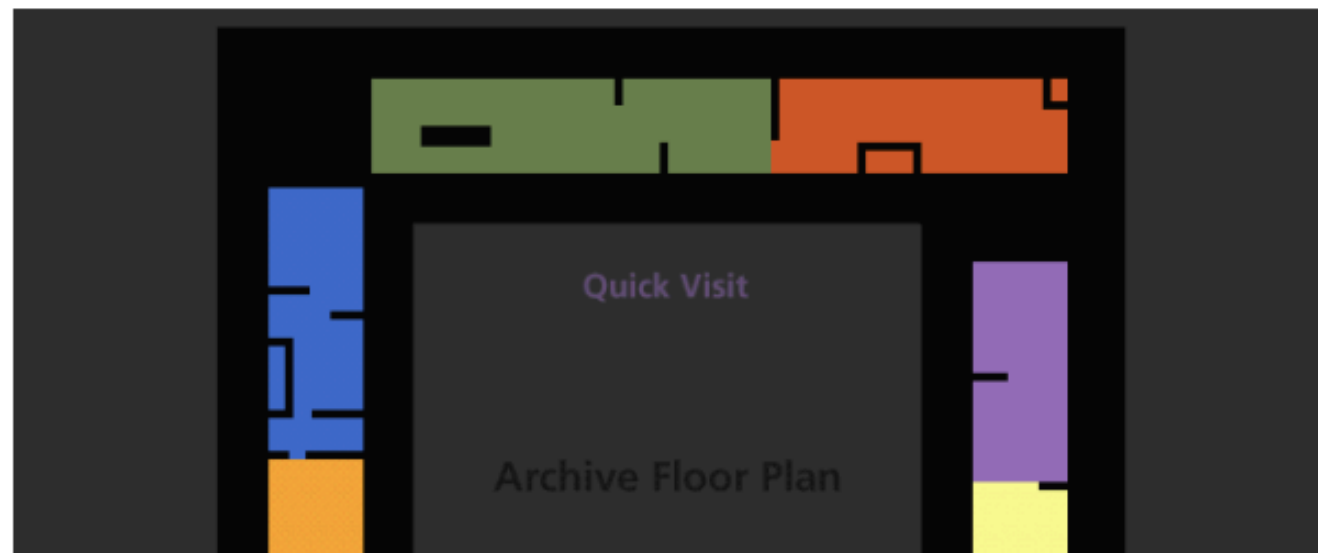
To participate in this effort, iMAL is initiating the Resurrection Lab project in collaboration with the University of Freiburg, and proposes a prototype of an easily accessible collection of floppy and CD-ROM artworks.



First tests of online publishing using cloud servers from University of Freiburg

An Anecdoted Archive from the Cold War

1994



[▶ Play emulation online!](#)

(When starting the cd-rom, to quit the intro sequence and go to the main menu, move the mouse out the cd-rom area and then in)

This project is both an interactive CD-ROM and a computer-media installation that explores the inscription of historical narrative through the process of archive construction.

George Legrady was born in Budapest in 1950 near the end of the Stalin era and grew up in Canada in the sixties' counter culture movement. The "Anecdoted Archive" reflects the author's particular hybridized history in relation to the Cold War. This non-linear index, or narrative features early 1950's East European, personal and official Communist material in the form of home movies, video footage of Eastern European places and events, objects, books, family documents, Socialist propaganda, money, sound recordings, news reports, identity cards, Western media reports, etc.

They are part of the author's collection of things and stories related to the Cold War that he has gathered during the past 20 years. These items, in the form of over sixty stories, have been arranged thematically in

FORMAT / PLATFORM



English

AUTHOR

George Legrady

PRODUCER

Hyperreal Media Productions (USA)

PUBLISHER

bASE.ARTS, San Francisco, 1994

CREDITS

George Legrady: Artwork narrative & Project design

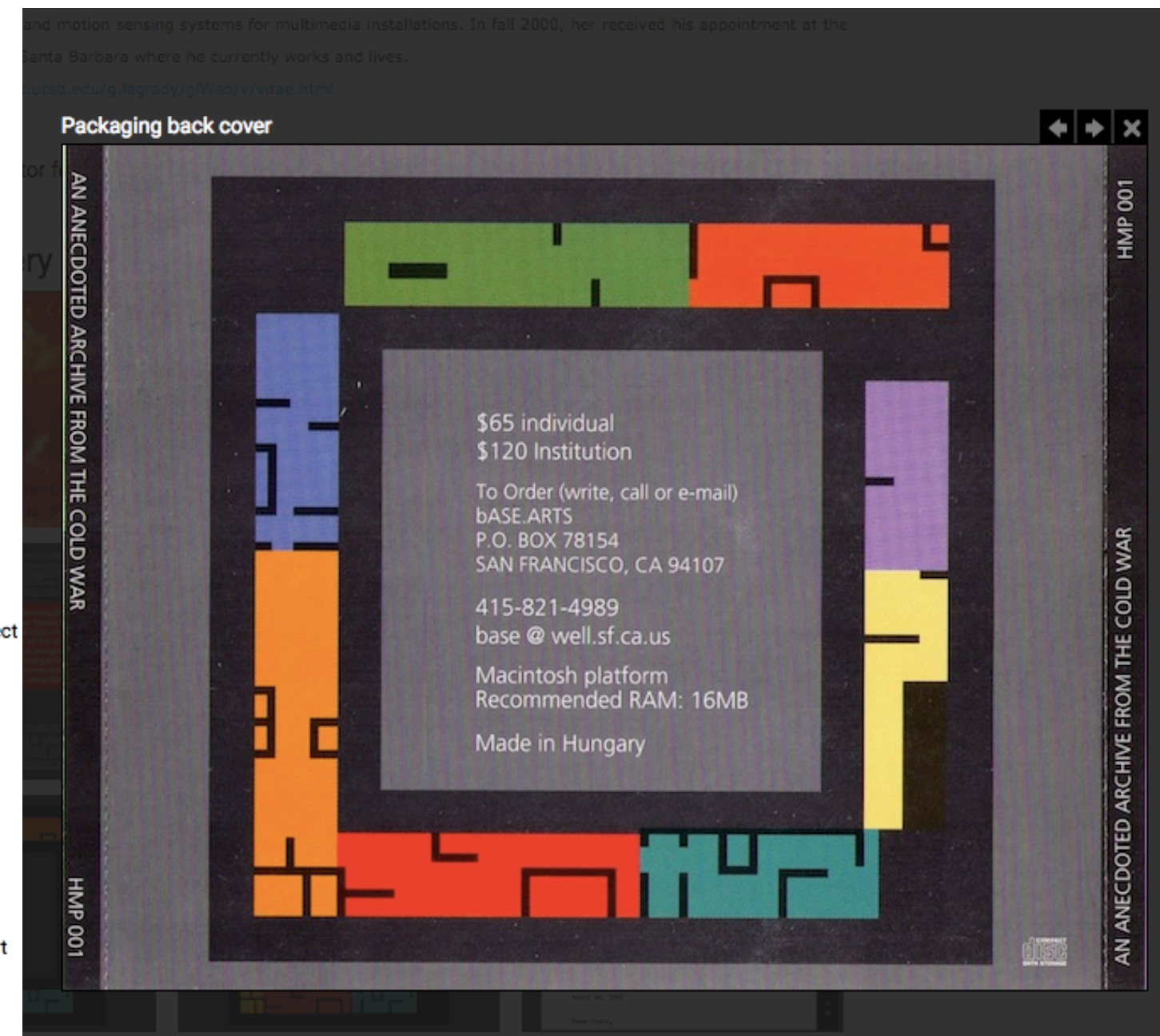
Rosemary Comella: Project Director, Authoring, HyperReal Media Productions
Andrea Schwartz: Photoshop & Design production

Gordon Saint-Clair: QuickTime production
Adrian Fernandez: Scanning production & Technical support

Judy Sitz: Photoshop production

Jim Burton: Videodisk & Technical support

[RESURRECTION LAB ↗](#)



Conclusions of the first phase (2014-2016)

Emulators are complex softwares :

- Need of OS images (eg Win3.1, MacOS 7.6) and system files
- Need of applications images (eg cd-rom disk images)
- Need complex configuration files
- Need Expert knowledge of original OS and applications
- Definitely Not for end user !
- Definitely not enough for Preservation Professionals and their collections !

Conclusions of the first phase (2014-2016)

New generation of CMS:

- We need elaborated environments for managing large collections of digital objects, their execution environments and emulation configurations
- And for managing their publishing according to types of public access.

New Resources:

- People : experts in vintage apps and OS, developers, designers, archivists,...
- Client computers and powerful servers for offline library
- Cloud resources for online publishing

Resurrection Lab

The project: 2017-2019

- a two-year project supported by Innoviris, the Brussels Institute for Research and Innovation



Resurrection Lab

The project: 2017-2019

- A collaboration between iMAL.org and Packed.be (Brussels)

200k€, 2 FTE

Resurrection Lab

The project: 2017-2019

A partnership with 2 leading institutions:

- The bwFLA team of the University of Freiburg, one of the leading R&D center in the development of emulation environments
- Rhizome (New-York), a born-digital art & culture organisation dedicated to its preservation.



RHIZOME

Resurrection Lab

The project : 2017-2019

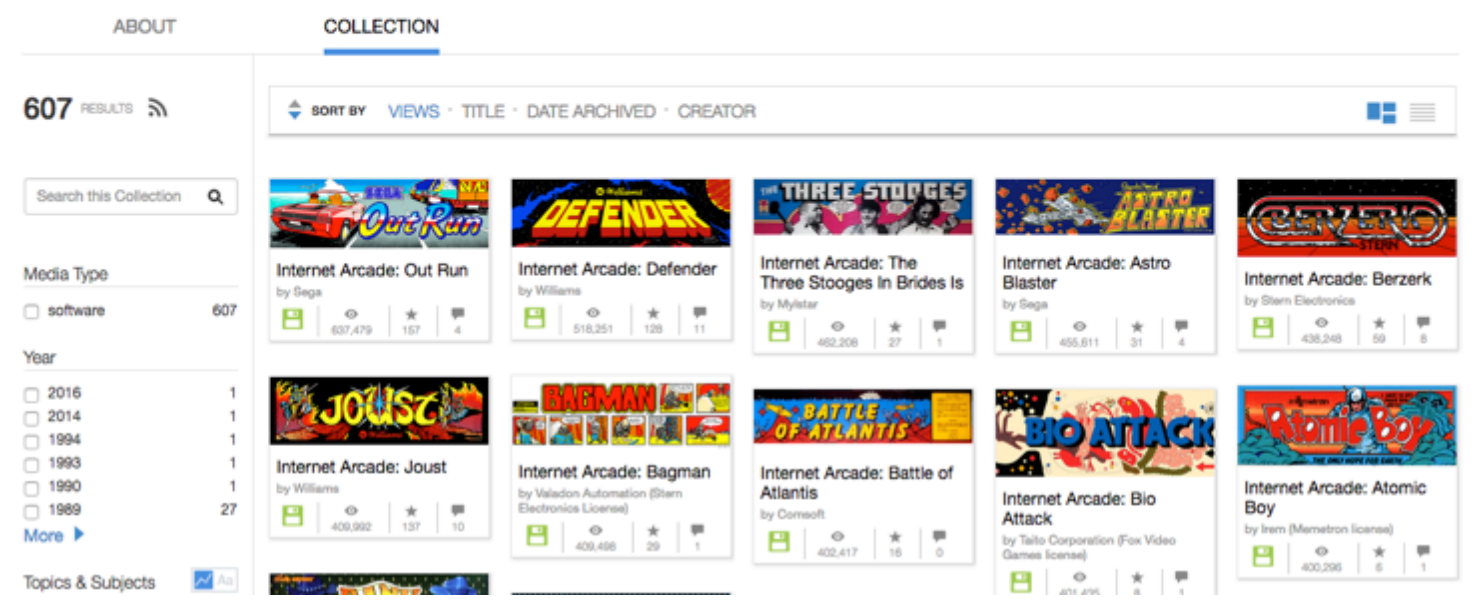
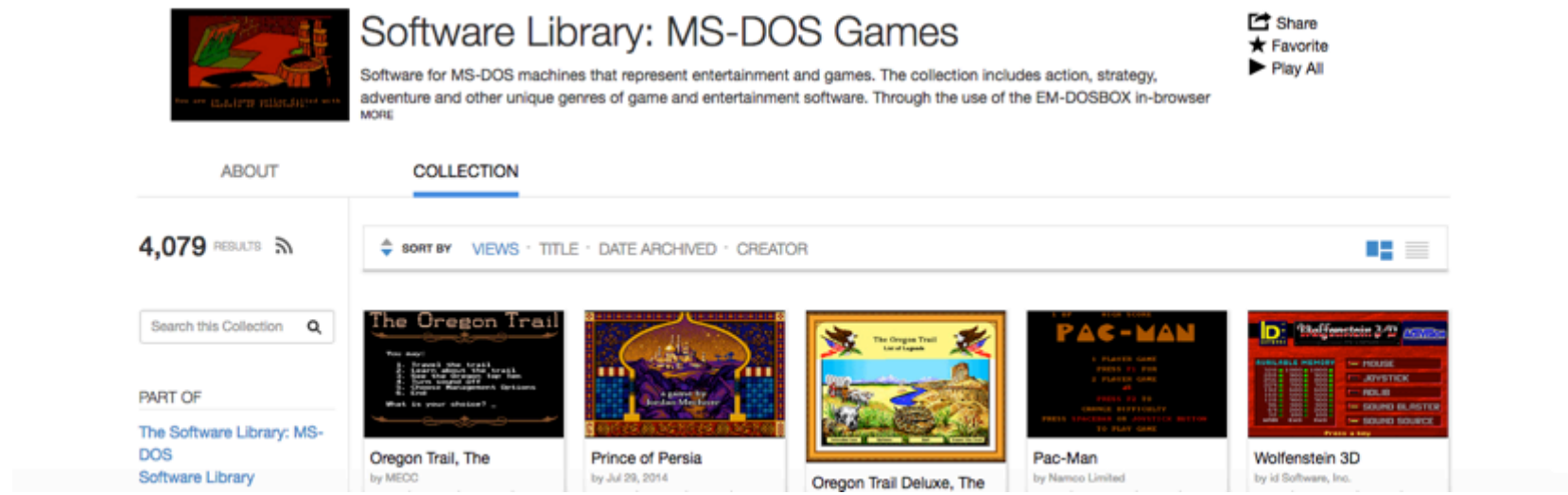
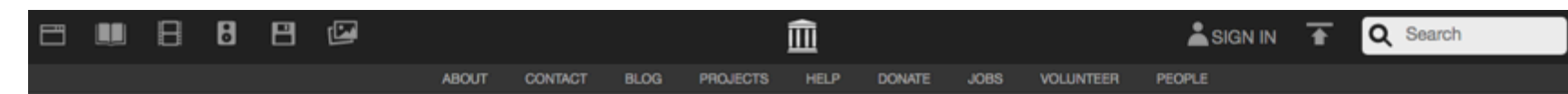
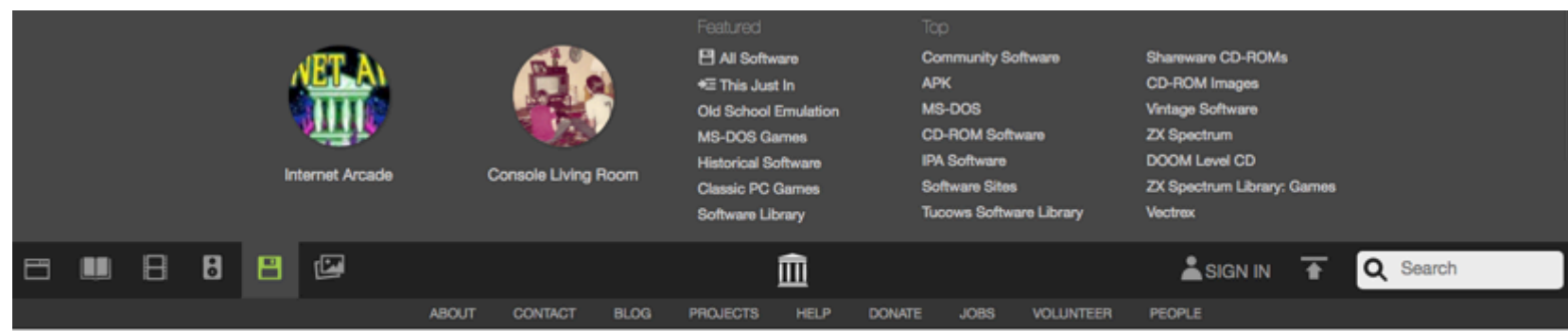
- Development of a capture workflow respecting long-term preservation standards.
- Development of a **prototype CMS** with emulation in its core design: the *digital artefact CMS* or *daCMS*

Resurrection Lab

The project : 2017-2019

- Preservation of *software-based* artworks starting with iMAL collection of cd-rom and floppy artworks
- Public Access through an offline library at iMAL and an online collection.

For born-digital heritage, there are just a few efforts for providing public access. *Internet Archive* is a rare example with a large collection of digital artefacts such as websites, software applications, and games.



> <https://archive.org>

For born-digital heritage, there are just a few efforts for providing public access.
Net Art Anthology by Rhizome.org is another one.

NET ART ANTHOLOGY

RETELLING THE HISTORY OF NET
ART FROM THE 1980S THROUGH THE
PRESENT DAY.

This two-year online exhibition will present 100 artworks from net art history, restaging and contextualizing one project each week.

Devised in concert with [Rhizome](#)'s acclaimed digital preservation department, Net Art Anthology also aims to address the shortage of historical perspectives on a field in which even the most prominent artworks are often inaccessible. The series takes on the complex task of identifying, preserving, and presenting exemplary works in a field characterized by broad participation, diverse practices, promiscuous collaboration, and rapidly shifting formal and aesthetic standards, sketching a possible net art canon.

Preservation and access to software-based artworks: our strategy

Due to the lack of ready made solutions, a specific approach is necessary.

Preservation:

- **maintain** some **original hardware** by collecting and repairing old machines in order to test and compare emulated version with the original software
- get rid of the original data carriers by **capturing Disk Images** via appropriated and secured protocols in order to preserve the **integrity** of the data
- store and preserve the captured Disk images on a safe repository, document and describe the original, create and preserve technical **metadata**.
- **management:** create a **digital artefact Collection Management System (daCMS)** to manage and document large collections of digital objects with their execution environment and emulation configurations
- respect **standards, methodologies and best practices of the archival community** to foster **long-term compatibility**

Preservation and access to software-based artworks: our strategy

Due to the lack of ready made solutions, a specific approach is necessary:

Access to the public:

- **emulation-based:** to simulate through software obsolete hardware and software platforms allowing to replay the original creations.
- **daCMS with publishing management:** for offline and online platforms to provide public access.
User friendly interfaces designed for various audiences to consult and experience the born-digital creations.
- **USB bootable stick:** for one-off demos and exhibition setup

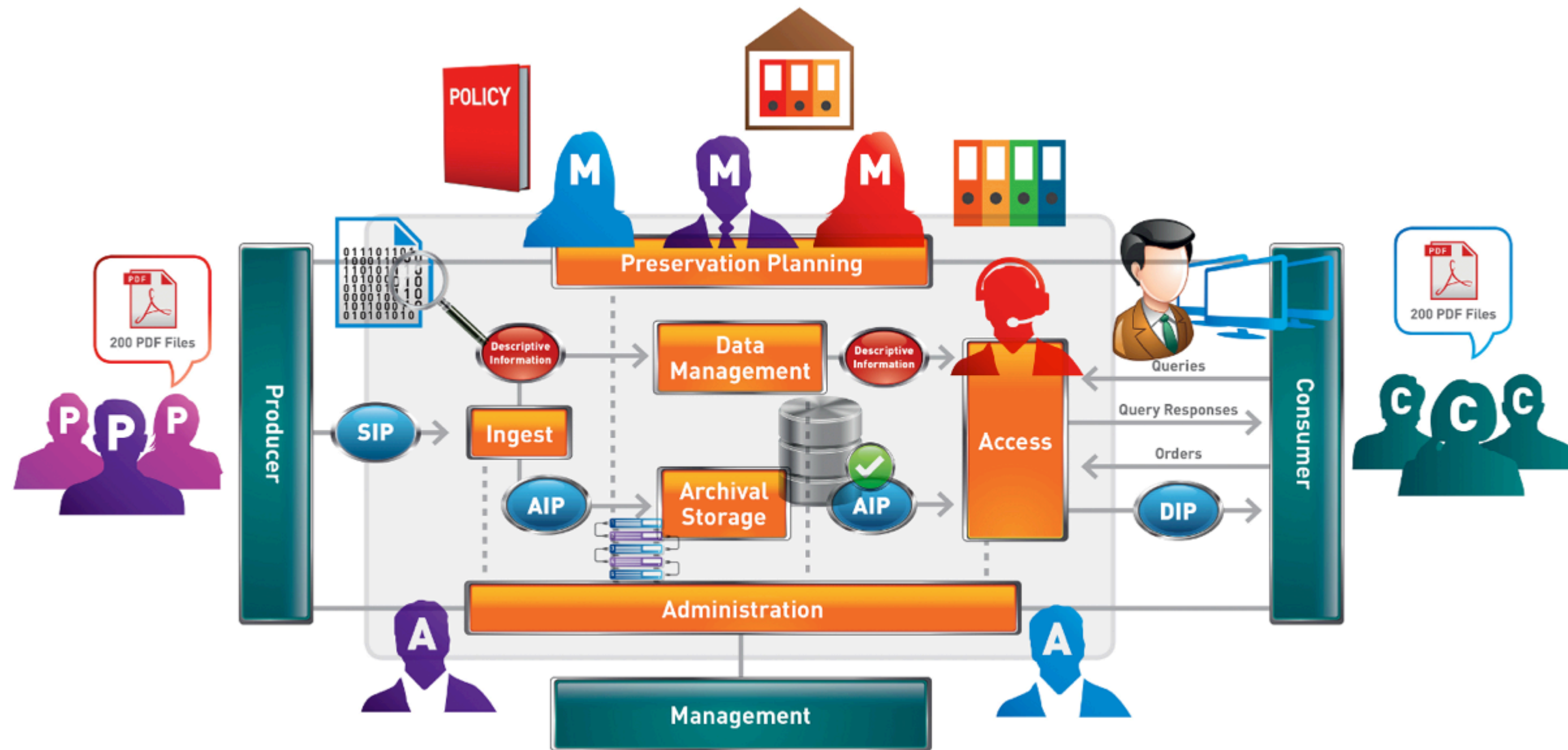
Resurrection Lab

Steps of R&D

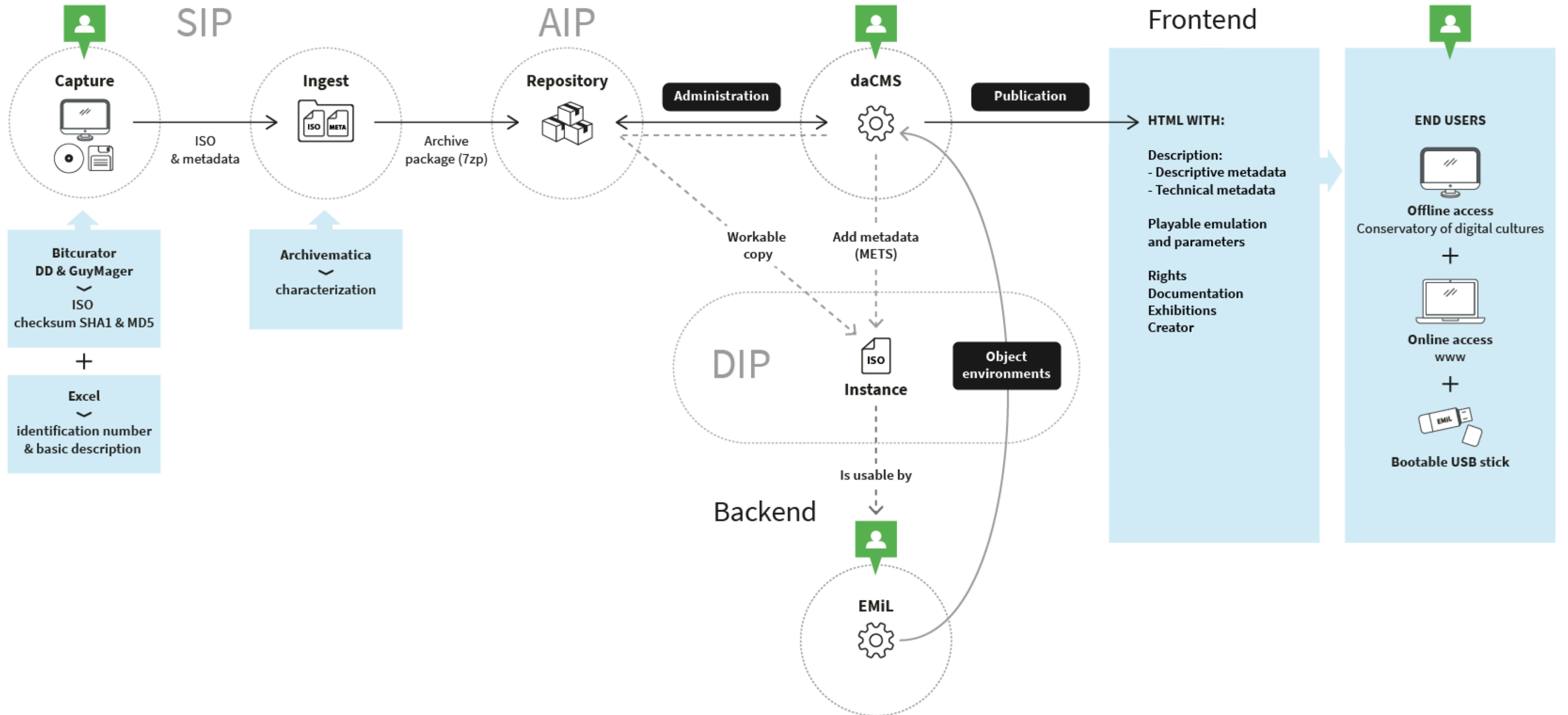
- Design of a workflow
- Capture Data Carriers and ingest of the Disk Images
- Characterization & preservation on a digital repository with Archivematica
- Design of a daCMS with emulation built-in as part of its core design
- Design of front-end platforms

OAIS

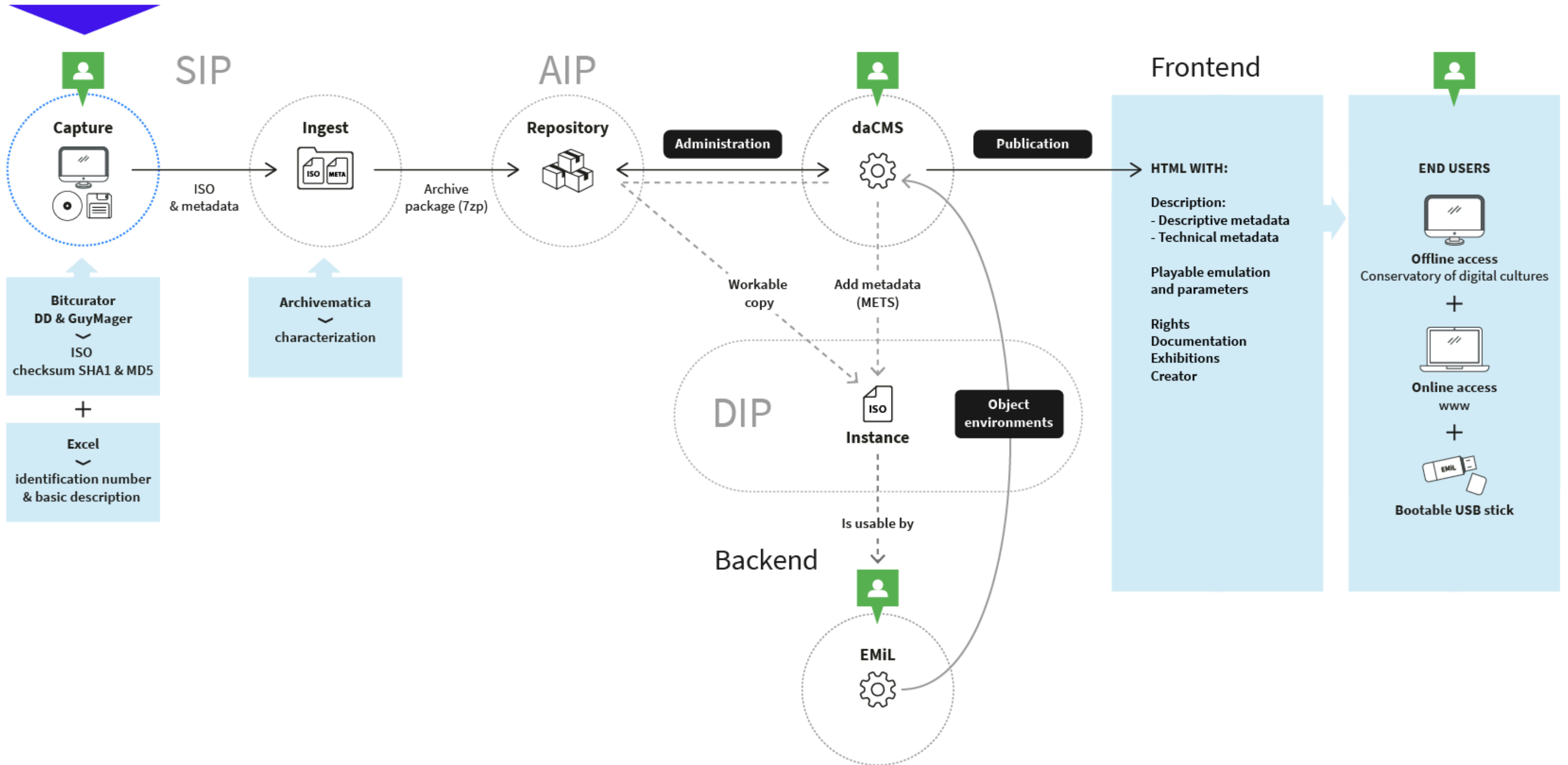
Open Archival Information System: a conceptual framework for an archival system dedicated to preserving and maintaining access to digital information over the long term.



Design of a workflow



Capture Data Carriers and ingest of the Disk Images



Capture Data Carriers and ingest of the Disk Images

Preparation of the data carriers



Capture Data Carriers and ingest of the Disk Images

Organisation of the collection: alphabetical order plus identification numbers.



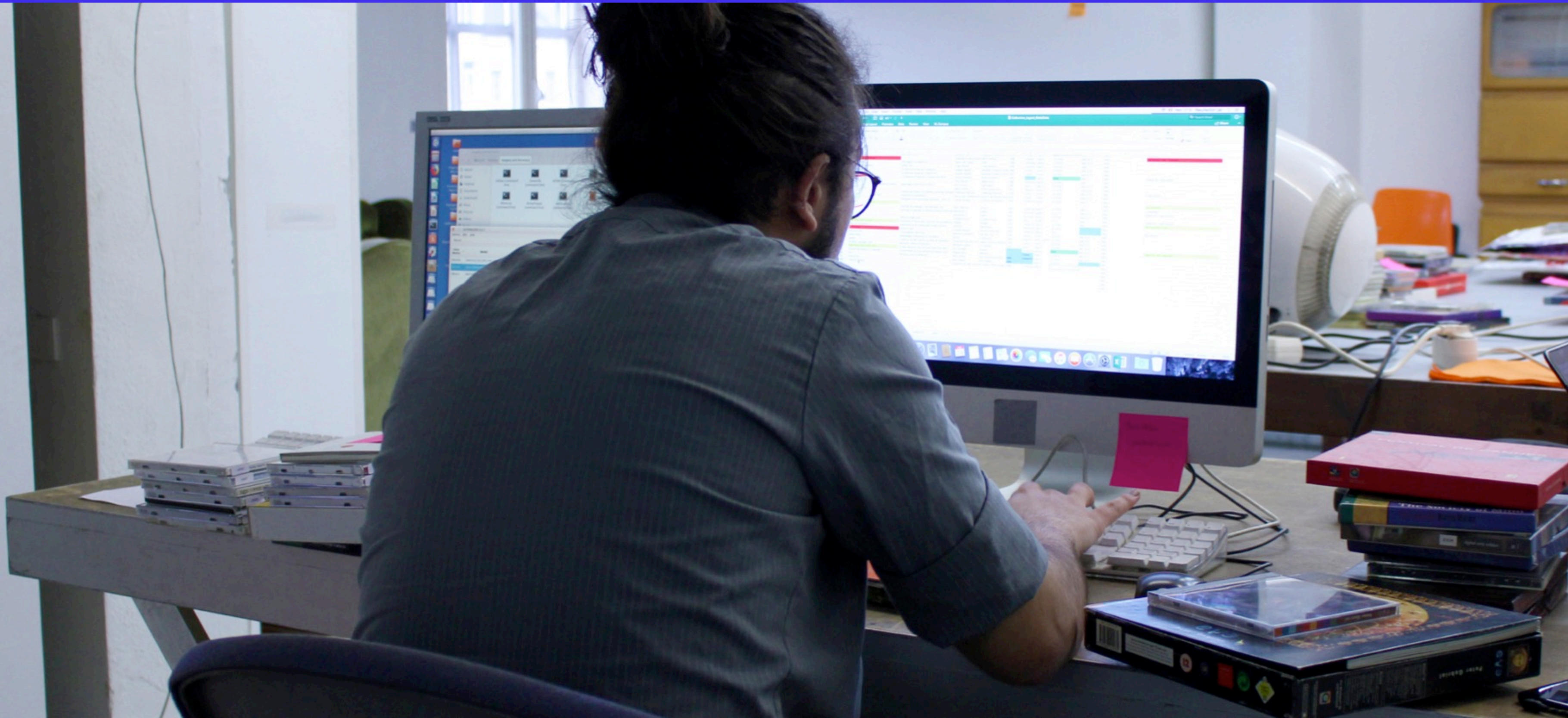
Capture Data Carriers and ingest of the Disk Images

Organisation of the collection: alphabetical order plus identification numbers.



Capture Data Carriers and ingest of the Disk Images

Ingestion with BitCurator & GuyMager. Basic descriptive metadata in Excel.

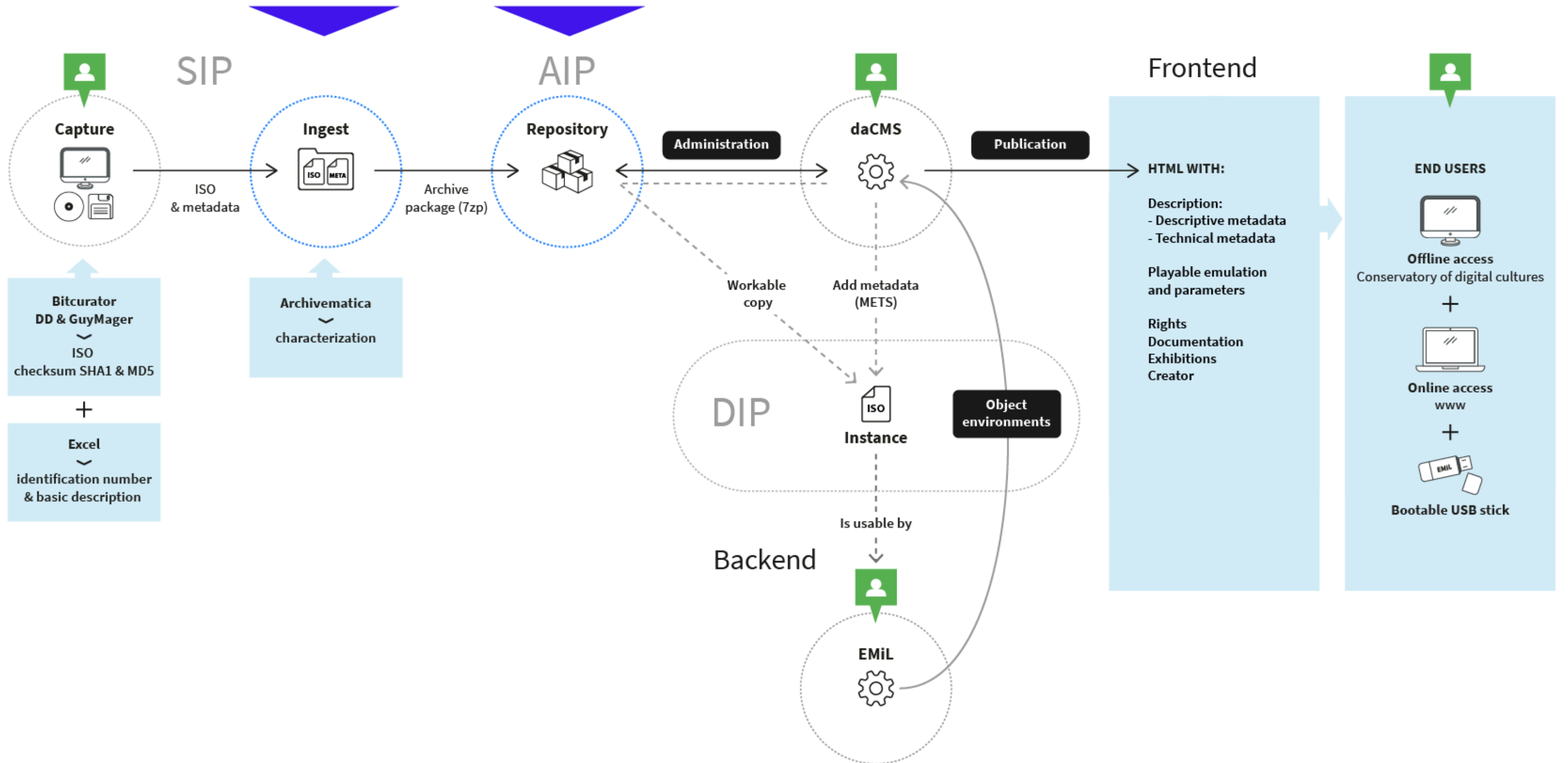


Capture Data Carriers and ingest of the Disk Images

Identifying partially unreadable or damaged carriers to be treated more carefully in a second time



Characterization & preservation on a digital repository with Archivematica



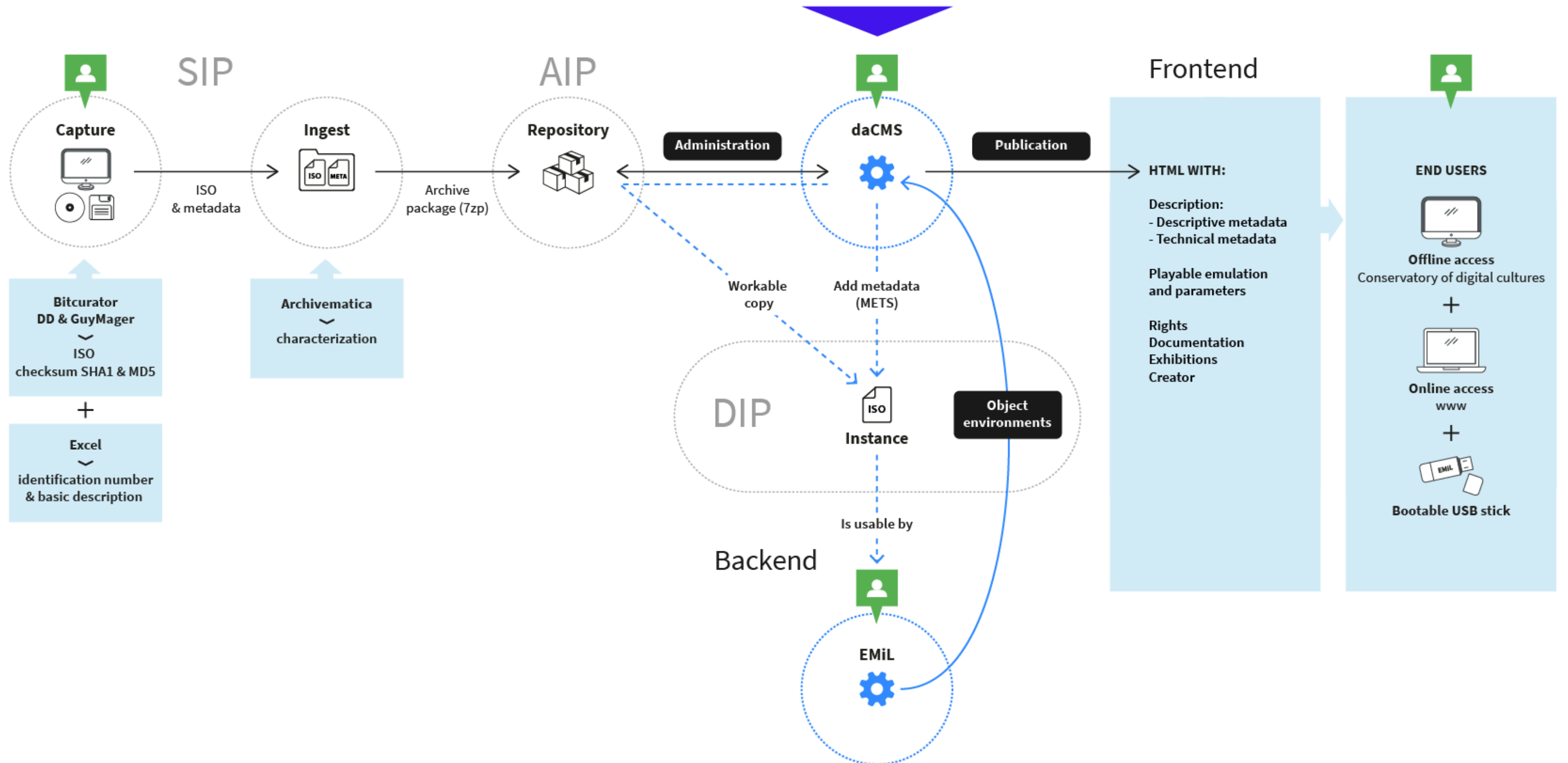
Characterization & preservation on a digital repository with Archivematica

Archivematica execute microservices such checksums, anti-viruses, file format identification, enclosing metadata (Premis, Mets) and deliver a "secure" archive of the media.

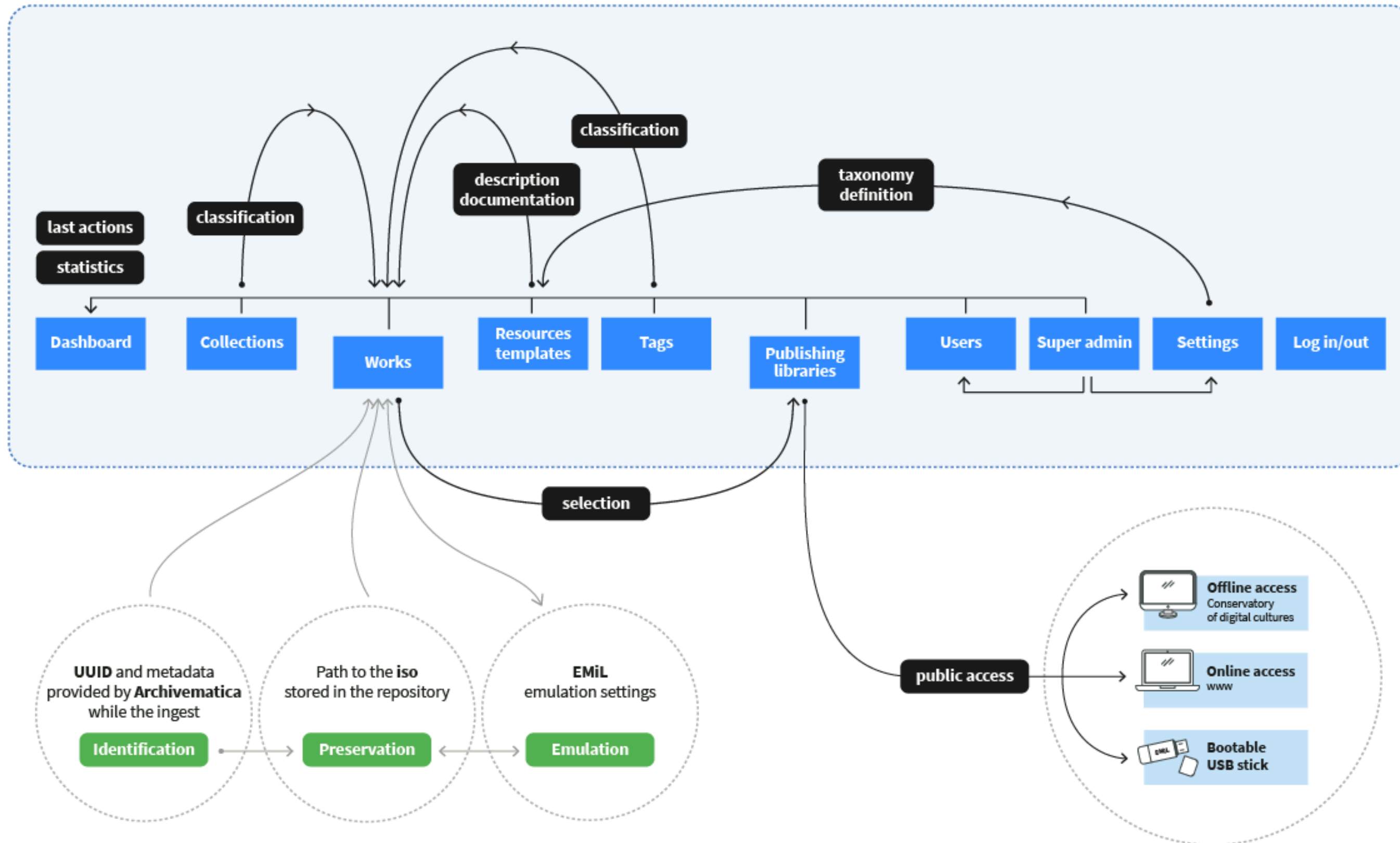
The screenshot shows the Archivematica Dashboard interface. The browser address bar is `ireslab.imal.org/ingest/`. The navigation menu includes: Transfer (8), Backlog, Appraisal, Ingest (12), Archival storage, Preservation planning, Access, Administration, and Isa. The main content area has a search bar with a dropdown set to 'Any' and a 'Search transfer backlog' button. Below this are two folder containers: 'originals' and 'arrange'. The 'arrange' folder has buttons for 'Add Directory', 'Edit Metadata', 'Delete', and 'Create SIP'. A table below displays submission information packages.

Submission Information Package	UUID	Ingest start time	
MaeghtFondation	42527eb7-b3a1-4333-be1c-62889f0c206b	2017-05-05 12:17	
▶ Micro-service: Store AIP			
Job: Store AIP (review) [?]		Awaiting decision	Actions
Job: Move to the store AIP approval directory		Completed successfully	
▶ Micro-service: Upload DIP			
▶ Micro-service: Prepare AIP			
▶ Micro-service: Prepare DIP			
▶ Micro-service: Generate AIP METS			
▶ Micro-service: Verify checksums			
▶ Micro-service: Process metadata directory			
▶ Micro-service: Process submission documentation			
▶ Micro-service: Transcribe SIP contents			
▶ Micro-service: Add final metadata			

Design of a daCMS with emulation built-in as part of its core design



Design of a daCMS with emulation built-in as part of its core design









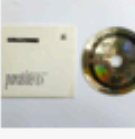





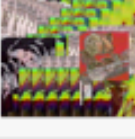





Design of a daCMS with emulation built-in as part of its core design

ResurrectionLab Settings Users Admin Log Out

Dashboard
Collections
Works
Tags
Publication platforms

Browse works (6 total)

Quick filter

<input type="checkbox"/>	Title	Creator	Date added	Type	Emulation	Visibility	Delete
<input type="checkbox"/>	 3e biennale d'art contemporain	Jean-Louis Boissier	08-08-2018	CD-ROM	✓		
<input type="checkbox"/>	 Parasite(s)	Pierre Braun	08-08-2018	CD-ROM	✓		
<input type="checkbox"/>	 Beyond Cyber Punk	Gareth Brownly & ...	08-08-2018	CD-ROM	✓		
<input type="checkbox"/>	 Meet mediaband	Mark Canter	08-08-2018	Original source code	✗		
<input type="checkbox"/>	 Billy Idol	Jaime Levy	08-08-2018	CD-ROM	✗		
<input type="checkbox"/>	 Commodore drawings	Cécile Massart	08-08-2018	CD-ROM	✓		

Design of a daCMS with emulation built-in as part of its core design

The screenshot displays the ResurrectionLab CMS interface. On the left is a dark sidebar with navigation options: Dashboard, Collections, Works (highlighted), Tags, and Publication platforms. The top navigation bar includes 'ResurrectionLab' and links for Settings, Users, Admin, and Log Out. The main content area is titled '3e biennale d'art contemporain de Lyon: documentation'. Below the title is a tabbed interface with 'Documentation' selected. Action buttons include 'Add a post', 'Upload an image', and 'Add a video'. A 'Save item' button is in the top right. The 'Add a post' form includes a text input, a 'Private' vs 'Public' radio button selection (with 'Public' selected), and a trash icon. A rich text editor toolbar is visible below the input. The text area contains a paragraph of placeholder text. At the bottom of the form, there is a file upload section with a preview image, the text 'JPG or PNG, max. 2Mb', and buttons for 'Choose file', 'Delete file', and 'Save'. On the right side, there is a 'Collection' dropdown menu (set to 'Select Below'), a 'Delete item' button, and metadata fields for 'Date created' and 'Date modified', both showing 'April 21, 2018'.

Design of a description model and ontology

With PACKED expertise, we design a description model matching best practices

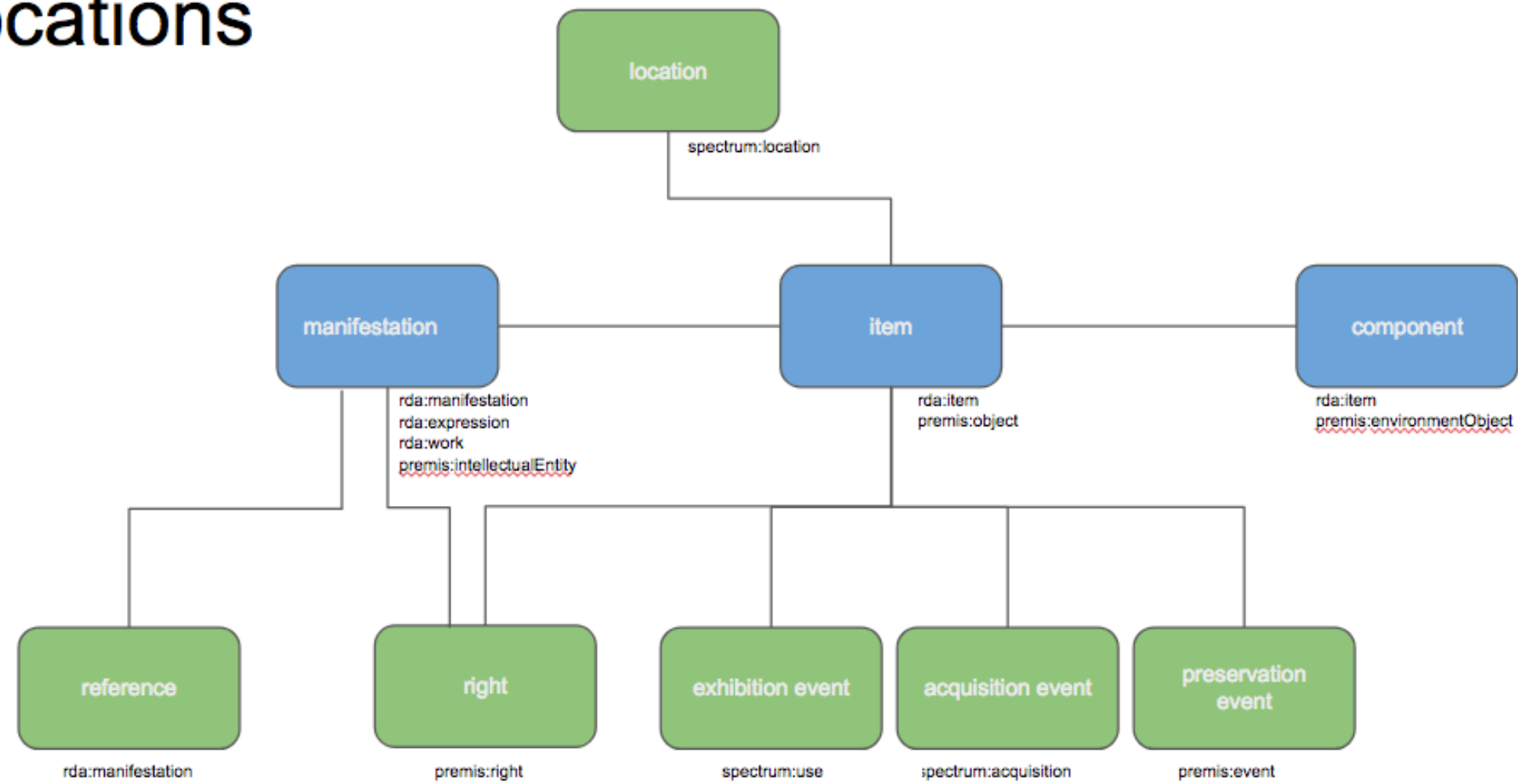
procedures

		standards	entities
Cataloguing	identification	RDA, PREMIS	<ul style="list-style-type: none">- rda:manifestation-rda:expression-rda:work/ premis:intellectualEntity- rda:Items/premis:object
	acquisition	SPECTRUM	<ul style="list-style-type: none">- spectrum:acquisitionInformation
Documentation	About Preservation	PREMIS	<ul style="list-style-type: none">- premis:event- premis:environmentObject
	About Exhibitions	SPECTRUM	<ul style="list-style-type: none">- spectrum:useInformation
	About References	RDA	<ul style="list-style-type: none">- rda:manifestation
	About IPR	PREMIS	<ul style="list-style-type: none">- premis:rightsStatement
Location		SPECTRUM	<ul style="list-style-type: none">- spectrum:locationInformation
Search & Retrieval		RDA, SPECTRUM	<ul style="list-style-type: none">- rda:expression-rda:work- spectrum:useInformation

Design of a description model based on FRBR principles

With PACKED expertise, we design a description model matching best practices

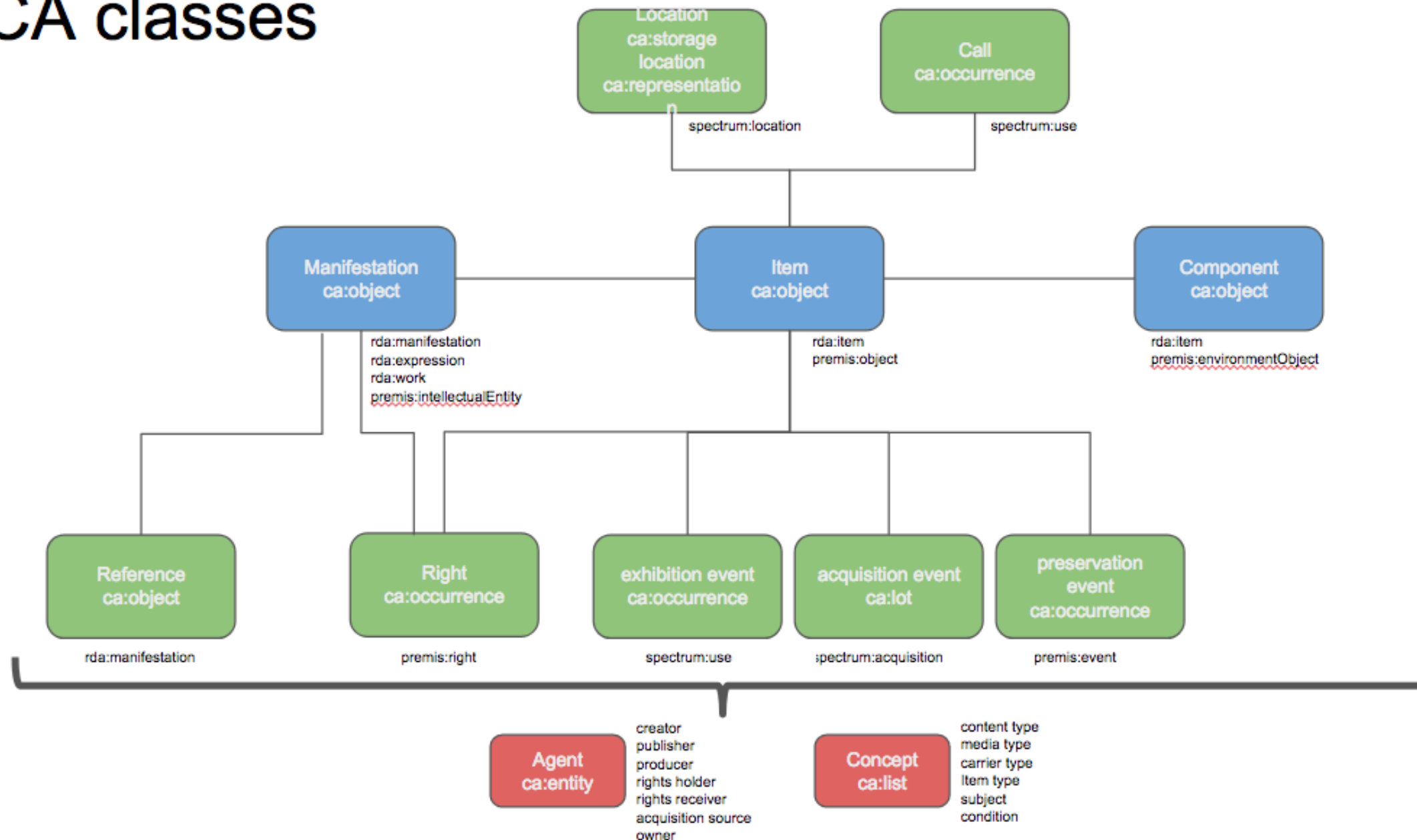
locations



Design of a description model based on FRBR principles

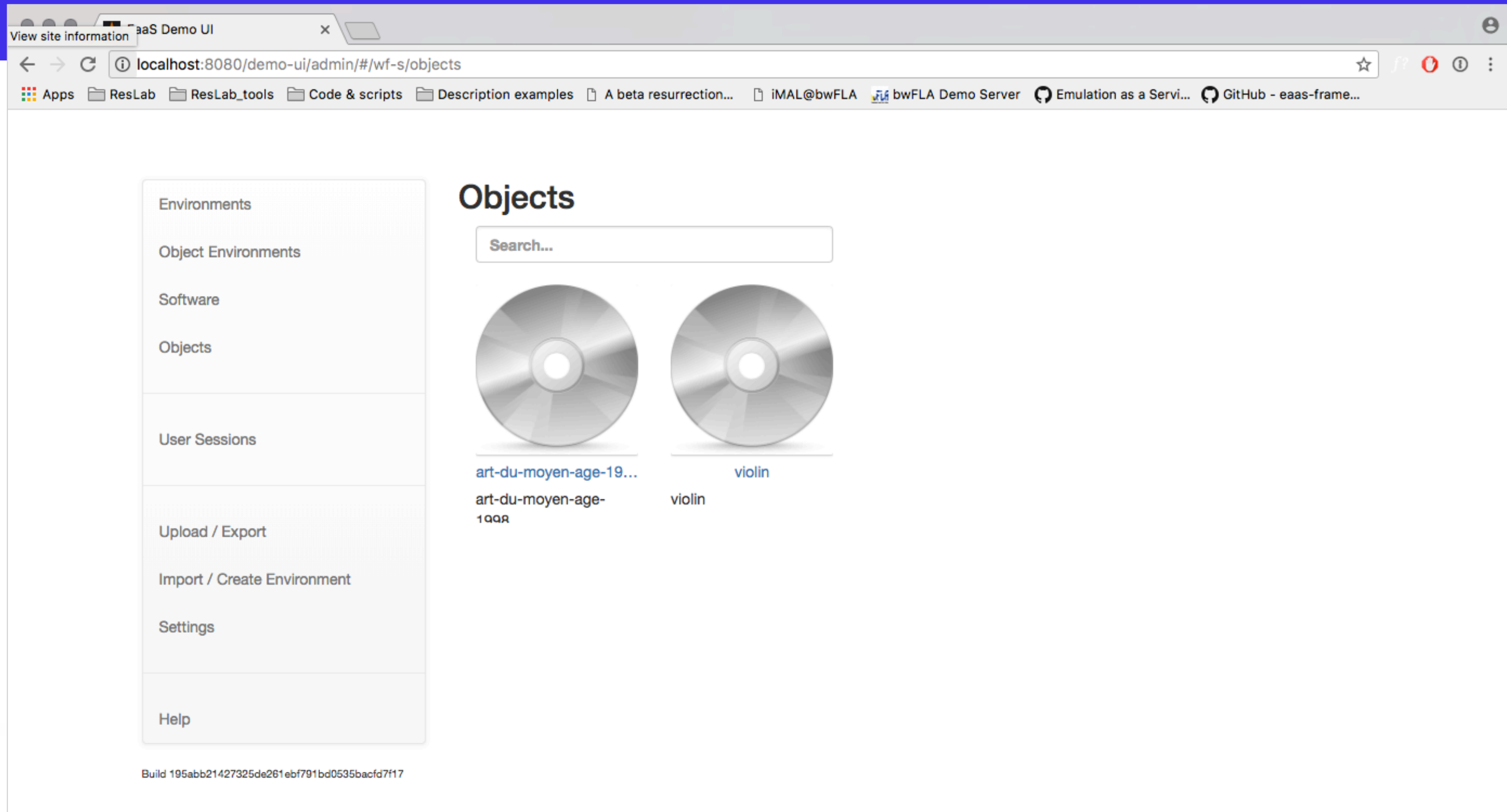
Our conceptual daCMS model matches *Collective Access CMS* implementation

locations CA classes



bwFla EMiL as back-end application

Design, generate, test runnable Object Environments of Digital Artefacts using emulation.



bwFla EMiL as back end application

The screenshot shows a web browser window titled "EaaS Demo UI" with the URL `localhost:8080/demo-ui/admin/#/wf-s/edit-object-characterization?objectId=violin`. The browser's address bar and tabs are visible at the top. The main content area is titled "Characterize object" and features a sidebar on the left with navigation options: Environments, Object Environments, Software, Objects, User Sessions, Upload / Export, Import / Create Environment, Settings, and Help.

The "Characterize object" page is divided into several sections:

- Object Details:** Displays "Object ID: violin".
- Configured Environments:** Contains two buttons: "Detect/find environments" and "Add environment".
- Environment List:** A table of configured environments, each with a plus icon, a name, and "Run" and "X" buttons.
- Classification Details:** A section at the bottom of the page.

Environment Name	Run	Close
The Violin env01	Run	X
win98-bsb	Run	X
Apple Mac OS 9	Run	X
ArtMoyenAge Test 1	Run	X

bwFla EMiL as back end application

Suggested environments:

- Microsoft Windows 32bit
 - **Default Environment:** [Edit/Assign](#)
- Microsoft Windows 9x
 - **Default Environment:** [Edit/Assign](#)
- Microsoft Windows 3.x
 - **Default Environment:** [Edit/Assign](#)
- Apple System 8/9
 - **Default Environment:** [Edit/Assign](#)
- Apple System 7
 - **Default Environment:** [Edit/Assign](#)
- Microsoft Windows 64bit
 - **Default Environment:** [Edit/Assign](#)

File formats:

- **JPEG File Interchange Format (fmt/43)**
 - **File count:** 602
 - **File dates:** Aug 20, 1997 8:46:33 PM - Nov 13, 1997 11:50:31 AM
- **Quicktime (x-fmt/384)**
 - **File count:** 152
 - **File dates:** Nov 1, 1997 8:21:13 PM - Jan 28, 1998 6:36:26 PM
- **Icon file format (x-fmt/418)**
 - **File count:** 1
 - **File dates:** Nov 13, 1997 1:46:24 PM - Nov 13, 1997 1:46:24 PM
- **Generic Library File (x-fmt/425)**
 - **File count:** 1
 - **File dates:** Jan 27, 1998 4:09:35 PM - Jan 27, 1998 4:09:35 PM
- **Macromedia (Adobe) Director Compressed Resource file (fmt/486)**
 - **File count:** 34
 - **File dates:** Dec 18, 1997 9:54:28 PM - Apr 2, 1998 10:43:19 PM
- **Write for Windows Document (x-fmt/12)**
 - **File count:** 1
 - **File dates:** Feb 17, 1998 10:32:36 AM - Feb 17, 1998 10:32:36 AM

bwFla EMiL as back end application

The screenshot displays a web browser window titled "EaaS Demo UI" with the address bar showing "localhost:8080/demo-ui/admin/#/wf-s/emulator". The browser's tab bar includes several open tabs: "Apps", "ResLab", "ResLab_tools", "Code & scripts", "Description examples", "A beta resurrection...", "iMAL@bwFLA", "bwFLA Demo Server", "Emulation as a Servi...", and "GitHub - eaas-frame...".

The main content area is divided into two sections. On the left is a sidebar menu with the following items: "Environments", "Object Environments", "Software", "Objects", "User Sessions", "Upload / Export", "Import / Create Environment", "Settings", and "Help". Below the menu is an "Actions" panel containing buttons for "Screenshot", "Save Environment", "Send Ctr-Alt-Del", "Restart Session", and "Stop".

The right section features a "Link to this environment" text above a large blue-tinted window. This window displays the classic Mac OS 9 "Starting Up..." screen, which includes the blue and white smiley face logo and the text "Mac OS 9". A progress bar at the bottom of the window indicates the booting process.

At the bottom left of the browser window, the build number "Build 195abb21427325de261ebf791bd0535bacfd7f17" is visible.

bwFla EMIl as back end application

The screenshot displays a web browser window titled "EaaS Demo UI" with the address bar showing "localhost:8080/demo-ui/admin/#/wf-s/emulator". The browser's tab bar includes "Apps", "ResLab", "ResLab_tools", "Code & scripts", "Description examples", "A beta resurrection...", "iMAL@bwFLA", "bwFLA Demo Server", "Emulation as a Servi...", and "GitHub - eaaS-frame...".

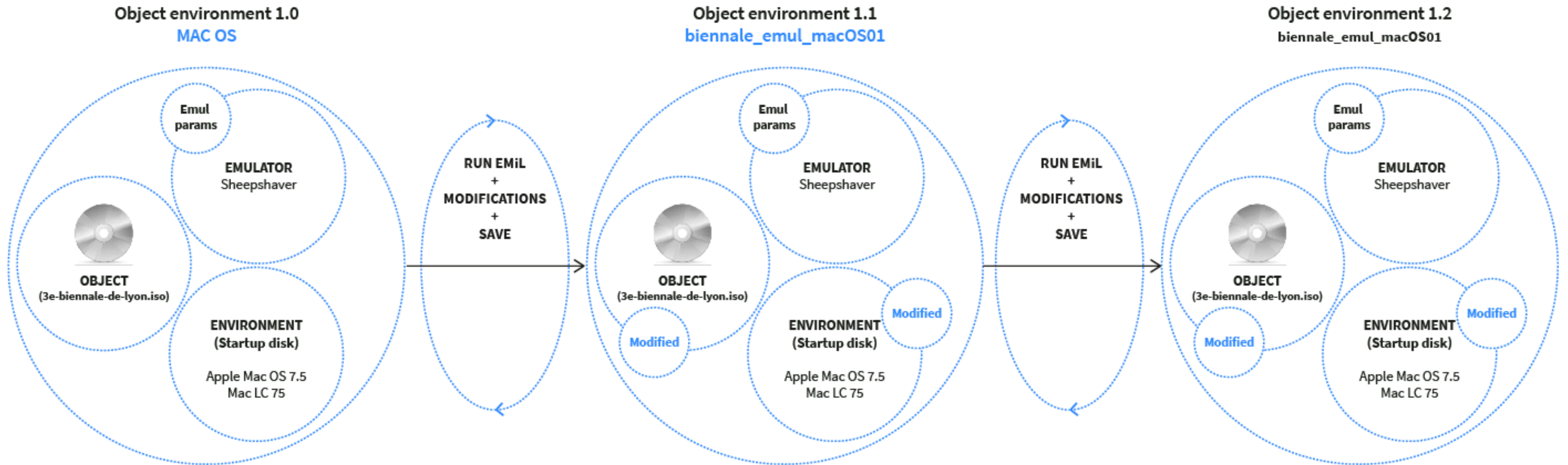
The main content area is divided into two sections. On the left is a sidebar menu with the following items: "Environments", "Object Environments", "Software", "Objects", "User Sessions", "Upload / Export", "Import / Create Environment", "Settings", and "Help". Below this menu is an "Actions" panel containing buttons for "Screenshot", "Save Environment", "Send Ctr-Alt-Del", "Restart Session", and "Stop".

On the right is a large window titled "Link to this environment" which displays an emulated Mac OS 9 desktop. The desktop has a blue background with a repeating "The Violin" watermark. A "Finder" window is open, showing a file list with 7 items and 588 K available space. The items are: "The Violin" (with a note: "-- To copy on your hard disk"), "QuickTime™ 2.5" (with a note: "-- Install QuickTime 2.5"), "Read Me", and "SimpleText". The desktop also features several application icons: "macos 9", "DropStuff alias", "The Violin", "StuffIt Expander alias", "Browse the Internet", "Mail", "QuickTime Player", "Register with Apple", "Sherlock 2", "Netscape", and "Trash". The system status bar at the top right of the desktop shows "3:00 PM" and the "Finder" application name. A dock with various icons is visible at the bottom of the desktop.

At the bottom left of the browser window, the text "Build 195abb21427325de261ebf791bd0535bacfd7f17" is displayed.

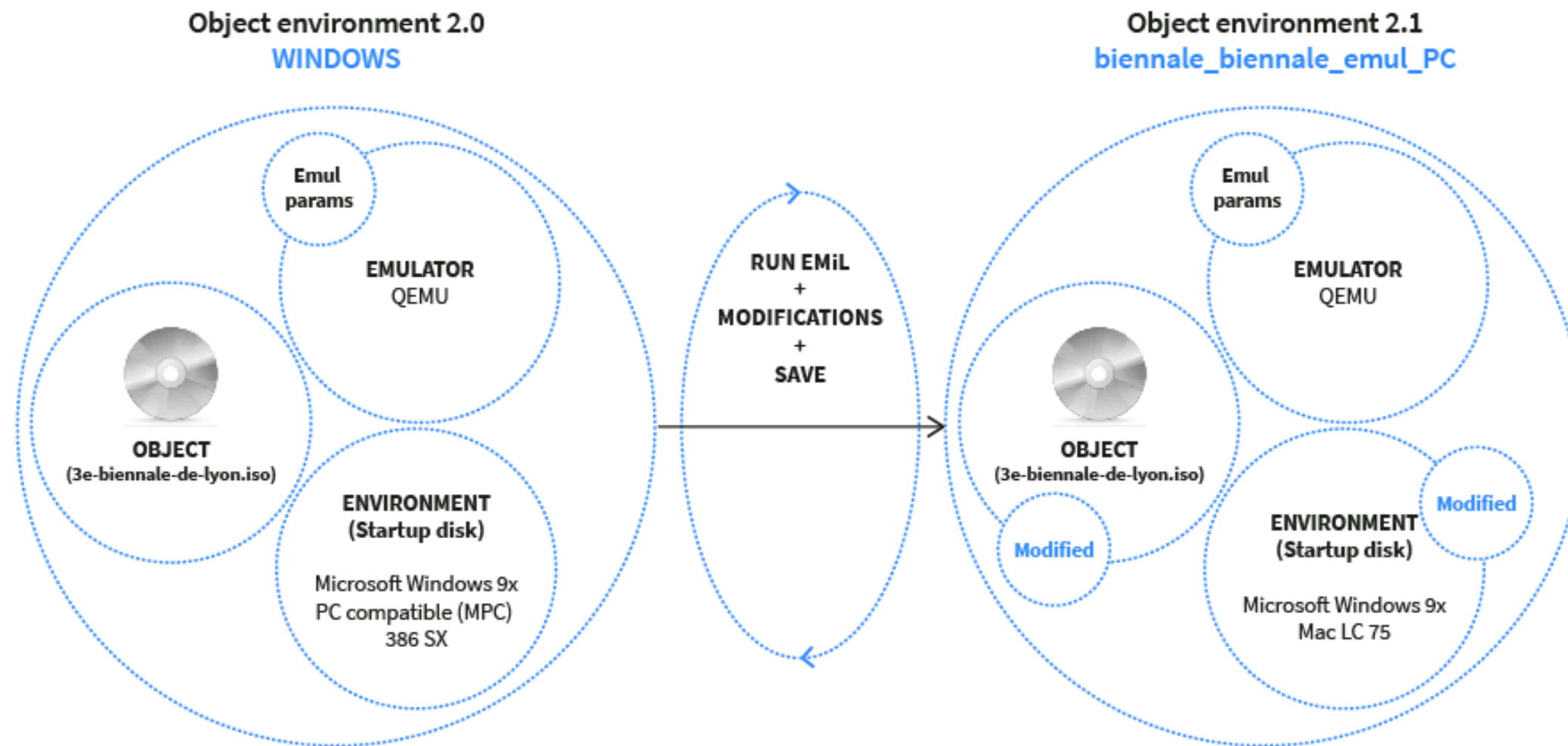
bwFla EMI_L as back end application

Design, generate, test runnable Object Environments of Digital Artefacts using emulation.

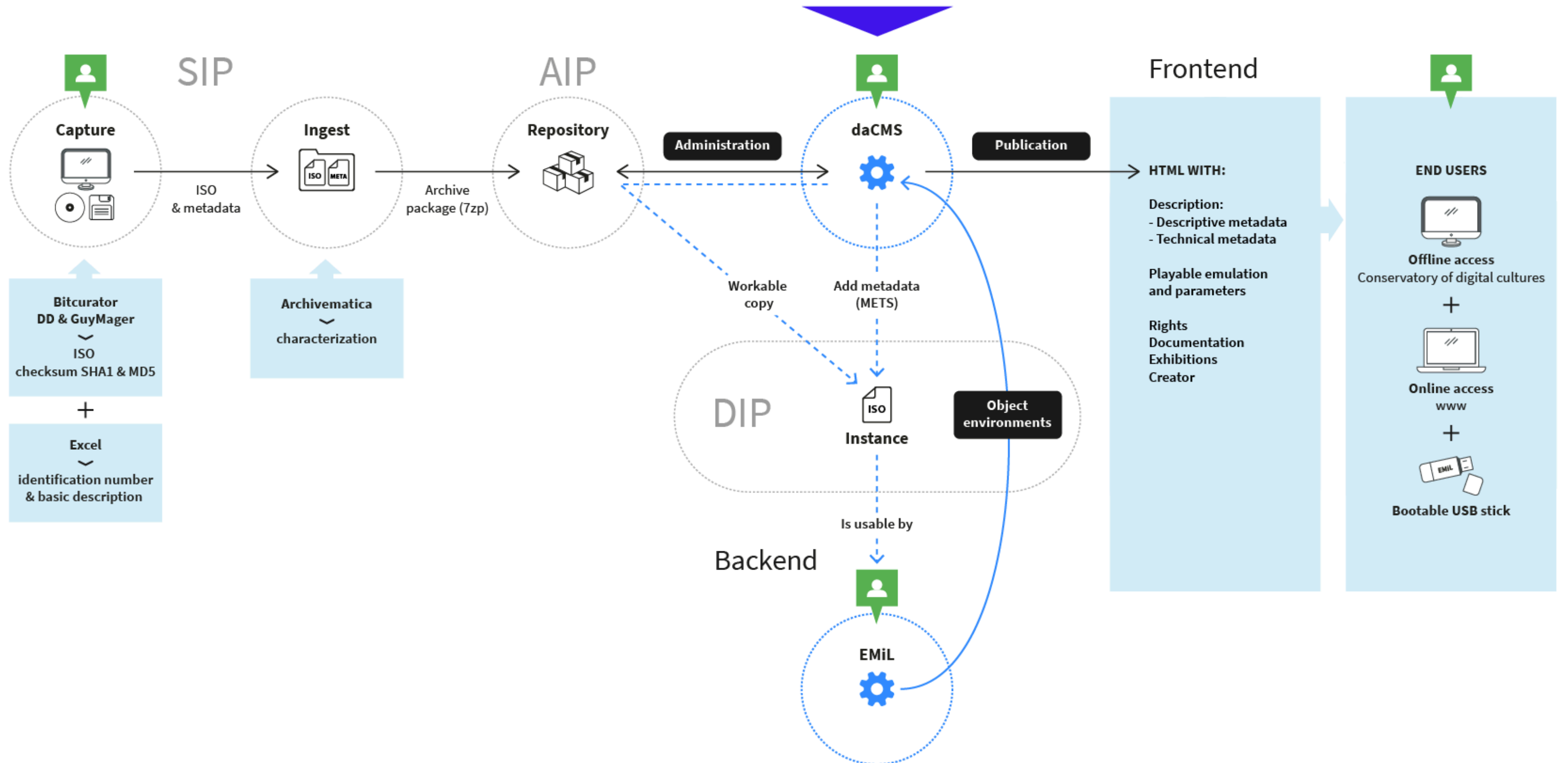


bwFla EMiL as back end application

Design, generate, test runnable Object Environments of Digital Artefacts using emulation.



Design of a daCMS with emulation built-in as part of its core design





Design of a daCMS with emulation built-in as part of its core design

ResurrectionLab Settings Users Admin Log Out

3e biennale d'art contemporain de Lyon: [emulation](#)


Manifestation Item **Emulation** Documentation Exhibitions Creator Tags **Save item**

Edit Object environment: **biennale_emul_macOS01** Date created: 05.10.2018 

Object ID:	3e-biennale-de-lyon	
Environment:	Apple Mac OS 7.5 -ResLab	
Emulator:	Sheepshaver	
Additional software:		

Note:
Environment with image copied on the desktop. Works very well.

Publish for platforms: **Publish for usb stick:**


Collection
Select Below 


Public
 Private

Delete item

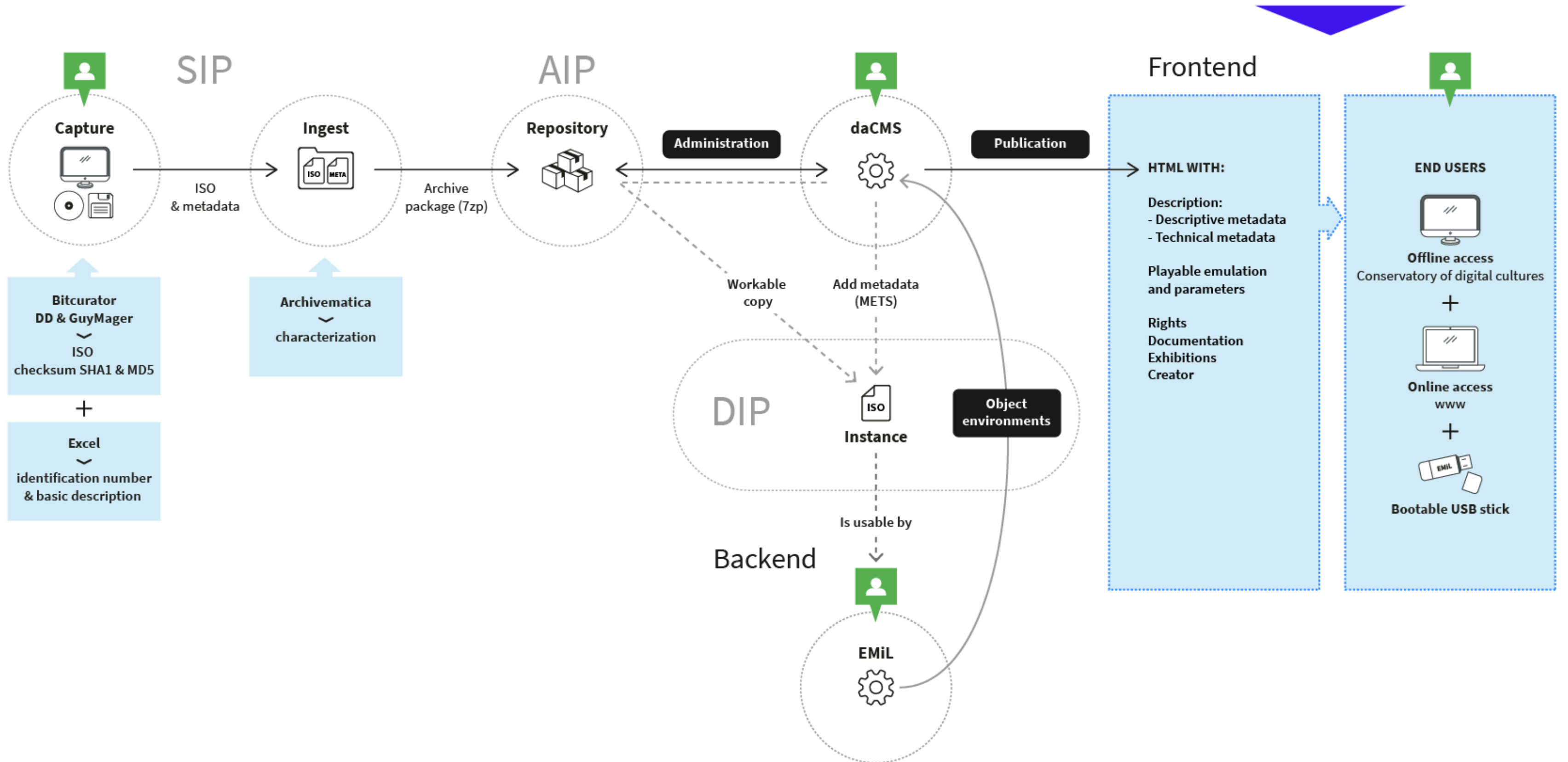
Date created
April 21, 2018

Date modified
April 21, 2018

Edit Object environment: **biennale_emul_PC** Date created: 23.09.2018 

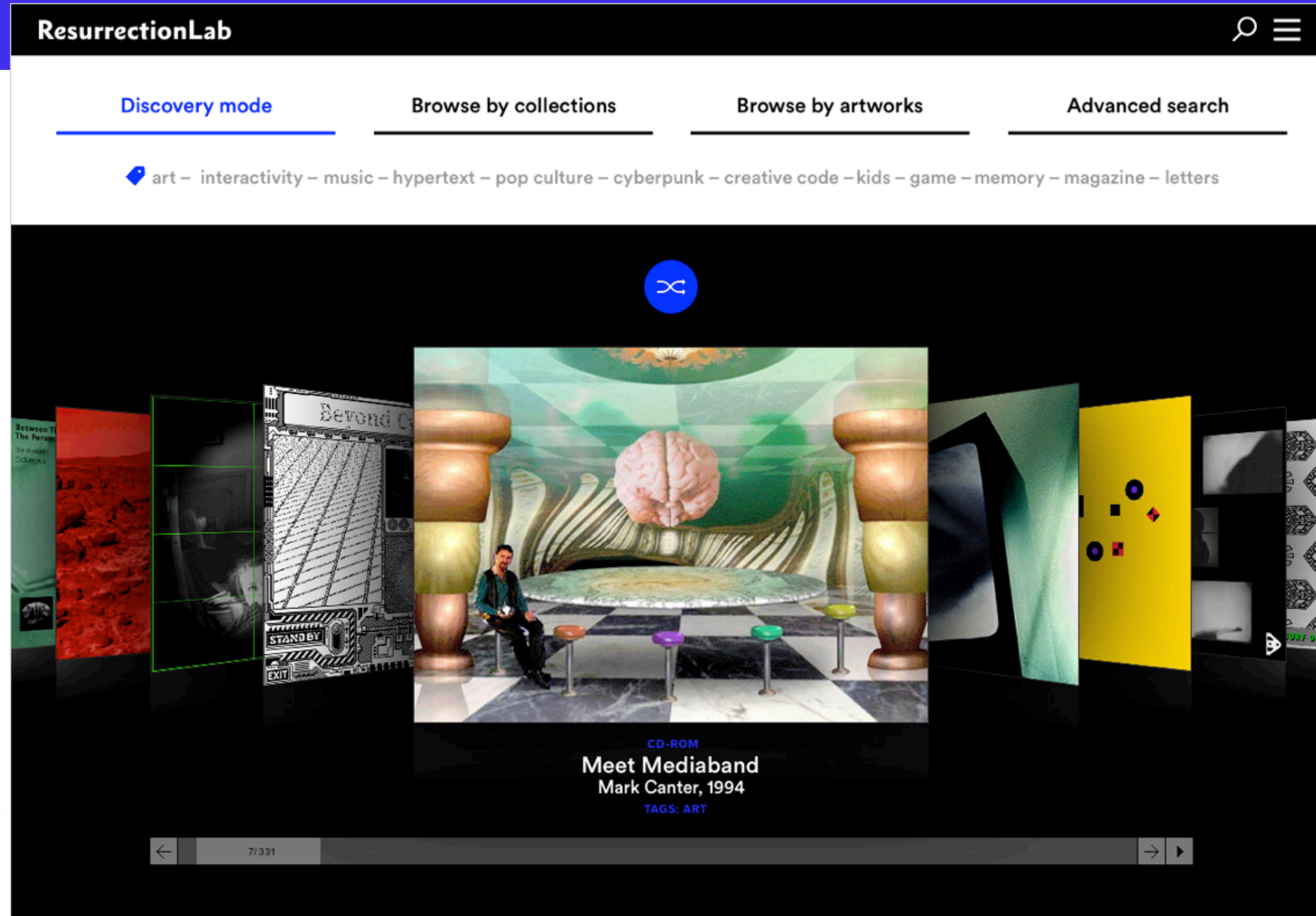
Object ID:	3e-biennale-de-lyon	
Environment:	Microsoft Windows 9x-ResLab	
Emulator:	Qemu	
Additional software:		

Design of front-end platforms



Design of front-end platforms: offline and online

Design scalable presentations targeted for neophyte or expert users



Design of front-end platforms: offline and online

Discovery mode: curated visits

ResurrectionLab 🔍 ☰


Discovery mode Browse by collections Browse by artworks Advanced search

CURATED VISIT & PRESENTATION

New extended territories for and by musicians

24.01.2019

by **Laurie Anderson**
Avant-garde artist, performer, composer, musician, singer, film director, multimedia creator

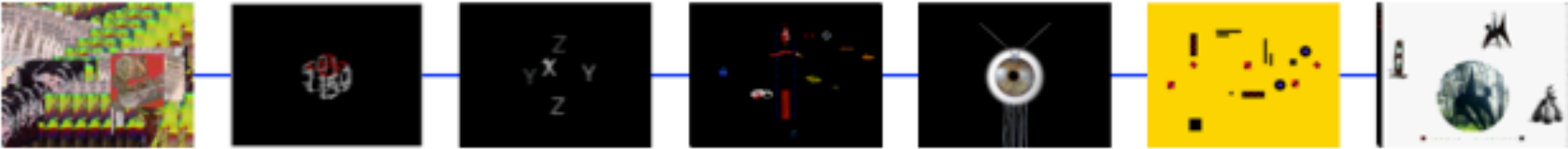


CURATED VISIT & PRESENTATION

A walk in the history of interactivity & art

24.01.2019

by **Jean-Louis Boissier**
Artist, curator, professor of aesthetics (University of Paris 8), and director of research (University of Paris 8; EnsadLab, École nationale supérieure des arts décoratifs, Paris)



Design of front-end platforms: offline and online

Discovery mode: curated visits

CURATED VISIT & PRESENTATION

New extended territories for and by musicians

by Laurie Anderson

Mauris non tempor quam, et lacinia sapien. Mauris accumsan eros eget libero posuere vulputate. Etiam elit elit, elementum sed varius at, adipiscing vitae est. Sed nec felis pellentesque, lacinia dui sed, ultricies sapien. Pellentesque orci lectus, consectetur vel posuere posuere, rutrum eu ipsum. Aliquam eget odio sed ligula iaculis consequat at eget orci. Mauris molestie sit amet metus mattis varius.

Donec sit amet ligula eget nisi sodales egestas. Aliquam interdum dolor aliquet dolor sollicitudin fermentum. Donec congue lorem a molestie bibendum. Etiam nisi ante, consectetur eget placerat a, tempus a neque. Donec ut elit urna. Etiam venenatis eleifend urna eget scelerisque. Aliquam in nunc quis dui sollicitudin ornare.

Lorem ipsum



CD-ROM

Jump!

David Bowie

◆ Keywords

Design of front-end platforms: offline and online

Discovery mode: curated visits

CURATED VISIT & PRESENTATION

New extended territories for and by musicians

by Laurie Anderson

Mauris non tempor quam, et lacinia sapien. Mauris accumsan eros eget libero posuere vulputate. Etiam elit elit, elementum sed varius at, adipiscing vitae est. Sed nec felis pellentesque, lacinia dui sed, ultricies sapien. Pellentesque orci lectus, consectetur vel posuere posuere, rutrum eu ipsum. Aliquam eget odio sed ligula iaculis consequat at eget orci. Mauris molestie sit amet metus mattis varius.

Donec sit amet ligula eget nisi sodales egestas. Aliquam interdum dolor aliquet dolor sollicitudin fermentum. Donec congue lorem a molestie bibendum. Etiam nisi ante, consectetur eget placerat a, tempus a neque. Donec ut elit urna. Etiam venenatis eleifend urna eget scelerisque. Aliquam in nunc quis dui sollicitudin ornare ac vitae

Jump!

CD-ROM
David Bowie
Keywords



DESCRIPTION & EMULATION

Donec facilisis tortor ut augue lacinia, at viverra est semper. Sed sapien metus, scelerisque nec pharetra id, tempor a tortor. Pellentesque non dignissim neque. Ut porta viverra est, ut dignissim elit elementum ut. Nunc vel rhoncus nibh, ut tincidunt turpis. Integer ac enim pellentesque, adipiscing metus id, pharetra odio.

Donec bibendum nunc sit amet tortor scelerisque luctus et sit amet mauris. Suspendisse felis sem, condimentum ullamcorper est sit amet, molestie mollis nulla. Etiam lorem orci, consequat ac magna quis, facilisis vehicula neque. Donec facilisis tortor ut augue lacinia, at viverra est semper. Sed sapien metus, scelerisque nec pharetra id, tempor a tortor.

Read more

>Lorem ipsum

CD-ROM
Freak Show
The Residents
Keywords



original hole there cut by the spades of the mates.

Read more



CD-ROM
neuf jouets optiques
Karel Doing, Pierre Bastien
Keywords

DESCRIPTION & EMULATION

In the tumultuous business of cutting-in and attending to a whale, there is much running backwards and forwards among the crew. Now hands are wanted here, and then again hands are wanted there. There is no staying in any one place; for at one and the same time everything has to be done everywhere.

It is much the same with him who endeavors the description of the scene. We must now retrace our way a little. It was mentioned that upon first breaking ground in the whale's back, the blubber-hook was inserted into the

Read more

References

1. There is much running backwards and forwards among the crew. www.cybercyber.org
2. The description of the scene. We must now retrace our way a little. It was mentioned that upon first breaking ground. More on "Don't be afraid: mooses are nice" website: www.dbaman.net
3. In the whale's back, the blubber-hook was inserted into the original hole there cut by the spades of the mates. But how did so clumsy and weighty a mass as that same hook get fixed in that hole? It was inserted there by my particular friend Queequeg.

AUTHOR

Laurie Anderson



1947 -

Avant-garde artist, performer, composer, musician, singer, film director, multimedia creator

Nam dapibus nisi vitae elit fringilla rutrum. Aenean sollicitudin, erat a elementum rutrum, neque sem pretium metus, quis mollis nisi nunc et massa. Praesent blandit, augue a posuere aliquam, arcu tortor feugiat turpis, quis lacinia augue sapien at tellus. Cras ut erat magna. Morbi nibh ante, condimentum vestibulum tempus a, tristique et velit. Sed semper aliquet ante. Quisque tempus arcu sapien, id convallis turpis dictum quis. Nunc commodo vitae risus sit amet sollicitudin. Sed id facilisis sem.

MORE INFORMATION

Back to list


Design of front-end platforms: offline and online

Browse by collections

ResurrectionLab 🔍 ☰

Discovery mode **Browse collections** Browse artworks Advanced search

SORT BY TITLE ⬇ CREATOR ⬇ DATE ⬇ « < 1 of 25 > »




*Le doux souvenir
de cette journée ne
coûtoit rien à ces aimables
filles; la tendre union qui
regnoit entre nous trois
valloit des plaisirs*

*plus vifs et n'est pu
subsister avec eux; nous
nous aimions sans mystère
et sans honte, et nous
voulions nous aimer
toujours ainsi.*

COLLECTION

**Documenting
contemporary art**

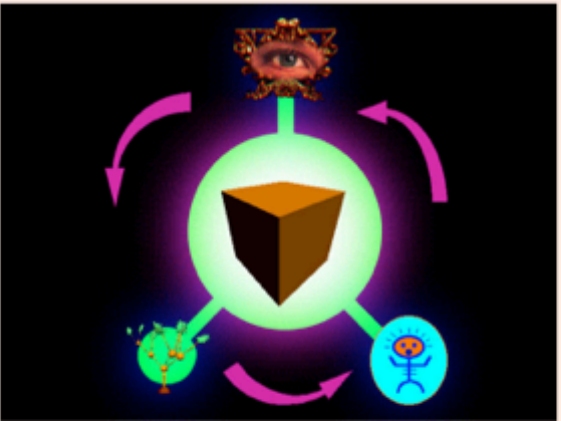
*Kogi Cosby sweater ethical squid irony disrupt,
organic tote bag gluten-free wolf typewriter
mixtape small batch. Pickled four Future
dreamcatcher plaid.*



COLLECTION

**Interactivity/Hypermedia
& Digital Aesthetics**


*Kogi Cosby sweater ethical squid irony disrupt,
organic tote bag gluten-free wolf typewriter
mixtape small batch. Pickled four Future
dreamcatcher plaid.*




COLLECTION

**Magazines and digital pop
culture**



*Kogi Cosby sweater ethical squid irony disrupt,
organic tote bag gluten-free wolf typewriter
mixtape small batch. Pickled four Future
dreamcatcher plaid.*






Design of front-end platforms: offline and online


Browse by artworks


ResurrectionLab  


Discovery mode Browse by collections **Browse by artworks** Advanced search

 art – interactivity – music – hypertext – pop culture – cyberpunk – creative code – kids – game – memory – magazine – letters

SORT BY TITLE ↕ CREATOR ↕ DATE ↕ << < 1 of 25 > >>

CD-ROM
Alire. Tome 1
Philippe Bootz, 1989
 *interactivity, hypertext, letters*

CD-ROM
An Eyewitness Account on the Landing on ...
GPS, José Manuel Palmeiro Rod, 1998
 *interactivity, fiction*

CD-ROM
BLAM! Tome 1
Eric Swenson, Keith Seward, 1994
 *Keywords*

CD-ROM

CD-ROM

CD-ROM

Design of front-end platforms: offline and online

Presentation, emulation and description of a work

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[Full description](#)
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[Exhibitions](#)
[Author](#)

CD-ROM

3e biennale d'art contemporain de Lyon

Jean-Louis Boissier, 1995



Mauris vitae ultricies metus, at condimentum nulla.

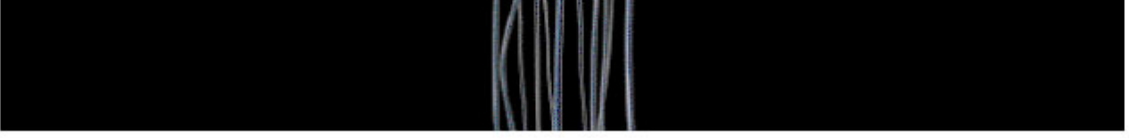
← 1/6 →

LAUNCH EMULATION

Design of front-end platforms: offline and online

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Mauris vitae ultricies metus, at condimentum nulla.

← 1/6 →

[LAUNCH EMULATION](#)

The cd-rom of the Third Lyon contemporary art Biennale (1995) proposes the works of 63 artists with interactive video interviews, photos, texts and audiovisual documents. The artists explore new technologies in reference to the art of the moving images, from cinema, television and virtual reality.

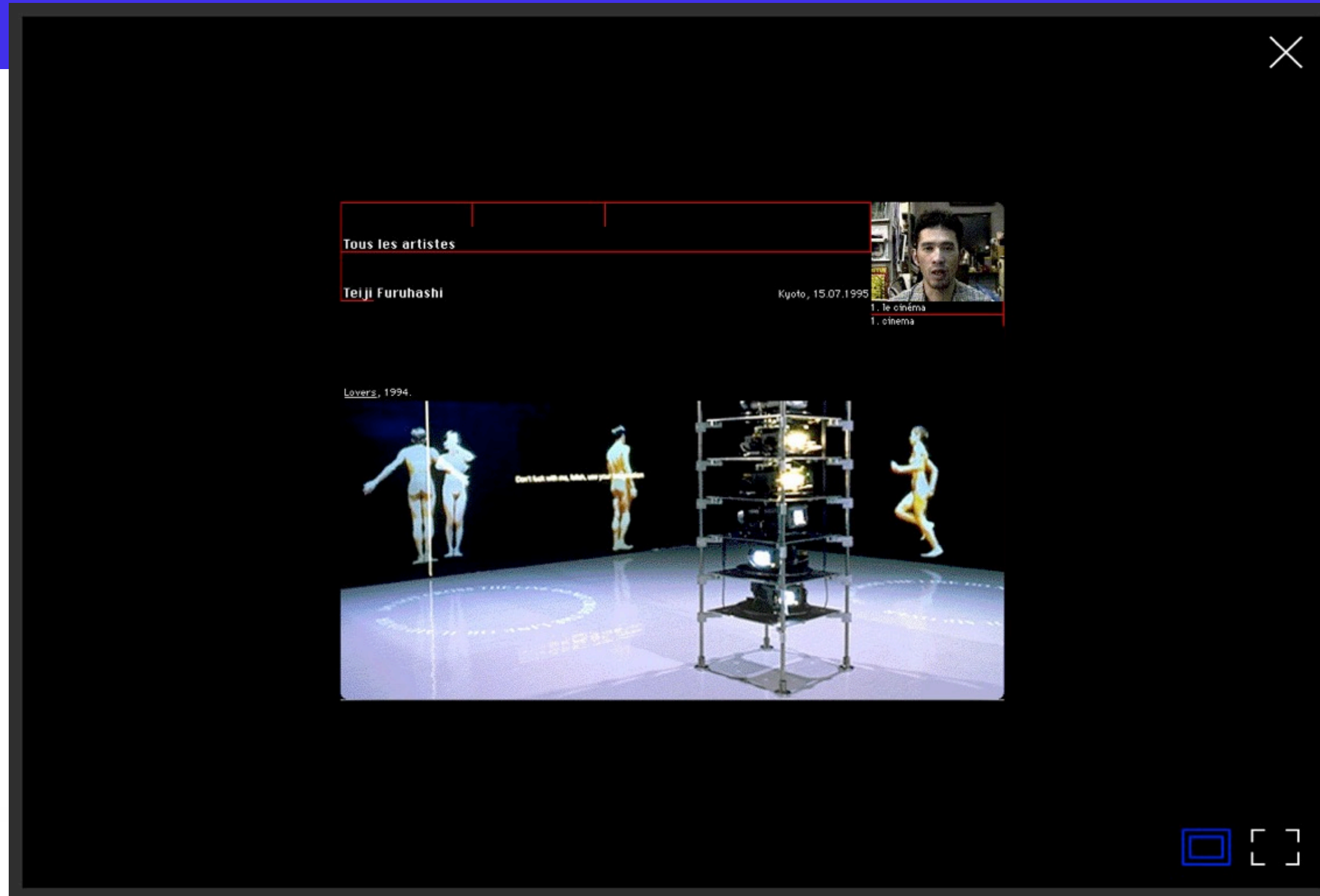
The cd-rom is an experimental new media work carried under the direction of Jean-Louis Boissier. Its design is innovant, matching the nature of the exhibited artworks using new technologies. The user interface is original: smart, hardly visible, without the usual control and navigation icons.

How to interact

The user interacts on the displayed media by rolling over, dragging, clicking to trigger the unfolding of other layers of information. The logic of navigation is computational, coming directly from the database query structure. And, for those artworks involving visitor's interactions, the cd-rom proposes an interactive interpretation of the visitor/work relation.

Design of front-end platforms: offline and online

Presentation, emulation and description of a work



Design of front-end platforms: offline and online

Presentation, emulation and description of a work

Presentation	<h3>Full description</h3>		
Full description			
Documentation			
Exhibitions			
Author			
Manifestation	Item		
Unique Identifier	(Provided by Archivematica)	Identifier	ISBN: 90-5544-111-2
Title	3e biennale d'art contemporain de Lyon	Item type	Representation
Authorship statement	Jean-Louis Boissier	Physical description	Cardboard case (210 x 14,3 mm), plastic tray, booklet, 120 mm optical disc
Creator	Université Paris 8, Laboratoire d'Esthétique et Technologie de l'Interactivité Realisation: Jean-Marie Dallet, redaction: Liliane Terrier, documentation: Françoise Agez. Assistants: Maren Köpp, Hajime Takeuchi, Sandy Tourle, Isabel Debry, Jean-François Rey.	Edition statement	Edition of 1000 copies
Creator	Magic Media Studio Realisation and development: Yves Bernard, Frédéric Durieu, Pascal Meurisse, François Bourgaux.	Condition	Very good
Publisher	Réunion des musées nationaux	Instruction	This CD-ROM needs Quicktime (included on the disc), please refer to the readme files for installation instructions.
Producer	Réunion des musées nationaux	Native configuration	
Date created	1995	Computer	Apple, Macintosh LC III or above, 8 MB RAM, dual speed CD-ROM driver
Date published	1995	Operating system	Apple, Mac OS 7.1 or above
Subject	Digital and contemporary Art, exhibition catalogue	Computer	Multimedia PC/PC compatible (MPC) 386 SX, 8 Mb RAM, dual speed cd-rom drive
Content type	Interactive video interviews, photos, texts and audiovisual documents	Operating system	Microsoft, Windows 3.1 or above
Media type	Computer	Processor	Intel, Pentium (II), 400mHz
Carrier type	Computer disc, CD-ROM	Application	Apple, Quicktime, extension included
Language	French, English	Holder	
Place of production	France	Rights statement	All rights reserved to the artists and publishers
Place of publication	France	Owner	iMAL
		Location	iMAL, Brussels, Belgium

Design of front-end platforms: offline and online

Presentation, emulation and description of a work

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[Author](#)



DOCUMENTATION

The first art catalogue on cd-rom

written by Marie Lechner

Mauris non tempor quam, et lacinia sapien. Mauris accumsan eros eget libero posuere vulputate. Etiam elit elit, elementum sed varius at, adipiscing vitae est. Sed nec felis pellentesque, lacinia dui sed, ultricies sapien.

Mauris non tempor quam, et lacinia sapien. Mauris accumsan eros eget libero posuere vulputate. Etiam elit elit, elementum sed varius at, adipiscing vitae est. Sed nec felis pellentesque, lacinia dui sed, ultricies sapien. Pellentesque orci lectus, consectetur vel posuere posuere, rutrum eu ipsum. Aliquam eget odio sed ligula iaculis consequat at eget orci.

Mauris molestie sit amet metus mattis varius. Donec sit amet ligula eget nisi sodales egestas. Aliquam interdum dolor aliquet dolor sollicitudin fermentum. Donec congue lorem a molestie bibendum.

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DOCUMENTATION

An interactive interpretation of the visitor/work relation

Design of front-end platforms: offline and online

Presentation, emulation and description of a work

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+

DOCUMENTATION

An interactive interpretation of the visitor/work relation

written by Ajime Takeuchi

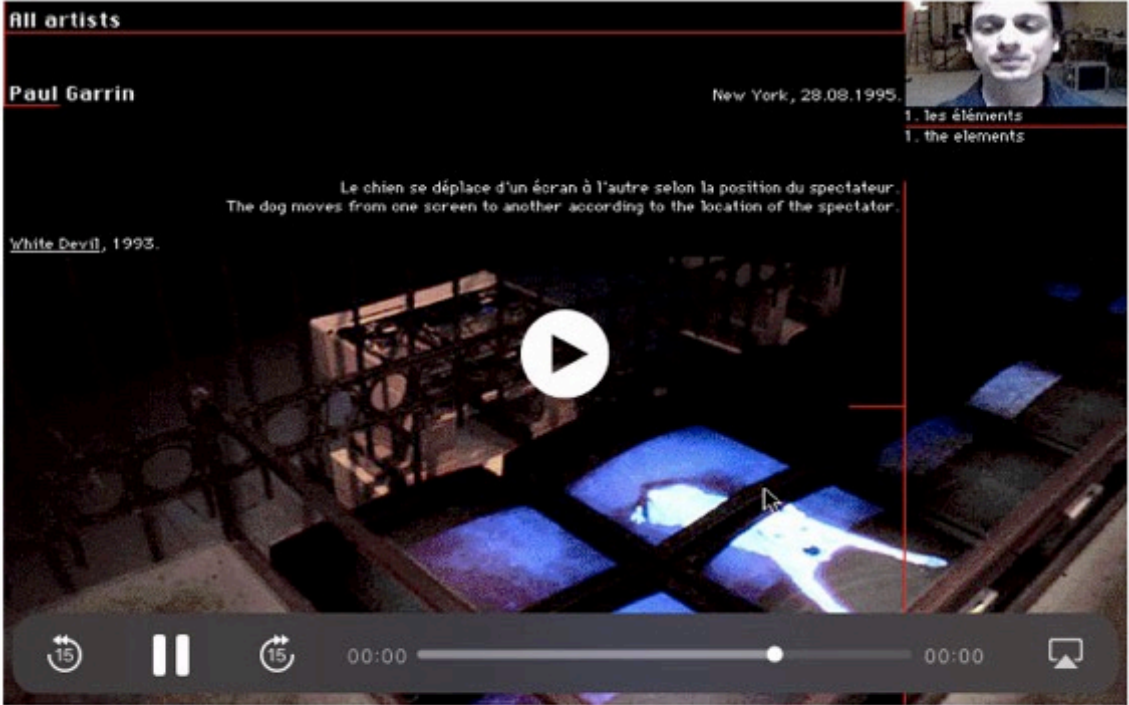
All artists

[Paul Garrin](#) New York, 28.08.1995.

1. les éléments
1. the elements

Le chien se déplace d'un écran à l'autre selon la position du spectateur.
The dog moves from one screen to another according to the location of the spectator.

[White Devil](#), 1993.



Mauris non tempor quam, et lacinia sapien. Mauris accumsan eros eget libero posuere vulputate. Etiam elit elit, elementum sed varius at, adipiscing vitae est. Sed nec felis pellentesque, lacinia dui sed, ultricies sapien.

[Read more](#)

Design of front-end platforms: offline and online

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Exhibitions



Welcome to the future

19 March - 26 April 2015, iMAL, Brussels

Vestibulum rutrum quam vitae fringilla tincidunt. Suspendisse nec tortor urna. Ut laoreet sodales nisi, quis iaculis nulla iaculis vitae. Donec sagittis faucibus lacus eget blandit. Mauris vitae ultricies metus, at condimentum nulla. Donec quis


Design of front-end platforms: offline and online

Presentation, emulation and description of a work

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CREATOR


Jean-Louis Boissier




1945 -

Artist, curator, professor of aesthetics (University of Paris 8), and director of research (University of Paris 8; EnsadLab, École nationale supérieure des arts décoratifs, Paris).

Nam dapibus nisl vitae elit fringilla rutrum. Aenean sollicitudin, erat a elementum rutrum, neque sem pretium metus, quis mollis nisl nunc et massa. Praesent blandit, augue a posuere aliquam, arcu tortor feugiat turpis, quis lacinia augue sapien at tellus. Cras ut erat magna. Morbi nibh ante, condimentum vestibulum tempus a, tristique et velit. Sed semper aliquet ante. Quisque tempus arcu sapien, id convallis turpis dictum quis. Nunc commodo vitae risus sit amet sollicitudin. Sed id facilisis sem.



[MORE INFORMATION](#) 

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Design of front-end platforms: offline and online

Advanced search


ResurrectionLab  

Discovery mode Browse by collections Browse by artworks **Advanced search**

Advanced search with one or more words in the following fields. To add a field click on the sign "+".

And 	Year 	1997	+
And 	Collection 	All 	
	Format 	Select a format 	

- 2-inch Floppy Disk
- 8-inch Floppy Disk
- 3.5-inch Floppy Disk (DD)
- 3.5-inch Floppy Disk (HD)
- ✓ 3.5-inch Floppy Disk (SD)
- 3.5-inch Hard Disk
- 3.5-inch Magneto-Optical Disk
- 5.25-inch Apple Disk II

SEND THE REQUEST 

USB stick

Bootable on x86 PC packaged in old computer case with vintage peripherals (CRT, mouse, keyboard)



*My Boyfriend Came Back From The War, Olia Lialina (1996)
Mockup vintage PC as exhibited at HeK, Basle (2016)
(using NUC Intel miniPC and EMiL/bwFLA)*

Resurrection Lab

Thank you!

iMAL www.imal.org - resurrectionlab@imal.org

PACKED www.packed.be

More info on <http://imal.org/en/project/resurrectionlab>