



functional
access for
digital
collections:
**Emulation
as a Service**

bwFLA: Emulation as a Service

Remote emulation framework:

- allows for cloud deployment
- runs legacy software inside a web browser

presentation outline

- any CD-ROMs?
- Rhizome & NDSR-NYC
- **Emulation-as-a-Service** case study: Theresa Duncan's CD-ROMs
- workshop: Puppet Motel

documentation & the bwFLA demo server

go to: <https://github.com/anyformation>

- workshop instructions & links
- how to image CD-ROMs

OR

go directly to bwfla demo server:

<http://demo.bw-fla.uni-freiburg.de/>

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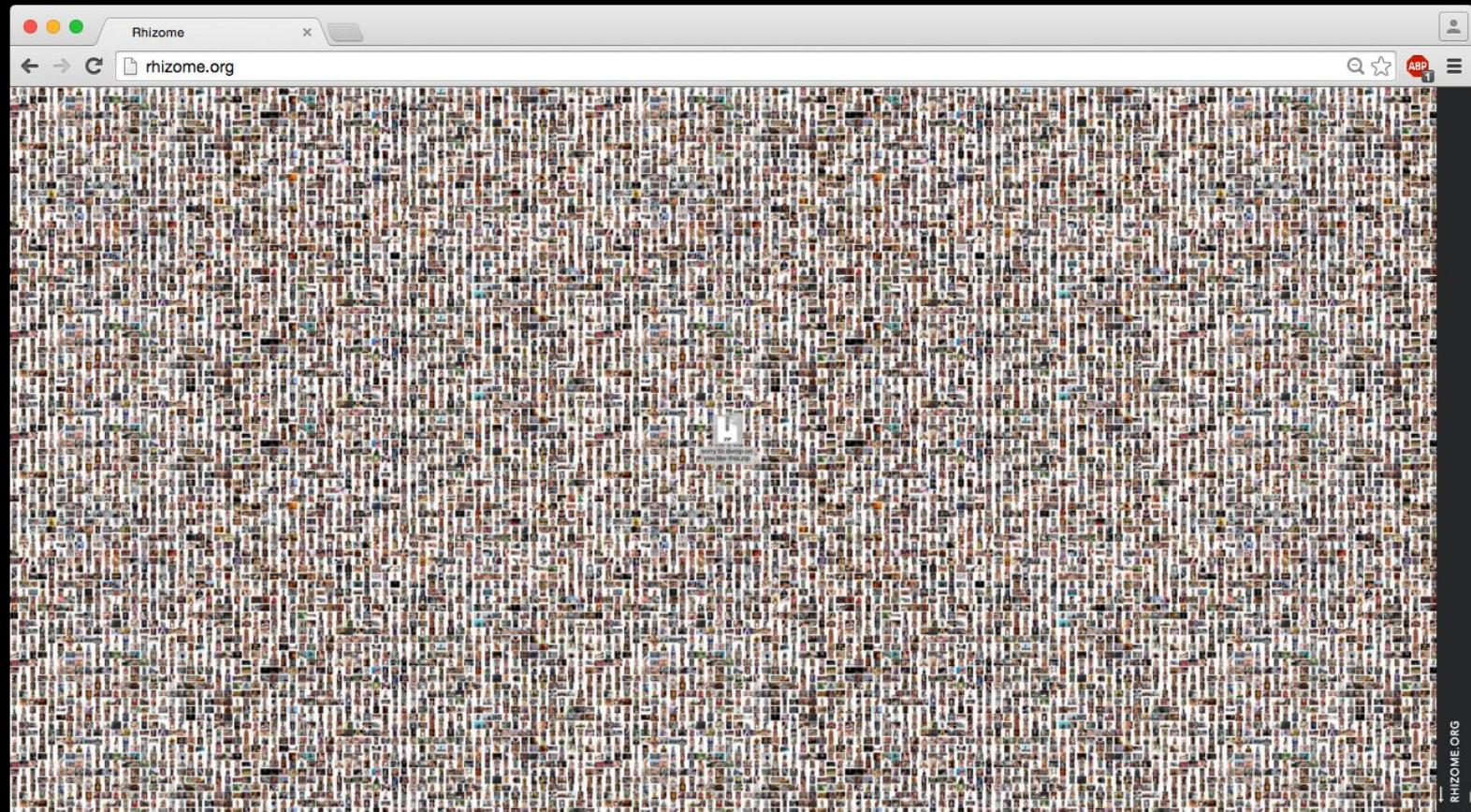
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The National Digital Stewardship Residency New York





. ART
. BLOG
. EVENTS
. COMMUNITY
. WHAT WE DO

. SEARCH . LOGIN

FIRST LOOK: EITHER
WE INSPIRE OR WE
EXPIRE

FIRST LOOK: THE
THERESA DUNCAN
CD-ROMS

I link therefore I am

RHIZOME

COLLECTION:
HYPERTEXT

FIRST LOOK: HORNY
LIL FEMINIST

SPLASHBACK:
RHIZOME'S SPLASH
PAGES, 1998-2002

FIRST LOOK:
EXCELLENCES &
PERFECTIONS

System as
Difference

FIRST LOOK:
POETRY AS
PRACTICE

FIRST LOOK:
BRUSHES

ARTBASE: EXPLORE THE FULL ARCHIVE



ARTBASE: EXPLORE THE FULL ARCHIVE

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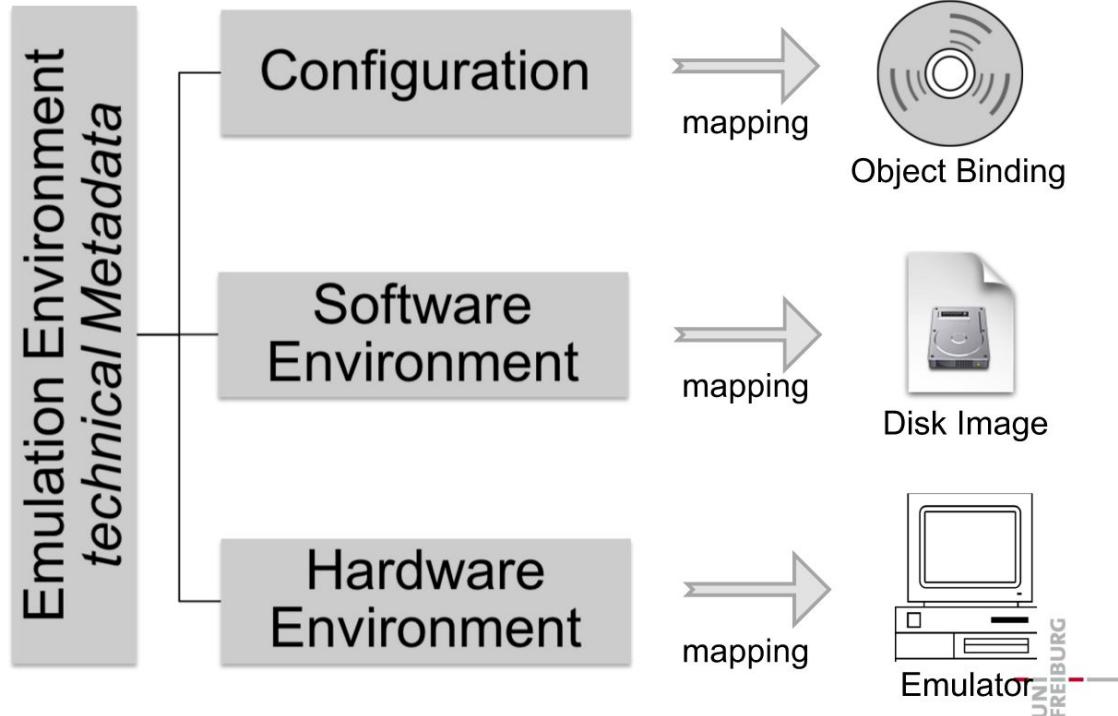


image source: “*Emulation as a Service*: A Preservation & Access Tool for born-digital content.” Presentation by Klaus Rechert, October 2015.

bwFLA: Emulation as a Service

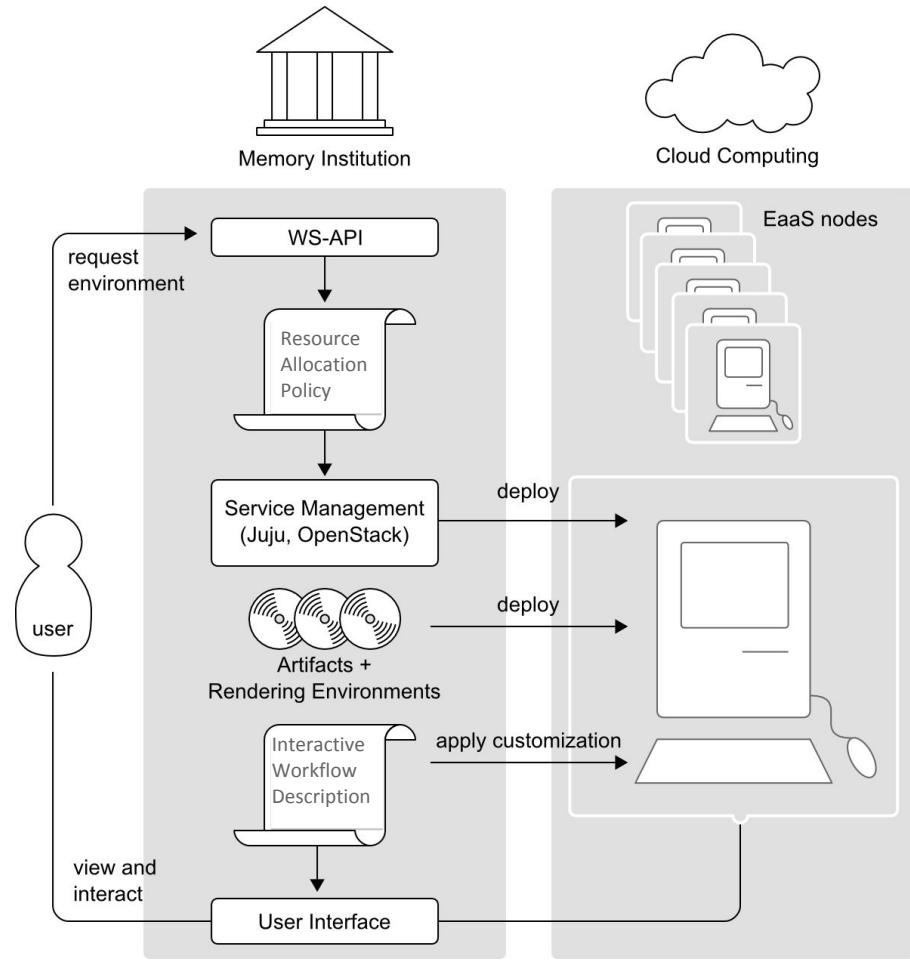


image source: bwfla website <http://bw-fla.uni-freiburg.de/eaaS.html>

bwFLA: Emulation as a Service

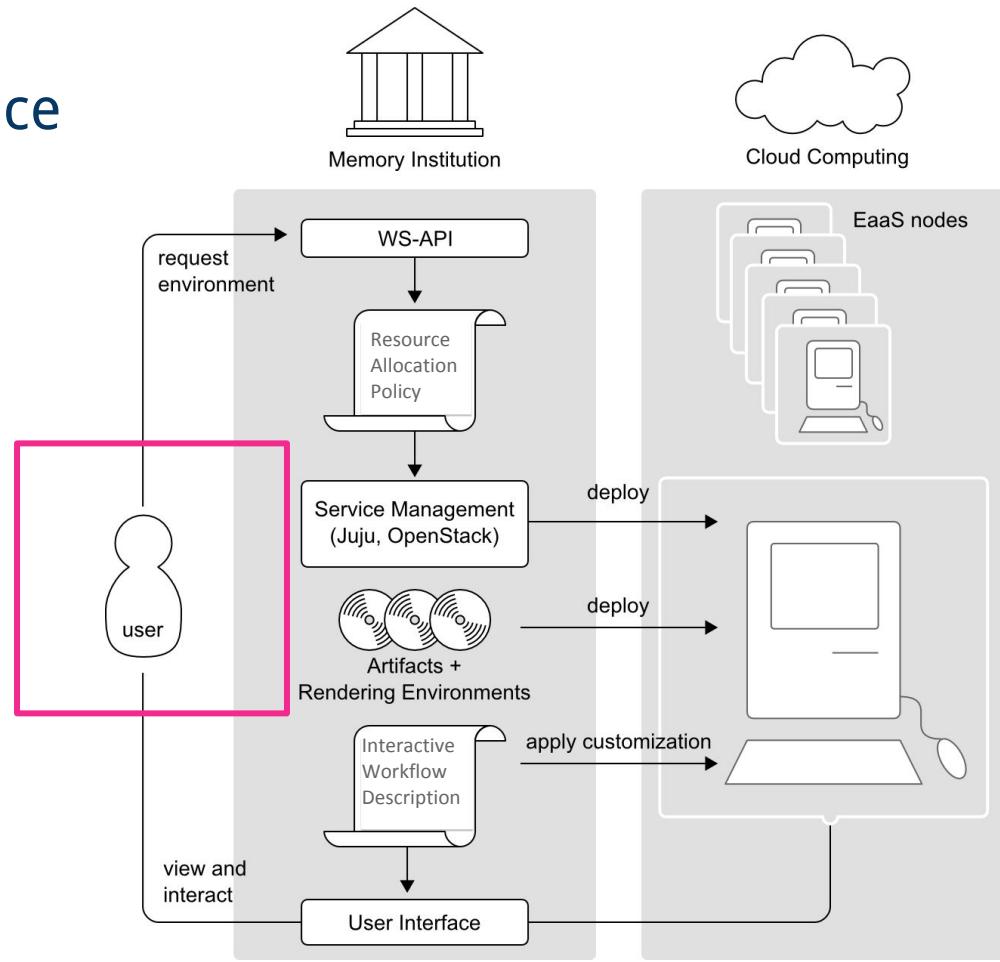


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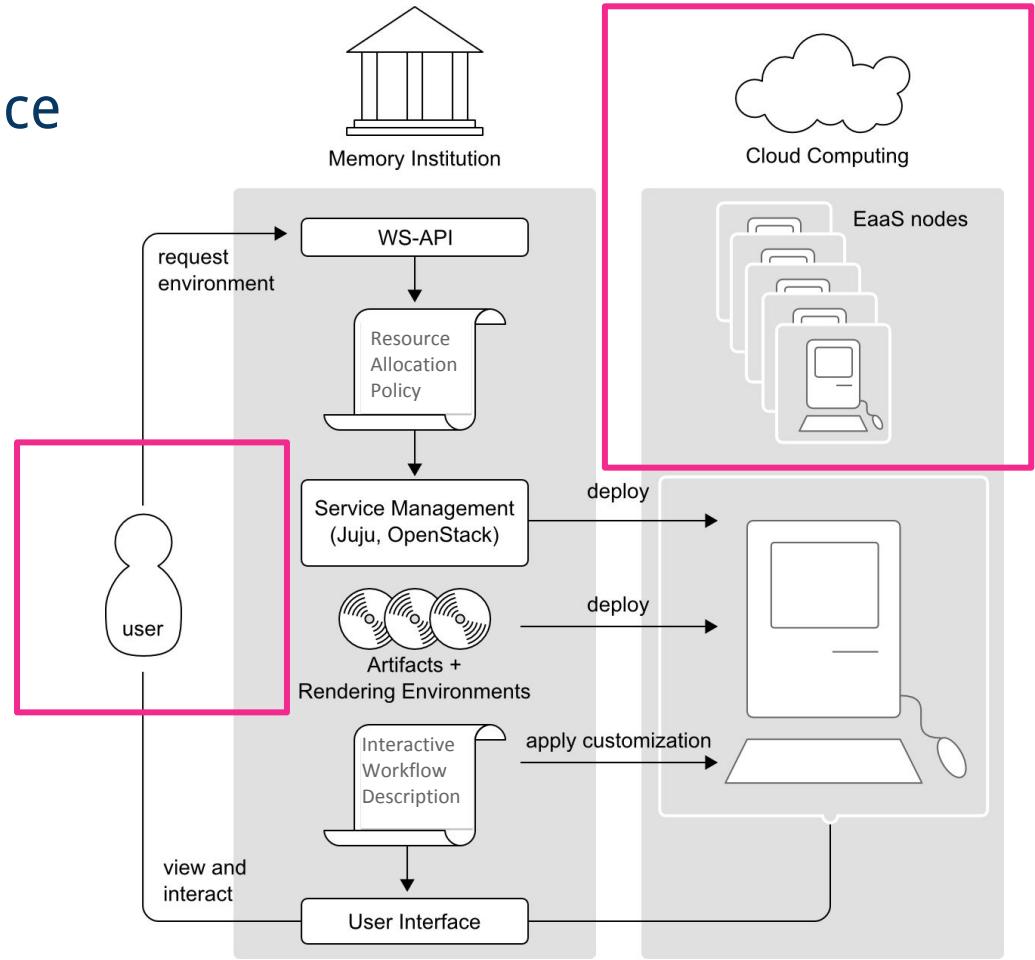


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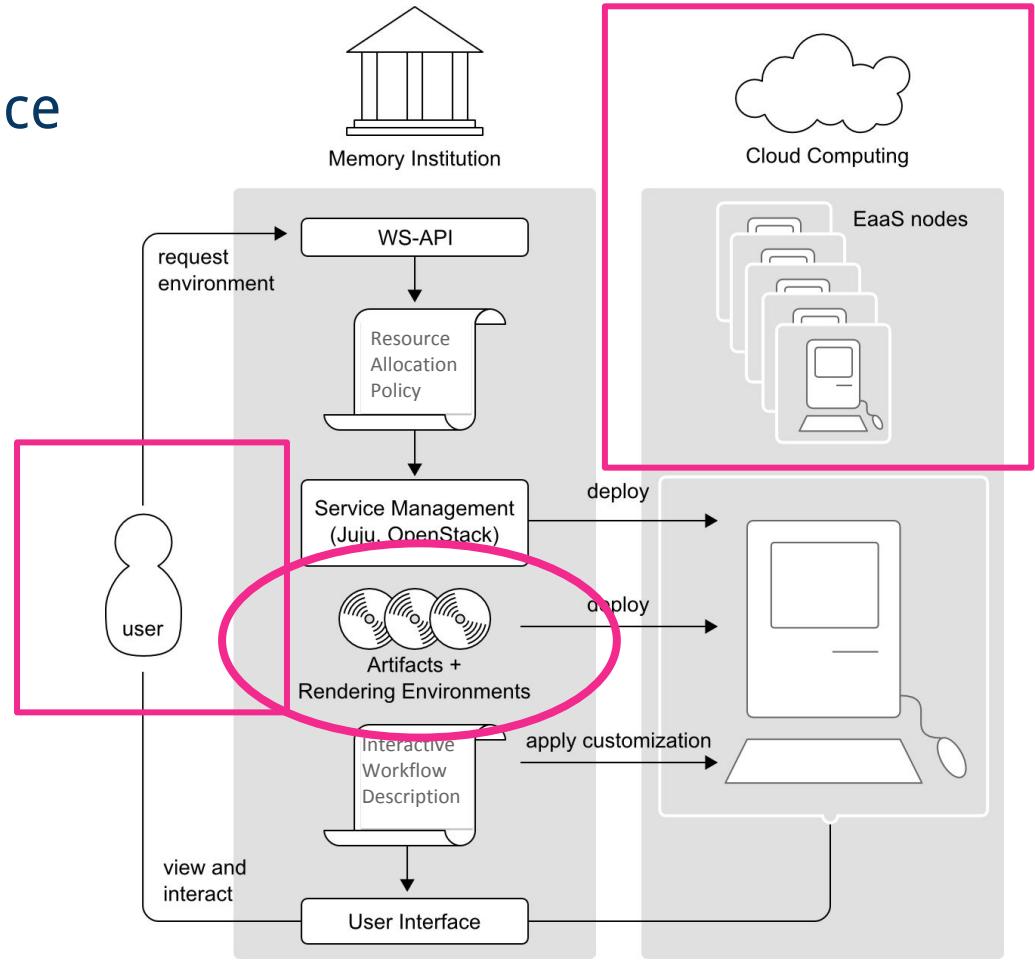


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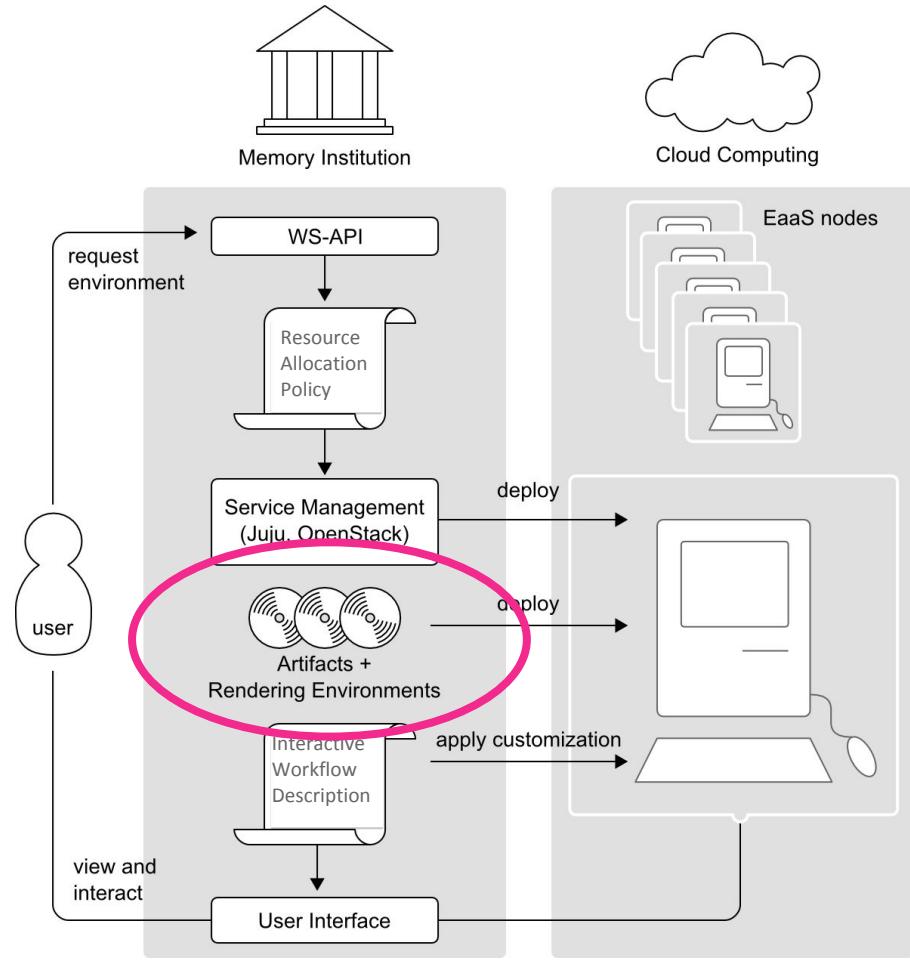


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bwFLA Basic System Enviro

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-miniwf/WF...

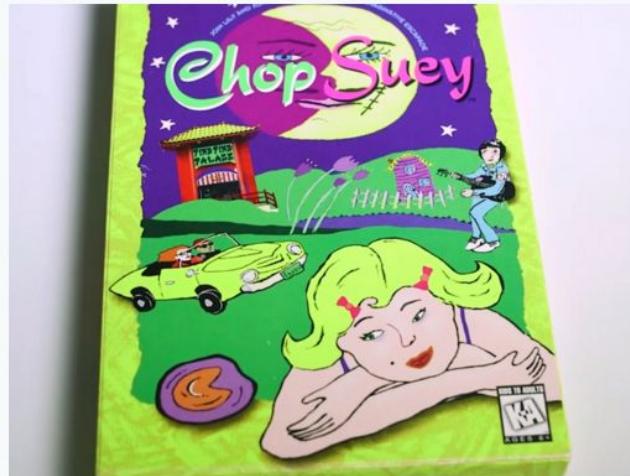
bwFLA Basic System Environments

Home

Emulator / Image Choice

BasiliskII	
VirtualBox	Apple Mac OS 6
DosBox	Apple Mac OS 7
Hatari	Apple Mac OS 7.5
Qemu	Bomb Iraq 8bbp (D)
SheepShaver	Bomb Iraq (S)
	Flusser - Die Schrift (Bodenlos) (S)
	Flusser-Bodenlos (S)

Theresa Duncan CD-ROMs: Visionary Videogames for Girls



Three pioneering feminist videogames have fallen into obscurity—help us save them and make them playable for free, online.

Created by

Rhizome



463 backers pledged \$20,740 to help bring this project to life.

[Campaign](#)[Updates \(9\)](#)[Comments \(7\)](#)[Share this project](#)

LIVE NOW: The Theresa Duncan CD-ROMs

Just now, The Verge premiered the restored versions of the Theresa Duncan CD-ROMs. Go play *Chop Suey*, *Smarty*, and *Zero Zero* in their original

April 17

PREVIOUS STORY

Orphan Black's third season complicates its pulpy joys

NEXT STORY

The single-person social network is a strangely beautiful thing

ENTERTAINMENT GAMING REPORT

6

COMMENTS

The girl game archival project that's rewriting geek history

Resurrecting Theresa Duncan's groundbreaking interactive art

By Adi Robertson on April 17, 2015 09:04 am [Email](#) [@thedextriarchy](#)

[f Share on Facebook \(597\)](#)[t Tweet \(414\)](#)[in Share \(19\)](#)[p Pin \(7\)](#)

It was the mid-'90s, and to many people, video games were synonymous with derivatives of *Doom* and *Quake*. "Zip through the aisles at the local computer store and the mayhem mounts quickly," *The New York Times* wrote, assessing the computer gaming landscape. "*Ravage*, *No Flesh Shall Be Spared*, and *Assassin* ('Shoot first, think fast... or get smoked') are typical CD-ROM titles." But a charismatic designer named Theresa Duncan offered something different.

THE LATEST HEADLINES



EPA will test all new diesel cars on actual roads after Volkswagen emissions scandal



VW admits false carbon dioxide readings on 800,000 vehicles after engineer steps forward



The Packers are terrible and Aaron Rodgers took it out on a Surface



Snapchat now gets over six billion views a day, up three times from this spring



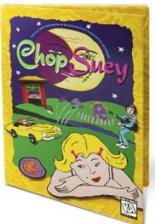
This Month in Luxury: billionaire doomsday bunkers



Star Wars: The Force Awakens gets its first TV spot: 'I know your eyes'



Narrated by a young David Sedaris, their non-linear stories, folk-art stylings, and cultural references were cute without being condescending. "We like dime-store, homemade-looking things," **Duncan told *Entertainment Weekly***, which named her and Gesue's *Chop Suey* its **CD-ROM of the year** in 1995, "things that look like they might be made by kids for the school play." The discs are more a series of magical realist vignettes than a traditional video game. In *Smarty*, for example, players experience the summer vacation of protagonist Mimi Smartypants. Every scene, whether it takes place in a cinema or a bubble bath, is full of hidden animations and opportunities for play. The tiny garage holds a jewelry-making kit, a paint-by-numbers set, a working pinball table, and a coconut that briefly transports the player to Hawaii.



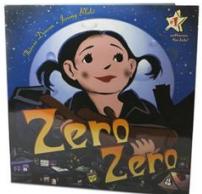
Chop Suey
1995

Play



Smarty
1996

Play



Zero Zero
1997

Play

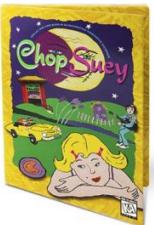
► [About cloud-based emulation](#)

RHIZOME
The Theresa Duncan CD-ROMs

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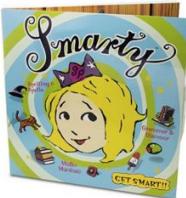


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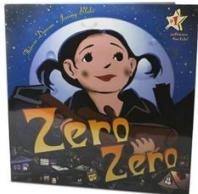
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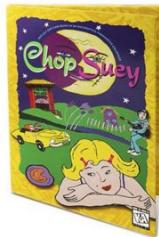
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Rhizome emulator
server embedded
in The Verge website

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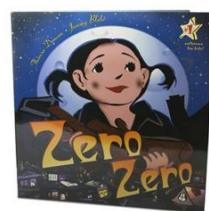
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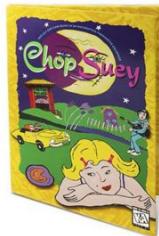
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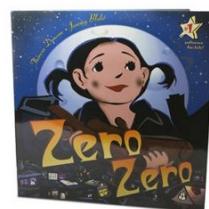
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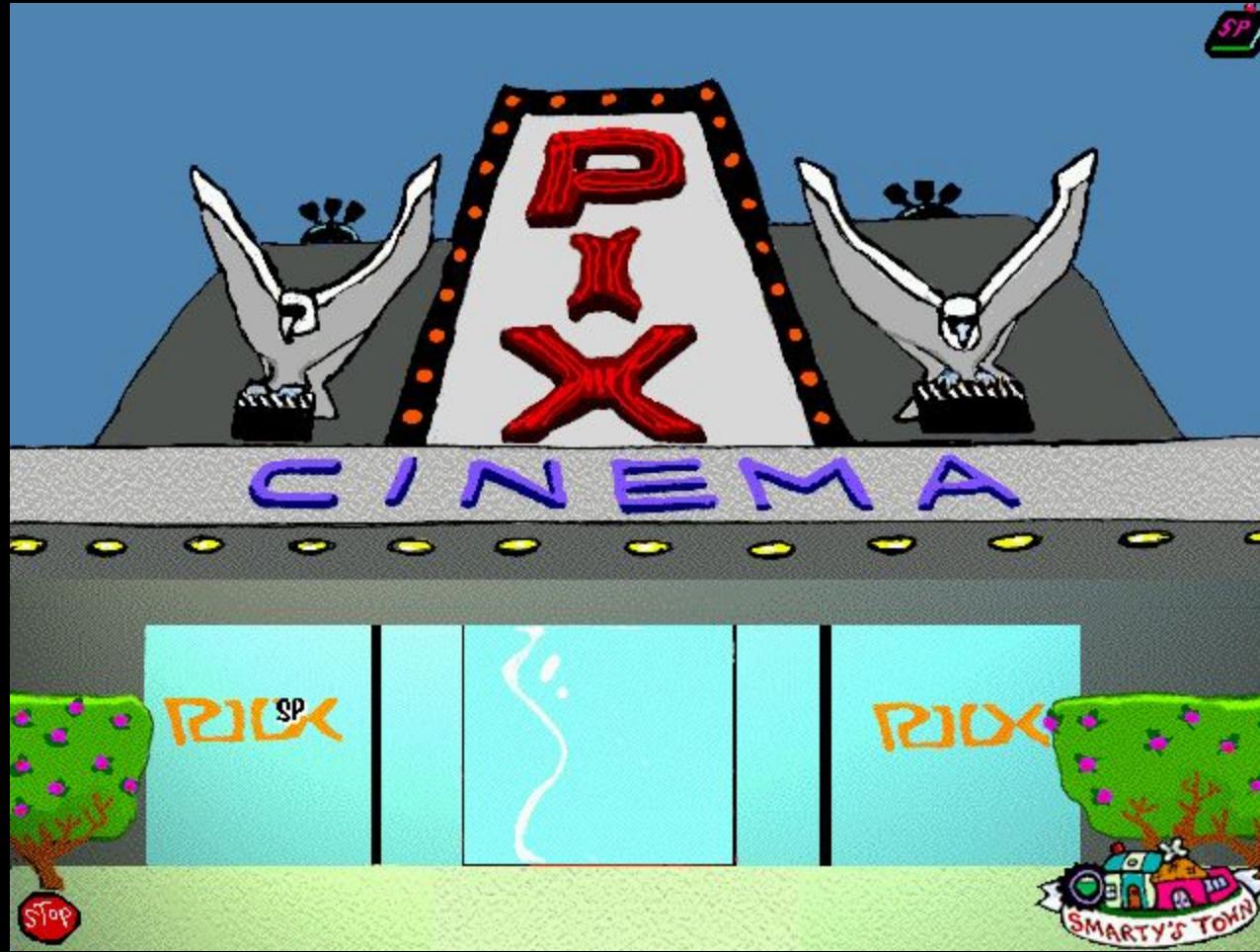
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These titles represent an important counter balance in the "pink gaming" explosion of 1990's girls' CD-ROMs that were dominated by the template of the highly successful Barbie series, perpetuating a very traditional image of girlhood.

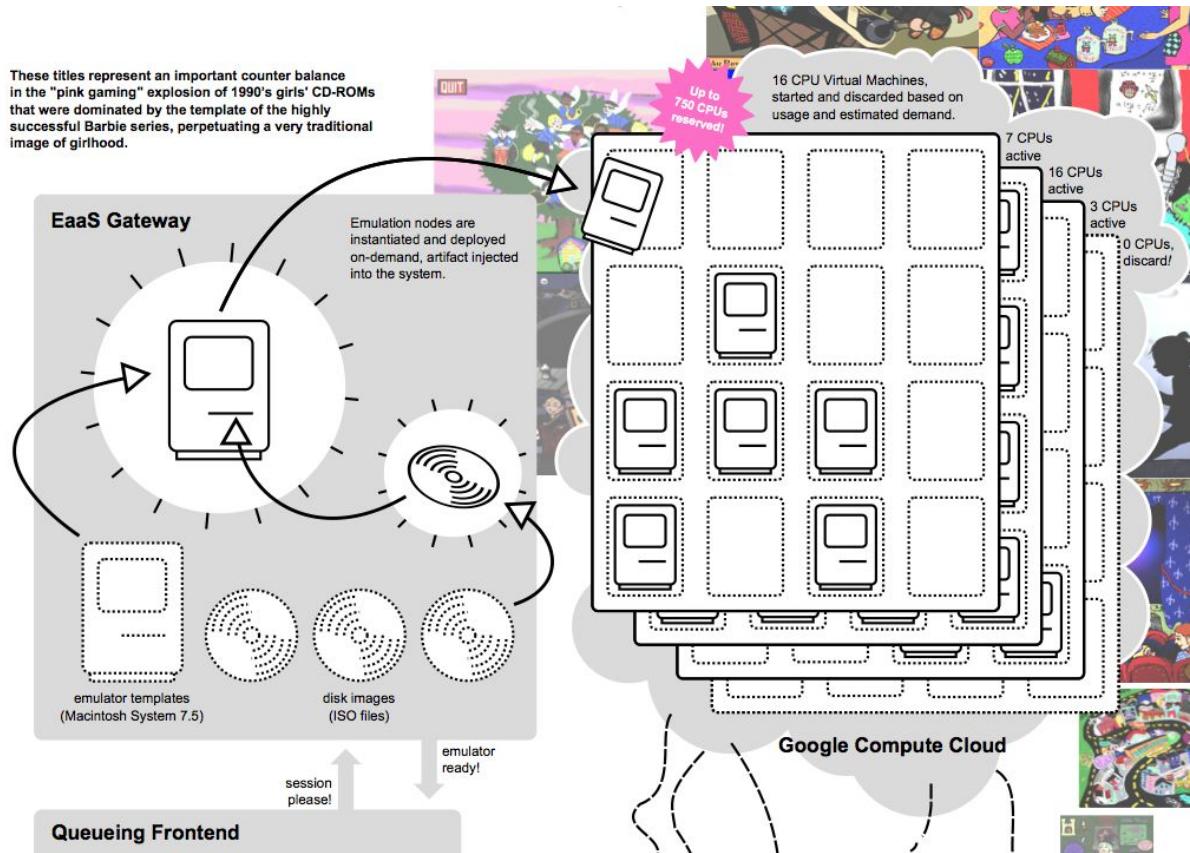


image source: Dragan Espenschied, Isgandar Valizada, Oleg Stobbe, Thomas Liebetraut and Klaus Rechert: (Re-)publication of Preserved, Interactive Content -- Theresa Duncan CD-ROMs: Visionary Videogames for Girls

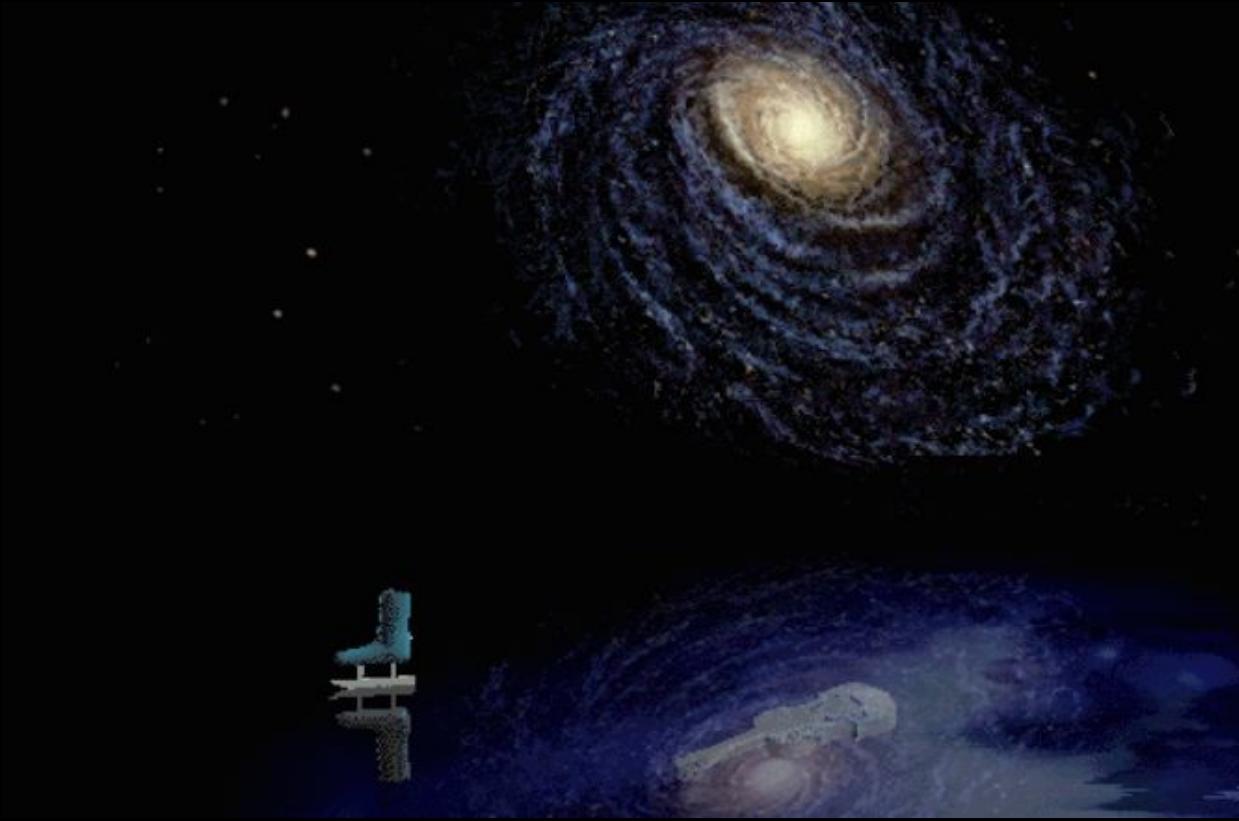




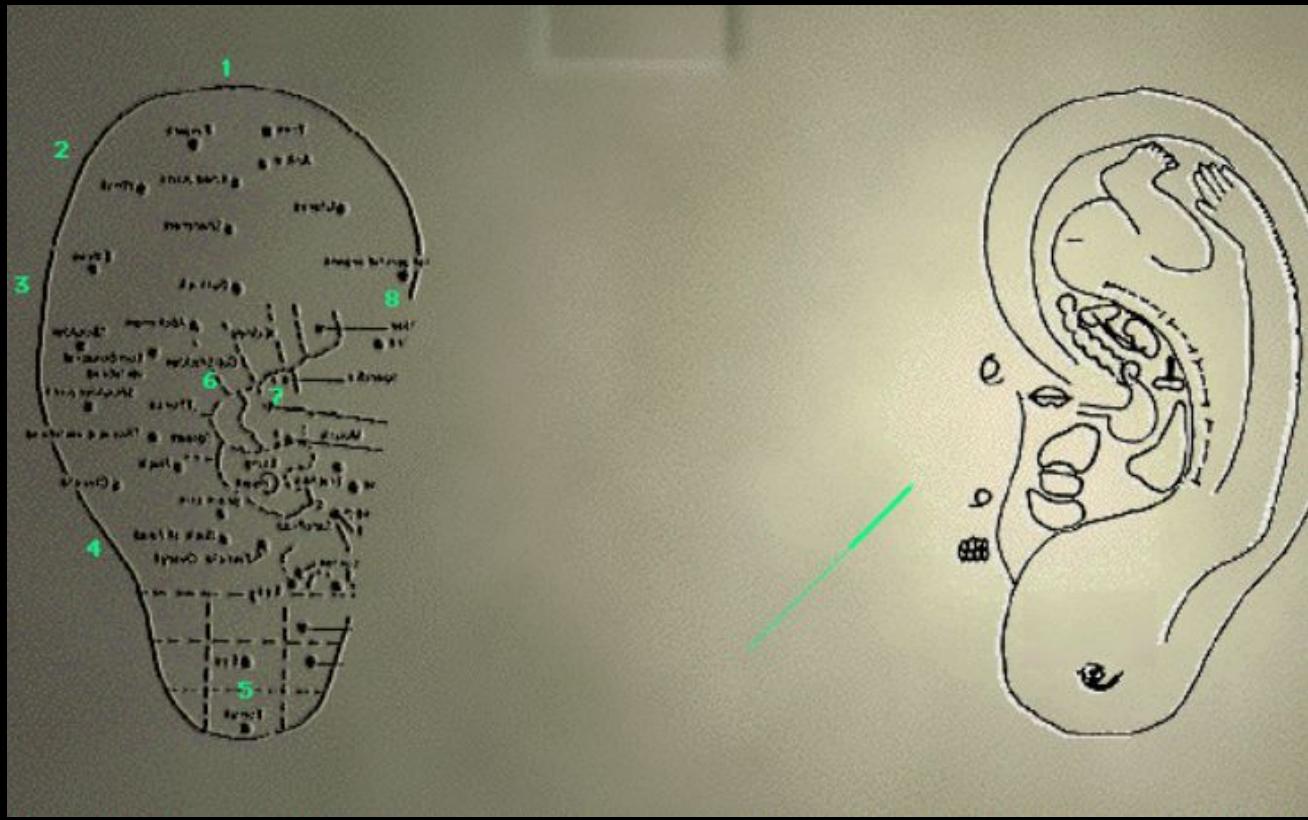


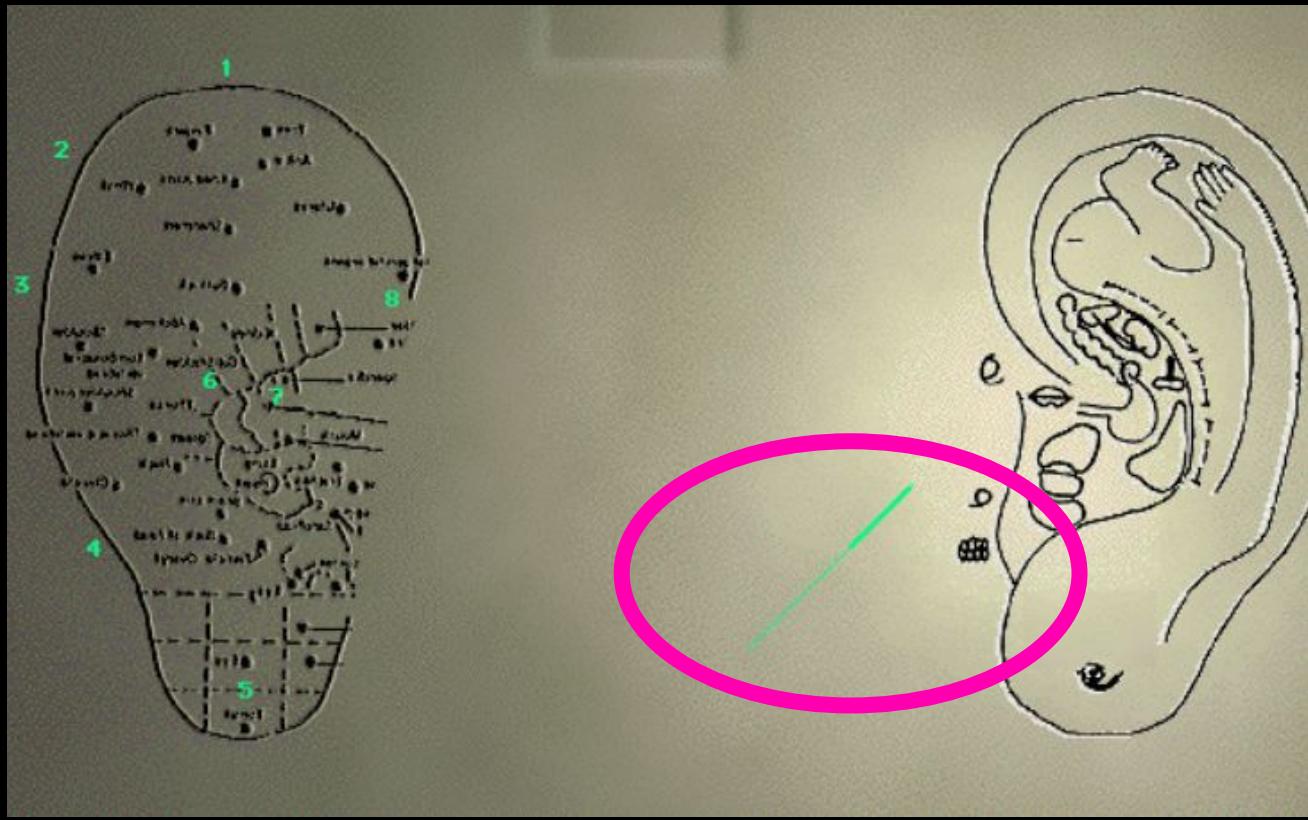


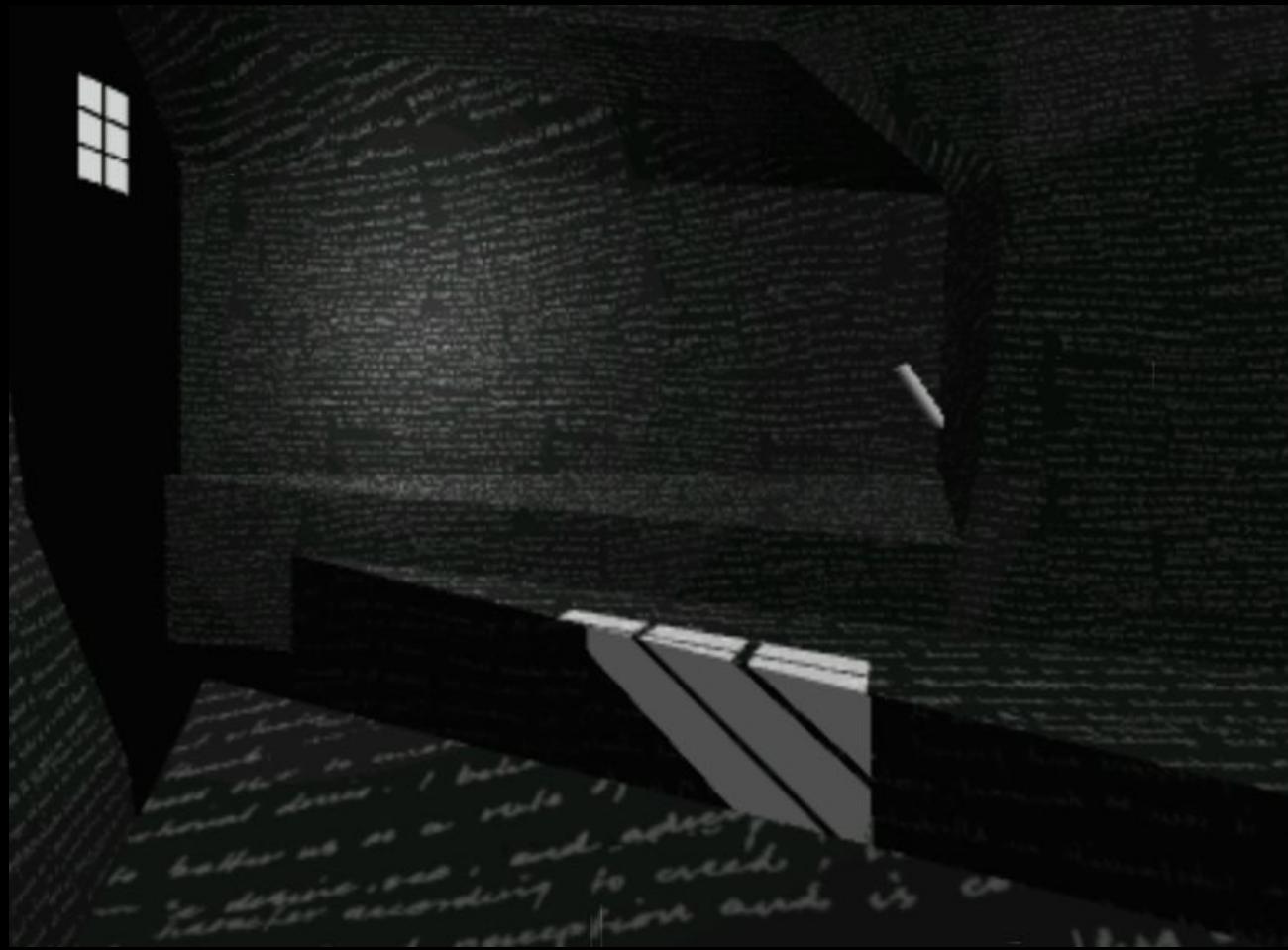


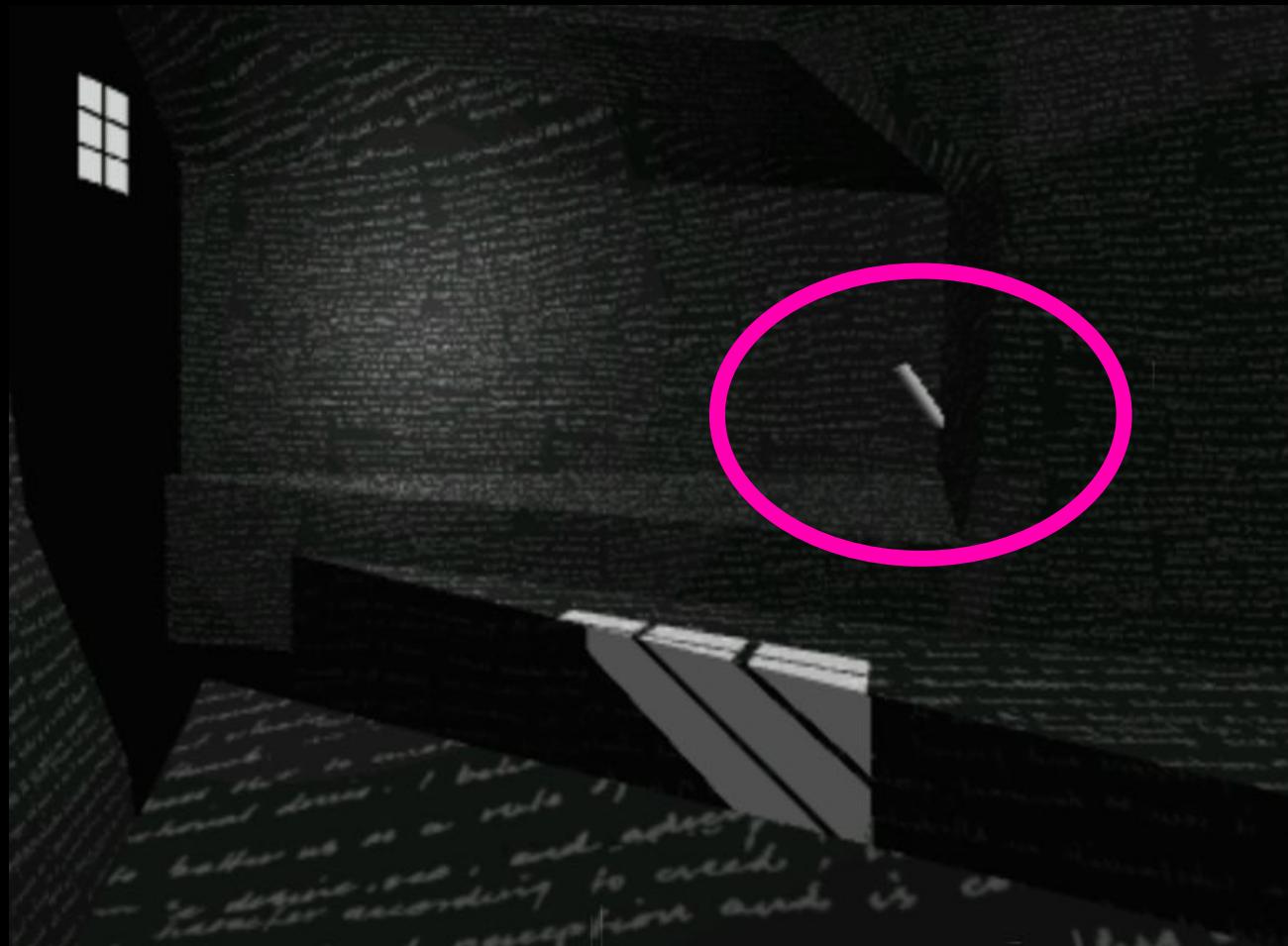


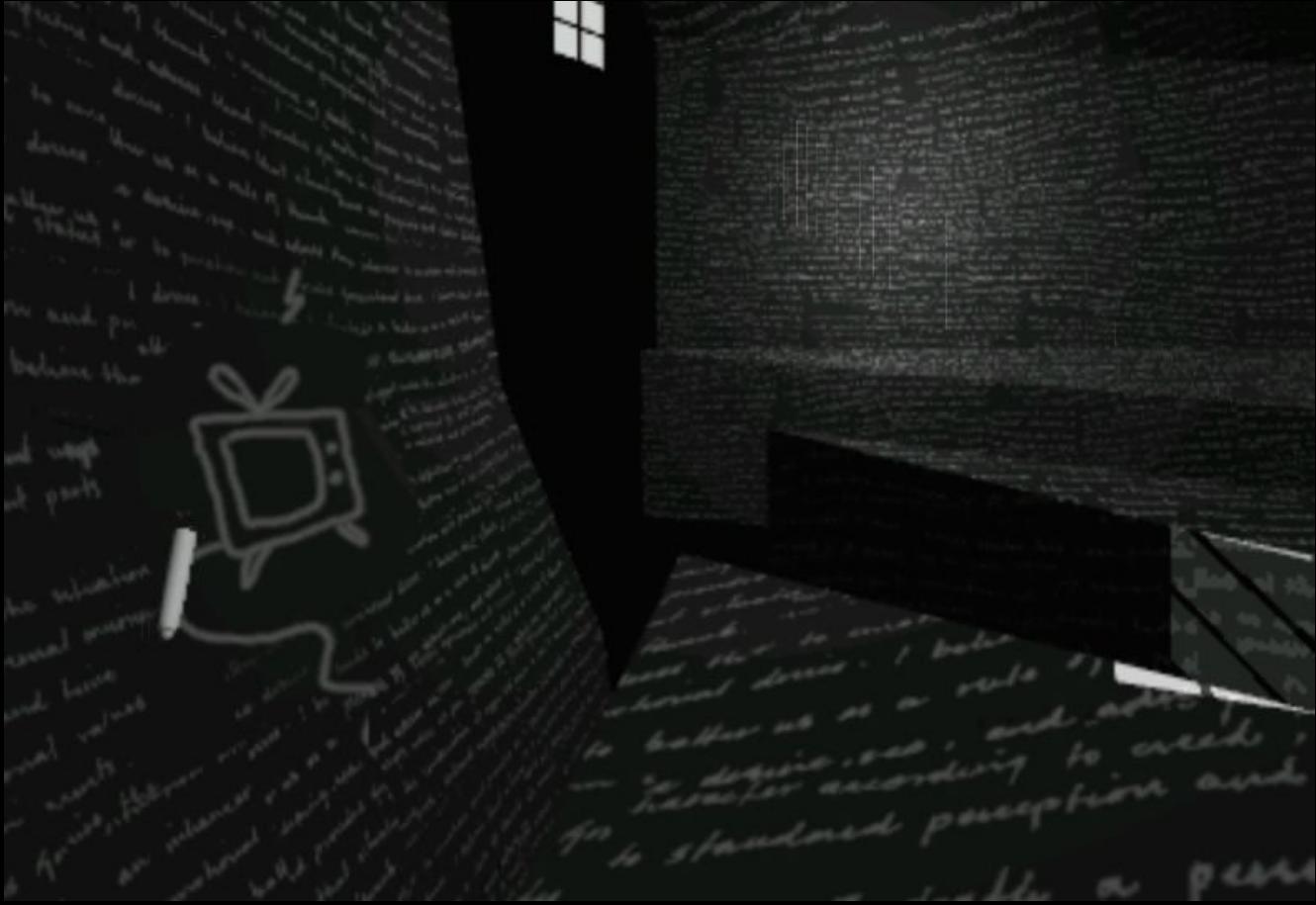


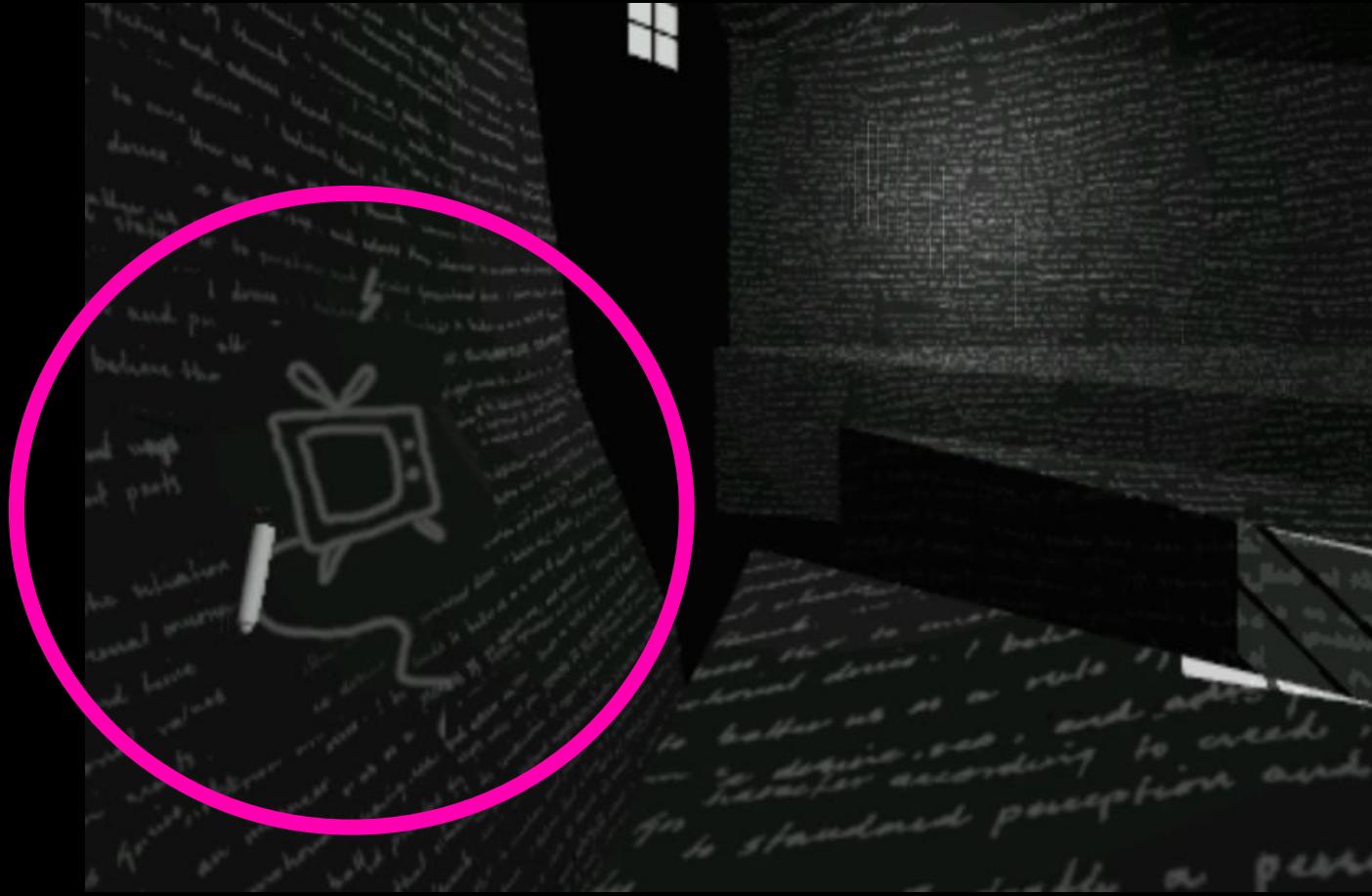


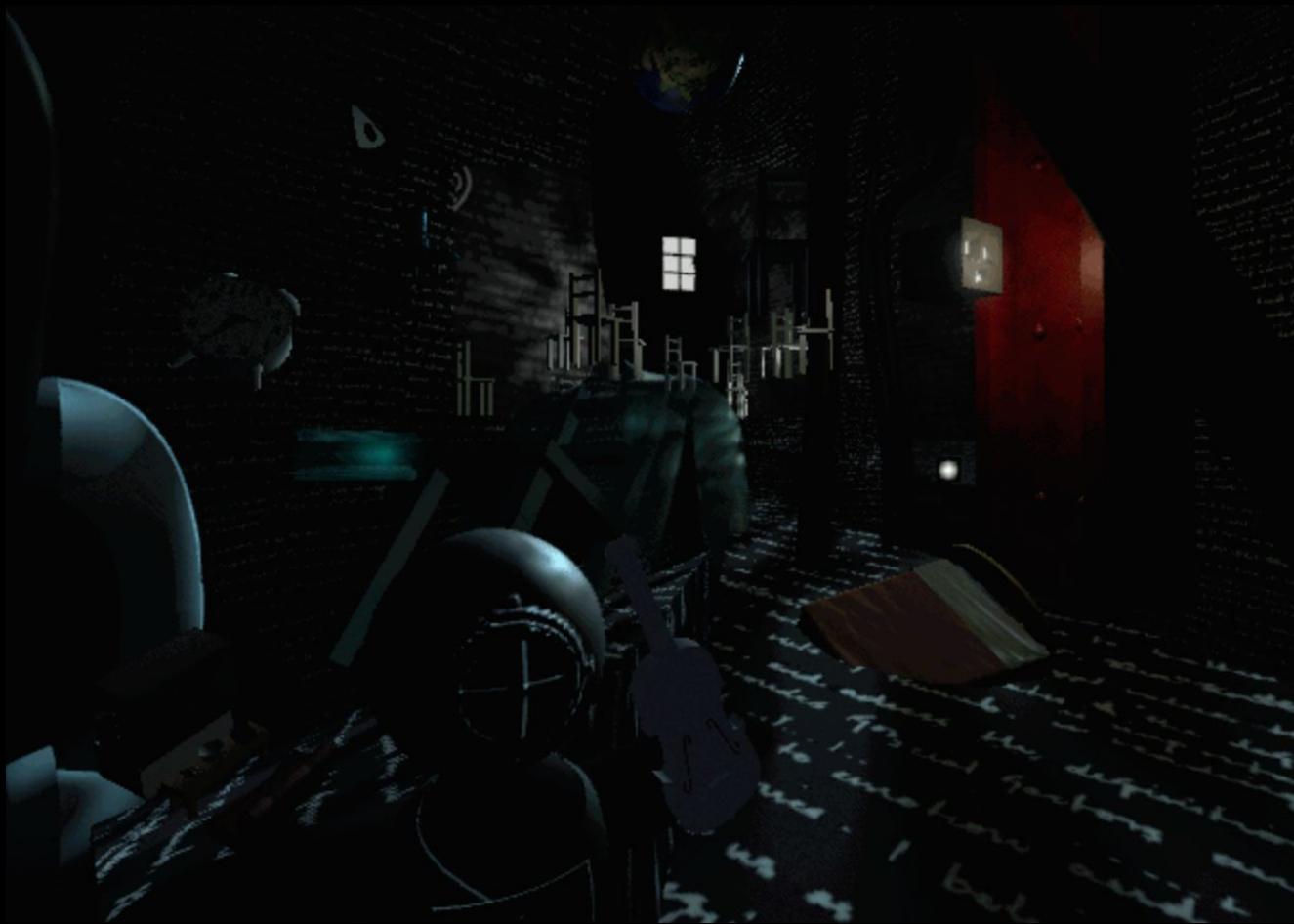
















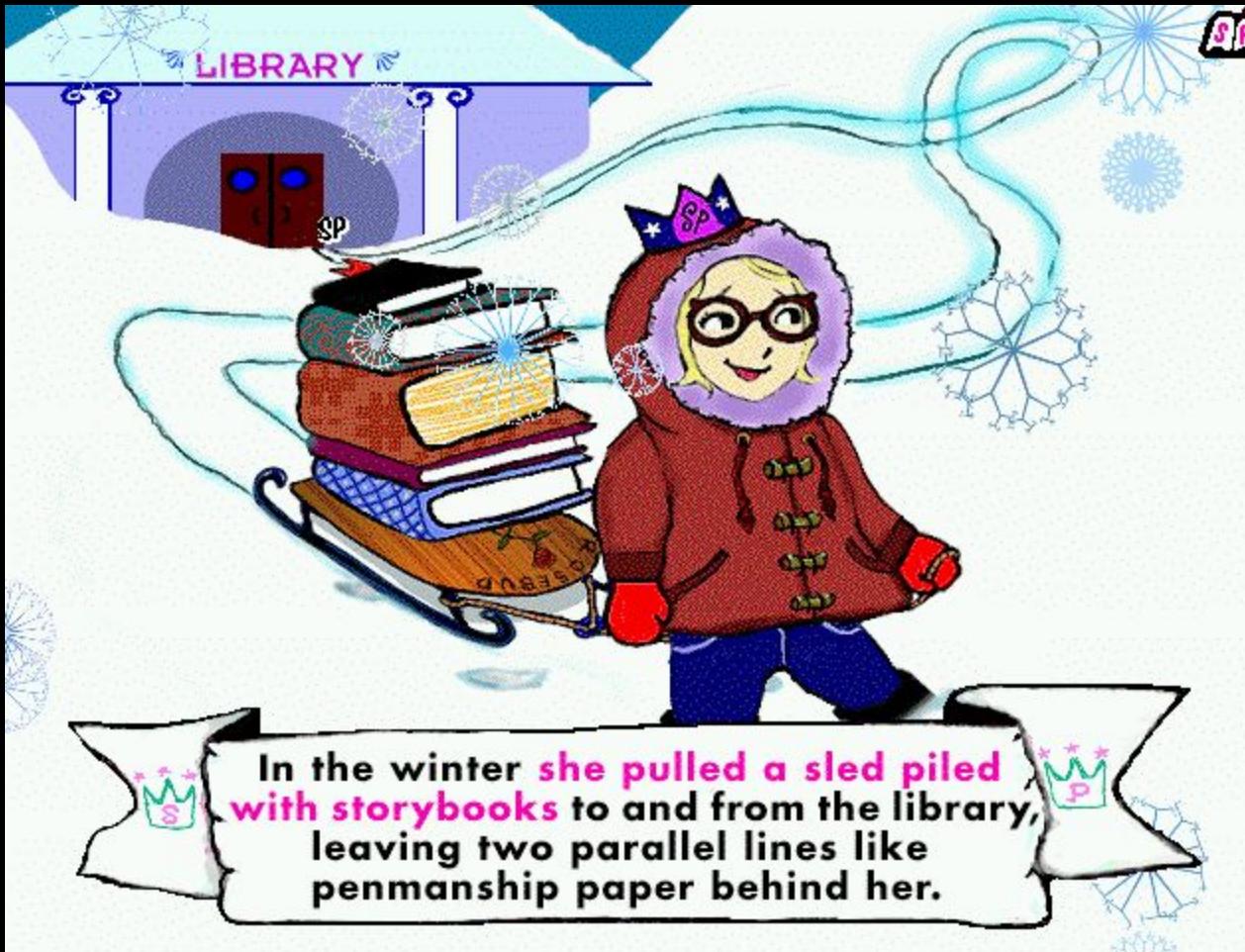


12:00









In the winter she pulled a sled piled
with storybooks to and from the library,
leaving two parallel lines like
penmanship paper behind her.



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bwFLA Demo Server

demo.bw-fla.uni-freiburg.de/faces/pages/bwfla.xhtml;jsessionid=QUIne1lygnCgs2j3cP9w2NIX?wi... ABP

bwFLA Emulation as a Service demo

This server shows demo preservation workflows to illustrate use cases for a cloud-based emulation service

Step 1: Include a disk-image

Image Ingest
Prepare a virtual harddisk image to be rendered by supported emulator

This workflow allows to include a disk-image to the EaaS service. The disk-image can either be uploaded directly to an incoming folder or provided as a HTTP reference. The disk image can be connected to virtual hardware and configured to be used with EaaS.

Step 2: Preparation

Modify Images
Customize existing images
Publish environments

Software Archive
Package software

This workflow allows to customize, e.g. by installing software and/or specific configuration steps. Software can either be used from the EaaS software archive or uploaded directly from the user's computer. Deployment chains allow to link multiple modification step with a URL for citation. External objects will be injected into the rendering environment on an emulated storage device.

Step 3: Object Ingest

Ingest
Browse a list of legacy CD-ROM art, evaluate emulation performance. Prepare for access

This workflow allows to use digital artifacts (e.g. CDROM images) to be used with previously prepared emulation environments. Objects may be automatically characterized (i.e. to find a suitable emulation environment) or an environment can be selected manually. A combination of environment and object can then be evaluated. If the performance meets the curators expectation the combination can be saved and published.

Step 4: Access objects

Access
Access objects in a ready-made emulation environment

This workflow demonstrates user access to a published object (in combination with a suitable emulation environment) through a (library) catalog as well as citation options.

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bwFLA

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_0.xhtml;jsessionid=UbpNfvMJnsCjAa2DLxYg-UYt?windo... ABP

bwFLA Workflow

Home

Available Objects

 ID: CHOPSUEY Doors Of Percepti...	 ID: Doors_of_Per... Netherlands Desi...	 ID: IdeaON_1996... Troy Innocent - 1...	 ID: C010 Iso Test	 Julien Marie ID: C008 Julien Marie
 Kluge ID: KLUGE Kluge	 ID: PuppetMotel Laurie Anderson ...	 ID: SMARTY Theresa Duncan ...	 ID: ZERO Theresa Duncan ...	

Please choose an artifact to be rendered

ulm university universität uulm LANDESARCHIV BADEN-WÜRTTEMBERG Staatliche Hochschule für Gestaltung Karlsruhe UNI FRIEBURG BSZ Bibliotheksservice-Zentrum Baden-Württemberg

bwFLA

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ID: KLUGE Kluge	ID: PuppetMotel Laurie Anderson ...	ID: SMARTY Theresa Duncan ...	ID: ZERO Theresa Duncan ...	ID: zeroZero-OS7_5-basil

Please choose an artifact to be rendered

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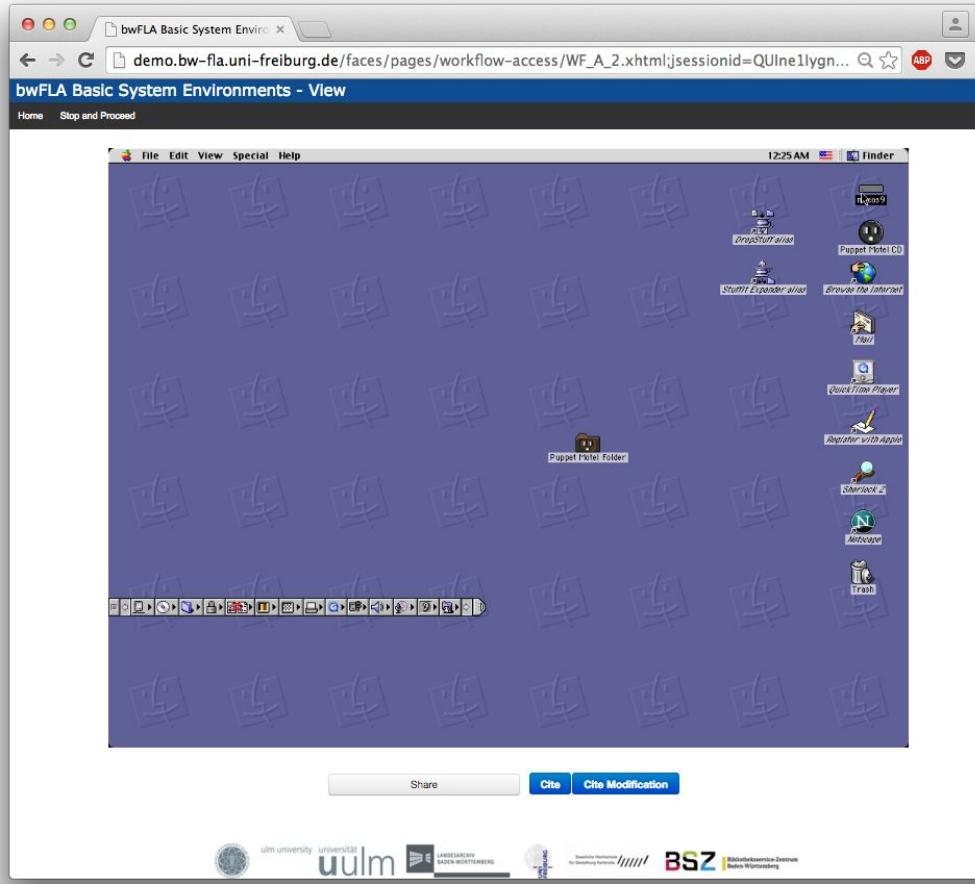
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Scientific Networks
for Documenting Exhibitions

BSZ

Bibliotheksservice-Zentrum
Baden-Württemberg



bwFLA Basic System Enviro x

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_2.xhtml;jsessionid=QUlnel1ygn... ABP

bwFLA Basic System Environments - View

Home Stop and Proceed

File Edit View Special Help 12:25 AM Finder

Puppet Motel alias
StuffIt Expander alias
Browse the Internet
Puppet Motel CD
Puppet Motel Folder
QuickTime Player
Register with Apple
Sherlock.app
Nitfudge
Trash

Share Cite Cite Modification

ulm university universität uulm ARBEITSGRUPPE BÄDER WÜRTTEMBERG Ressourcen-Hanns-Seidel // BSZ Bibliotheksservice-Zentrum Baden-Württemberg

bwFLA Basic System Enviro x

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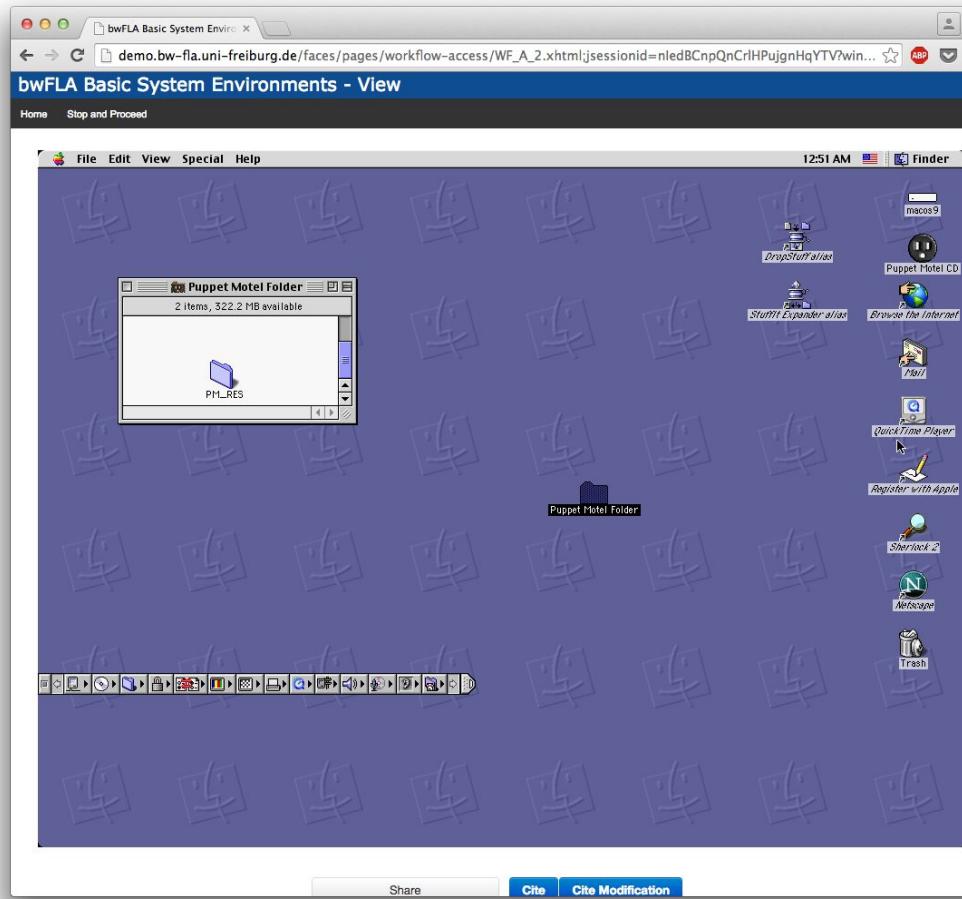
Home Stop and Proceed

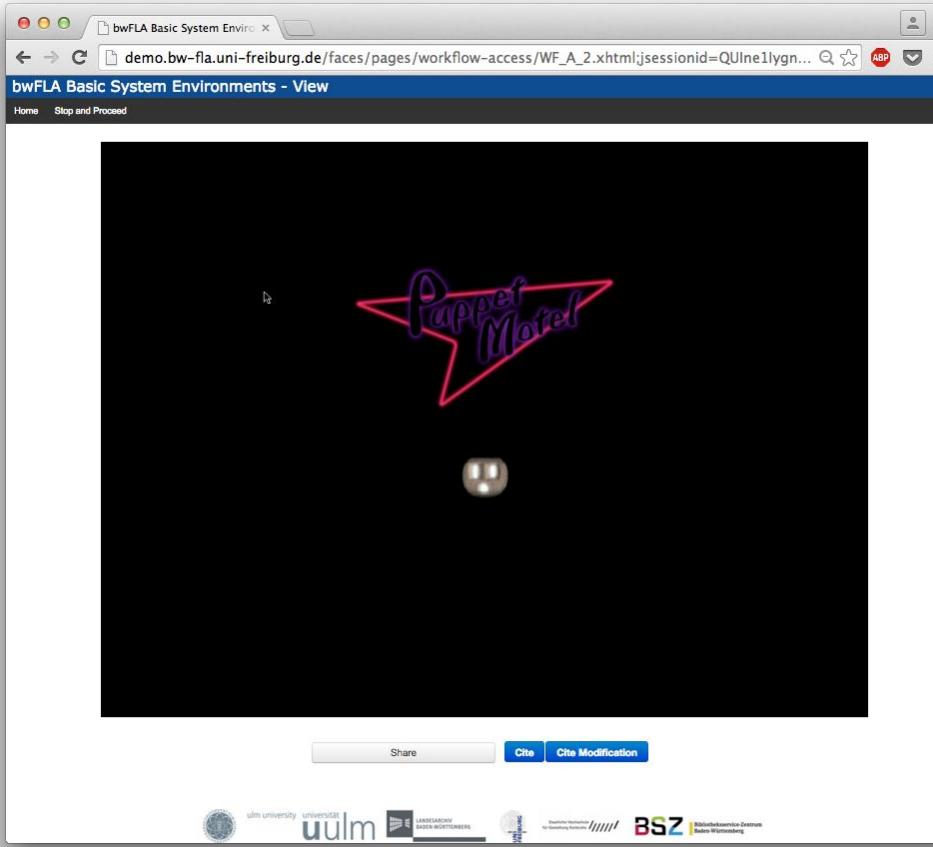
File Edit View Special Help 12:25 AM Finder

The screenshot shows a Mac OS X desktop with a purple background featuring a repeating logo pattern. A window titled "bwFLA Basic System Enviro" is open, displaying a "Finder" interface. The desktop icons include "DropStuff alias", "Puppet Hotel CD", "Storm Expander alias", "Browse the Internet", "Mail", "QuickTime Player", "Register with Apple", "Sherlock 2", "Netscape", and "Trash". A specific icon for "Puppet Hotel" is highlighted with a red circle. At the bottom of the screen, the Dock contains numerous small icons representing various applications and system status indicators.

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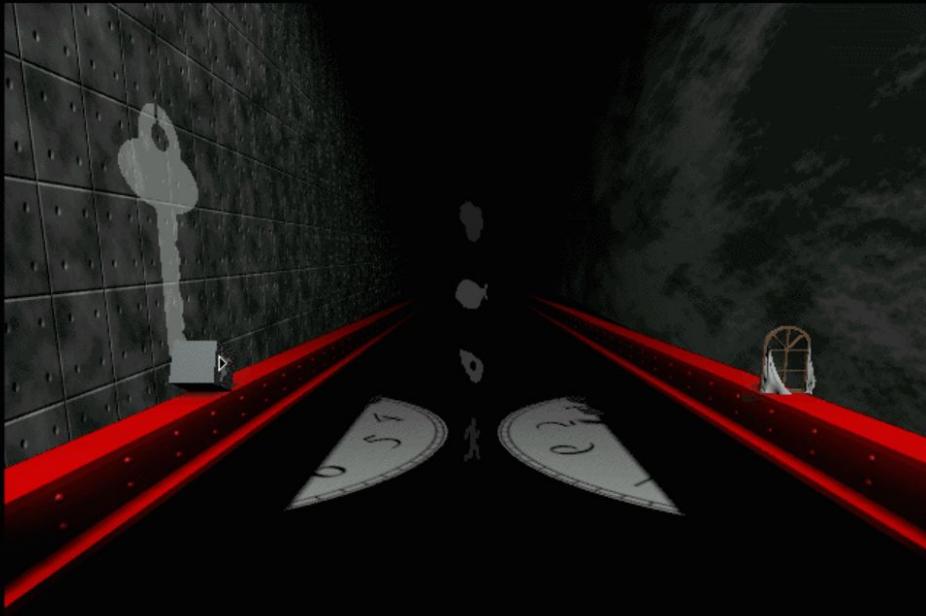




Sign In

--







bwFLA Basic System Environ X

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_2.xhtml;jsessionid=ii3hi+h... ABP

Apps MacOS-HowTo m2015 WebArchiv Linux dd-ISOs Git Plex.6 RhizWork shortcuts

bwFLA Basic System Environments - View

Home Stop and Proceed

File Edit View Label Special 8:03 AM

ZeroZero

8 items 408.9 MB In disk 51 MB available

ZeroFla ReadMe.txt

QuickTime

Zero51.exe zero95.exe

ZeroIcon.bmp AUTORUN.INF

macos7

ZeroZero

Trash

Startit Expander

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BSZ Bibliothekservice-Zentrum Baden-Württemberg

bwFLA Basic System Envir... demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_2.xhtml;jsessionid=ii3hi+h... ABP

Apps MacOS-HowTo m2015 WebArchiv Linux dd-ISOs Git Plex.6 RhizWork shortcuts

bwFLA Basic System Environments - View

Home Stop and Proceed

Rhinestone Publishing

a division of Nicholson NY

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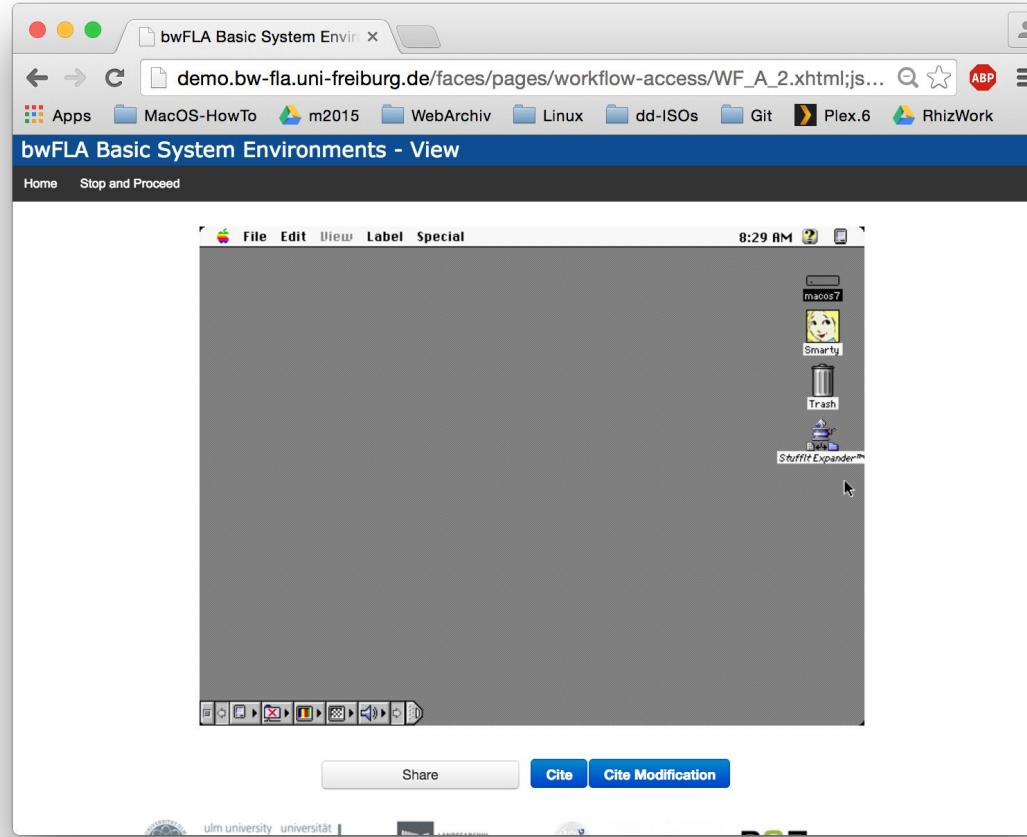
Au Revoir





Au Revoir





bwFLA Basic System Envir... demo.bw-fla.uni-freiburg.de/... ABP

Apps MacOS-HowTo m2015 WebArchiv Linux dd-ISOs Git Plex.6 RhizWork

bwFLA Basic System Environments - View

Home Stop and Proceed

File Edit View Label Special 8:29 AM

Smarty 8 items 259.5 MB In disk zero K available

Mac68k MacPPC

QuickTime README.TXT

macos7 Smarty Trash StuffIt Expander

Share Cite Cite Modification

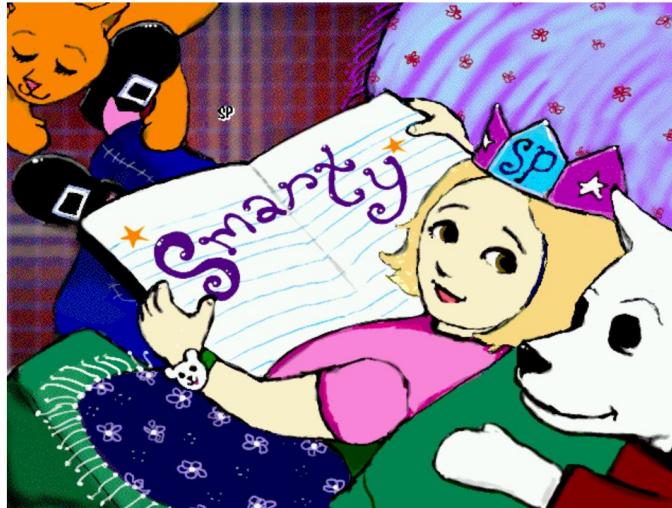
bwFLA Basic System En ↻ x

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_2.xhtml;js... ABP

Apps MacOS-HowTo m2015 WebArchiv Linux dd-ISOs Git Plex.6 RhizWork >

bwFLA Basic System Environments - View

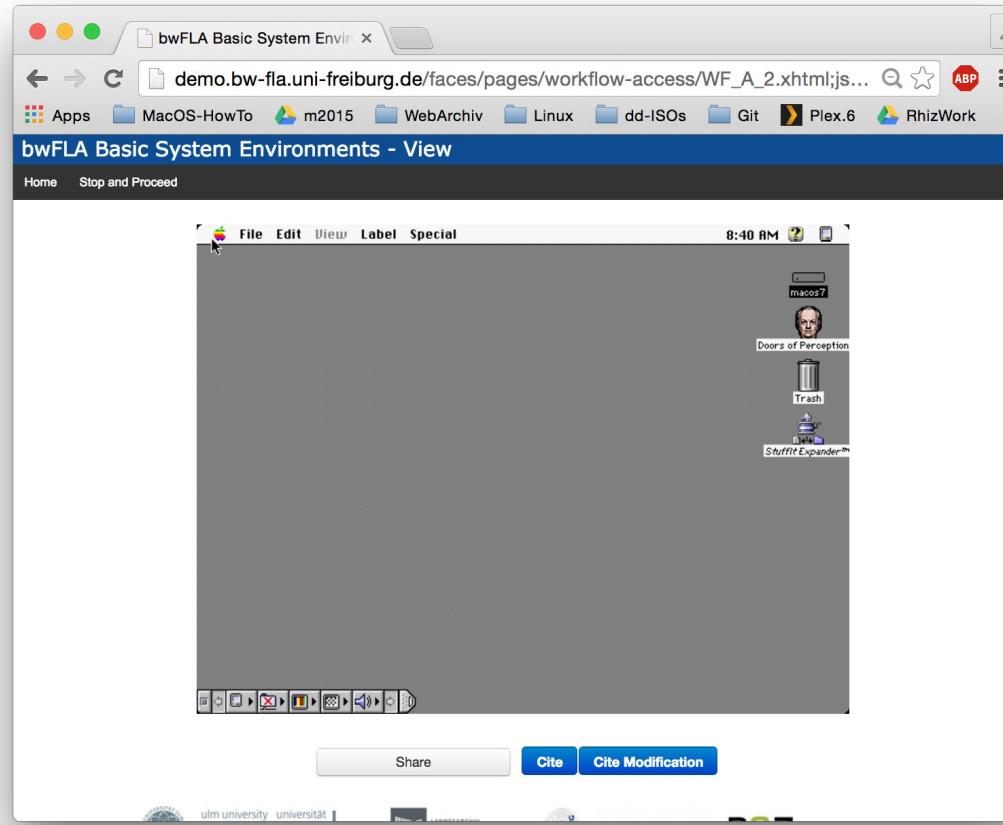
Home Stop and Proceed



A colorful cartoon illustration of a young girl with blonde hair wearing a blue crown with stars. She is holding a white sign with the word "smart" written on it in purple cursive. Behind her is a white dog, and to her left is a yellow cat wearing headphones. The background is purple with small red flowers.

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bwFLA Basic System Envir... demo.bw-fla.uni-freiburg.de/... WF_A_2.xhtml;js... ABP

Apps MacOS-HowTo m2015 WebArchiv Linux dd-ISOs Git Plex.6 RhizWork

bwFLA Basic System Environments - View

Home Stop and Proceed

The screenshot shows a Mac OS X desktop environment. A window titled "Doors of Perception" is open, displaying a folder structure with items like "Read Me 1st", "For 8 Mb RAM", "To Your System Folder", "Prototypes", and "Texts". The window has a standard Apple menu bar at the top. To the right of the window, there's a vertical stack of icons for "macos7", "Doors of Perception", "Trash", and "Stuffit Expander". At the bottom of the screen, a Dock contains various application icons, including Finder, Mail, Safari, and others. The desktop background is a solid grey.

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bwFLA Basic System Env x

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_2.xhtml;js... ABP

Apps MacOS-HowTo m2015 WebArchiv Linux dd-ISOs Git Plex.6 RhizWork »

bwFLA Basic System Environments - View

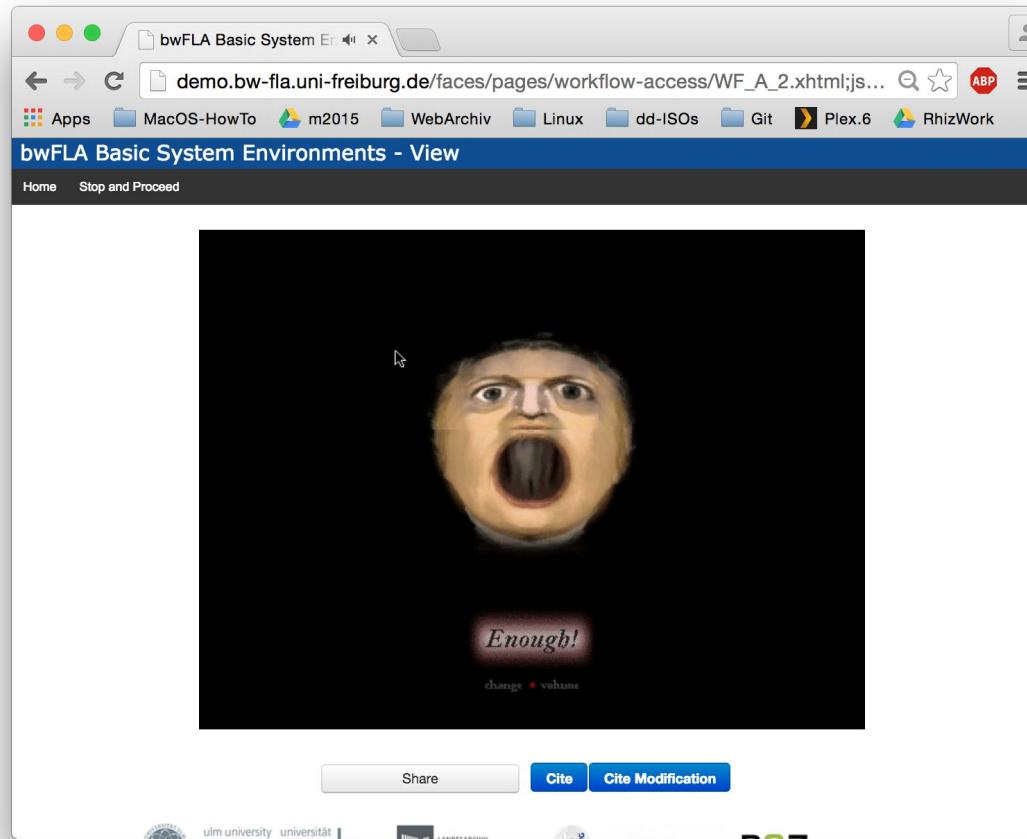
Home Stop and Proceed

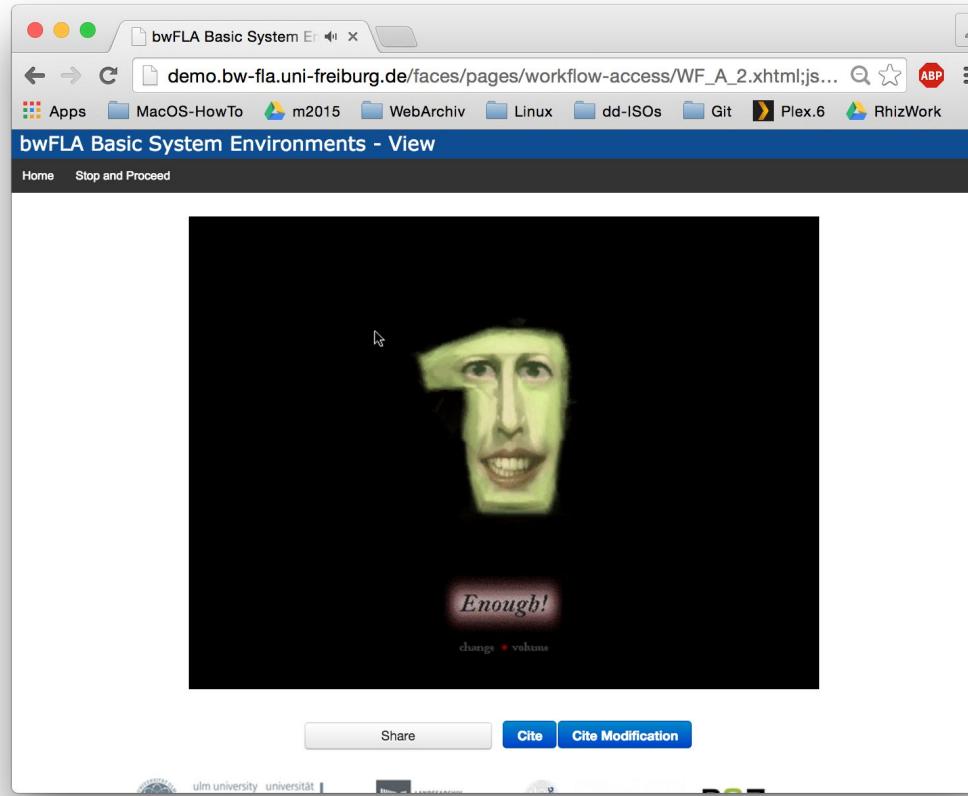
Enough!

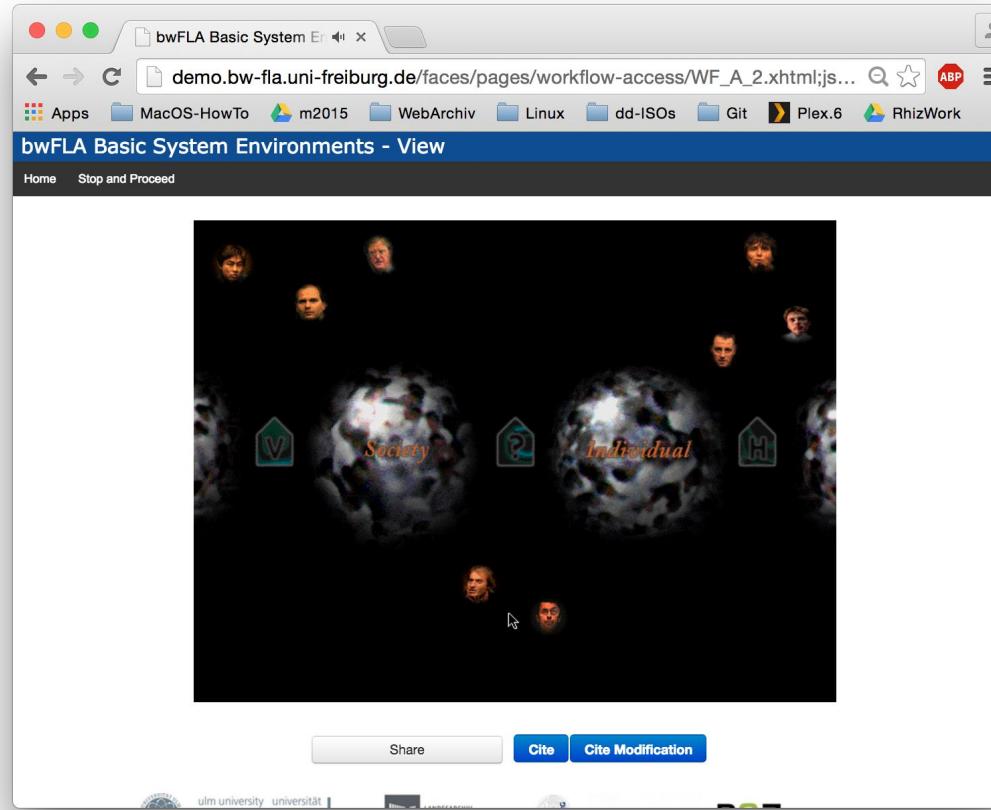
change volume

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bwFLA Demo Server demo.bw-fla.uni-freiburg.de/faces/pages/bwfla.xhtml;jsessionid=QUIne1lygnCgs2j3cP9w2NIX?wi... configuration

bwFLA Emulation as a Service demo

This server shows demo preservation workflows to illustrate use cases for a cloud-based emulation service

Step 1: Include a disk-image

Image Ingest
Prepare a virtual harddisk image to be rendered by supported emulator

This workflow allows to include a disk-image to the EaaS service. The disk-image can either be uploaded directly to an incoming folder or provided as a HTTP reference. The disk image can be connected to virtual hardware and configured to be used with EaaS.

Step 2: Preparation

Modify Images
Customize existing images
Publish environments

Software Archive
Package software

This workflow allows to customize, e.g. by installing software and/or specific configuration steps. Software can either be used from the EaaS software archive or uploaded directly from the user's computer. Deployment chains allow to link multiple modification step with a URL for citation. External objects will be injected into the rendering environment on an emulated storage device.

Step 3: Object Ingest

Ingest
Browse a list of legacy CD-ROM art, evaluate emulation performance. Prepare for access

This workflow allows to use digital artifacts (e.g. CDROM images) to be used with previously prepared emulation environments. Objects may be automatically characterized (i.e. to find a suitable emulation environment) or an environment can be selected manually. A combination of environment and object can then be evaluated. If the performance meets the curators expectation the combination can be saved and published.

Step 4: Access objects

Access
Access objects in a ready-made emulation environment

This workflow demonstrates user access to a published object (in combination with a suitable emulation environment) through a (library) catalog as well as citation options.

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bwFLA Basic System Enviro

demo.bw-fla.uni-freiburg.de/faces/pages/workflow-miniwf/WF_M_1.xhtml;jsessionid=...

bwFLA Basic System Environments - Upload File(s)

Home

Inject files into emulated environment (optional)

Directly inject files

DISK_IMG CDROM_IMG DISK

CDROM_IMG

Filename Device

No records found.

* Remove Selected File

Inject a Software from a Software-Archive

Help

+ Back Next



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bwFLA Basic System Enviro x

← → C demo.bw-fla.uni-freiburg.de/faces/pages/workflow-miniwf/WF_M_1.xhtml;jsessionid=...

bwFLA Basic System Environments - Upload File(s)

Home

Inject files into emulated environment (optional)

Directly inject files

DISK_IMG CDROM_IMG DISK

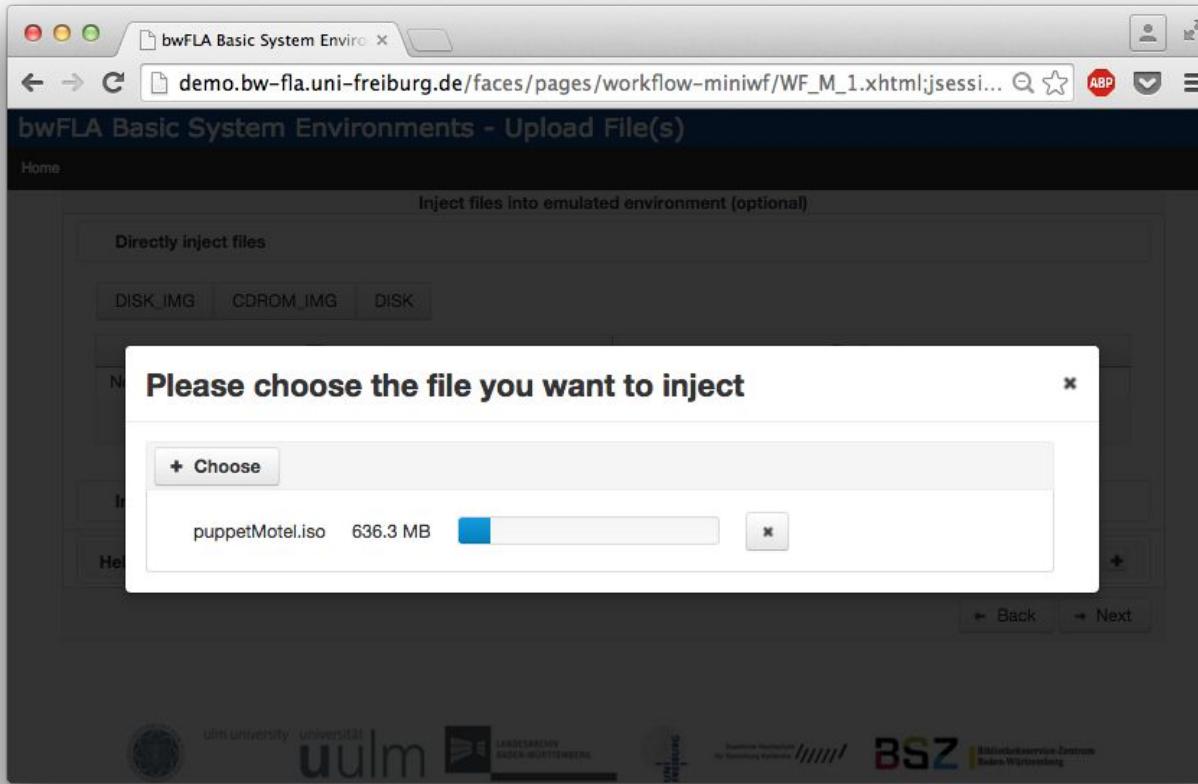
Please choose the file you want to inject

+ Choose

Help

Back Next

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bwFLA Basic System Environments - Upload File(s)

Inject files into emulated environment (optional)

Directly inject files

DISK_IMG CDROM_IMG DISK

Please choose the file you want to inject

+ Choose

puppetMotel.iso 636.3 MB

Back Next

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LEIBNIZ INSTITUT FÜR INFORMATIK

BSZ Bibliotheksservice-Zentrum Baden-Württemberg

Waiting for 132.230.3.204...

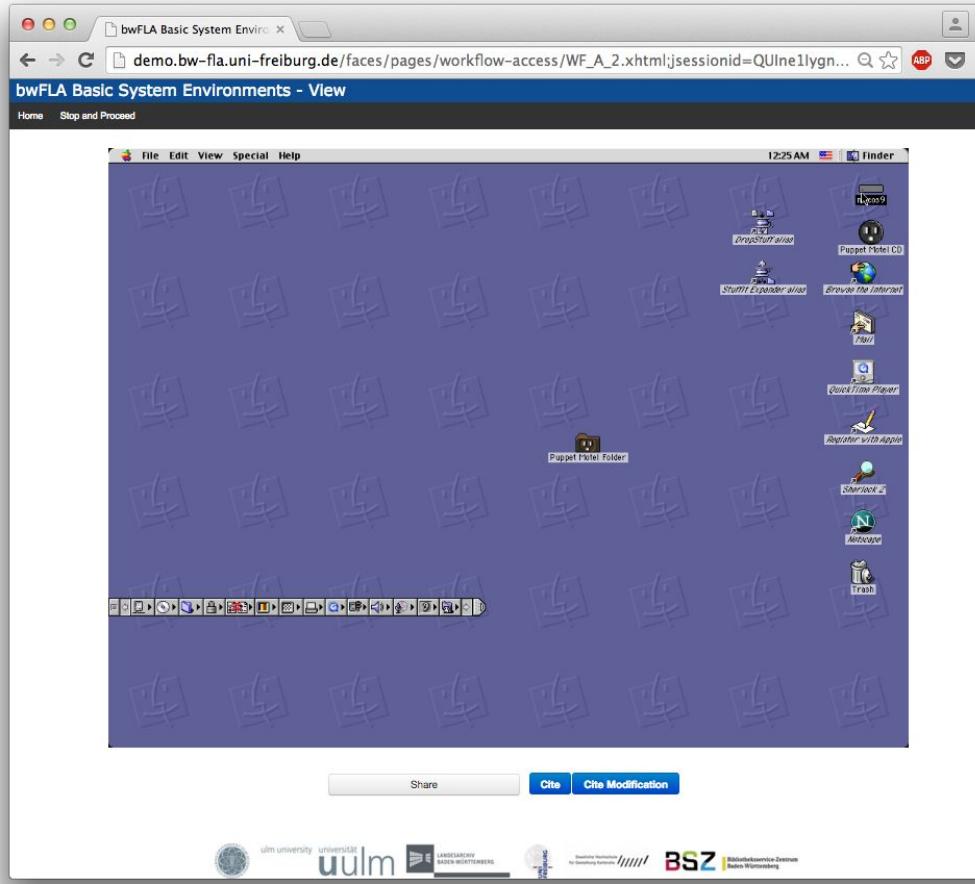
bwFLA Basic System Environ: demo.bw-fla.uni-freiburg.de/faces/pages/workflow-access/WF_A_2.xhtml;jsessionid=QUlne1lygnCgs2j3cP9w2NIX?windowId=430

bwFLA Basic System Environments - View

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- CD-ROM cabinet project tumblr site <http://cdromcabinet.tumblr.com/>
- List of ISOs for CD-ROM artworks at Internet Archive <http://archive.org/search.php?query=cd-rom%20cabinet>
- 54 giorni journal - CD-ROM essay by Arie Altena <http://www.mediamatic.net/8669/en/54-giorni>
- Laurie Anderson "Puppet Motel" at The Internet Archive <https://archive.org/details/puppet-motel-1998>

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thank you

