

DESIGN LANDSCAPE: ONLINE COLLECTION INTERFACES

3

About this report series

This report is part #3 in a series of reports documenting the research process and practice of Lozana Rossenova, a PhD researcher embedded at Rhizome between 2016–2020.

The reports trace the development of a practice-based interaction design research project, starting with a Discovery and User Research phase. Discovery and User Research includes: study of the organizational context and history (report #1); information gathering around past and current use-cases and user expectations (report #2); as well as review of the contemporary landscape of digital design for cultural heritage archives and collections (report #3). The next phase – Design Exploration, which includes low-fidelity sketches and prototypes and continuing the conversations with users, is documented in report #4. Report #5 documents the final two phases of the process – Design Specification and Evaluation, wherein the initial design proposals are transformed into concrete design specifications and recommendations, alongside a functional prototype, which can be evaluated by users.

About the researcher

Lozana Rossenova is a London-based digital designer and researcher, and a PhD candidate at London South Bank University's Centre for the Study of the Network Image. Her PhD is a practice-based collaboration with Rhizome. Lozana is particularly interested in working with open-source and community-driven approaches to infrastructure, which organizes, stores and makes cultural heritage data accessible. Her current research focus is on born-digital archives and born-digital art. Her PhD project develops design methods which build understanding across diverse communities of practice and facilitate informed interaction, favouring nuance and complexity over reductive simplification.

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Executive Summary

Introduction

This report reviews the landscape of digital collection interfaces utilized for cultural heritage preservation purposes (as of 2018). It asks questions such as: what are the common visual and interaction design paradigms in the field; and how forms of information architecture and choice of databases and content management systems inform user interactions with these interfaces. It does not claim to be a comprehensive state-of-the-art survey.

Methods

The methods for selecting interfaces to be reviewed included conducting user research (and asking users about collection interfaces they access often), reviewing existing academic literature, and attending relevant talks and demos at professional or academic conferences. The selection is biased towards interfaces accessible in English and institutions based in the Europe (mostly UK) or the US, due to the researcher's own academic position and access to resources.

Selected interfaces are represented via few screenshots (with respective URL addresses and dates of reference). Visuals are supplemented by short analysis and specific elements are called out as design feature cards (designed to be used later in conjunction with the user story cards from Report #2). The focus is not on creating a detailed taxonomy of all design elements of each interface, but rather to capture specific elements, which might be relevant to other collection interface use-cases in general, and the ArtBase specifically.

Structure of the report

The report is divided across a few specific directions of enquiry – all relevant to the new ArtBase interface. These are articulated in the following sections:

1. **Interfaces for net art archives**
2. **Interfaces for artwork records in institutional collections**
3. **Interfaces for collection entry**

4. Interfaces utilizing collection overview visualizations
5. Interfaces for linked data cultural projects
6. Interfaces utilizing data visualizations to express relationships in collections
7. Interfaces exhibiting net art

The report concludes with a mapping of design feature cards from all seven sections to user story cards from Report #2 and offers recommendations how these could be implemented in the new ArtBase re-design.

Key findings and recommendations

The report highlights 46 different interfaces ranging from institutional to experimental projects. The design feature cards extracted from these have been assorted into categories relating to: the general structure of the data in the archive; discovery and entry into the collections; the single-record-level page and its metadata; and finally, to exhibiting net art online. The report recommends several of those feature cards to be implemented in the new design prototypes for the ArtBase, not just because they map to specific user stories, but because they can facilitate many of the requirements identified throughout the Discovery and User Research Phase. A selection of these recommendations includes:

- ▶ **A linked data database** – for the capacity to facilitate both complex relationships between items in the database (and across databases), as well as complex search queries within the database.
- ▶ **Explorable terminology** – for the provision of richer metadata around conservation procedures or technical dependencies.
- ▶ **Capacity for contradiction** – for the possibility to add new metadata to the database, alongside existing metadata statements, and to use data provenance information to differentiate, but not erase potential contradictions.
- ▶ **Expression of relations** – for the possibility to make explicit links across various items in the linked data database, such as common exhibition histories or common technical dependencies.
- ▶ **Links to pre-set queries** – for the capacity to act as navigational tools and to support understanding of context and relationality in the archive.
- ▶ **SPARQL query GUI** – for the facilitation of complex research needs.
- ▶ **Single-object timeline** – for the provision of temporal context, versioning and preservation history metadata for digital cultural heritage

- ▶ **Metadata related to literature and events** – for the provision of additional temporal and historical context around artworks, such as exhibitions and reviews.
- ▶ **Metadata clustering** – for the facilitation of granular access to data.
- ▶ **Access statement** – for the capacity to set user expectations around access provision to different variants of net art works.
- ▶ **Emulated environments** – for the provision of access to functional artworks in a historicized context.
- ▶ **Overlay state for contextual information** – for the provision of additional context alongside artwork re-performances, within a granular approach to data presentation.
- ▶ **Including the browser frame (in thumbnail or static screenshot representations)** – for the provision of a specific temporal context around net art works, which is often integral to the user experience of the works.

Introduction

Problem statement

Research around interface design for online collections and digital cultural heritage preservation is already being carried out, even if remaining somewhat fragmented (see Bibliography). The surveys which aim to be comprehensive, by necessity tend to be focused on a specific direction of enquiry – e.g. the use of data visualisation; design for serendipitous discoveries and browsing; design for advanced search utilities. While all of these topics are interesting in their own right, looked at in isolation, they do not provide the necessary points for benchmark evaluation needed for the re-design process of the ArtBase.

This report reviews the landscape of digital collection interfaces (as of 2018) and asks questions such as: what are the common visual and interaction design paradigms in the field; and how forms of information architecture and choice of databases and content management systems inform user interactions with these interfaces. Of particular interest are areas in the design of interfaces focusing on the presentation of complex born-digital artefacts; metadata around temporal and historical context; as well as discovery and search within the framework of a linked data database.

Methods for selection and analysis

The methods for selecting interfaces to be reviewed included conducting user research (and asking users about collection interfaces they access often), reviewing existing academic literature, and attending relevant talks and demos at professional or academic conferences. The decisions how to group and discuss interfaces in sections are connected to the existing context of the ArtBase archive (an archive of net art; a Wikibase instance; a linked data database), balanced against the primary focus of the research project which is the presentation of the individual artwork record and related records, and the potential need for future research into collection-level visualizations and query-capabilities.

Selected interfaces are represented via few screenshots (with respective URL addresses and dates of reference). Visuals are supplemented by short analysis and specific elements are called out as design feature cards (designed to be used later in conjunction with the user story cards from Report #2). The focus is not on a creating a detailed taxonomy of all design elements of each interface,



but rather to capture specific elements, which might be relevant to other collection interface use-cases in general, and the ArtBase specifically.

Structure of the report

The report presents a ‘scan’ of the landscape divided across a few specific directions of enquiry – all relevant to the new ArtBase interface. These are articulated in the following sections:

1. **Interfaces for net art archives** – providing the opportunity to evaluate what are the other net art archives online and how they present artworks and metadata.
2. **Interfaces for artwork records in institutional collections** – this expands on section 1. by broadening the scope beyond net-art-only collections to include collections in larger institutions which may have some net art or software-based art pieces. Added are also some institutional interfaces which utilize relevant design patterns, even if not dealing specifically with born-digital art.
3. **Interfaces for collection entry points** – this section expands on the previous one by looking at how collections and archives can be accessed: taking a step back from the individual record page.
4. **Interfaces utilizing collection overview visualizations** – this section builds upon the previous by focusing on the use of various data visualization approaches towards providing “alternative” collection or archive entry points.
5. **Interfaces for linked data cultural projects** – having looked at how item records are represented in general institutional interfaces, as well as what are the entry points to these interfaces (including those that utilize data visualizations), this section focuses on projects which use applications specifically built around a linked data database. This section, therefore, aims to provide guidance as to how applications such as Wikibase (the linked data system underlying the ArtBase archive) might be utilized for cultural heritage purposes.
6. **Interfaces utilizing data visualisations to express relationships in collections** – this section focuses on a specific strand of collection data visualization: namely, how data visualization techniques, in combination with a linked data database, can provide ways of expressing complex relationships between various items (or concepts) in the archive or collection.
7. **Interfaces exhibiting net art** – this final section looks beyond interfaces built for archives and collections and focuses instead on the exhibition format. How can net art be exhibited online and what paradigms are typically used? The section aims to highlight features which might be of use for the re-performance platforms Rhizome is developing in addition to the main archival interface.

Limitations of the method

This landscape overview does not claim to be a comprehensive state-of-the-art survey. Such a survey would require a larger research team, and broader time framework. The review here was conducted over several months in 2018. Some of the interfaces (and attendant notes) may be outdated by time of publishing.

To mitigate the effects of link rot, in addition to providing the original source URLs for the interfaces under review, the report is complemented by a web archive collection of all referenced interfaces, which can be accessed at: https://conifer.rhizome.org/lozana_r/collection-design-landscape

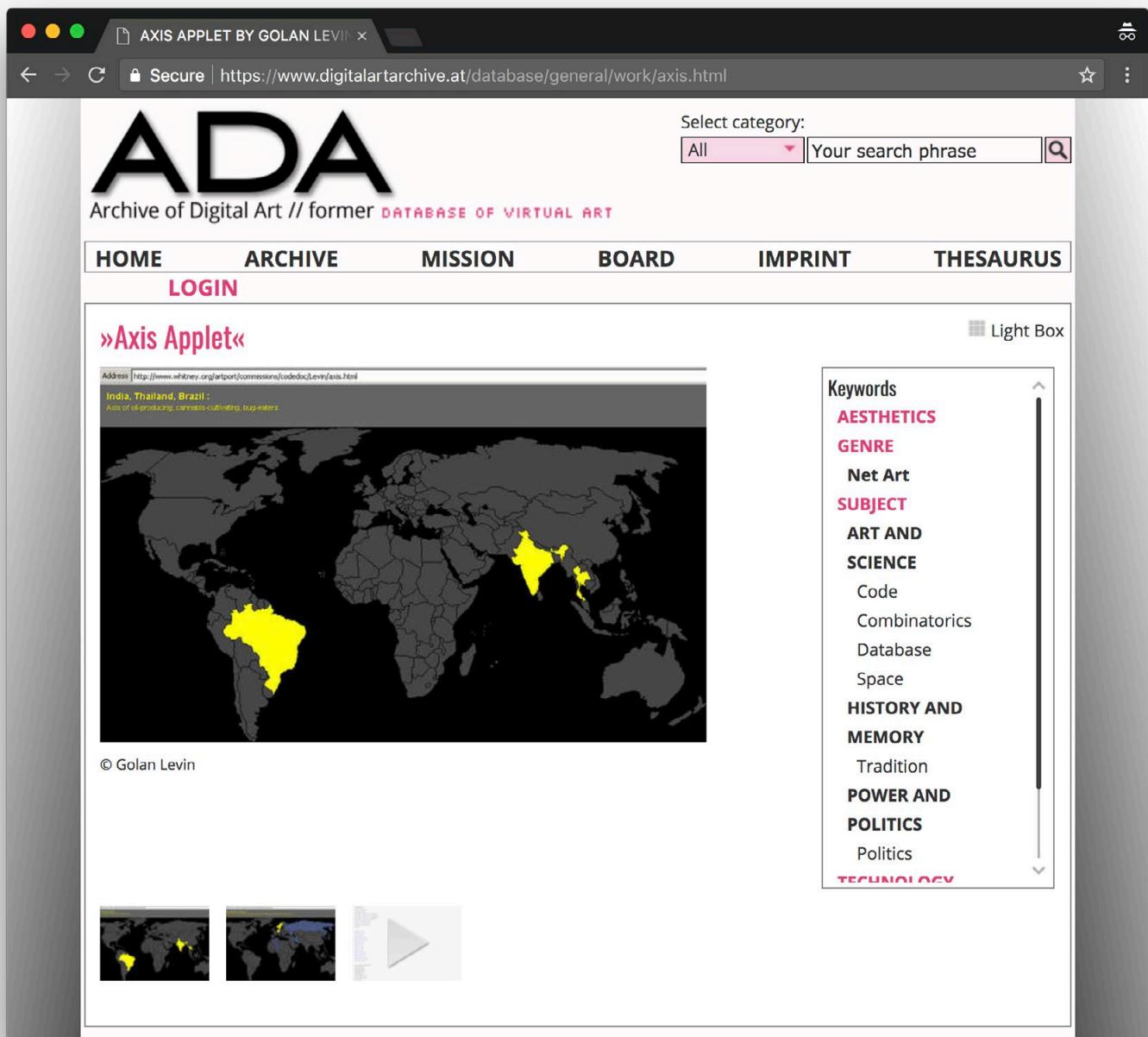
The net art exhibitions referenced in section 6 of the report are available as separate, complete web archive collections, listed under each exhibition's respective title here: https://conifer.rhizome.org/lozana_r/

A further limitation of the research method is the bias within the selection towards interfaces accessible in English and institutions based in Europe (mostly UK) or the US, due to the researcher's own academic position and limited access to resources. Goals for future extensions of this research include more international collaborations that can extend the cultural reach and relevance of the survey.¹

¹ Some discussions for possible expansions of scope have already started.
See: <https://twitter.com/phivk/status/1256931372486340608?s=20>

1 Interfaces for net art archives

Archive of Digital Art (still active)



Example view of an artwork record: Screenshot previews and keyword categories are featured near the top of the page.



Metadata clustering



Metadata related to
literature & events

The screenshot shows a web page from the Digital Art Archive at <https://www.digitalartarchive.at>. The page displays various metadata categories for an artwork:

- Information:** Includes a profile picture of Golan Levin and the title "»Axis Applet«, 2002".
- Technology:** Labeled "SOFTWARE" and describes it as a "JAVA applet".
- Literature:** A citation by Marchese, Francis T. titled "Software Archaeology and the Preservation of Code-based Digital Art." It is included in the "Proceedings of Archiving Conference 2013", edited by Society for Imaging Science and Technology, 25-29 Springfield, VA, 2013.
- Descriptions & Essays:** Contains instructions to enter project here, a link to artport.whitney.org, and notes about Java security settings and commissioning by the Whitney Museum.
- Exhibitions & Events:** Lists an exhibition entry for 2003 at CODeDOC II in Linz.

Example view of an artwork record: Other metadata available for the record is grouped in categories near the bottom of the page.

Reference URL: <https://www.digitalartarchive.at>

Date of screenshots: 2018-05-14

Notes: Participants in some of the user studies found parts of the metadata presented here useful; in particular, elements such as essays, literature, or exhibitions and events related to a specific artworks (when such data was available).

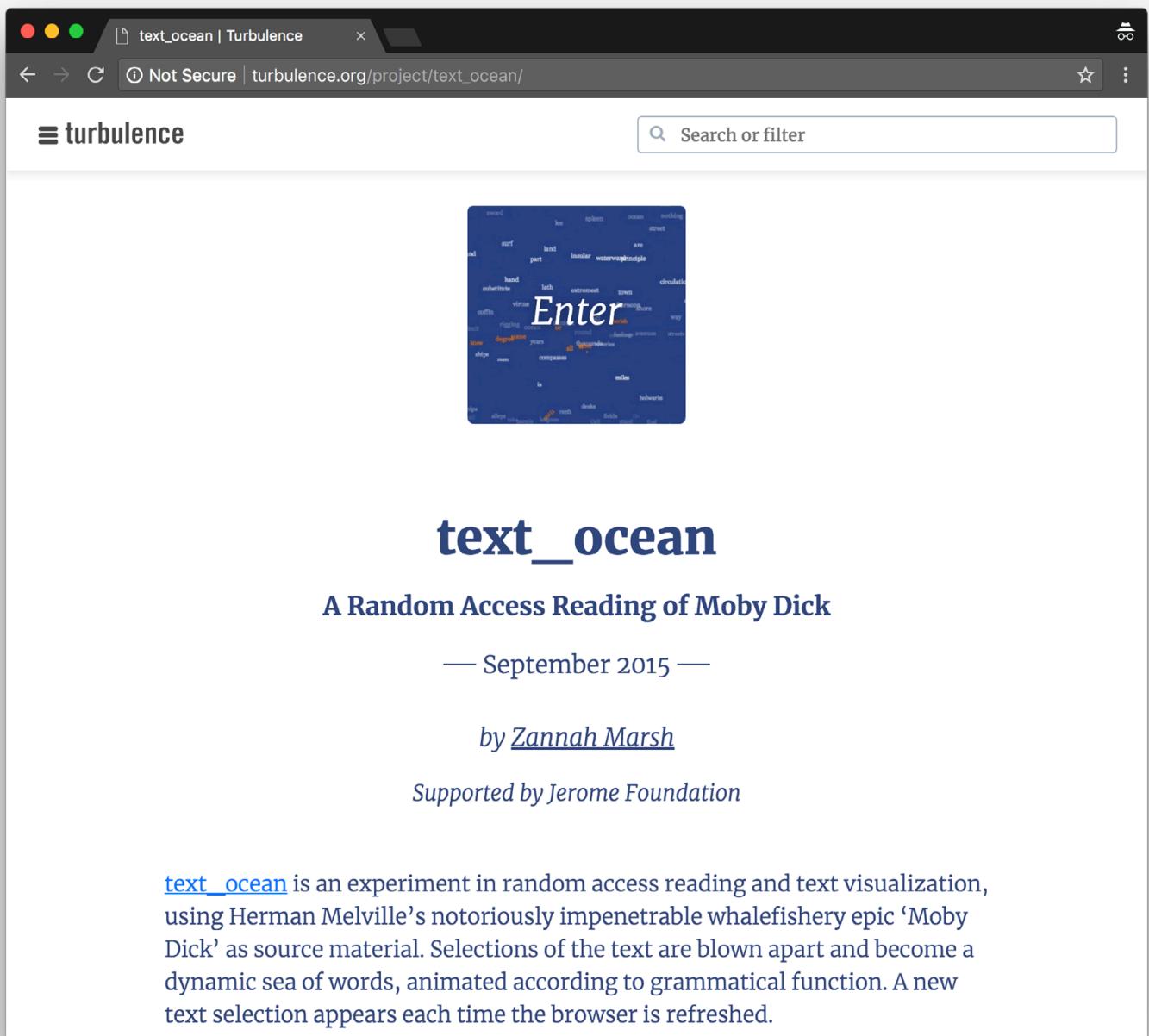
Turbulence (legacy database)

The screenshot shows the Turbulence legacy database interface. At the top, there's a navigation bar with a back/forward button, a search bar containing 'turbulence', and a search/filter input field. Below the navigation is a search/filter bar with the placeholder 'search or filter by project, artist or keyword'. To the right of this bar are date navigation buttons for '2015 / 1996'. The main content area features three filtering options: 'projects grid' (dotted grid icon), 'projects with titles' (dashed grid icon), and 'people' (dash-dot grid icon). Below these are six rows of project thumbnails, each row representing a year from 2015 down to 1996. Each row has a year indicator on the left and a 'next' arrow on the right. The thumbnails are small images representing various net art projects.

Collection overview: Thumbnails of the projects are ordered chronologically.



Overviews & previews



The screenshot shows a web browser window titled "text_ocean | Turbulence". The address bar indicates it's not secure. The page itself features the "turbulence" logo and a search bar. Below this is a large, abstract visualization of words from Herman Melville's "Moby-Dick". The words are arranged in a grid-like pattern, with some words appearing larger than others, creating a dynamic sea of text. In the center of this word cloud, the word "Enter" is prominently displayed in a large, bold, white font. Below the visualization, the title "text_ocean" is written in a large, dark blue serif font. Underneath the title, the subtitle "A Random Access Reading of Moby Dick" is displayed in a smaller, dark blue sans-serif font. A date, "— September 2015 —", follows. The author's name, "by Zannah Marsh", is in a dark blue italicized font. Below that, the text "Supported by Jerome Foundation" is in a smaller, dark blue sans-serif font.

text_ocean

A Random Access Reading of Moby Dick

— September 2015 —

by *Zannah Marsh*

Supported by Jerome Foundation

[text_ocean](#) is an experiment in random access reading and text visualization, using Herman Melville's notoriously impenetrable whalefishery epic 'Moby Dick' as source material. Selections of the text are blown apart and become a dynamic sea of words, animated according to grammatical function. A new text selection appears each time the browser is refreshed.

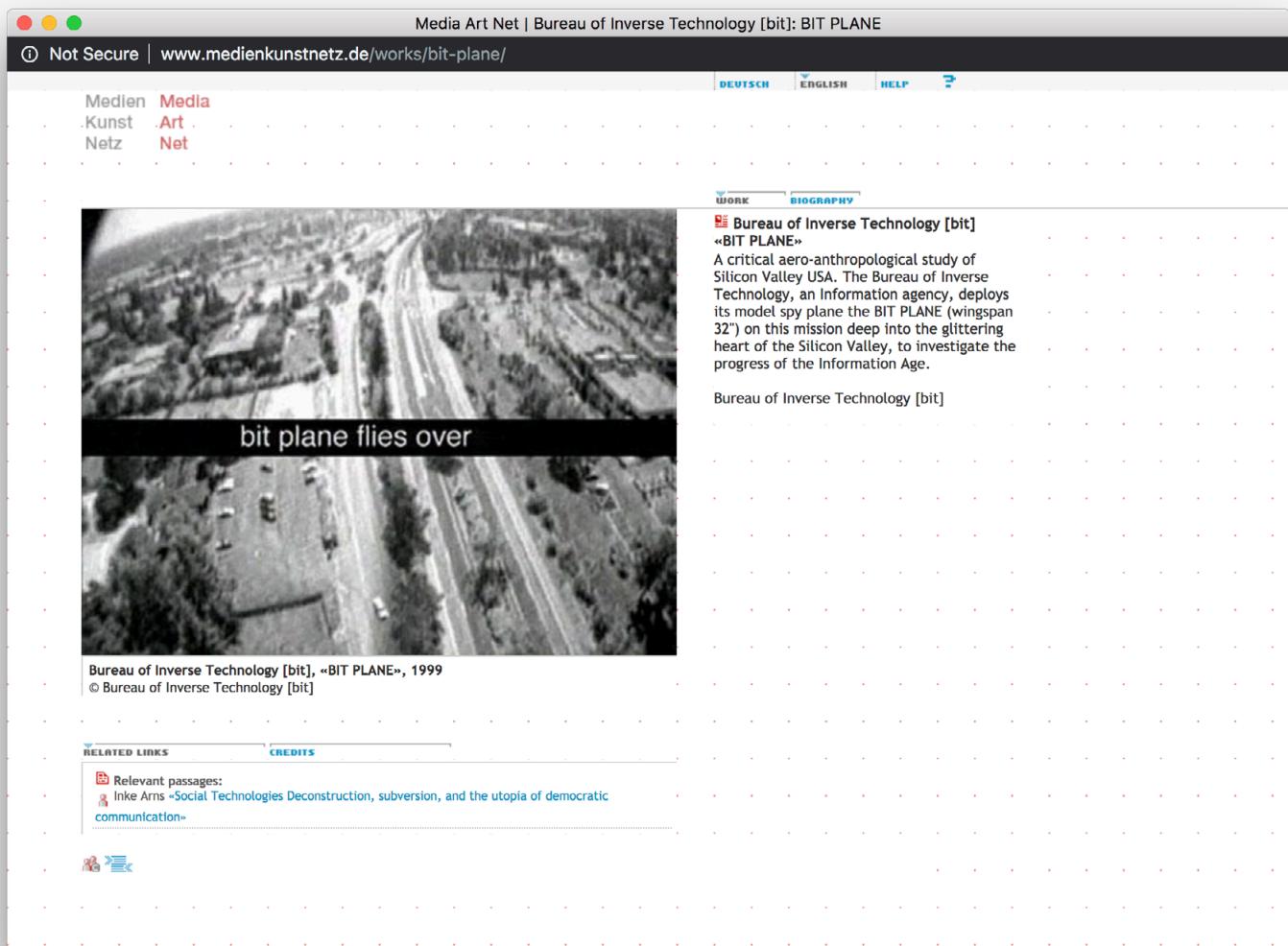
Example view of an artwork record: A prominent access point, title, description and few other metadata entries are featured near the top of the page.

Reference URL: <http://turbulence.org>

Date of screenshots: 2018-05-14

Notes: Participants in the user studies did not find the collection overview particularly useful, nor the metadata provided with each artwork record.

Media Kunst Netz (legacy database)



Example view of an artwork record 1: Features include image thumbnail, short description and related citations.



Metadata related to
literature & events



Metadata clustering

Media Art Net | Jodi: walkmonster_start ()

① Not Secure | www.medienkunstnetz.de/works/walkmonster-start/

DEUTSCH ENGLISH HELP

Medien Media
Kunst Art
Netz Net

Jodi
«walkmonster_start ()»
On October 22, 2001, Jodi put an extensive text onto the international e-mail list Netttime. The text seemed to be a critical comment on contemporary political crises and wars and the way they were discussed on cultural platforms on the Web. But above all, the text turned out to be an impressive poetic work. The military order of linguistic and typographical features gave the text the appearance of an obsessively encoded inventory or a strategic diagram or plan. Readers who know both English and programming languages were also able to see that the poem is a functional source code in the programming language C. Indeed, the text is one part of a source code of Jodi's untitled game. This code is based on the source code of the commercial computer game Quake. By holding back the information about its origin and function, Jodi's e-mail made visible the esthetical and political subtexts of seemingly neutral sequences of technical commands.

(Source: Florian Cramer, «Discordia Concors: www.jodi.org,» in: [plugin] / Tilman Baumgärtel / BüroFriedrich (eds.), *Install.exe-Jodi*, Basel, 2002)

36724***.htm
Content-Type: text/plain; charset="us-ascii"

```

void up/soldier/soldier3
{
    origin 0 -6 24
    frame base
    skin skin

    ifname soldierc
    ifname soldierd
}

/*
*/

void() army_fice
{
    void() army_stand1
    *{ Isoldiero, army_stand2 }*
    void() army_stand2
    *{ Isoldiero, army_stand3 }*
    (ai_stand1());
    void() army_stand3
    *{ Isoldiero, army_stand4 }*
    (ai_stand2());
    void() army_stand4
    *{ Isoldiero, army_stand5 }*
    (ai_stand3());
    void() army_stand5
    *{ Isoldiero, army_stand6 }*
    (ai_stand4());
    void() army_stand6
    *{ Isoldiero, army_stand7 }*
    (ai_stand5());
    void() army_stand7
    *{ Isoldiero, army_stand8 }*
    (ai_stand6());
    void() army_stand8
    *{ Isoldiero, army_stand1 }*
}

void() army_walk1
*{ Isoldiero, army_walk2 }*
if (endnode) < 0.21
    sound (self, CHAN_VOICE, "soldier/idle.wav", 1, ATTN_IDLE);
ai_walk1();
void() army_walk2
*{ Isoldiero, army_walk3 }*
ai_walk1();

```

Jodi, «walkmonster_start ()», 2001
Screenshot | © Jodi

RELATED LINKS CREDITS

- Categories: Internet
- Keywords: Computer graphic | Interface | Material
- Relevant passages:
 - Inke Arns -Read_me, run_me, execute_me. Code as Executable Text: Software Art and its Focus on Program Code as Performative Text-
- Works by Jodi:
 - JET SET WILLY ©1984 OSS****

Example view of an artwork record 2: Features include image thumbnail, short description and ‘Related links’, such as keywords, citations, as well as other works by the same artist.

Reference URL: <http://www.mediakunstnetz.de>

Date of screenshots: 2018-11-15

runme.org (legacy database)

The screenshot shows the homepage of runme.org. On the left, there's a large grid of keywords categorized by decade (1960s, 1980s, 1990s, 1999, 2000). On the right, there's a login form with fields for email and password, and links for newcomers, forgot your password?, and latest projects.

Keywords Grid:

Decade	Collaborative	Firefox	Knitting	P2P	Python	Surveillance
1960s	community	flash	labor	paranoid	radio	symbiosis
1980s	conceptual	folk	lawyer_resistant	narrative	random	synmetry
1990s	consciousness	formalist	lingo	pascal	realtime	synesthesia
1999	constraints	found_object	linux	passionate	realworld	system
2000	copyright	fractal	lisp	patterns	relaxing	taking
2000	abstraction	commodity	fragile	literary	performance	religious
2000	abuse	coutercultural	free_software	live	performative	remix
2000	active	crash	friendly	live_coding	perf	representation
2000	addon	criticism	frustrated	love	philosophical	templates
2000	aesthetics	cute	gadgets	lowtech	photography	text_manipulation
2000	algorithmic	cyborg	generative	mac	PHP	trash
2000	amiga	dada	genetic	manifesto	sampling	trivial
2000	anachronistic	dangerous	glitch	mapping	pixel	turing
2000	anti-information	database	goofy	market	plagiarists	semantic
2000	anthropomorphic	death	Google	marxist	plugin	Twitter
2000	apocalyptic	debate	hackerly	mathematical	pocket_pc	seminal
2000	archetype	deconstructive	hardware	meme	poetry	typing
2000	archive	design	historical	metaphorical	political	serial
2000	ascii	desktop	hoax	metaphysical	poo_culture	unnoticeable
2000	audiovisual	destructive	html	MIDI	positive	useless
2000	authorship	dhtml	human	mindware	silence	utility
2000	automatic	disturbing	identity	minimalistic	posix	vectorial
2000	automation	dos	illegal	mobile	post-dotcom	simulation
2000	backwards	drugs	illustration	modal	powerscript	video
2000	BBS	dysfunctional	imagery	montage	power	virtual
2000	beos	eccentric	information	multilayer	pragmatic	virus
2000	binary	ecological	installation	musical	presence	visual
2000	blog	educational	instructive	neural_net	sound	voice
2000	body	efficient	interactive	network	spam	voyeur
2000	c	email	interface	news	privacy	speech
2000	c64	error	intuitive	noisy	probability	stimulation
2000	capitalism	evangelist	irc	norms	process	war
2000	chaos	Facebook	ironic	obfuscation	story	xxxxx
2000	chat	feedback	iterative	obfuscation	productivity	YouTube
2000	code	feminist	java	on-line	programming	
2000	coding	filesharing	javascript	open_source	stream	
2000	collaboration	film	junk	outsource	subjectivity	
2000					zozapanda	
2000					provocative	
2000					subversive	
2000					psychedelic	
2000					supernatural	
2000					superstitious	
2000					surreal	

Login Form:

newcomers, [sign up here.](#)
login
email
password

[forgot your password?](#)

Latest Projects:

- naked.on.pluto
- torrent.py
- 100.000.000 stolen pixels
- Excerpts From the Chronicles of Pookie & JR
- Satromized
- CodeSounding
- Velato
- Destroy the Web
- (more)

Featured Projects:

- LYCAY (Let Your Code pLAY)
- Reindeer Me
- Go-Logo
- Outsource me!
- The Invisible Hand Machine
- aPpRoPiRaTe!
- Towards a Permanently Temporary Software Art Factory
- (more)

The screenshot shows a detailed view of an artwork record for "naked on pluto" by Aymeric Mansoux, Marloes de Volk & Dave Griffiths. It includes a large image thumbnail, project details, and a sidebar with a login form and featured projects.

Project Details:

naked on pluto
Aymeric Mansoux, Marloes de Volk & Dave Griffiths
Naked on Pluto proposes a playful yet disturbing online game world, developed with Free/ Libre Open Source Software, which parodies the insidiously invasive traits of much "social software". The city of "Elastic Versailles" is animated by the quirky combinatorial logics of a community of fifty seven AI bots that glean Facebook data from subscribers to the game.

Please read [this disclaimer](#) before downloading

[download here](#) | [report broken link](#)
project homepage: <http://naked-on-pluto.net/>
keywords: social-liso-Facebook-ascii-Twitter-
program-hack-cyberpunk-apocalyptic-surveillance-
open-source-friend-community-anachronistic-story-
multiplayer-free-software-capitalism-1980s
category: social software
uploaded by [noboogo](#), 09 Oct 2012

[add a comment](#)

Login Form:

newcomers, [sign up here.](#)
login
email
password

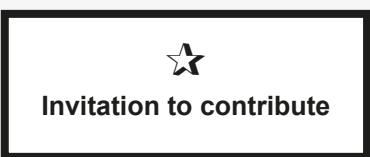
[forgot your password?](#)

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- aPpRoPiRaTe!
- Towards a Permanently Temporary Software Art Factory
- (more)



The screenshot shows a web browser window with the URL "runme.org - say it with software art!" in the address bar. The page has a dark header with navigation links like "front", "latest", "featured", "categories", "keywords", "news archive", "submit a project", "read_me festival", "about", "faq", and "feedback". Below the header is a search bar and a "search" button. The main content area is divided into two columns. The left column contains a sidebar with various category links and their counts, such as "algorithmic appreciation" (2), "appropriation and plagiarism" (5), "artificial intelligence" (10), "artistic tool" (38), "bots and agents" (16), "browser art" (21), "code art" (24), "conceptual software" (31), "data transformation" (37), "digital aesthetics r&d" (12), "digital folk and artisanship" (20), "existing software manipulations" (8), and "games" (16). The right column contains sections for "newcomers, sign up here.", "login" (with fields for email and password and a "login" button), "forgot your password?", "latest projects" (listing "naked on pluto", "torrent.py", "100.000.000 stolen pixels", "Excerpts From the Chronicles of Pookie & JR", "Satromizer.pl", "CodeSounding", "Velato", "Destroy the Web", and "[more]"), and "featured projects" (listing "LYCAY (Let Your Code.pLAY)", "Reject Me", "Go-Logo", "Outsource me!", "The Invisible Hand Machine", "aPpRoPiRaTe!", "Towards a Permanently Temporary Software Art Factory", and "[more]").

Collection overview by categories.

Reference URL: <http://runme.org>

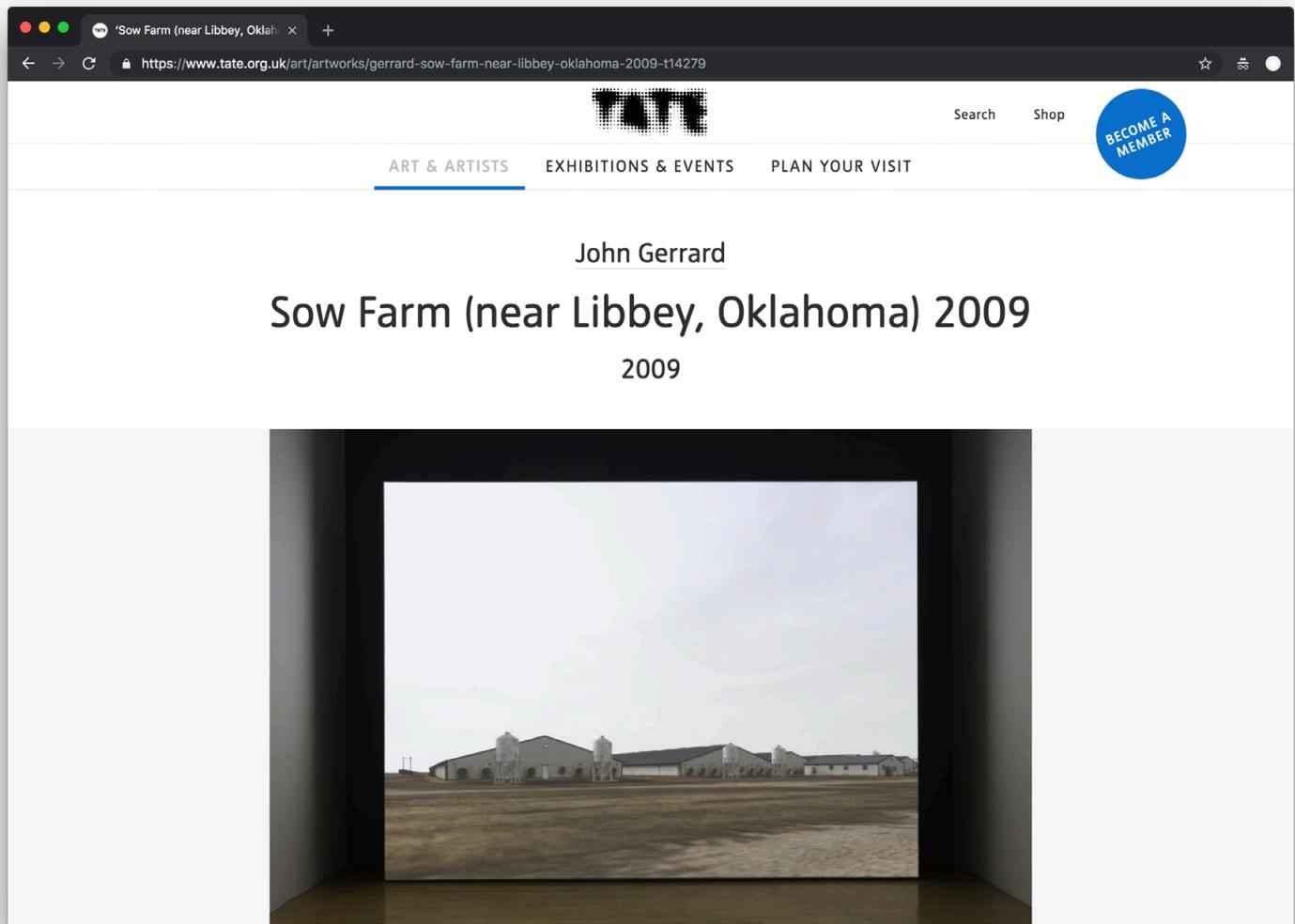
Date of screenshots: 2018-11-15

Notes: One participant in the user studies commented on this site and the creative use of categories and keywords for organizing. This approach, however, is sustainable when information is consistently provided by artists within a purpose-built framework based around the artist's submissions. While close to the early stages of the ArtBase, the ArtBase later evolved to have different collection policies.



2 Interfaces for artwork records in institutional collections

Tate (UK)



Example view of an artwork record: An image slideshow is featured near the top of the page.



Access statement

SUMMARY

John Gerrard's *Sow Farm (Near Libbey, Oklahoma) 2009* 2009 is a digital projection that depicts a huge, unmanned, entirely computer-controlled agricultural complex set on the American Great Plains. Presented as a single screen projection, the pig farm, desolate and sprawling, is depicted with blank dispassion. Although based on photographs taken on location by the artist, the work itself has been painstakingly constructed by Gerrard and a number of collaborators over many months using Realtime 3D, a computer software that is used primarily in the video-gaming industry. Gerrard has developed a distinctive engagement with the possibilities of this software since his discovery of it in the late 1990s. Realtime 3D involves creating three-dimensional objects through the software and displaying them on a screen almost immediately. The computer-generated image is deemed to be 'real time' because the software renders it on screen without any delay time.

Gerrard has described the process of making his works using Realtime 3D: 'I take my camera, walk around this facility and take four or five thousand pictures of it. We use that to remake it as a 3D model which is then clad in photographs to make almost a three-dimensional photograph. What you produce is a piece of software, which is a set of instructions which are then executed to produce this vision.' (Quoted in *Tate Shots* 2016, accessed 29 August 2018.) The results are eerie virtual portraits of real places which offer a strange and sometimes

NOT ON DISPLAY	
ARTIST	John Gerrard born 1974
MEDIUM	Realtime 3D projection, single screen, colour
DIMENSIONS	Duration: 365days
COLLECTION	Tate
ACQUISITION	Purchased with funds provided by The Ampersand Foundation in memory of Michael Stanley 2015
REFERENCE	T14279

Example view of an artwork record: Descriptive text and other metadata available for the record are featured near the bottom of the page.

Reference URL: <https://www.tate.org.uk>

Date of screenshots: 2018-11-15

Notes: Tate classify all their born-digital artworks as time-based media and use the term "medium" (which is part of the traditional museum CMS structure) to record basic requirements for the artwork performance such as "single screen" or "colour". The discrepancy between dimensions and durations reveals the limits of the CMS in use in the gallery, which only serves traditional items in the collection. The "Not on Display" disclaimer can be argued to serve as an access statement.

MoMA (US)

The screenshot shows a web browser window for the MoMA website. At the top, there is a navigation bar with links for 'Buy tickets', 'MoMA', 'Plan your visit', 'Exhibitions and events', 'Art and artists' (which is underlined), 'Store', and a search icon. Below the navigation is a large image of a gallery space featuring a projection screen displaying a scene from the artwork. To the right of the image, the artist's name 'Ian Cheng' and the title 'Emissary in the Squat of Gods' are displayed, along with the year '2015'. At the bottom of the page, there are sections for 'Not on view', 'Medium' (described as 'Live simulation and story (color, sound)'), 'Dimensions' ('Infinite duration'), 'Credit' ('Fund for the Twenty-First Century'), 'Object number' ('248.2016'), 'Copyright' ('© 2018 Ian Cheng. Courtesy of the Artist'), 'Department' ('Media and Performance Art'), and a note about research being incomplete. There are also links for 'Ian Cheng has 2 works online.' and 'There are 72 software works online.'

Example view of an artwork record 1: An image slideshow is featured near the top of the page.

This screenshot shows the same artwork record as the first one, but with more detailed metadata visible. The 'Medium' section is expanded to show 'Live simulation and story (color, sound)'. Other sections like 'Dimensions', 'Credit', 'Object number', 'Copyright', 'Department', and the note about incomplete research are also present. The right side of the page continues with the same links for related works.

Example view of an artwork record 1: Structured metadata is featured near the bottom of the page. There are also links to suggested query results for related works.



Structured data



Links to related queries



Invitation to contribute

Example view of an artwork record 1: Licensing information is provided near the bottom of the page.

The screenshot shows a web browser window with the URL https://www.moma.org/collection/works/202995?classifications=39&include_uncataloged_works=1&locale=en&page=1. The page title is "Ian Cheng, Emissary In the Square". The navigation bar includes "Plan your visit", "Exhibitions and events", "Art and artists" (which is underlined), "Store", and a search icon. A "Licensing" link is visible in the top right. The main content area contains two paragraphs of text about reproduction rights and contact information for Scala Archives and the Film Study Center. At the bottom right of the content area, there are three small icons: a grid, a left arrow, and a right arrow.

Example view of an artwork record 1: There is also an option to contribute metadata or suggest corrections.

The screenshot shows a web browser window with the same URL as the previous screenshot. The page title is "Ian Cheng, Emissary In the Square". The navigation bar includes "Plan your visit", "Exhibitions and events", "Art and artists" (underlined), "Store", and a search icon. A "Feedback" link is visible in the top right. The main content area contains a single paragraph about the record being a "work in progress" and encouraging users to send feedback to digital@moma.org. At the bottom, there is a "Top ↑" link, followed by a black footer bar with links for "About us", "Support", "Research and learning", and "Magazine". The footer also contains information about The Museum of Modern Art (open today, 10:30 a.m.–5:30 p.m., 11 West 53 Street, Manhattan, Please enter at 18 West 54 Street) and MoMA PS1 (open today, 12:00–6:00 p.m., 22–25 Jackson Avenue, Queens). Three small icons are at the bottom right of the footer bar.

Reference URL: <https://www.moma.org>

Date of screenshots: 2018-11-15

Notes: MoMA group their born-digital artworks in categories such as “website” and “software”. Information on “medium” varies widely across these artwork categories without an apparent consistent pattern of application. It appears to function as a catch-all field in the CMS. The discrepancy between dimensions and duration reveals same traditional-media bias in the CMS here, as seen in the Tate example, too. The use of structured metadata allows the construction of natural language ‘suggestions’ for queries which produce lists of related results. The invitation to the public to contribute (albeit via email, rather than database login) is a growing trend in US cultural institutions.

MoMA (US) continued

The screenshot shows a web browser window for the MoMA collection page. The URL is https://www.moma.org/collection/works/163892?classifications=40&date_begin=Pre-1850&date_end=2018&include_uncataloged_works=1&locale=en&page=1. The page title is "Fernanda Bertini Viégas, Martin Wattenberg". The main navigation menu includes "Plan your visit", "Exhibitions and events", "Art and artists" (which is underlined), "Store", and a search icon. A large image of a wind map of the United States is displayed above the text. Below the image, the artist names and work title are listed: "Fernanda Bertini Viégas, Martin Wattenberg" and "Wind Map". The year "2012" is also present. To the left of the text is a small button labeled "Not on view". The text describes the Wind Map as an online application that pulls information from the public National Digital Forecast database maintained by the National Weather Service. It states that near-term forecasts, revised once per hour, are precise within a range of two square miles. The time stamp shows the time of download. In the designers' words, Wind Map is a "living portrait" of the wind landscape over the United States: "An invisible, ancient source of energy surrounds usenergy that powered the first explorations of the world, and that may be a key to the future," they have written. Wind Map creates arrestingly beautiful patterns but also useful visualizations of data that can be analyzed in various ways. A gallery label from "Applied Design, March 2, 2013–January 31, 2014." is also present. On the right side of the page, there are links to related queries: "Fernanda Bertini Viégas has 2 works online.", "Martin Wattenberg has 2 works online.", "There are 9,860 design works online.", and "There are 2 websites online.". Navigation arrows are located at the bottom right.

Example view of an artwork record 2: Image, text description and links to related queries are featured near the top of the page.

The screenshot shows a web browser window for the MoMA collection page. The URL is https://www.moma.org/collection/works/163892?classifications=40&date_begin=Pre-1850&date_end=2018&include_uncataloged_works=1&locale=en&page=1. The main navigation menu includes "Plan your visit", "Exhibitions and events", "Art and artists" (which is underlined), "Store", and a search icon. Below the menu, there is descriptive text: "Medium Interactive software", "Credit Gift of the designers", "Object number 1751.2012", "Copyright © 2018 Fernanda Bertini Viégas and Martin Wattenberg", and "Department Architecture and Design". At the bottom of the page, the heading "Installation views" is followed by the text: "We used machine learning to identify this work in photos from our exhibition history." Navigation arrows are located at the bottom right.

Example view of an artwork record 2: Through a machine-learning experiment with Google Labs, some artwork records also feature installation views.

Reference URL: <https://www.moma.org>

Date of screenshots: 2018-11-15

Whitney Museum of American Art (US)

The screenshot shows a website page for the Whitney Museum of American Art. At the top, there's a navigation bar with links for VISIT, EXHIBITIONS, EVENTS, ART & ARTISTS, LEARN, SHOP, a search icon, BUY TICKETS, and BECOME A MEMBER. Below the navigation, a section for "Douglas Davis" features the title "THE WORLD'S FIRST COLLABORATIVE SENTENCE" in large, bold, black letters. Underneath the title, it says "1994-, CONSERVED 2012". To the right of the title is a search bar with the placeholder "Search by artist, artwork, or credit line" and a "SEARCH" button. Below the search bar are two radio buttons: one for "Collection" and one for "Rest of site". On the far right, there are left and right arrows. Below the title, there's a section titled "Image" which includes a thumbnail of the artwork and its details. The artwork is a screenshot of a computer screen displaying a video or image of a person's face. Overlaid on the image is a red text box containing the sentence "Come closer get into the lens let me see you We are about to create together... The World's first...". To the right of the image, the following metadata is listed:

Artist Douglas Davis (1933-2014)	Medium Website (HTML)	Credit line Whitney Museum of American Art, New York; Whitney Museum of American Art, New York; gift of Barbara Schwartz in honor of Eugene M. Schwartz 95.253. Originally commissioned by the Lehman College Art Gallery, The City University of New York, with the assistance of Gary Welz, Robert Schneider, and Susan Hoeltzel.
Title The World's First Collaborative Sentence	Dimensions Dimensions variable	Accession number 95.253
Date 1994-, conserved 2012		Rights and Reproductions Information © artist or artist's estate

Example view of an artwork record: Only an image thumbnail and minimal amount of metadata for the record are provided.



Reference URL: <http://collection.whitney.org>

Date of screenshots: 2018-11-15

Notes: The medium is given as “website (HTML)”, but there are no other fields where more detailed preservation or performance-related information can be provided. The dimensions filed here, once again, reveals the limits of the CMS in use in the museum, which only serves the traditional items in the collection.

Guggenheim (US)

The screenshot shows a web browser window for the Guggenheim Collection Online. The URL is <https://www.guggenheim.org/artwork/15337>. The page title is "COLLECTION ONLINE". A vertical sidebar on the left contains links for "GUGGENHEIM", "VISIT", "ART", "ENGAGE", "JOIN & GIVE", "RESEARCH", "ABOUT", "SHOP", and a search bar. Below this is a "OPEN TOMORROW 10 AM–5:45 PM" button. The main content area features a grid of images from the artwork "Brandon" by Shu Lea Cheang, which includes various photographs and text elements like "SWAP" and "EXPOSURE". To the right of the images, descriptive text and metadata are displayed:

Shu Lea Cheang
Brandon
In 1993 Brandon Teena (born Teena Renae Brandon), a young transgender man, was raped and murdered in Nebraska when it was discovered that he was anatomically female. Shu Lea Cheang's 1998 work *Brandon* is a multifaceted web project that uses the nonlinear and participatory nature of the Internet as a means to explore and illuminate Brandon Teena's tragic story. From the opening image of morphing gender signifiers, Cheang propels the viewer into a probing investigation of human sexuality. It is an inquiry that utilizes hyperlinked images of a disembodied human form, once-live chat rooms on the subject of crime and punishment, and graphic moving

ARTIST
[Shu Lea Cheang](#)
b. 1954, Taiwan

TITLE
Brandon

DATE
1998–99

MEDIUM
Interactive networked code (html, Java, Javascript and server database)

Example view of an artwork record: Representative image, descriptive text and some metadata elements are featured near the top of the page.



The screenshot shows a web browser window with the URL <https://www.guggenheim.org/artwork/15337>. The page title is "Brandon". On the left, there's a vertical sidebar with the Guggenheim logo and links for VISIT, ART, ENGAGE, JOIN & GIVE, RESEARCH, ABOUT, SHOP, and SEARCH. A banner at the bottom says "OPEN TOMORROW 10 AM-5:45 PM". The main content area is titled "Shu Lea Cheang Brandon". It describes the artwork as a multifaceted web project that explores Brandon Teena's tragic story through nonlinear and participatory means. The artwork uses hyperlinked images, once-live chat rooms, and graphic moving images to illuminate the wide-reaching effect of Brandon's life and death. It highlights the highly mutable "skin" of the Internet and how it enables individuals to inhabit and play with different gender roles. The text notes that "Brandon" is a prime example of "cyberfeminism". Below this, another paragraph discusses the artwork's presentation at the Society for Old and New Media in the Netherlands, noting its dual nature as both a website and a social/academic space, and its role in blurring the distinctions between online and offline platforms. The right side of the page contains detailed metadata fields: ARTIST (Shu Lea Cheang, b. 1954, Taiwan); TITLE (Brandon); DATE (1998-99); MEDIUM (Interactive networked code (html, Java, Javascript and server database)); DIMENSIONS (dimensions vary with installation); CREDIT LINE (Solomon R. Guggenheim Museum, New York Commissioned by the Solomon R. Guggenheim Museum, and produced in association with the Waag Society for Old and New Media, The Institute on the Arts and Civic Dialogue at Harvard University, and The Banff Centre, with additional funding from The Bohem Foundation, The Rockefeller Foundation, the New York Foundation for the Arts, and the Mondriaan Foundation); ACCESSION (2005.44); COPYRIGHT (© Shu Lea Cheang); ARTWORK TYPE (Internet Art); and MOVEMENT (Networked art).

Example view of an artwork record: Descriptive text and other metadata elements continue further on the page.

Reference URL: <https://www.guggenheim.org>

Date of screenshots: 2018-11-15

Notes: As with other museum interfaces, the "dimensions" metadata field here once again is of no use. The metadata field "medium" here is used to provide some high level of technical information, but as noted in discussion with conservators, this information can quickly become outdated and won't hold true for restored or variously preserved variants of the artwork necessarily. This interface uses the term "artwork type" to differentiate internet artworks from other works in the collection such as paintings, sculptures, etc. There is also a "movement" defined. This latter field is something curators might assign to artworks specially selected to be acquired in the collection, but is likely to be harder to define with a collection driven by artist submissions.

SFMOMA (US)

The screenshot shows a web browser window for SFMOMA. The title bar reads "Lynn Hershman Leeson, Agent". The URL is "https://www.sfmoma.org/artwork/2008.230". The page features the SFMOMA logo in red. A large image of a woman's face with red eyes and red lips is on the left. Overlaid on this image is a digital interface titled "AGENT RUBY'S EDREAM PORTAL". The interface has a "CONNECT" section with text input fields for "Ruby:" and "Seeker:". Buttons at the bottom include "[Put Ruby on your Palm]" and "[Info]". Below the interface are links: "rosella's research", "lynnhershman.com", and "teknotlustthemovie.com". The copyright notice "©2002 Lynn Hershman" is at the bottom right.

Example view of an artwork record: A representative image occupies the top of the page.

☆
Access statement

Lynn Hershman Leeson, Agent

<https://www.sfmoma.org/artwork/2008.230>

SFMOMA

Artwork Image Artwork Info

Artwork Info

Artwork title	<i>Agent Ruby</i>	Date acquired	2008
Artist name	Lynn Hershman Leeson	Credit	Collection SFMOMA
Date created	1999-2002	Copyright	Gift of bitforms gallery, Gallery Paule Anglim, and the artist © Lynn Hershman Leeson
Classification	digital media	Permanent URL	https://www.sfmoma.org/artwork/2008.230
Medium	web project	Artwork status	View this work online

Other Works by Lynn Hershman Leeson

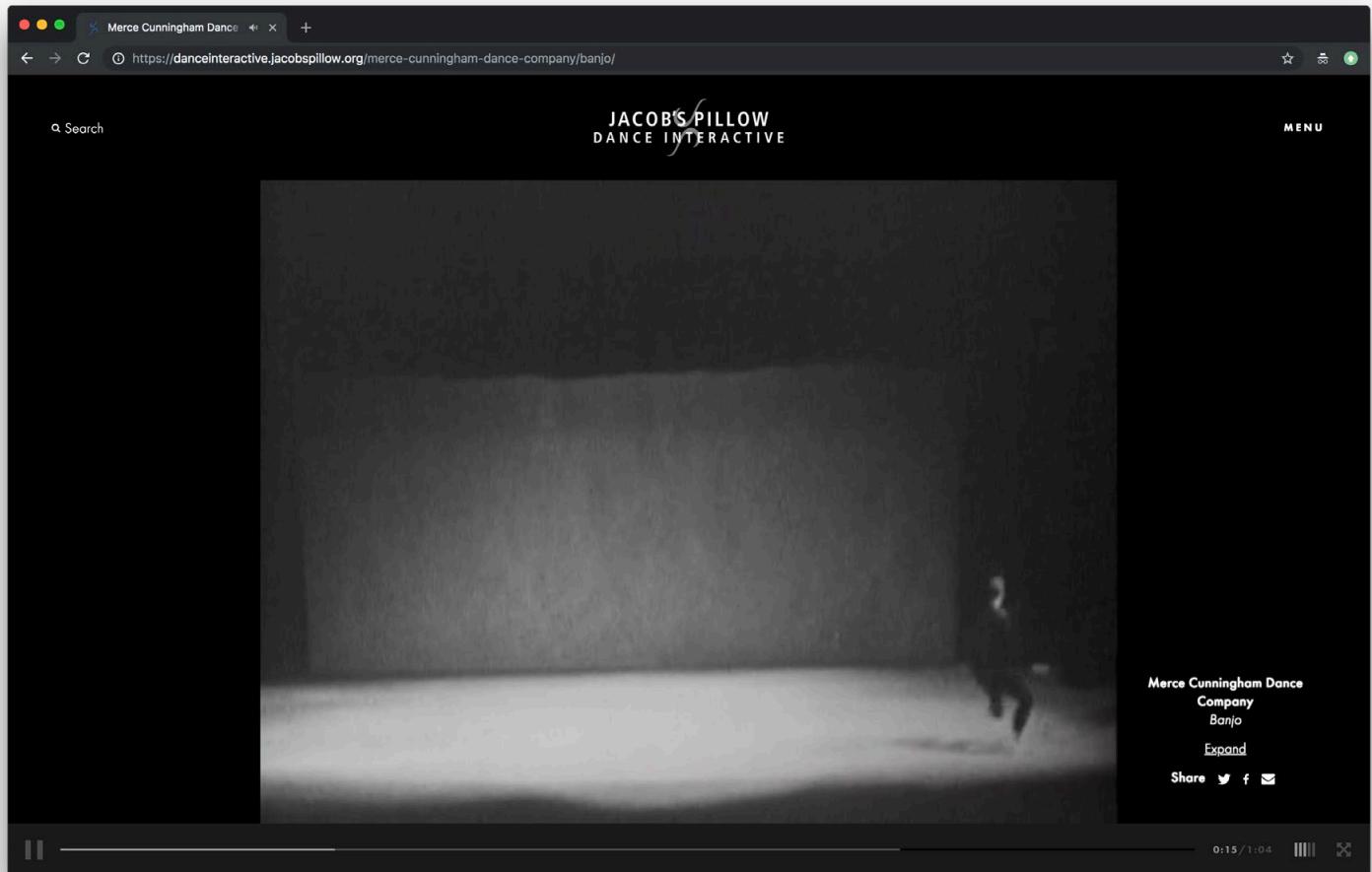
Example view of an artwork record: Some relevant metadata elements, as well as more works by the artist, are featured near the bottom of the page.

Reference URL: <https://www.sfmoma.org>

Date of screenshots: 2018-11-15

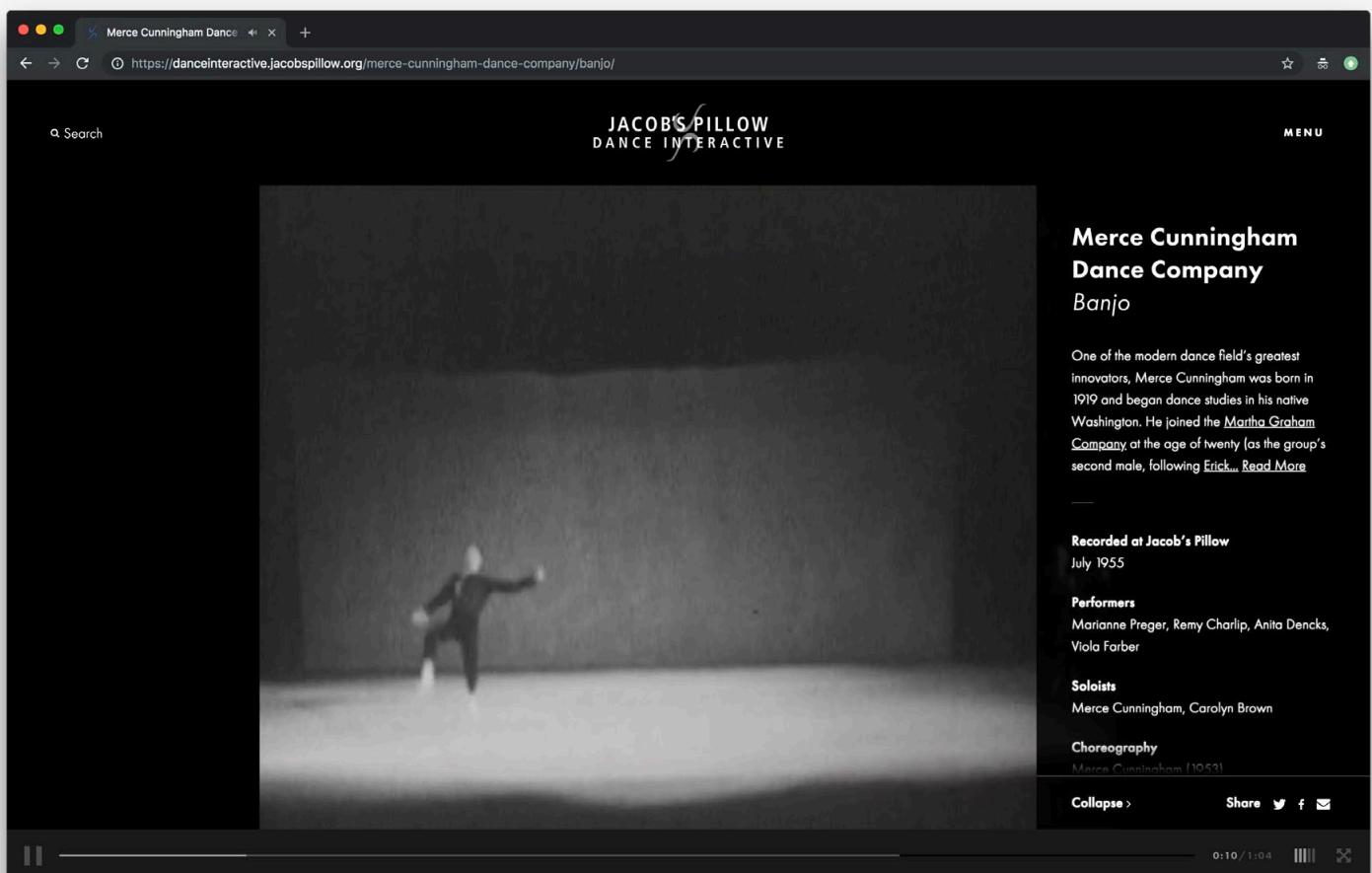
Notes: The work here is classified as “digital media”. The metadata field “medium” is used only to imply the work is web-based – “web project”. The “permanent URL” is a new element not present in other museum interfaces, but is crucial for all web-based works. Also the “status” of the artwork is made more explicit as part of the metadata record, which is helpful. In comparison, Guggenheim’s restored version of Brandon is only accessible from a text link in the artwork description (without even revealing the URL of the link). Making the access point a clear statement part of the metadata record is a much more effective user interaction pattern. Admittedly some of the other museum interfaces provide a label, such as “not on display” or “not on view”, which is also a form of access statement, but they don’t actually make the works available online, which is the ArtBase’s aim.

Jacob's Pillow Dance Archive (US)



Example view of an artwork record: Video representation featured at the top of the page.





Example view of an artwork record: Relevant metadata elements are available as an expandable/ collapsible sidepanel on the right side of the browser window.

Reference URL: <https://danceinteractive.jacobspillow.org>

Date of screenshots: 2018-11-20

Notes: While, not an archive containing digital art, this archive was suggested by one of the users during the user studies as a rare example of a performing arts archive. The collapsed metadata sidepanel seems particularly relevant for a design framework which will present artwork re-performances in the ArtBase, e.g. via Webenact or emulated representations.

Cooper Hewitt (US)

The screenshot shows a digital artwork titled "DIGITAL PROJECT, TEN THOUSAND CENTS, 2007-08". It features a highly pixelated, greenish-yellow version of a \$100 bill. Below the image, there is a caption: "This is a Digital Project. It was designed by Aaron Koblin. It is dated 2007-08 and we acquired it in 2014. Its medium is processing, adobe flash cs3, php/mysql, amazon mechanical turk, adobe photoshop, adobe after effects. It is a part of the Digital department." There are also social sharing icons and a save button.

Example view of an artwork record: Image representation, followed by title, timeline, and a description compiled as natural language out of structured data statements, are all featured near the top of the page.

The screenshot shows the same digital artwork record. Below the main description, there is a section titled "See more objects with the tag graphic design, digital computing, money, Benjamin Franklin, rendering." It includes a "Save" button and a "Related objects" section featuring two smaller images: "Sidewall Alimony, 1977" and "Border, Pocket Change, ca. 1970".

Example view of an artwork record: Links to suggested related works are featured further down the page.



Structured data

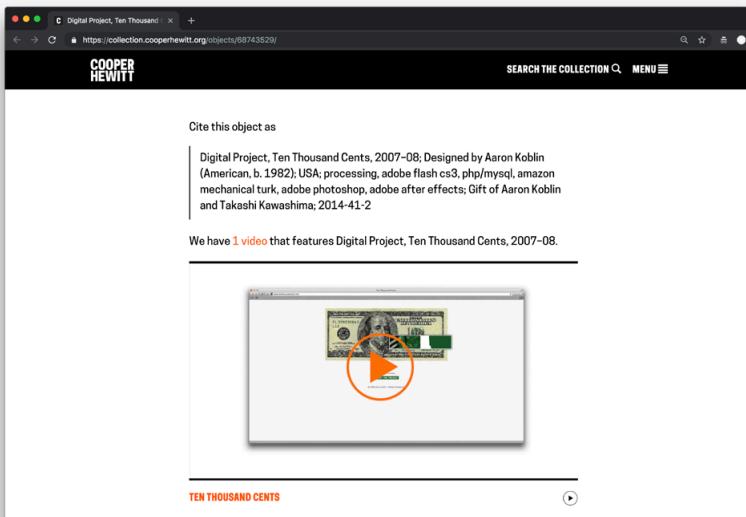


Natural language summary generated from structured data

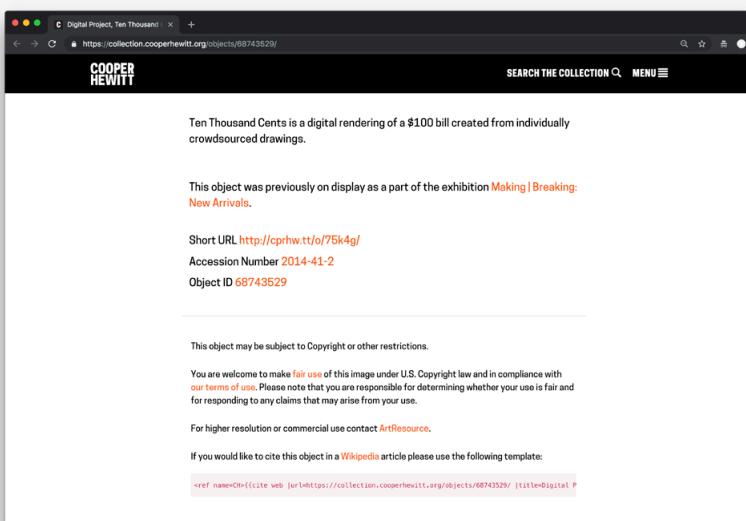


Single-object timeline

Example view of an artwork record: Citation information and video documentation are featured near the bottom of the page.



Example view of an artwork record: Additional administrative metadata (identifiers and licensing) is also provided in the end of the record page.



Reference URL: <https://collection.cooperhewitt.org>

Date of screenshots: 2018-11-15

Notes: This museum interface doesn't provide access to born-digital artworks per se, but represents many of the widely-used contemporary paradigms in institutional interfaces. Structured data is utilized to successfully enable multiple relations across the collection to be drawn. Additionally, the natural language descriptions generated out of structured data have been identified as a positive feature by multiple users during the user research. The timeline for the object history has also been identified as useful, and at the same time frustrating due to lack of interactivity. Finally, the only problem for longer, richer records appears to be the lack of clustering or any other hierarchy of organization for metadata, as unrelated statements seem to run on into each other without discernable visual distinction (as partly illustrated in the screenshots).

Rijksmuseum (NL)

The screenshot shows a detailed view of the painting 'The Milkmaid' by Johannes Vermeer. At the top, there's a navigation bar with the title 'Rijks: The Milkmaid, Johannes Vermeer'. Below the image, there are several interaction icons: a magnifying glass, a search icon, and a color palette. The main content area features the painting itself, which depicts a maid pouring milk from a large vessel into a smaller one. Below the image, there's a red button with a heart icon and the number '18,301', followed by a trash can icon, a share icon, and two search icons. To the right of the image, there's a color palette with various shades of blue and grey. Below the palette, there's a download button labeled 'Download image' with a download icon. On the left side of the main content area, there's a small text box with an 'i' icon and the title 'The Milkmaid, Johannes Vermeer, c. 1660'. It also includes the medium ('oil on canvas') and dimensions ('h 45.5cm x w 41cm'). A link to 'More details' is provided. A descriptive text follows, mentioning that the maid is pouring milk while everything else is still, and that Vermeer took a simple everyday activity and made it the subject of an impressive painting. It also notes that Vermeer had an eye for how light plays over the surface of objects. At the bottom left, there's a button labeled 'On display in Eregalerij'.

Collections with this work

Johannes Vermeer
RUKS MUSEUM

Schilderijen
Gorm Tigh
14 hours ago - 21 works • 49 ★ 0

dada magazine
diane
3 hours ago - 6 works • 4 ★ 0

Example view of an artwork record: High-res image and brief description are featured at the top of the page, alongside other user interaction prompts.

- 
Metadata clustering
- 
Metadata in collapsible element
- 
Access statement
- 
Expression of relations

The screenshot shows a detailed artwork record for 'The Milkmaid' by Johannes Vermeer. The page is structured with various sections and clusters of data.

Identification	Title(s)	The Milkmaid
	Object type	painting
	Object number	SK-A-2344
	Description	Een dienstmaagd staat achter een tafel en schenkt melk uit een melkkannetje in een kookpot. Op de tafel staat een mand met brood en een stenen kruik, links een venster met een rieten mand en een koperen pot. Onderaan de muur rechts een rijtje tegels en een stoofje.
Creation	Artist	painter: Johannes Vermeer
	Dating	c. 1660
Material and Technique	Physical features	oil on canvas
	Material	canvas, oil paint (paint)
	Measurements	h 45.5 cm x w 41 cm
Subject	What	<ul style="list-style-type: none"> • kitchen-maid, kitchen servant • milkmaid • milk • bread, loaf • foot-stove • container of ceramics: jar, jug, pot, vase
Acquisition and rights	Credit line	Purchased with the support of the Vereniging Rembrandt
	Acquisition	1908
	Copyright	Public domain
Relations	Related	Glorie van de Gouden Eeuw: De Keukenmeid
Documentation		<ul style="list-style-type: none"> • Vermeer : the life and work of a master, J. Henderson, V. Schiferli

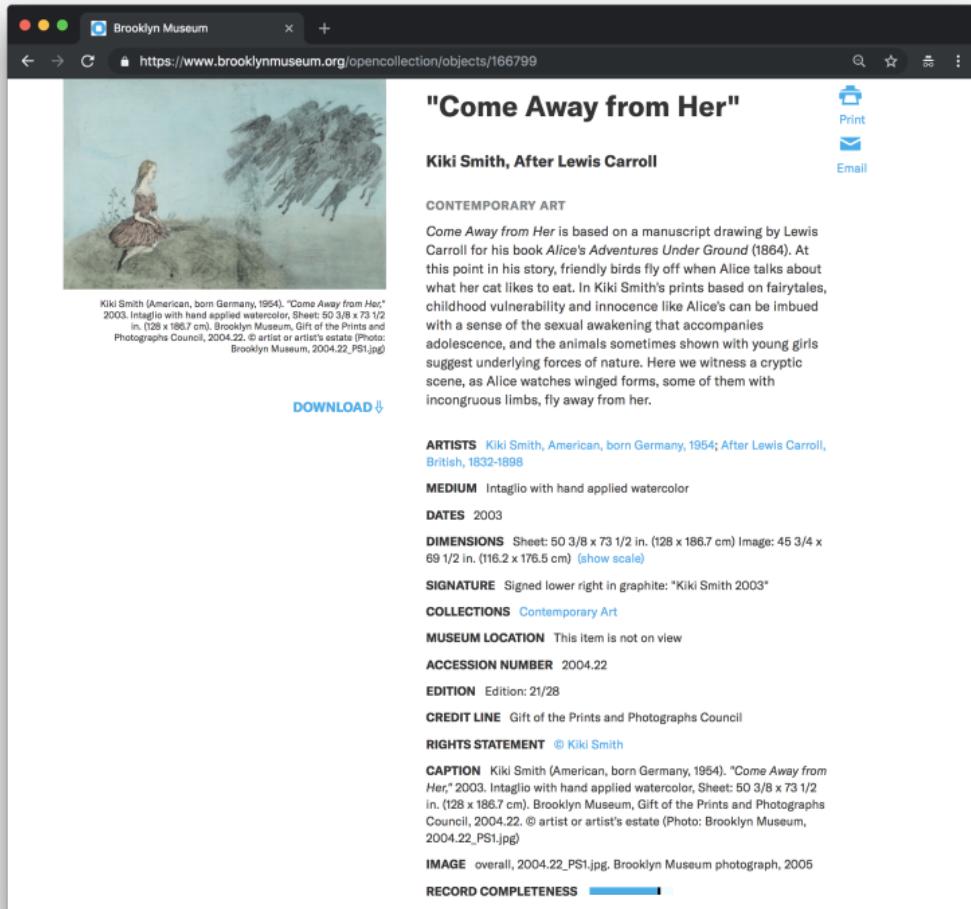
Example view of an artwork record: Relevant metadata elements are available as a long list of clusters, which are collapsed by default, but the user can expand by clicking an “Object data” button.

Reference URL: <https://www.rijksmuseum.nl>

Date of screenshots: 2018-05-14

Notes: This museum interface doesn't provide any access to born-digital artworks, but represents many of the widely-used contemporary paradigms in institutional interfaces. Providing different levels of detail at different steps in the user interface (via scroll/ collapsible elements) is a good example of how to cater to a wide variety of use-cases. Clustering relevant data under headings, and making relations explicit and explorable, are also helpful tactics of making large amounts of data more accessible to human reading vs machine processing.

Brooklyn Museum (US)



The screenshot shows a web browser window for the Brooklyn Museum's website. The URL is https://www.brooklynmuseum.org/opencollection/objects/166799. The main content is an artwork titled "Come Away from Her" by Kiki Smith, After Lewis Carroll. The image is a black and white intaglio print with hand-applied watercolor, depicting a young girl sitting on a grassy hill looking up at birds flying away. Below the image is a caption: "Kiki Smith (American, born Germany, 1954). 'Come Away from Her,' 2003. Intaglio with hand applied watercolor, Sheet: 50 3/8 x 73 1/2 in. (128 x 186.7 cm). Brooklyn Museum, Gift of the Prints and Photographs Council, 2004.22. © artist or artist's estate (Photo: Brooklyn Museum, 2004.22_PS1.jpg)". To the right of the image are three buttons: Print, Email, and a menu icon. The title "Come Away from Her" is in bold. Below it is the artist's name "Kiki Smith, After Lewis Carroll". A section titled "CONTEMPORARY ART" follows. The descriptive text for the artwork is as follows:

Come Away from Her is based on a manuscript drawing by Lewis Carroll for his book *Alice's Adventures Under Ground* (1864). At this point in his story, friendly birds fly off when Alice talks about what her cat likes to eat. In Kiki Smith's prints based on fairytales, childhood vulnerability and innocence like Alice's can be imbued with a sense of the sexual awakening that accompanies adolescence, and the animals sometimes shown with young girls suggest underlying forces of nature. Here we witness a cryptic scene, as Alice watches winged forms, some of them with incongruous limbs, fly away from her.

Below the text are several metadata fields with their values:

- ARTISTS: Kiki Smith, American, born Germany, 1954; After Lewis Carroll, British, 1832-1898
- MEDIUM: Intaglio with hand applied watercolor
- DATES: 2003
- DIMENSIONS: Sheet: 50 3/8 x 73 1/2 in. (128 x 186.7 cm) Image: 45 3/4 x 69 1/2 in. (116.2 x 176.5 cm) [\(show scale\)](#)
- SIGNATURE: Signed lower right in graphite: "Kiki Smith 2003"
- COLLECTIONS: Contemporary Art
- MUSEUM LOCATION: This item is not on view
- ACCESSION NUMBER: 2004.22
- EDITION: Edition: 21/28
- CREDIT LINE: Gift of the Prints and Photographs Council
- RIGHTS STATEMENT: © Kiki Smith
- CAPTION: Kiki Smith (American, born Germany, 1954). "Come Away from Her," 2003. Intaglio with hand applied watercolor, Sheet: 50 3/8 x 73 1/2 in. (128 x 186.7 cm). Brooklyn Museum, Gift of the Prints and Photographs Council, 2004.22. © artist or artist's estate (Photo: Brooklyn Museum, 2004.22_PS1.jpg)
- IMAGE: overall, 2004.22_PS1.jpg. Brooklyn Museum photograph, 2005

RECORD COMPLETENESS: ■■■■■

Example view of an artwork record: Image thumbnail, descriptive text and a list of metadata statements are feautured near the top of the page.

RECORD COMPLETENESS

Not every record you will find here is complete. More information is available for some works than for others, and some entries have been updated more recently. Records are frequently reviewed and revised, and we welcome any additional information you might have.

The artwork record page also features a “record completeness” statement, which (upon click) explains the variation between records in the collections and invites contributions from the public.



Metadata richness
indicator



Invitation to contribute

Reference URL: <https://www.brooklynmuseum.org>

Date of screenshots: 2018-05-14

Notes: This museum interface is included in this review for its use of the concept of record completeness, or richness. This makes the explicit statement that the museum doesn't try to project some absolute truth, but rather that the collection and all archival records are a constant work-in-progress. Also this interface invites the public to contribute.

Auckland Museum (NZ)

Example view of an artwork record: Image thumbnail, descriptive text and a list of metadata statements are feautured near the top of the page.

The screenshot shows a detailed view of an artwork record for a photograph titled "The ruins of Ypres Cathedral. N.Z. troops looking for souveniers." The page includes a header with search and navigation links, a main title, a library classification, and social sharing options. Below the title is a large image of the photograph showing soldiers in the rubble of a cathedral. Metadata fields include description, other number, collection area, and record richness. There are also buttons for enquiring and adding to a collection. A "Catalogue" section provides a summary of the record details.

CATALOGUE TITLE	The ruins of Ypres Cathedral. N.Z. troops looking for souveniers.
IDENTIFIERS	PH-ALB-419 (Reference Number)
CREATOR	Sanders, Henry Armytage Bradley, 1886-1936
PERIOD	1914-1918
DESCRIPTION	Hand written inscription reads: "The ruins of Ypres Cathedral. N.Z. troops looking for souveniers. 20/10/17." New Zealand soldiers looking through the rubble outside the heavily damaged leper Cathedral in Belgium.
COLLECTION	Official H Series

The artwork record page also features a “record richness” statement with a gradation of three possible states. The condition of the collection and the possibility of errors or omissions is stated in the bottom of the page, but there is no invitation for public contribution.

OTHER NUMBER
PH-ALB-419
COLLECTION AREA
RECORD RICHNESS

Indication of record richness

Metadata richness indicator

Reference URL: <https://www.rijksmuseum.nl>

Date of screenshots: 2018-05-14

Notes: This museum interface is included in this review for its use of the concept of record completeness, or richness.

3 Interfaces for collection entry points

Victoria & Albert Museum (UK)

HOME VISIT WHAT'S ON **COLLECTIONS** LEARN JOIN & SUPPORT SHOP

From the Collections

From ancient Chinese ceramics to Alexander McQueen evening dresses, take an incredible journey through 5000 years of human creativity with our online collections.

LATEST

 Postmodernism  Embroidery  Fashion in Motion  Garry Fabian Miller

EXPLORE THE COLLECTIONS

SPACES PERIODS AND STYLES PEOPLE FEATURED MATERIALS AND TECHNIQUES PLACES

 Raphael Cartoons  Glass  Sculpture

 Knitting  Embroidery  Textiles

 Tapestry  Paintings  Print

 Ceramics  Quilting and patchwork  Cast collection

 Photography

Want to discover more?
Delve into our collections online

SEARCH THE COLLECTIONS

BACK TO THE TOP

Victoria and
Albert Museum

*Entry point to all collections:
Various collection categories,
re-presented via image
thumbnail surrogates give a
broad overview of collection
holdings.*

★
Overviews & previews

★
Curated selections

Entry point to a specific collection: Limited number of pre-set curated object previews are re-presented via image thumbnails, with the option to “show more”.

The screenshot shows the homepage of the Victoria & Albert Museum's Photography collection. At the top, there is a large banner featuring a black and white photograph of a group of women in traditional dress, possibly from a performance or exhibition. The V&A logo is prominently displayed in the bottom right corner of the banner. Below the banner, the word "Photography" is written in a large, bold, sans-serif font. Underneath it, smaller text reads "Photography Centre, Rooms 99–101". A "PLAN A VISIT" button is located just below the main title. The main content area has a dark background with white text. It starts with a paragraph about the history of the collection: "The V&A began acquiring photographs in 1852, and its collection is now one of the largest and most important in the world." Below this, there is a "Read more" link with a small icon. To the right of the text, there are several interactive elements: a "Where to find this collection" link with a location pin icon, a "Download a map" link with a map pin icon, a "Search the Collections" search bar, and social sharing icons for Facebook, Twitter, Pinterest, and Google+. Below these, there is a section titled "EXPLORING PHOTOGRAPHY" which features six thumbnail images of various photographs, each with a caption and a "SHOW MORE" link. The thumbnails include images of Queen Elizabeth II, an African man in a colorful patterned suit, a blue-toned flower, a building, a woman sitting, and a series of circular patterns.

Reference URL: <https://www.vam.ac.uk>

Date of screenshots: 2018-11-20

Notes: This museum interface doesn't provide access to born-digital artworks, but represents some contemporary paradigms in institutional interfaces, specifically the provision of some form of "overviews" and "previews" for what's in the collections. Despite lack of data visualizations, the general approach follows some of the principles of "generous interfaces" (See Whitelaw, 2015).



Tate (UK)

The screenshot shows the Tate (UK) website's search results for 'artwork'. At the top, there's a navigation bar with links for 'ART & ARTISTS', 'EXHIBITIONS & EVENTS', and 'PLAN YOUR VISIT'. A 'BECOME A MEMBER' button is also visible. Below the navigation is a search bar with a magnifying glass icon. Underneath the search bar is a category menu with options: 'All (127,679)', 'Artists (4,986)', 'Artworks (79,245)' (which is highlighted in blue), 'Exhibitions & Events (5,018)', 'Displays (128)', 'Archive Items (22,566)', 'Video & Audio (4,954)', 'In Depth (3,596)', and 'Location (104)'. A 'Refine your search' dropdown arrow is located to the right of the category menu. Below this, it says 'Showing 1–20 of 79,245 results'. Four artwork thumbnails are displayed in a row: 1. 'Ophelia' by Sir John Everett Millais, Bt (1851–2). 2. 'Bust of a Woman' by Pablo Picasso (1909). 3. 'Whaam!' by Roy Lichtenstein (1963). 4. 'Salisbury Cathedral from the Meadows' by John Constable (exhibited 1831). Each thumbnail has a caption below it. A green circular icon with a dot is present next to the captions for the artworks by Millais, Picasso, and Lichtenstein.

Entry point to the collection: The interface offers overviews (in the form of categories) and previews (via image thumbnail surrogates).



Overviews & previews

Reference URL: <https://www.tate.org.uk>

Date of screenshots: 2018-11-15

Notes: This interface offers different ways to 'slice' the collection into categories, but does not take a generous approach in visualizing showing specific areas of the collection. The search box still holds the most prominent place in the interface.

Cooper Hewitt (US)

The screenshot shows the homepage of the Cooper Hewitt website. At the top, there's a navigation bar with links for 'COOPER HEWITT', 'SEARCH THE COLLECTION', and 'MENU'. Below the navigation, there are links for 'YOU', 'TOYS', and 'EXPLORE THE COLLECTION'. A prominent orange button labeled 'WELCOME TO OUR COLLECTION!' is centered above three preview images. Each preview image has a color palette below it. The first image shows a colorful textile or paper design. The second image is a Christmas card with a landscape illustration and holly leaves. The third image is a floral patterned textile. At the bottom of the page, there's descriptive text about the collection's diversity and some fun facts.

WELCOME TO OUR COLLECTION!

COOPER HEWITT

SEARCH THE COLLECTION

YOU TOYS EXPLORE THE COLLECTION

RANDOM

JOYFUL CHRISTMAS

show me more things!

This website represents Cooper Hewitt, Smithsonian Design Museum's diverse collection, spanning thirty centuries of historic and contemporary design, including [the world's coolest office](#), [a large snail shell](#), [snakes](#), [a dragon](#) and [four bearded men](#), [a cone propped up on a bench](#), [a pair of colorful hands](#), [a mysterious tv](#) and [a perpetual calendar](#).

Entry point to the collection: Six (random) object previews are featured, with option to “show more”. In addition, descriptive text offers various possible ‘routes’ through the collection to visitors.



Reference URL: <https://collection.cooperhewitt.org>

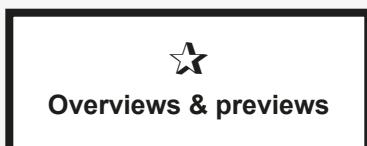
Date of screenshots: 2018-11-15

Notes: This interface takes a generous approach, by removing the search box from a central position on the page. Instead, it previews random items from the collection, which are reloaded every time the user visits the collection. Additionally, the descriptive text provides more ‘fun’ entry points into the collection and conceptually links well to the way users can navigate the collection through the natural language summaries generated from the structured data associated with each object.

MoMA (US)

The screenshot shows the MoMA collection search interface. At the top, there is a navigation bar with links to 'Plan your visit', 'Exhibitions and events', 'Art and artists' (which is underlined), 'Store', and a search icon. Below the navigation is a search bar labeled 'Search artists and works' with a magnifying glass icon. Underneath the search bar is a 'Filters' section with a dropdown menu set to 'Software (72)'. It also includes date filters 'Pre-1850 through 2018', a checkbox for 'Recent acquisition' (unchecked), and a checked checkbox for 'Include uncataloged works'. There are also two radio buttons for 'Has image' (unchecked) and 'On view' (unchecked). Below the filters, a message says 'Showing 72 out of 79,873 works online'. The main content area displays five work cards, each with a thumbnail image (the first one has a preview image, while the others say 'No image available'), the artist's name, and the title. The titles are: 'Ian Cheng Emissary Forks at Perfect 2015 - 2016', 'Ian Cheng Emissary in the Squat o 2015', 'Andrew John Hessel, Ja Synthetic PhiX174 Bact 2014', 'Andrew John Hessel, Ja Synthetic PhiX174 Bact 2014', and 'Andrew John Hessel, Ja Synthetic PhiX174 Bact 2014'.

Entry point to the collection: The search box is centred at the top of the page. Advanced search is facilitated via filters and previews (with image thumbnail surrogates).



The Collection | MoMA

Showing 68,750 out of 79,873 works online

Wyatt Kahn
Untitled
2018

Martirene Alcántara
Speculum (From the series)
2017

Archi-Union Architects,
"In Bamboo" Cultural Exchange
2017

Fiona Banner
The Vanity Press 2018 NUDE CALENDAR
2017

Sofia Borges
Yellow Chalk
2017

Matthew Brannon
Concerning Vietnam: One
2017

Silvia Buonvicini
Sans titre
2017

Maurizio Cattelan
Untitled (for Parkett, no. 100)
2017

Marlene Dumas
Art Is/Always/Having to
2017

Shannon Ebner
PHOTORAMA
2017

Nicole Eisenman
Beer Garden with Big Heads
2012-17

Omer Fast
White Male Selfies (for Facebook)
2017

Entry point to the collection: Scrolling past the search box and filters, offers previews of everything in the collection (with image thumbnail surrogates).

Reference URL: <https://www.moma.org>

Date of screenshots: 2018-11-15

Notes: This interface offers different ways to “filter” the collection via categories and temporal dimensions, but does not take a generous approach in visualizing specific areas of the collection. The search box still holds the most prominent place in the interface.

Whitney Museum of American Art (US)

The screenshot shows the Whitney Museum of American Art's collection browsing interface. At the top, there's a navigation bar with links for VISIT, EXHIBITIONS, EVENTS, ART & ARTISTS, LEARN, SHOP, a search icon, BUY TICKETS, and BECOME A MEMBER. Below the navigation is a section titled "BROWSE ALL ARTISTS" with a grid of artist thumbnails. Each thumbnail includes the artist's name and the number of works. There are also filters like "Works on view", "Recent acquisitions", and "For teachers". A search bar at the top right allows users to search by artist, artwork, or credit line. A pagination area at the bottom right shows page 1 of 139.

Artist	Number of Works
Berenice Abbott	3 works
Matthew Abbott	1 work
Zarouhie Abdalian	1 work
Michele Abeles	3 works
Sigmund Abeles	2 works
Satoru Abe	1 work
Marina Abramovic	1 work
Vito Acconci	11 works
Koith Achapco	1 work

Entry point to the collection: Some filters and sorting utilities are featured near the top of the page, followed by previews (with image thumbnail surrogates).



Overviews & previews

Reference URL: <https://collection.whitney.org>

Date of screenshots: 2018-11-15

Notes: This interface provides very few ways of discovering items in the collection without having a very specific search query (and search is also limited to knowing the exact artwork title or name of the artist). The use of previews does not mitigate this and casual browsing is poorly facilitated.

SFMOMA (US)

Artists + Artworks

Collection Artist Interviews Collecting Areas Public Practice Research Back to top

The screenshot shows a grid of eight artworks from the SFMOMA collection. Each item includes a thumbnail, the artist's name, and the title.

- Frank Lobdell**, *Summer 1965*, 1965
- Martin Venezky**, *2001 Sundance Film Festival Postcard*, 2000
- Henry Wessel**, *Civic Center Plaza, San Francisco, California*, 1985
- Loom**, *Movement 4, from Thailand Unfolding House*, 1994-1996
- Martin Venezky**, *Open, Number 3*, 2000
- Dr. William J. Pierce**, *Spirit Photographs*, 1903
- Judith Joy Ross**, *Susan Ravitz, Protesting the U.S. War in Iraq, Factor, Pennsylvania*, from the series *Protests*
- Henry Wessel**, *Untitled*, from the series *Continental Divide*

Entry point to the collection: Some overviews and previews are provided based on a few categories (e.g. “collecting areas”).



Randomization



Overviews & previews

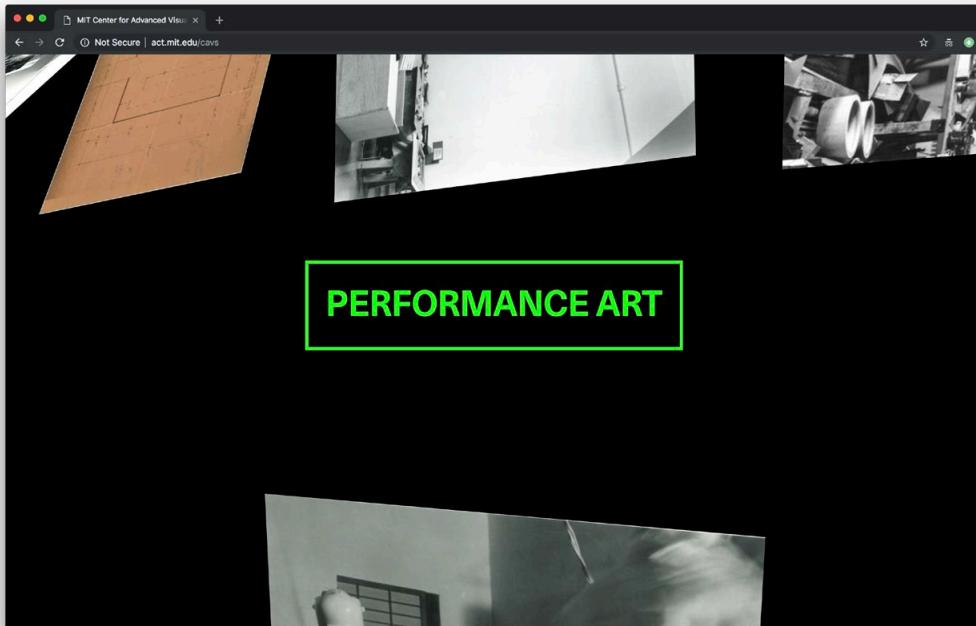
Reference URL: <https://www.sfmoma.org>

Date of screenshots: 2018-11-15

Notes: This interface takes an exploratory approach to the collection offering overviews and previews across a few different categories, but is more limited in scope compared to the V&A or Cooper Hewitt examples. Search box and filters are available as a second step via the “Explore the collection” button. It does feature eight random items from the collection (shown above), which re-load every time the user visits the collection entry page.



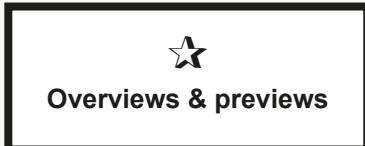
MIT's Center for Advanced Visual Studies (CAVS) (US)



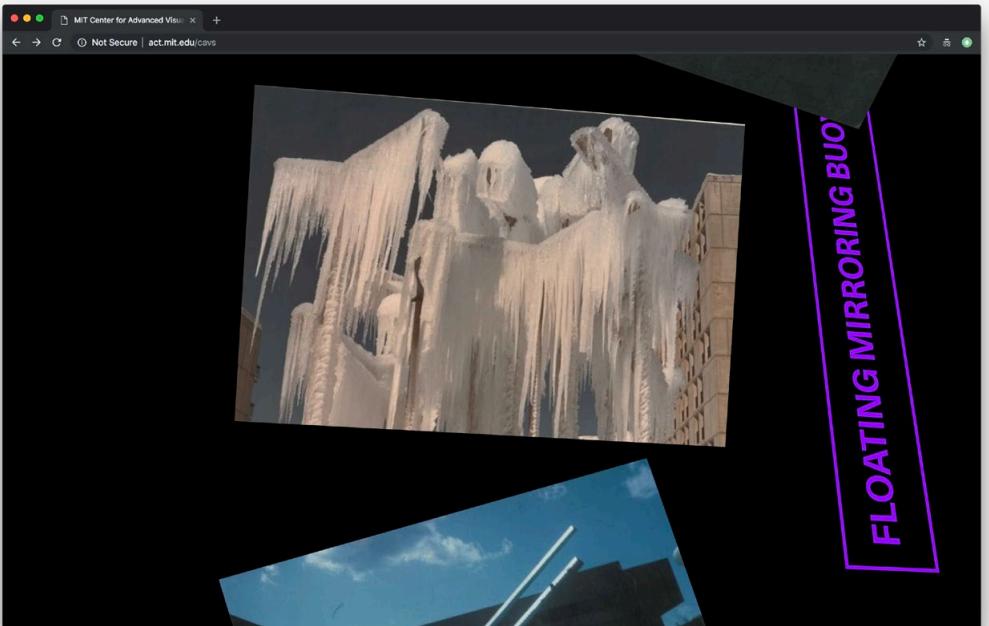
Entry point to the collection:
The collection can be
navigated via a randomized
3D environment of collection
materials.



Entry point to the collection
(cont.).



*Entry point to the collection
(cont.).*



Example view of an item record: An image and minimal amount of metadata represent the item.

A screenshot of a web browser window titled "Butler Fountain". The URL is "act.mit.edu/cavs/item/cavsdfl_nesjar_c_Sact-office16112113391". The main content area shows a photograph of a modern fountain sculpture with multiple water jets spraying upwards. Below the image, there is descriptive text and metadata:

Part of: [Butler Fountain](#) by Carl Nesjar

Butler Fountain, 1983
Photograph of CAVS Fellow Carl Nesjar's sculpture "The Butler Fountain," for the State University College at Buffalo. Photograph: unknown.

Subjects: Art works, Sculpture, Fountains Format: sculpture [visual works]
Holding Institution: Massachusetts Institute of Technology, Program in Art, Culture and Technology

Reference URL: <http://act.mit.edu/cavs>

Date of screenshots: 2018-11-20

Notes: This interface takes a generous approach to giving an overview of the collection – in the form of an experimental 3D viewing plane where order is randomised and categories branch out vertically and horizontally. This is a creative solution to encourage users to interact with what is otherwise primarily static documentation of time-based and performance-based artworks. The work/documentation records reveal very little metadata and a frustrating aspect of user interaction here is the inability to “go back” to the 3D environment after opening an item record. Instead, the user is taken back to the opening screen of the collection. There are, however, other more standard ways to browse (or search) lists of work previews which can be sorted and filtered.

Google Arts & Culture

The screenshot shows the 'Explore' section of the Google Arts & Culture website. At the top, there's a navigation bar with 'HOME', 'EXPLORE' (which is underlined), 'NEARBY', 'PROFILE', a search icon, and a 'SIGN IN' button. Below the navigation, the 'Highlights' section features three cards: 'Art Camera' (Explore high-definition artworks), '360° videos' (Experience culture in 360 degrees), and 'Street View' (Tour famous sites and landmarks). The 'Categories' section follows, with five cards: 'Artists' (5,933 artists), 'Mediums' (231 mediums), 'Art Movements' (121 art movements), 'Historic Events' (638 historical events), and 'Historical Figures' (6,415 historical figures). Finally, the 'Collections' section is shown, featuring five image thumbnails of various museum exhibits.

Entry point to all collections: Overviews and previews (with image thumbnail surrogates) are provided based on various categorizations.



Overviews & previews



Curated selections

The screenshot shows the Google Arts & Culture homepage with a grid of featured stories. Each story includes a thumbnail image, a category label, a title, a brief description, and a share icon.

- VIRTUAL EXPLORER**: [The Kinoscope in 360°](#)
Take a journey into the world of cinema
- VIRTUAL EXPLORER**: [Beyond the Bucket List: 20 Can't-Miss Locations Around the Globe](#)
From sand dunes to jungles, these far-flung wonders will take your breath away
- WE WEAR CULTURE**: [Traditional Korean Clothing with a Modern Twist](#)
The pioneering designs of Lee Young Hee
- ART EXPERIMENTS**: ["Until" at Mass MoCA](#)
A tour of Nick Cave's empowering installation
- CULTURAL HERITAGE**: [The Never-Ending Love of the Mountains](#)
The cultural significance of mountains in the UAE
- FOOD FOR THOUGHT**: [The Story of Mexico's Mesquite](#)
Slow Food Foundation for Biodiversity - Ark of Taste
- VIRTUAL EXPLORER**: [La Mosquée des Omeiyades in 360°](#)
Travel to Syria to see this archaeological treasure
- MUSEUM EXPLORER**: [Explore Nafasi Art Space](#)
A contemporary art centre in Tanzania
- AMAZING CRAFTSMANSHIP**: [Traditional Venetian boats](#)
From models to boatbuilding at the
- UNBURIED TREASURES**: [Beautiful Jade from Jinsha](#)
The colorful artifacts of the ancient
- CULTURAL HERITAGE**: [The Intricate Art of Japanese Sweets](#)
A look at the history of wagashi
- MUSEUM EXPLORER**: [Go Inside the Rijksmuseum](#)
See world-famous masterworks

Entry point to all collections: Curated selections are also represented as previews (with image thumbnail surrogates).

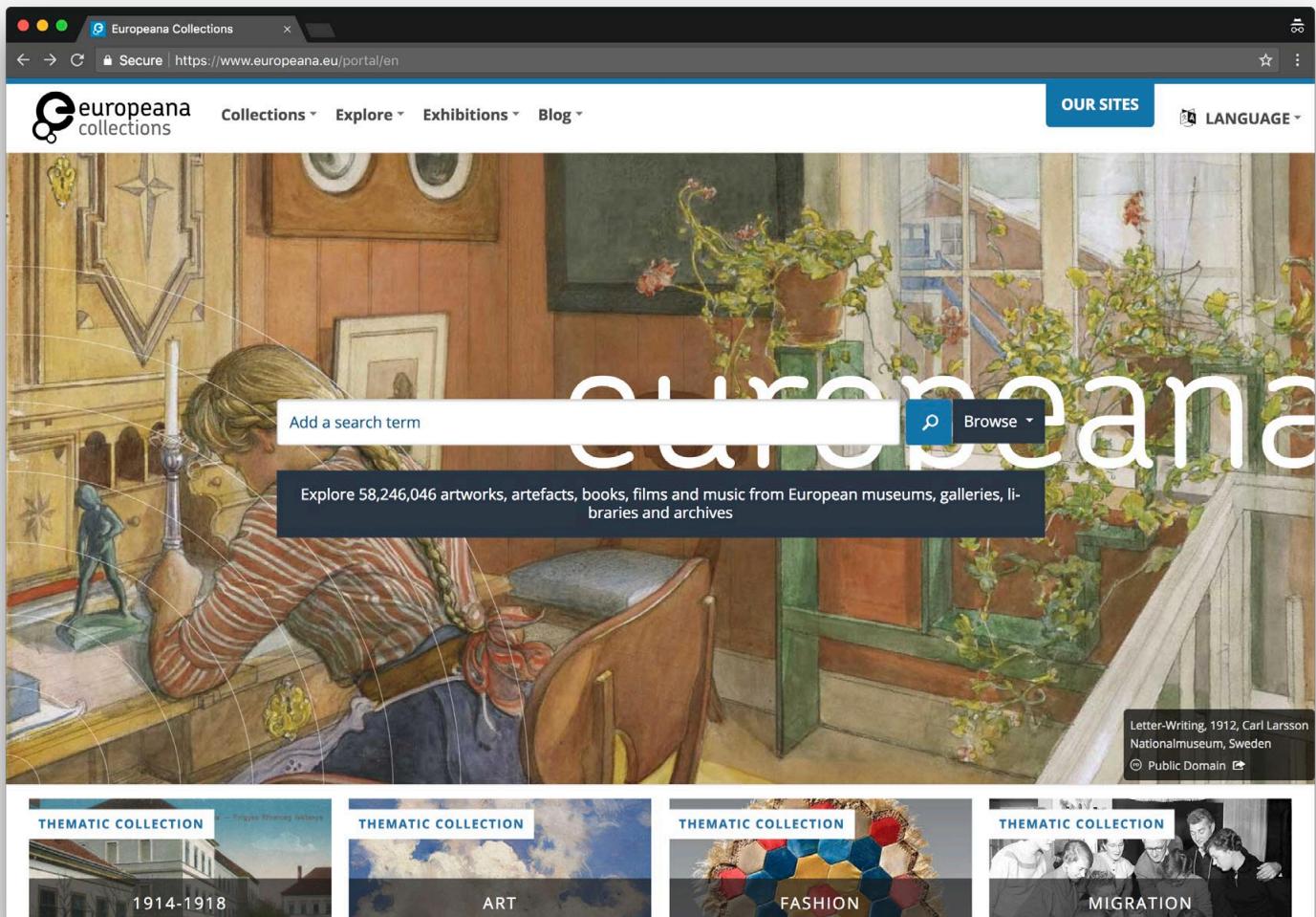
Reference URL: <https://artsandculture.google.com>

Date of screenshots: 2018-05-14

Notes: While, not an institutional interface, this interface acts as an aggregator of many different institutional collections, as well as additional, specially-commissioned content. It utilizes many of the popular paradigms in collection interface design practices, such as overviews and previews, curated selections, minimizing the role of direct search and focusing on exploratory browsing. However, the primary issue with the implementation of this approach in the context of an aggregator is how easy it is to flatten and/or altogether remove the specific cultural context around each collection, and thereby inhibit the ability to interpret and make meaning of individual collections.



Europeana (EU)



Entry point to all collections.

Reference URL: <https://www.europeana.eu>

Date of screenshots: 2018-09-12

Notes: Despite a recent redesign, the Europeana portal continues to uphold the dominance of the search box as primary navigation paradigm. The desire to emulate the “Google experience” has been well documented in research papers on collection interfaces, but when even Google’s Arts&Culture portal is moving away from this paradigm, it’s surprising that other cultural initiatives are still upholding it. There are some curated selections and additional browsing utilities further into the interface, but search remains the primary entry point.



Curated selections

DPLA (US)

The screenshot shows the DPLA homepage. At the top, there's a navigation bar with links for 'BROWSE BY TOPIC', 'BROWSE BY PARTNER', 'EXHIBITIONS', 'PRIMARY SOURCE SETS', 'MY LISTS', 'ABOUT DPLA', 'NEWS', and 'DPLA PRO'. Below the navigation is the DPLA logo and a 'Digital Public Library of America' tagline. A prominent orange 'Donate' button is visible. The main content area features a search bar with the placeholder 'Search the collection' and a blue 'Search' button. Below the search bar are links for 'Browse by Topic' and 'New? Start Here'. A large callout box in the center promotes 'Teaching and Learning with DPLA', encouraging users to 'Dive into another year of teaching and learning at DPLA. Explore our guide to our education resources including Primary Source Sets, a free webinar for educators, National History Day materials, and more.' A 'Learn more' button is part of this callout. To the left of the callout, there's a thumbnail for 'Primary Source Sets'. At the bottom of the page, there's a section for 'Online Exhibitions' with a 'Browse all Exhibitions >' link and a small image strip.

Entry point to all collections.

 Curated selections

Reference URL: <https://dp.la>

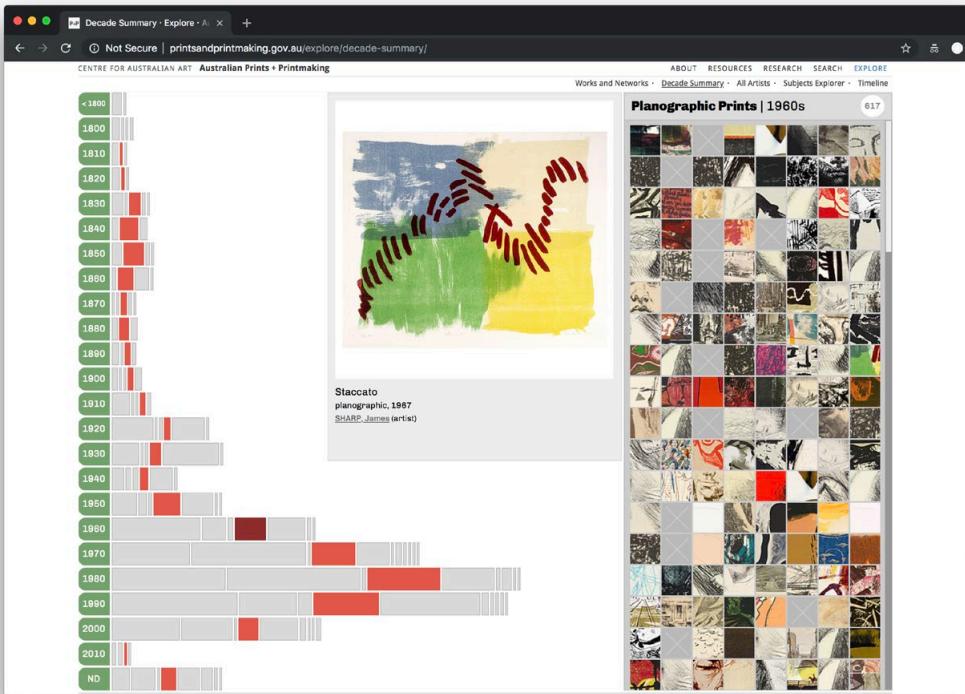
Date of screenshots: 2018-09-12

Notes: Similar to the Europeana portal, the DPLA portal focuses on search as a primary navigation mode. There are some curated selections and additional browsing utilities, but search remains primary entry point.

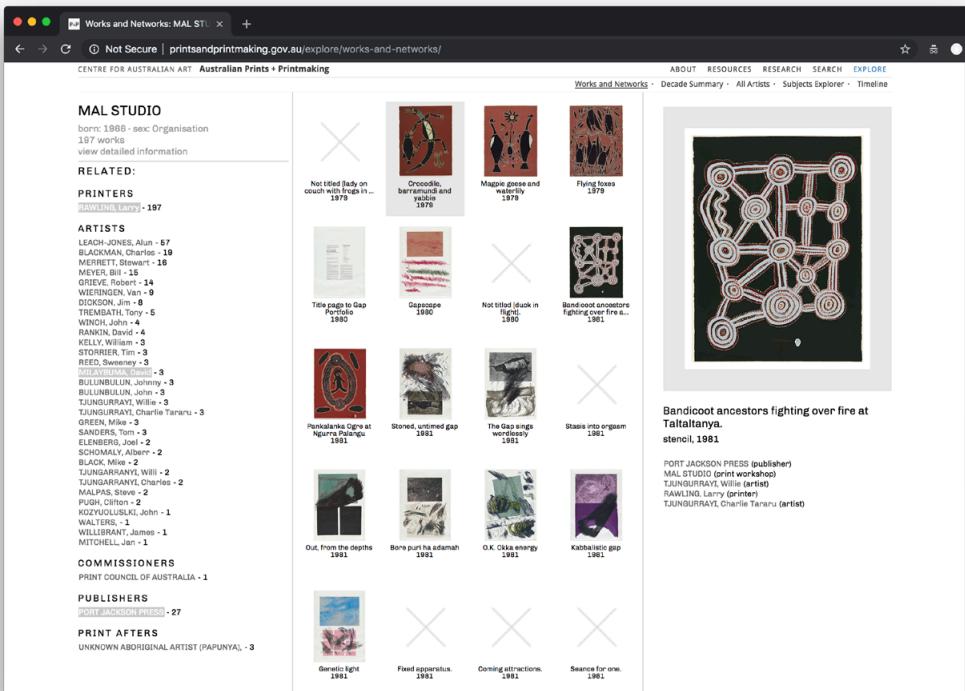


4 Interfaces utilizing collection overview visualizations

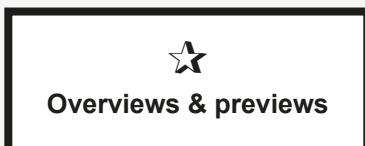
The work of Mitchell Whitelaw



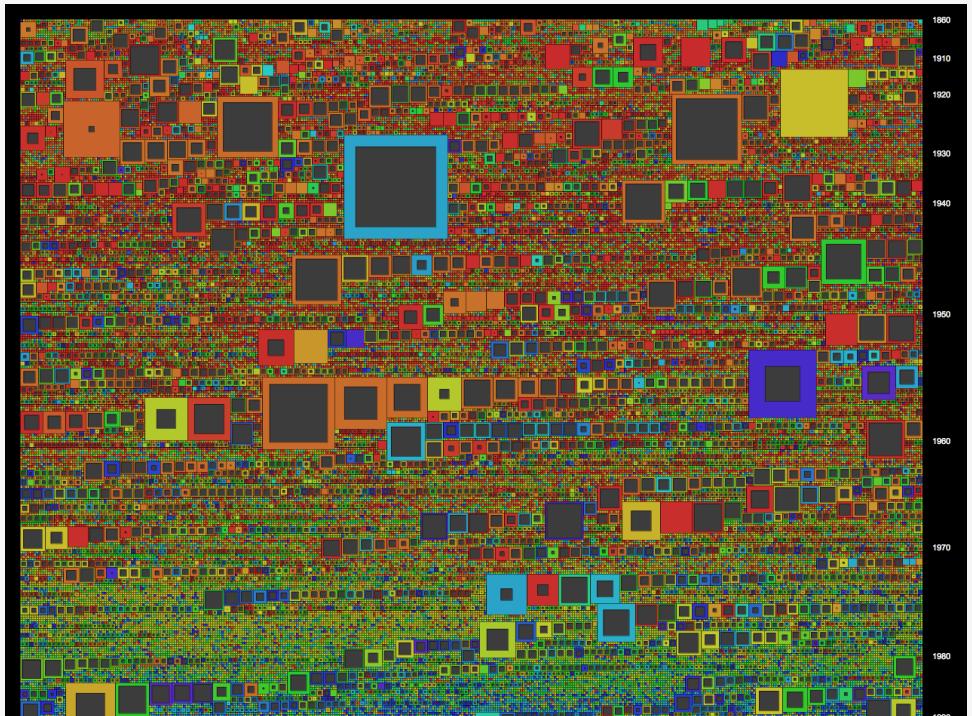
Example collection overview interface 1: Items are visualized on a timeline and supplemented by thumbnail previews.



Example collection overview interface 1: Items are visualized based on categories of relations and supplemented by thumbnail previews.



Example collection overview interface 2: Items are visualized on a timeline using abstract surrogate representation.



Example collection overview interface 2: Video screenshot shows the possible interactions with the abstract representations.



Reference URL: <http://mtchl.net/category/projects/>

Date of screenshots: 2018-11-20

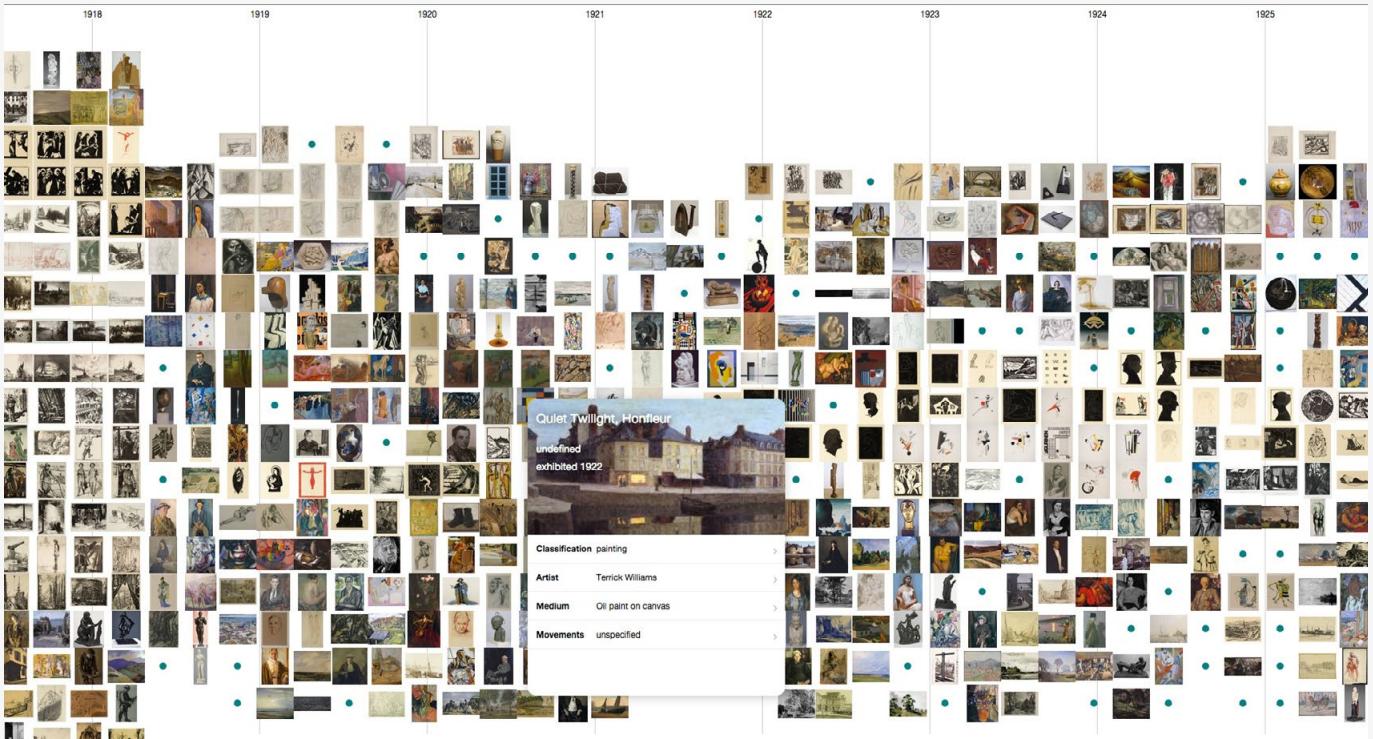
Notes: Designer and academic Mitchell Whitelaw developed the generous interfaces concept and design approach (Whitelaw, 2015). His interface design work has been influential among practitioners and researchers in the field. The various data visualization styles and techniques present a compelling overview of a collection's holdings. The only issue to keep in mind with this approach is the inevitable limitation of data visualization when it comes to heterogeneous ("unclean") datasets and the possibility to omit or obscure outliers in the dataset.



Multi-object timeline



The work of Florian Kräutli



Example collection overview prototype: Items are visualized on a timeline and supplemented by thumbnail previews. Additional metadata per item is available on click.



Generous interfaces



Overviews & previews

Reference URL: <http://www.kraeutli.com/index.php/category/projects/>

Date of screenshots: 2018-11-20



Data viz

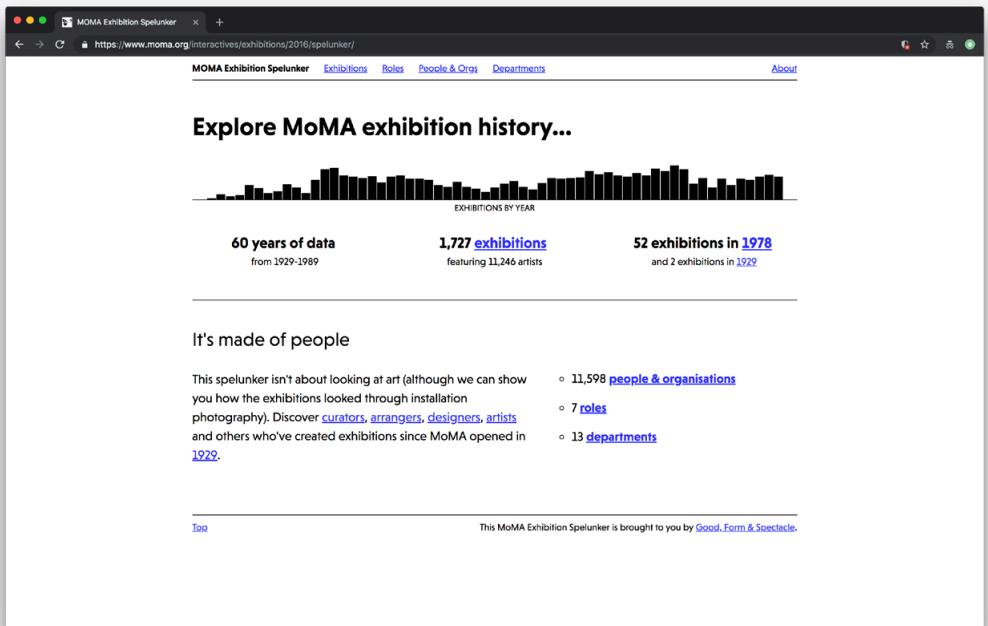


Multi-object timeline

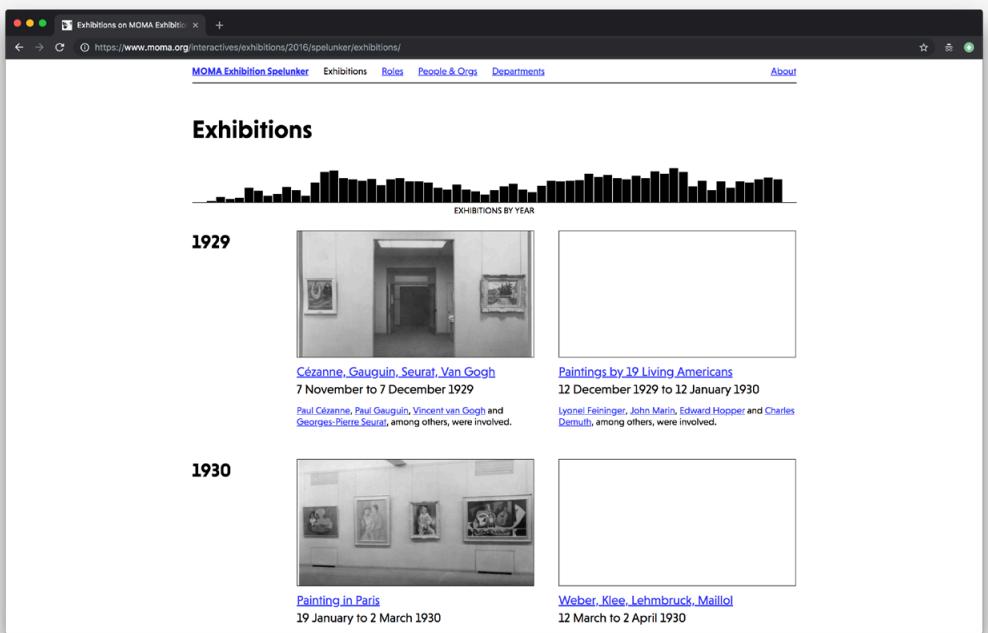
Notes: Designer and researcher Florian Kräutli has developed numerous collection interface prototypes and data visualizations aiming to tackle various questions around item exploration (particularly in relation to time) in collection interfaces. While these interfaces present dynamic and engaging user experiences, they work well with large collections of materials with visual surrogates (such as digitized image representations) and homogeneous metadata. Implementing such an approach to a highly heterogeneous dataset of born-digital artworks (where relations between time of creation and duration of performativity are more complex) remains limited.

The work of George Oates

Example collection overview interface: Items are visualized on a timeline and some data stats are also included.



Example collection overview interface: Items are visualized on a timeline and supplemented by thumbnail previews.



Generous interfaces



Data viz



Multi-object timeline

Reference URL: <http://goodformandspectacle.com/>

Date of screenshots: 2018-11-20

Notes: Designer George Oates has developed the concept of “spelunkers”: explorative interfaces presenting alternative views of collections, or sometimes just sections of collections. Her work often involves creative uses of data (and linked data) to reveal unusual aspects of collections – distinct from the traditional approach of simply listing works by date, author or category. Her approach, however, is bespoke to each individual collection and elements from these interfaces are not necessarily transferable across collections.

Rethinking Guernica



Example timeline view: Events and archival documents all relating to a single artwork are visualized on a timeline, supplemented by thumbnail previews.

Additional metadata per item is available on click.



Generous interfaces



Data viz



Single-object timeline

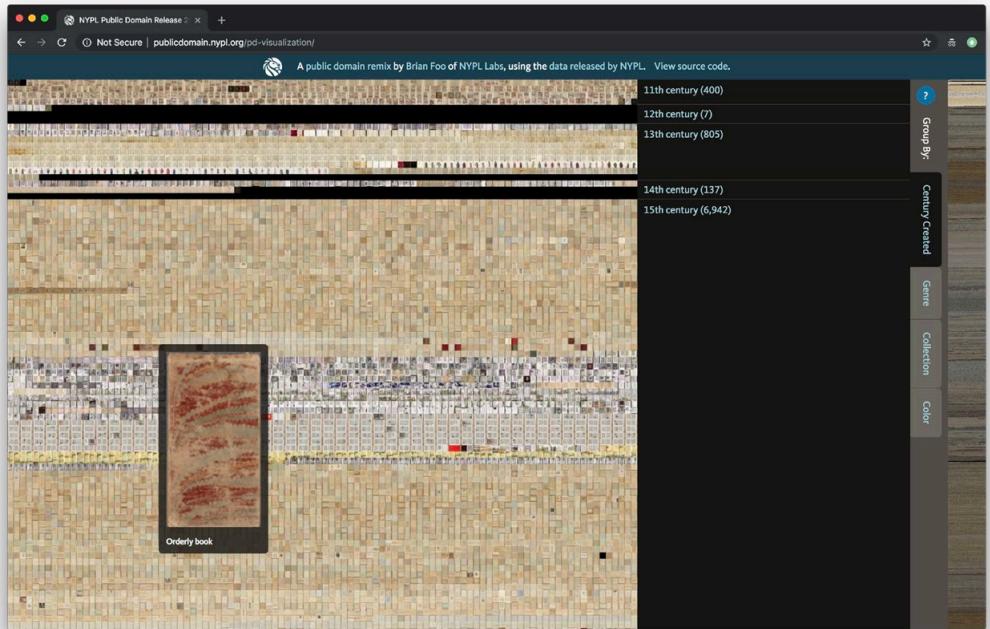
Reference URL: <https://guernica.museoreinasofia.es/cronologia/en/>

Date of screenshots: 2018-11-20

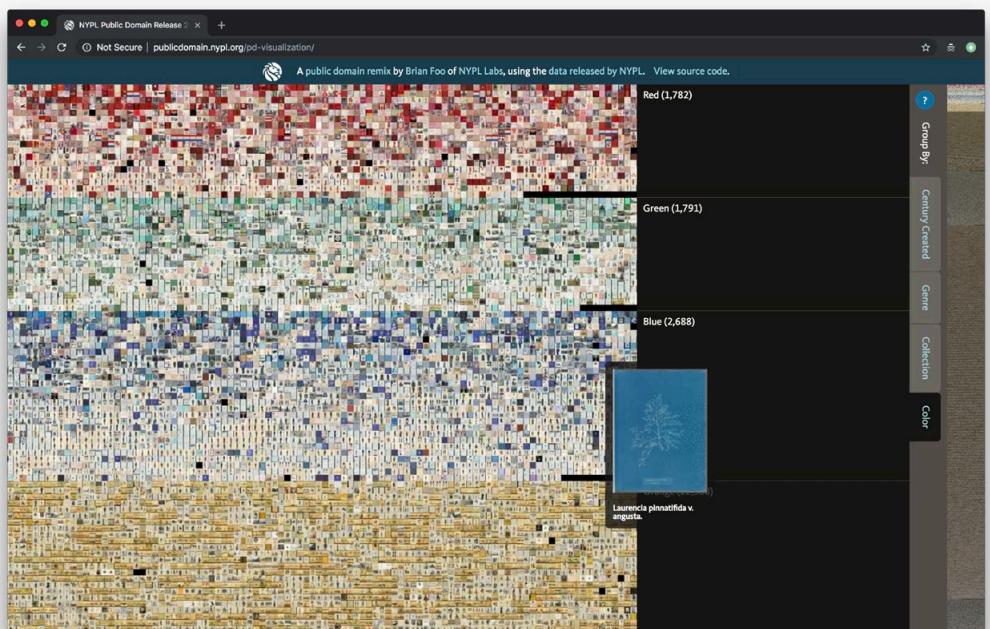
Notes: While not strictly a collection overview interface, this interface bears relation to the design examples reviewed so far. This chronology timeline presents a range of events and documents all relating to a single artwork. The project of researching the complex history of Guernica has generated a vast amount of data which benefits from visualization just as other digital collections. This dynamic data visualization is a useful reference point for the ArtBase, since it sets an example where a timeline visualization can be useful even if it tracks the history of a single artwork vs visualizations of all artworks in the collection. Data is revealed in different degrees of granularity depending on user interaction.

NYPL Labs

Example collection overview interface 1: Items are visualized on a timeline and supplemented by thumbnail previews.



Example collection overview interface 2: Items are visualized based on colour similarity and supplemented by thumbnail previews.



★
Generous interfaces

★
Data viz

★
Multi-object timeline

★
Sort by color

Reference URL: <http://publicdomain.nypl.org/pd-visualization/>

Date of screenshots: 2018-11-20

Notes: NYPL Labs have developed a number of experimental interface prototypes aiming to visualise the collections according to different categories or criteria. A timeline approach is an already standard method for data visualization, which in this particular instance is supplemented by the option to also sort the collection based on color similarity, achieved through advances in computer vision and machine learning.

Google Arts & Culture

This screenshot shows the Google Arts & Culture interface for the artist Rembrandt. At the top, there's a navigation bar with links for HOME, EXPLORE, NEARBY, PROFILE, and SIGN IN. Below the navigation is a search bar. The main content area is titled "Discover this artist" and shows a grid of 1,705 items related to Rembrandt. The items are organized by popularity, as indicated by the blue underline under the "Organize by" dropdown menu. The grid includes various artworks and sketches by Rembrandt. A quote by Rembrandt is displayed: "I can't paint the way they want me to paint and they know that too." Below the quote, it says "Rembrandt Jul 15, 1606 - Oct 4, 1669".

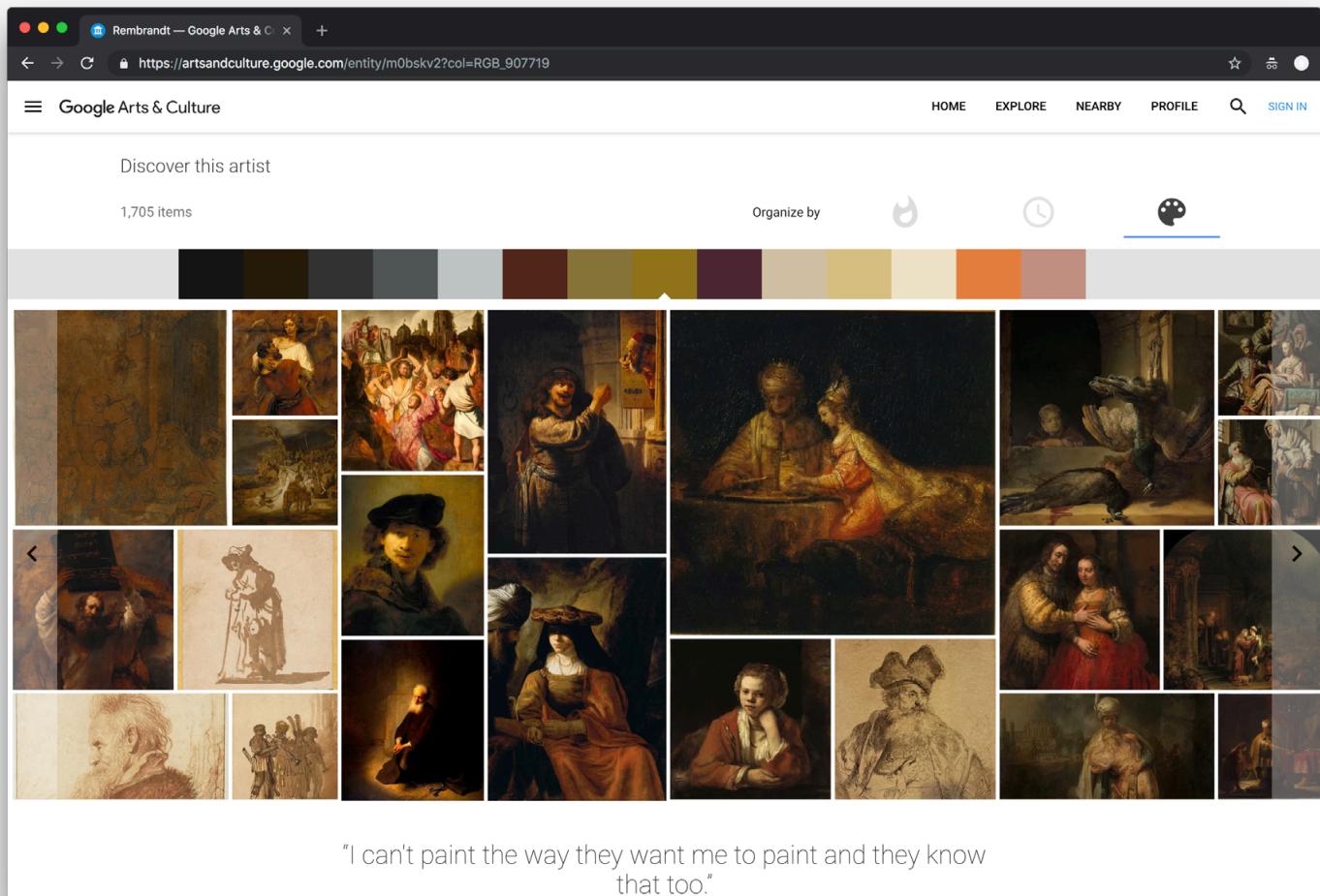
Overview interface for all items related to a specific artist (or other search term):
This view can be sorted by popularity, time periods, or color.

This screenshot shows the Google Arts & Culture interface for Rembrandt, specifically a timeline view. The top navigation bar and search bar are present. The main content area shows a grid of artworks and sketches, with a horizontal timeline at the top labeled from 1634 to 1656. The timeline is divided into years by vertical lines, and each year has a small preview image above it. The grid below the timeline contains various artworks, including a large sketch of a pig. A quote by Rembrandt is displayed: "I can't paint the way they want me to paint and they know that too."

★
Generous interfaces

★
Overviews & previews

★
Data viz



Overview interface for all items related to a specific artist: This view can be sorted by color similarity based on a value within the color palette of the collection overview.



Multi-object timeline



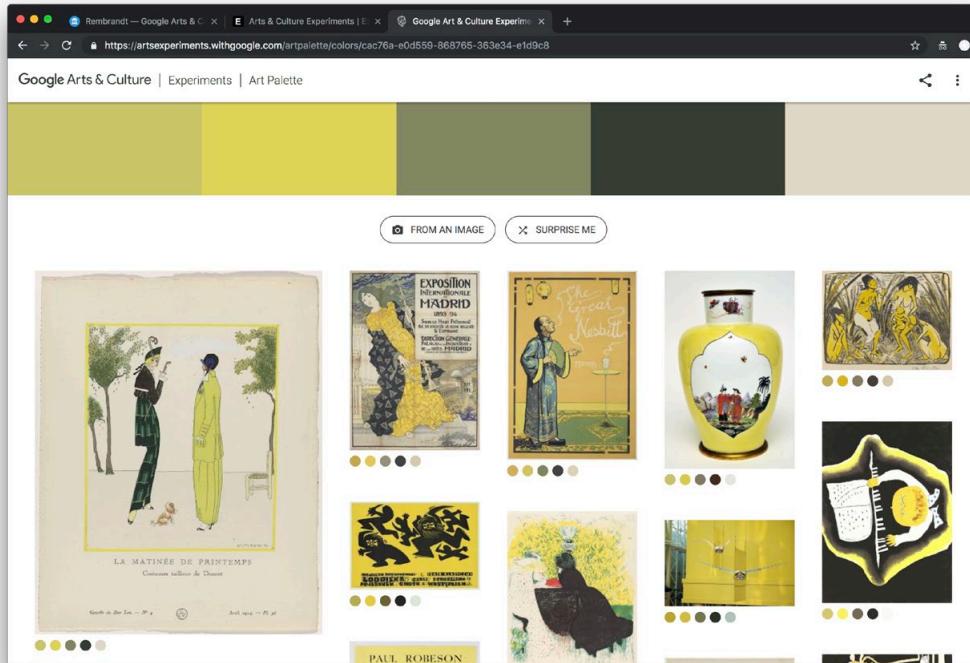
Sort by color

Reference URL: <https://artsandculture.google.com/>

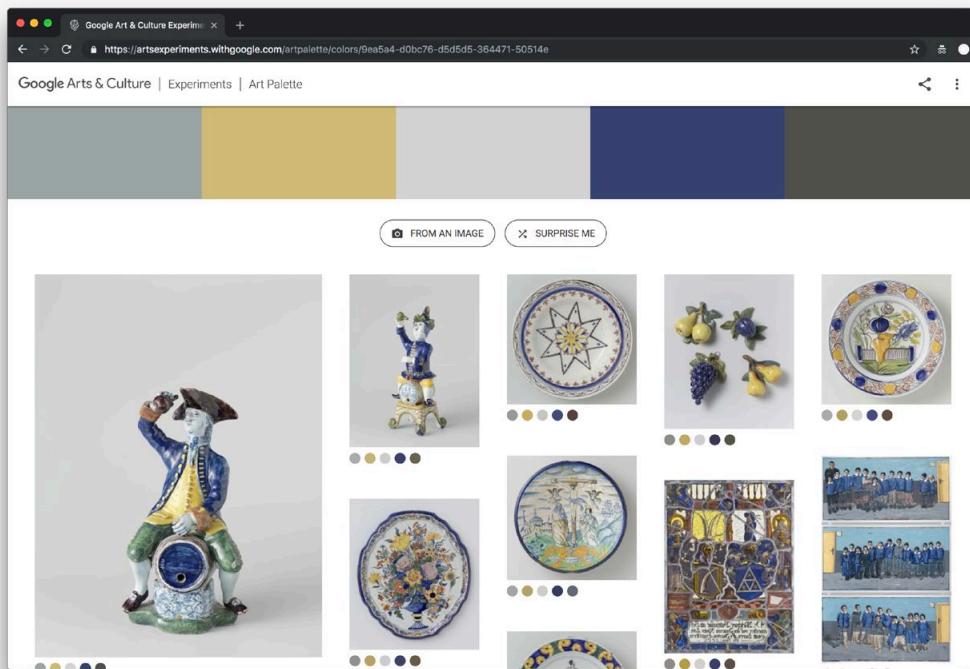
Date of screenshots: 2018-11-20

Notes: Google's Arts & Culture interface offers a few different ways to browse a selection from the collections based on a search term (such as an artist, a movement, a particular institution, etc). As with previous notes on the general platform, the lack of context for where the aggregated items are coming from is problematic in this seemingly "transparent" approach to presenting collection overviews and previews (See: Bolter & Gromala, 2003, for more on interface transparency).

Google A&C Experiments: Art Palette



Example view of Art Palette 1:
Collection overview with
thumbnail previews organized
by colour palette.



Example view of Art Palette 2.



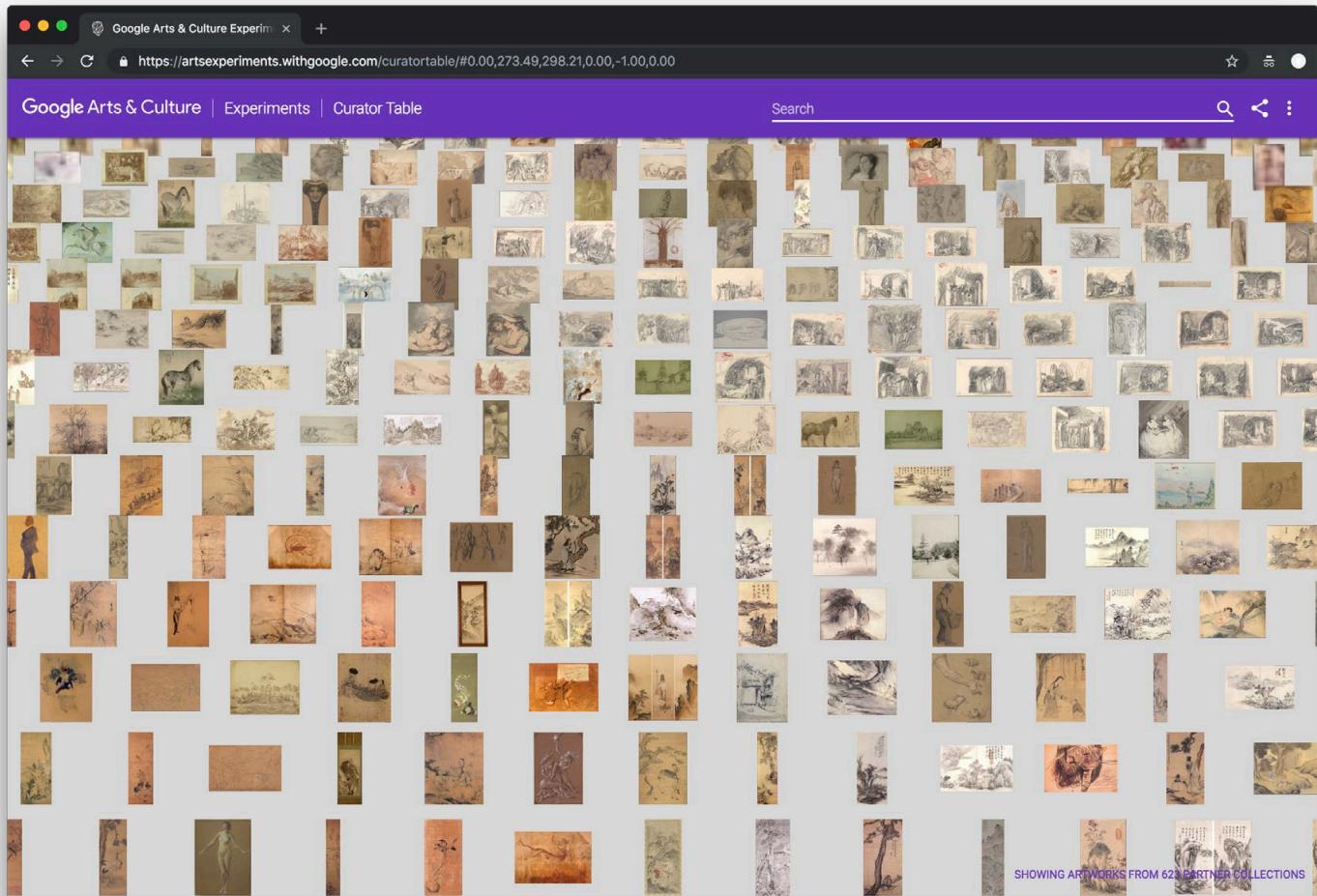
Overviews & previews



Sort by color

Reference URL: <http://act.mit.edu/cavs>
Date of screenshots: 2018-11-20

Google A&C Experiments: Curator Table



Example view of Curator Table 1: Collection overview with thumbnail previews presented in a 3-dimensional environment where computer vision and machine learning enable different modes for organizing and structuring collection items.



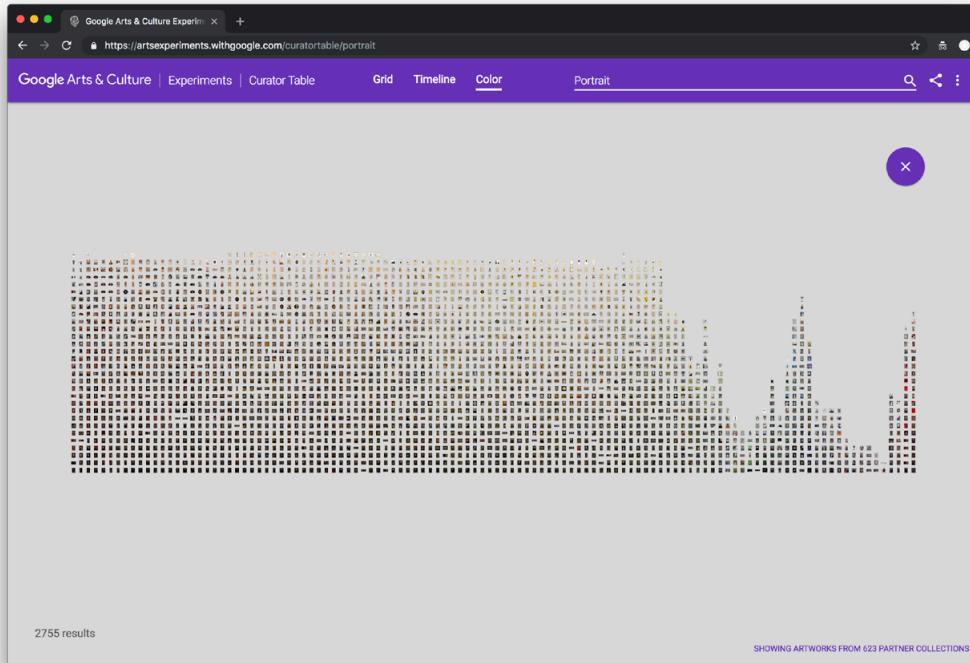
Generous interfaces

Reference URL: <https://artsexperiments.withgoogle.com/curatortable/>

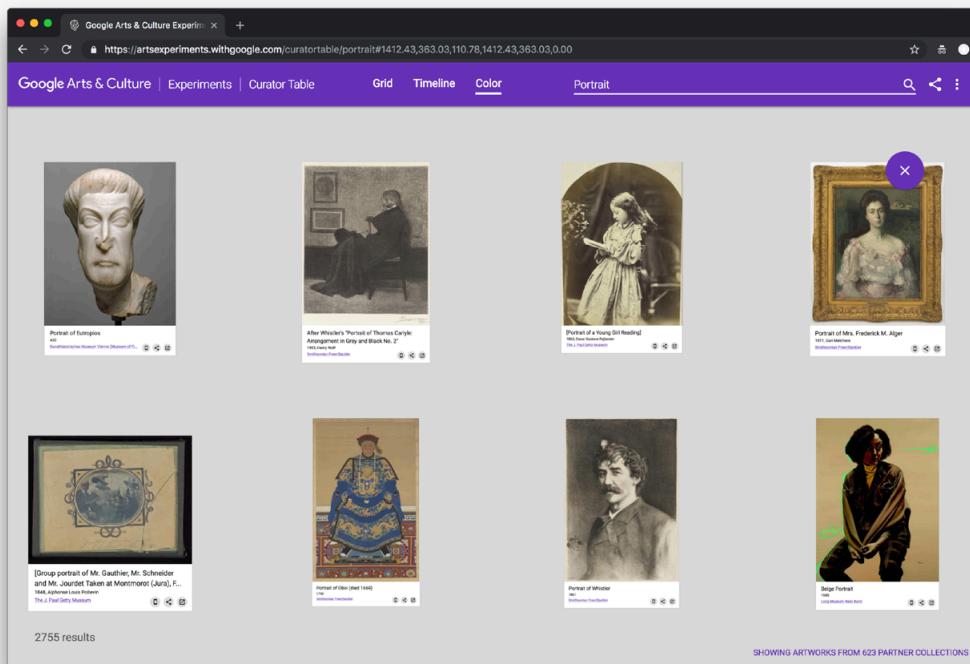
Date of screenshots: 2018-11-20



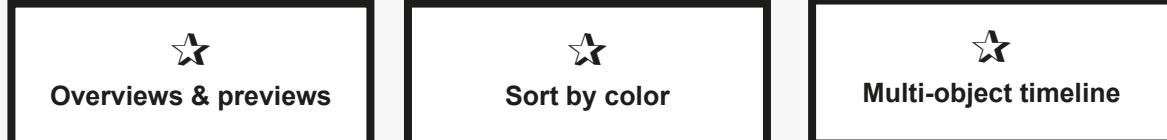
Google A&C Experiments: Curator Table (cont.)



Example view of Curator Table 2: Collection overview can be narrowed down by search terms and organized by color similarities.

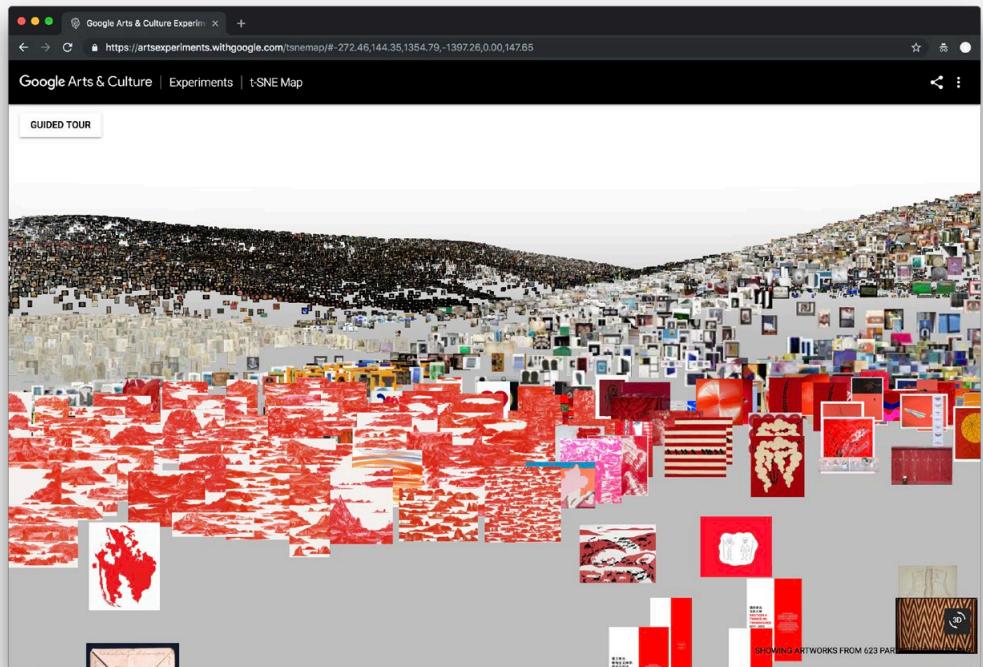


Example view of Curator Table 3: Zoomed-in view with thumbnail previews provides some contextual information.

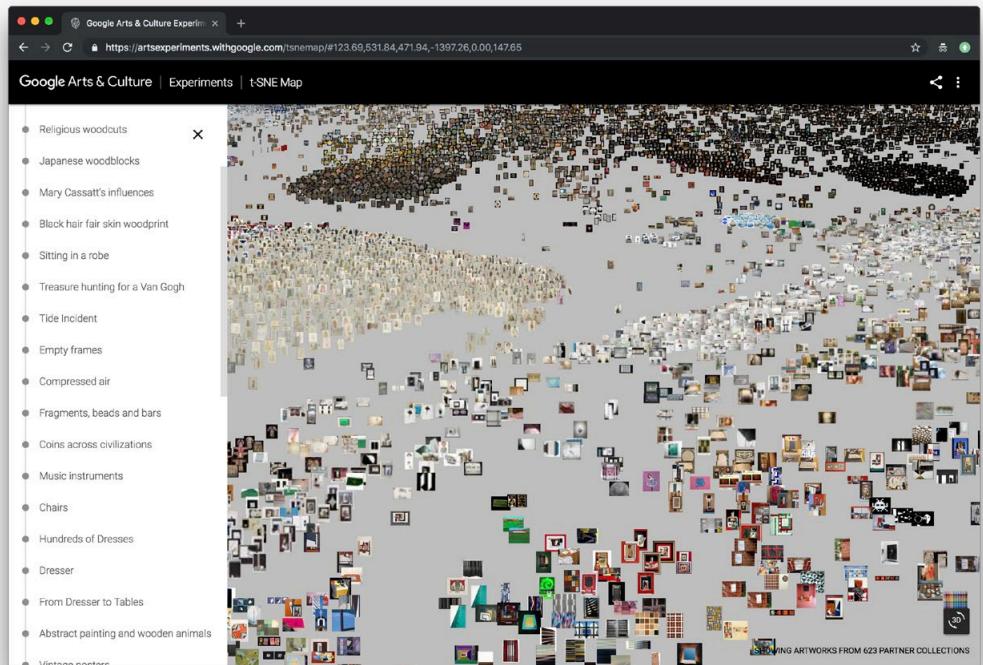


Google A&C Experiments: t-SNE Map

Example view of t-SNE Map 1: Collection overview with thumbnail previews is mapped on a 3-dimensional landscape.



Example view of t-SNE Map 2: Suggested “points of interest” can be used to traverse the collection in a guided route.



★
Generous interfaces

★
Overviews & previews

★
Sort by color

Reference URL: <https://artsexperiments.withgoogle.com/tsnemap/>

Date of screenshots: 2018-11-20

Notes: Built similarly to the Curator's table experiment, this interface replaces the grid view with a “landscape” generated through a mix of algorithmic approaches to data visualization. While an engaging way to browse the collection, similarly to the other experiments, this type of interface can only work for artworks which can be clearly represented by a single digital image. Again, any form of context and even a sense of scale are missing from this experience.

5 Interfaces for linked data cultural projects

British Museum – Research space (UK)

The screenshot shows the homepage of the British Museum ResearchSpace. On the left, there's a sidebar with 'Getting Started' and 'Example Searches' sections. The main area features a search interface with a sidebar of entity types: Thing, Actor, Place, Time, Event, and Concept. A text input field at the bottom of this sidebar is labeled 'text' and 'text search'. The footer contains links to the British Museum, the Andrew W. Mellon Foundation, and Metaphacts.

Entry point to the collection data: A graphical user interface (GUI) facilitates the construction of SPARQL queries without prior knowledge of SPARQL or the underlying data structure.

This screenshot is similar to the one above, but the 'Actor' entity type is selected in the dropdown menu, which is now highlighted in grey. The rest of the interface and footer are identical.



Screenshot of the ResearchSpace interface showing the item record for The Rosetta Stone.

The page title is "The Rosetta Stone, granodiorite, Ptolemaic (.24)".

The object is identified as "Object (Man-Made Object) record".

The object is from the "British Museum".

Navigation tabs include "Summary" (selected), "Annotations", and "Explore Related".

A large image of the Rosetta Stone is displayed on the left.

A table provides detailed information about the object:

Field	Value	Annotations	Assertions
Title	The Rosetta Stone, granodiorite, Ptolemaic (.24)	0	0
Description	Part of grey and pink granodiorite stela bearing priestly decree concerning Ptolemy V in three blocks of text: Hieroglyphic (14 lines), Demotic (32 lines) and Greek (54 lines).	0	0
Object Type	stela	0	0
Asset ID	YCA62958	0	0
Material	granodiorite (en)	0	0
Dimensions	Length: 112.3 Centimeter Thickness: 28.4 Centimeter Width: 75.7 Centimeter	0	0

Example view of an item record: Linked data statements are represented in a tabular format (as fields and values).

Reference URL: <https://public.researchspace.org>

Date of screenshots: 2018-11-22

Notes: This project's interface aims to reveal the capabilities of a linked data database to users unfamiliar with the LOD paradigm. Particularly strong points are the GUI for running queries on the database and the ability to add annotations / assertions to each metadata statement. This functionality is similar to the qualifiers function in Wikidata: it enables the construction of contradictory statements which can co-exist because they are given appropriate sourcing and argumentation as a "sub-statement". The underlying data model in this case follows the CIDOC-CRM specification and its argumentation extension.



Max Planck Institute – Sphaera CorpusTracer (DE)

The screenshot shows the main interface of the Sphaera CorpusTracer. At the top, there's a navigation bar with links for 'Books', 'Persons', 'Places', 'Terms', and 'Search'. A search bar below the navigation bar contains the placeholder 'type to search, minimum 3 symbols ...'. The main content area is divided into two main sections: 'Books' on the left and 'Persons' on the right.

Books
There are currently 320 books in the database.
[List all books](#)

Persons
There are currently 342 persons in the database.
[List all persons](#)

Below these sections, there are 'Recently edited' lists for both books and persons, each showing a single entry:

Recently edited (Books):
Title
El filosofo. Ocupacion de nobles, y discretos contra la cortesana ociosidad. Sobre los libros de cielo, y Mundo, Meteoro, Parvos Naturales, Ethica, Economica, Politica de Aristoteles, y Esfera de Sacro Bosco. Epitome claro, y curioso. Tratanse estas materias con rigor escolastico: y dividense en dos libros, Filosofia Natural, y Filosofia Moral. Por el licenciado Cosme Gomez Texada de los Reyes, Capellan mayor de las Bernardas Descalzas, y Patronazgo en S. Ildefonso de Talavera. Al licenciado Frey Martin Rodriguez de Corrales, del Abito de San Iuan, Prior de San Christoval de Salamanca, y Vicario

Recently edited (Persons):
Name
Jacques Quesnel
[View](#)

Name
Richard Watkins
[View](#)

Entry point to the collection: A collection overview is provided based on two primary record types – books and persons.

The screenshot shows the search interface of the Sphaera CorpusTracer. The top navigation bar includes 'Books', 'Persons', 'Places', 'Terms', and 'Search' links. Below the navigation bar, the URL is db.sphaera.mpiwg-berlin.mpg.de/resource/:search. The main content area shows a search form with a 'Book' icon and a dropdown menu labeled '... related to' containing options: Person, Place, Timeframe, and Language.

Home / Search

Book ... related to Person Place Timeframe Language cancel

CorpusTracer is based on [Metaphactory](#) and [ResearchSpace](#). It has been developed within [The Sphere](#) project at the [Max Planck Institute for the History of Science](#)

Search interface view: This interface is an application of the SPARQL query GUI of Research Space.

★
Linked data

★
SPARQL query GUI

★
Links to related queries

Example view of an item record: A natural language summary of the structured data is featured alongside an image pulled from Wikimedia Commons via Wikidata.

The screenshot shows a web browser window for the Sphaera CorpusTracer application. The URL is db.sphaera.mpiwg-berlin.mpg.de/resource/?personiri=http%3A%2F%2Fspaera.mpiwg-berlin.mpg.de%2Fid%2Fperson%2F8b4f7955-2da2-45c1-a182-2b8... The page title is "Sphaera CorpusTracer". The main content area displays a summary of a person named "Hans Lufft", described as a "Printer". Below the summary is a portrait of Hans Lufft, a man with a beard and a turban-like hat. A "Give Feedback" button is visible in the top right corner.

Example view of an item record: More metadata statements are presented further down on the page.

The screenshot shows a web browser window for the Sphaera CorpusTracer application. The URL is db.sphaera.mpiwg-berlin.mpg.de/resource/?personiri=http%3A%2F%2Fspaera.mpiwg-berlin.mpg.de%2Fid%2Fperson%2F8b4f7955-2da2-45c1-a182-2b8... The page title is "Sphaera CorpusTracer". The main content area displays detailed metadata for "JOHANNES LUFFT". It includes a portrait of Johannes Lufft with a title above it: "JOHANNES LUFFT, Typographus, Bibliopolis et Consil' Wittenbergensis celebrissimus Nat. A. 1495 d. Non. Septembris. 1584 Ex collectione Friderici Roth Scholzii Norim." Below the portrait are sections for "Other Names", "Books published and printed", "External Links", "DOI", and "Identifier".

Reference URL: <http://db.sphaera.mpiwg-berlin.mpg.de/resource/Start>

Date of screenshots: 2018-11-15

Notes: This project builds upon the Research Space platform with some adaptation to fit the context of the collection. The data model used is CIDOC-CRM with the bibliographic extension FRBRoo. The search GUI, relevant pre-set queries, natural language summaries, and even federation with other open datasets (i.e. Wikidata) demonstrate the benefits of linked data for cultural heritage projects at large.



Natural language
summary generated
from structured data



Wikidata / Wikibase default interface

Douglas Adams (Q42)

British author and humorist (1952–2001)
Douglas Noel Adams | Douglas Noël Adams | Douglas N. Adams

Language	Label	Description	Also known as
English	Douglas Adams	British author and humorist (1952–2001)	Douglas Noel Adams Douglas Noël Adams Douglas N. Adams
French	Douglas Adams	écrivain anglais de science-fiction	Douglas Noel Adams Douglas Noël Adams
German	Douglas Adams	britischer Schriftsteller (1952–2001)	Douglas Noel Adams Douglas Noël Adams
Scots	Douglas Adams	No description defined	Douglas Noel Adams Douglas Noël Adams

All entered languages

Statements

instance of human

2 references
stated in Virtual International Authority File
VIAF ID 113230702
retrieved 7 December 2013

stated in BNF authorities
retrieved 10 October 2015
reference URL <http://data.bnf.fr/ark:/12148/cb11888092r>

image



Douglas adams portrait cropped.jpg
333 x 380; 32 KB

Example view of an item record 1: The item page features a text label, description, aliases, translations of the label and description, and a series of (unordered) statements.

country of citizenship United Kingdom

1 reference
stated in Virtual International Authority File
VIAF ID 113230702
retrieved 7 December 2013

name in native language Douglas Adams (English)

0 references

birth name Douglas Noel Adams (British English)

1 reference
title Obituary: Douglas Adams (English)
publisher The Guardian
publication date 15 May 2001
language of work or name English
reference URL <http://www.theguardian.com/news/2001/may/15/guardianobituaries.books>
retrieved 7 December 2013
author Nicholas Wroe

given name Douglas

series ordinal 1

2 references
stated in Integrated Authority File
GND ID 119033364
retrieved 7 July 2015

imported from Wikimedia project English Wikipedia

Noëll

series ordinal 2

1 reference
stated in Integrated Authority File
GND ID 119033364
retrieved 7 July 2015

Example view of an item record 1: This particular example is often used as a model item to showcase Wikidata capacities; the statements on the page are extremely detailed.



Linked data



Invitation to contribute

Net Art Anthology (Q28050689)

online exhibition of the history of net art

Language	Label	Description	Also known as
English	Net Art Anthology	online exhibition of the history of net art	
French	Net Art Anthology	No description defined	
German	Net Art Anthology	No description defined	
Scots	No label defined	No description defined	

All entered languages

Statements

- instance of
 - online exhibition of Internet art
 - anthology
- inception
 - 27 October 2016
- organizer
 - Rhizome
- official website
 - https://anthology.rhizome.org/

Wikipedia (0 entries) | edit

Wikibooks (0 entries) | edit

Wikinews (0 entries) | edit

Wikiquote (0 entries) | edit

Wikisource (0 entries) | edit

Wikiversity (0 entries) | edit

Wikivoyage (0 entries) | edit

Wiktionary (0 entries) | edit

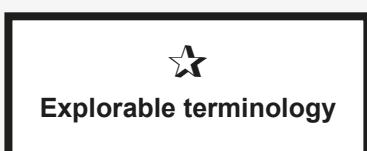
Other sites (0 entries) | edit

Example view of an item record 2: An item page can also have just a few statements; there are no min or max metadata requirements.

Reference URL: <https://www.wikidata.org/>

Date of screenshots: 2018-11-22

Notes: The default Wikidata (Wikibase) interface is included here as a point of comparison with other interfaces which have been developed to pull data from Wikidata and present it in alternative ways. While this default interface is primarily intended for machine-reading (rather than human usability), it still sets out some useful paradigms, such as the fact that both properties and items within statements are clickable – thereby enabling horizontal browsing (and also discovery of what these statements mean). As mentioned already in relation to Research Space, Wikidata also allows contradictory statements, these are differentiated via qualifiers. How such contradictions are made visible to users could be made more explicit in the design.



Wikimedia Labs – Reasonator

The screenshot shows a web browser window for the Reasonator tool at <https://tools.wmflabs.org/reasonator/?&q=42>. The page displays information about Douglas Adams (Q42), a British author and humorist. The main content includes his biography, a photo of him, and a photo of his grave. Below the main content are several collapsible sections: 'Relatives' (Parents: father Christopher Douglas Adams, mother Janet Adams; Children: child Polly Jane Rocket Adams), 'Siblings' (Susan Adams), 'Other' (spouse Jane Belson, start time 1991-11-25, end time 2001-05-11), 'Other properties' (native language British English, employer BBC, place of burial Highgate Cemetery, manner of death natural causes, instrument guitar), and 'External sites' (official website). At the bottom right is a handwritten signature of Douglas Adams.

Example view of a an item record 1: Statements are presented in customized clusters and collapsible elements.



Linked data



Metadata clustering



Expression of relations



Explorable terminology



Metadata in collapsible element



Capacity for contradiction

Example view of an item record 1: A timeline of events connected to the item and other related media are featured further down on the page.



Single-object timeline



Open source

Reference URL: <https://tools.wmflabs.org/reasonator/>

Date of screenshots: 2018-11-22

Notes: This experimental interface, aiming to make Wikidata “pretty”, implements a number of approaches towards making Wikidata statements more “human-readable”. For a small number of record types (i.e. person, place, species, etc) the templates are customized to present data in hierarchical clusters (and even short natural language summaries)... (cont.)

Wikimedia Labs – Reasonator (cont.)

The screenshot shows a web browser window for the "Net Art Anthology - Reasonator" tab, with the URL <https://tools.wmflabs.org/reasonator/?&q=28050689>. The page displays detailed information about the item Q28050689, titled "Net Art Anthology".

Item Details:

- Other properties:**
 - instance of:** online exhibition exhibition whose venue is cyberspace of : Internet art
 - anthology:** collection of creative works chosen by the compiler
 - inception:** 2016-10-27
 - organizer:** Rhizome Born-digital nonprofit organization supporting digital art and culture
- From related items:**
 - A Cyberfeminist Manifesto for the 21st Century art project point in time : 2016-10-27
 - Reabracadabra visual poem by Eduardo Kac point in time : 2016-11-03
 - My Boyfriend Came Back From The War Internet artwork by Olia Lialina point in time : 2016-11-10
 - The File Room artwork by Antoni Muntadas point in time : 2016-11-17
 - FloodNet art project by Electronic Disturbance Theater point in time : 2016-12-01
 - Mouchette.org internet artwork by Martine Neddam point in time : 2016-12-08
 - Mezangelle artificial language and art project by Mez Breeze point in time : 2016-12-15
 - Form Art internet artwork and art genre by Alexei Shulgin point in time : 2017-01-12
 - BIT Plane art project by Bureau of Inverse Technology (BIT) point in time : 2017-01-19
 - Heritage Gold art project by Mongrel point in time : 2017-01-26
 - Blacklash video game mod and artwork by Mongrel point in time : 2017-02-03
 - The Dollie Clone Series artwork by Lynn Hershman Leeson point in time : 2017-02-09
 - The Web Stalker internet artwork by I/O/D point in time : 2017-02-16
 - LOVE internet artwork by Group Z point in time : 2017-02-22
 - Documenta Done internet artwork by Vuk Čosić point in time : 2017-02-22

Side panels:

- Free images Google search:** External sites (selected), official website
- Wikimedia projects:** Concept cloud

Example view of a an item record 2: Statements are presented in customized clusters and collapsible elements, notably “related items”.

The screenshot shows a web browser window for 'Net Art Anthology - Reasonator'. The URL is <https://tools.wmflabs.org/reasonator/?&q=28050689>. The main content area displays a timeline visualization titled 'exhibition history: BIT Plane'.

Timeline Details:

- Start Date:** JANUARY 12, 2017 (exhibition history: Form Art)
- End Date:** JANUARY 26, 2017 (exhibition history: Heritage Gold)
- Event:** exhibition history: BIT Plane (occurring on JANUARY 19, 2017)
- Art Project:** art project by Bureau of Inverse Technology (BIT)

Related media:

- A thumbnail image of a person speaking at a podium.
- A small diagram labeled 'Single Net Art Diagram' showing a network structure.
- A screenshot of a software interface with various panels and data.

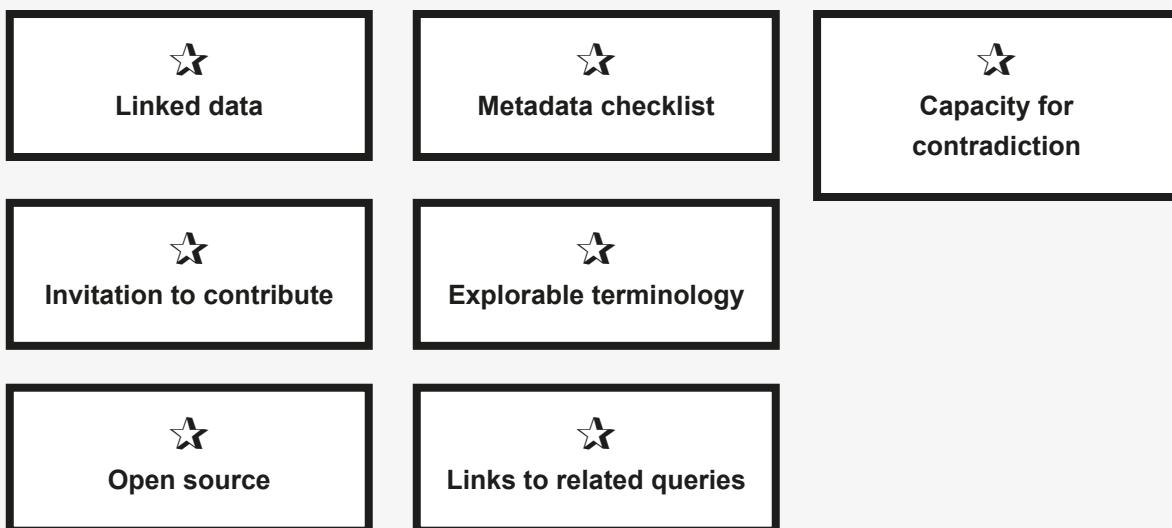
Example view of a an item record 2: A timeline features the related items, via the point-in-time qualifier on the “related” statement.

Notes (cont.): For the regular records (e.g. the exhibition example above), the statements tend to be lumped under “other properties”, but a very useful feature is the cluster of “related items”, which is pulled via a SPARQL query. This feature could be extremely useful in the general Wikidata interface as well, because it enriches all item records without the need to create inverse properties. For example, the page for the NAA exhibition in Wikidata features few statements. However, the same page in Reasonator is a lot richer, because it pulls in all artworks which have the property “exhibition history” with value “NAA exhibition”. This information can then also be rendered in a timeline visualization.

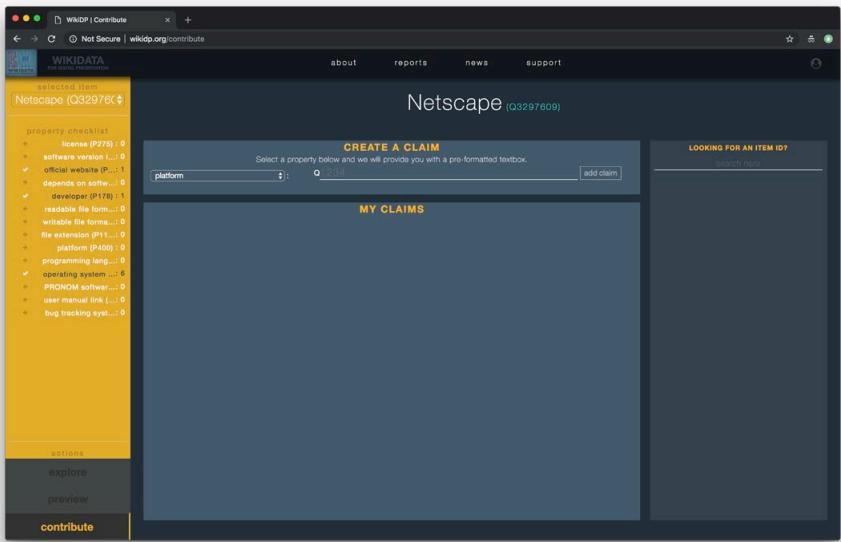
Wikidata for Digital Preservation portal

The screenshot shows a web browser window with the title "WikiDP | Preview". The URL is "Not Secure | wikidp.org/Q3297609". The page header includes links for "about", "reports", "news", and "support". The main content area is titled "Netscape (Q3297609)". On the left, there is a sidebar with a "selected item" dropdown set to "Netscape (Q3297609)". Below it is a "property checklist" table with various statements like "instance of (P31)", "developer (P178)", and "sub class of (P279)". The central part of the page displays "Current Data About Netscape" with sections for "software (Q7397)" (imported from Wikimedia project P143), "AOL (Q27585)" (developer P178), and "Windows 98 (Q483132)" (reference URL P854). On the right, there are sections for "Aliases" (Netscape 7.0) and "External Links". A large image of the Netscape logo is centered below the software section.

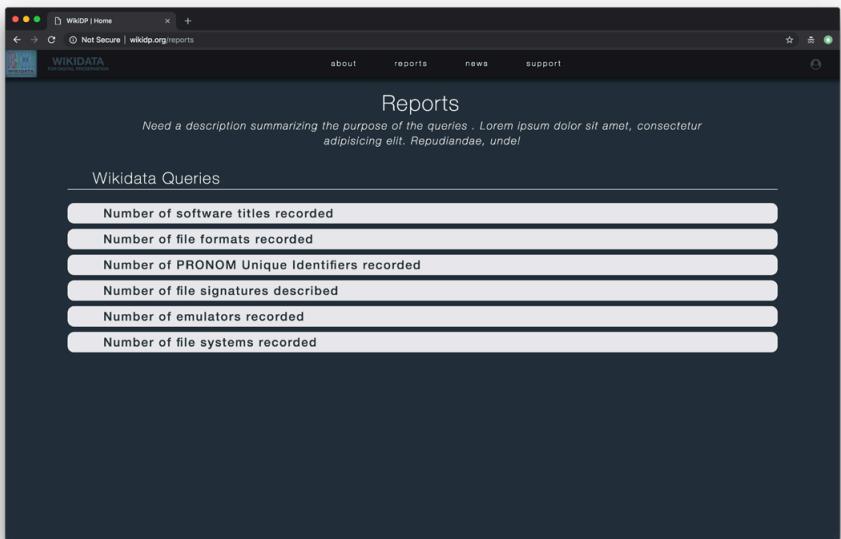
Example view of an item record: Statements are pulled from Wikidata and presented in a custom-styled interface.



Example view of an item record: There is an option to contribute data directly within the portal via a form to create claims.



Exploratory options: The portal features some links to pre-set Wikidata queries of common interest.



Reference URL: <https://artsandculture.google.com/>

Date of screenshots: 2018-11-20

Notes: The Wikidata for Digital Preservation portal is a Python-based interface pulling data from Wikidata, but unlike Reasonator, which functions as an overlay to the entire Wikidata database, this portal is specific to data regarding software items and file formats. Record pages feature a checklist in a sidebar panel, which is designed to encourage contributions by exposing (explicitly) what metadata is recommended to be there, but is currently missing. Contributing data is made easier (compared to other interfaces such as Reasonator), by providing a quick-to-fill-out form right within the portal, without the need to log-in or even go to Wikidata. But on the record-page level, the interface doesn't fundamentally change the interaction paradigms of Wikidata's generic interface. Metadata is presented without any particular hierarchy or clustering. Finally, the portal also features links to pre-set Wikidata queries of common interest. This is a useful feature, which could be utilized more in other linked data interfaces as a way to encourage exploration and/or avoid the need for a SPARQL GUI.



Science Stories

The screenshot shows a web browser window for 'Grace Hopper - Story | Science'. The left sidebar contains a navigation menu with links like 'Introduction', 'The college years', 'Hooper at Work', etc. The main content area features a large black and white photograph of Grace Murray Hopper in her office. Below the photo is the title 'Grace Murray Hopper'. A detailed text box provides information about her life and work, mentioning her role as one of the first programmers of the Harvard Mark I computer and her invention of COBOL. At the bottom of the page is a pink footer bar with a downward arrow and a circular refresh icon.

Example view of a “story”, dedicated to a person’s record.

The screenshot shows a web browser window for 'Grace Hopper - Story | Science'. The left sidebar is identical to the previous screenshot. The main content area has a yellow header with the title 'Grace Murray at Vassar College'. Below the title is a subtext: 'This collection is provided by Yale University Library Manuscripts and Archives'. The main content area displays two images: a portrait of Grace Murray Hopper and an image of the Thompson Library at Vassar College. The interface uses the IIIF-compliant Mirador image viewer, allowing users to zoom and pan through the images. A pink footer bar with a downward arrow and a circular refresh icon is visible at the bottom.

Example view of a “story”: The interface uses the IIIF-compliant Mirador image viewer to display images from open collections.



Linked data

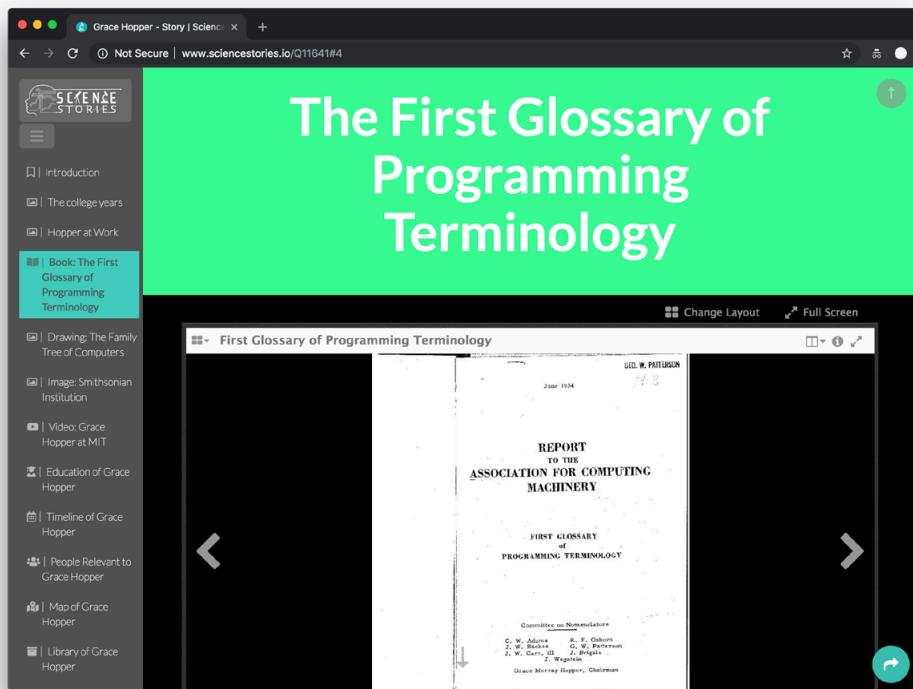


Explorable terminology

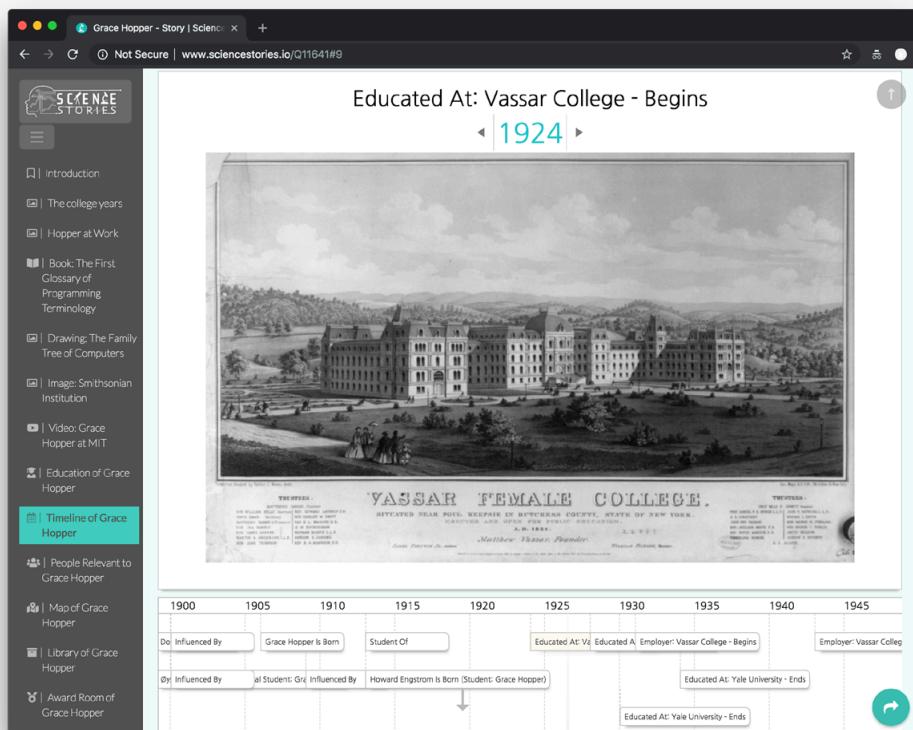


Single-object timeline

Example view of a “story”: The Mirador viewer can be used to display other media objects, too, such as books or videos.



Example view of a “story”: A customized timeline view is rendered based on statements contained in the Wikidata record page.



Open source

Reference URL: <http://www.sciencestories.io/>

Date of screenshots: 2018-11-16

Notes: This project re-imagines how linked data and media found in open collections can be combined to tell “stories” about people, in this case focusing on women in science. It demonstrates a few different approaches to displaying data from Wikidata and Wikimedia Commons, including a timeline, a media viewer, and a custom view of Wikidata statements.

Science Stories (cont.)

The screenshot shows a web browser window with the title "Grace Hopper - Story | Science". The main content area displays a Wikidata record for Grace Hopper (Q11641). The page includes a sidebar with links to various resources like books, images, and videos. The Wikidata interface features a search bar, a "Statements" section, and a "Contents" sidebar with links to "Statements", "Identifiers", and "Sitelinks". The "Statements" section lists facts about Grace Hopper, such as her instance of being a human and her award of the Defense Distinguished Service Medal.

Example view of a “story”:
The interface also features
a customized view of the
Wikidata record page.

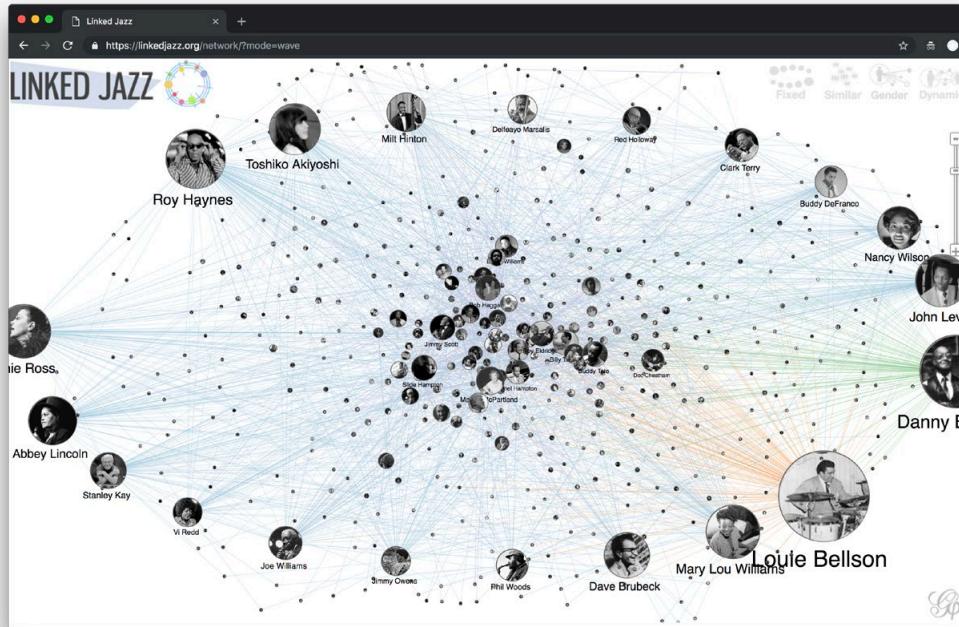
This screenshot shows the same Science Stories interface, but with a different view of the Wikidata record for Grace Hopper. The main content area now displays a list of statements grouped by category, such as "name in native language" and "Computer Society". The sidebar remains the same, providing links to external resources. This view appears to be a more structured or simplified representation of the Wikidata data compared to the first screenshot.

Notes (cont.): Similar to the previous portal interface, however, this one does not fundamentally re-design how Wikidata statements are presented to users. The overall “flow” of the story is highly structured and works well for only one type of record – person’s records. Utilizing a similar approach to an artwork-type record, is not impossible, but will have to be applied in a more flexible manner in order to work with heterogeneous types of works.

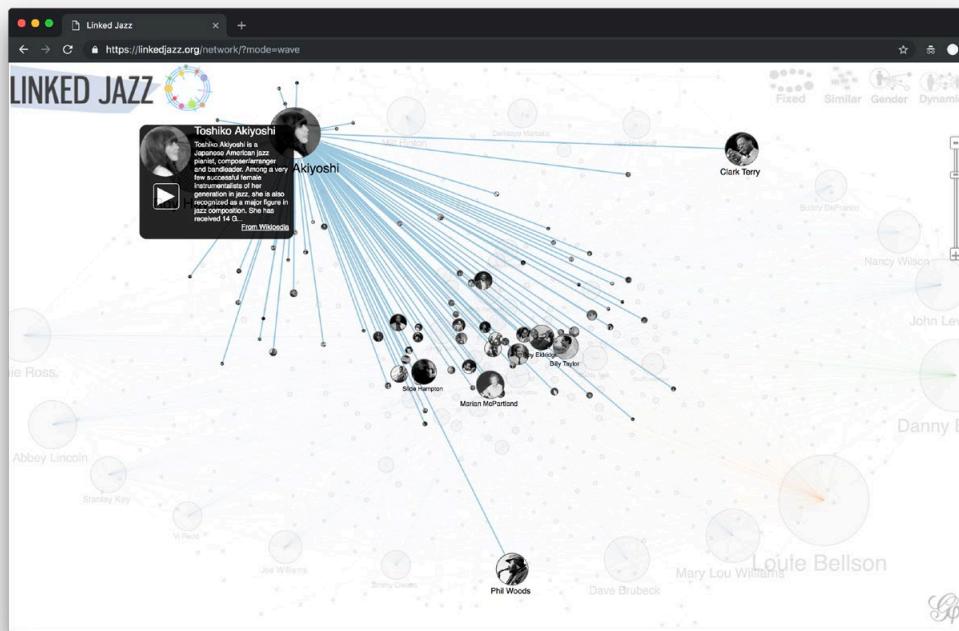


6 Interfaces utilizing data visualizations to express relationships in collections

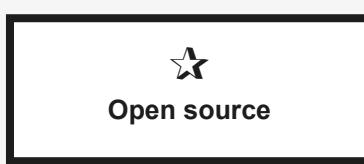
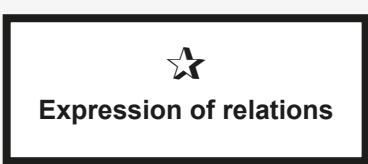
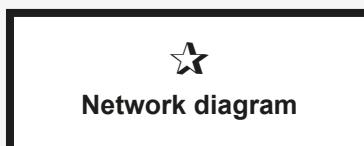
Pratt Institute – Linked Jazz (US)



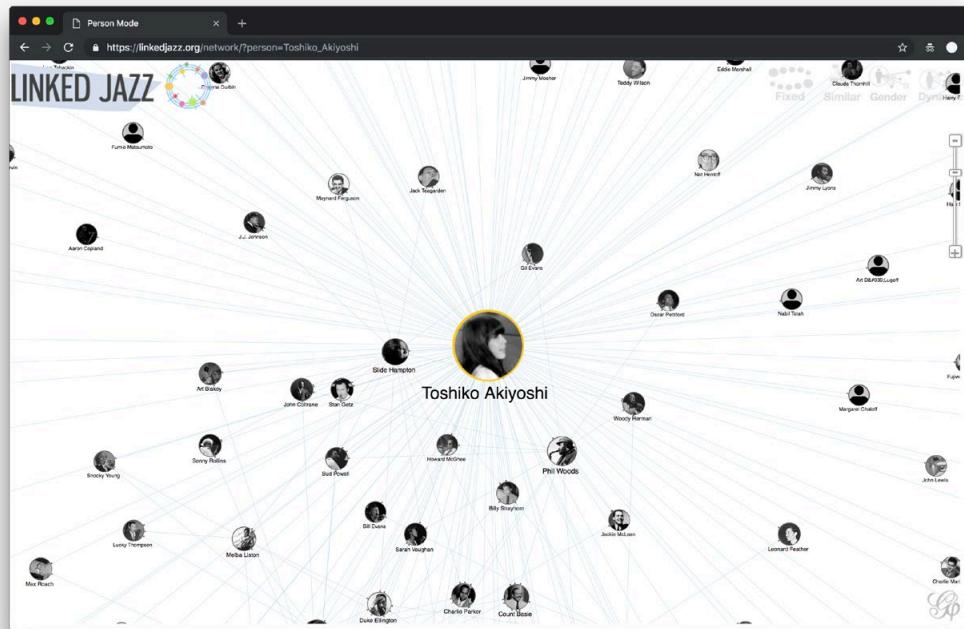
*Example collection overview:
A network diagram traces the
relations between actors in
the data set.*



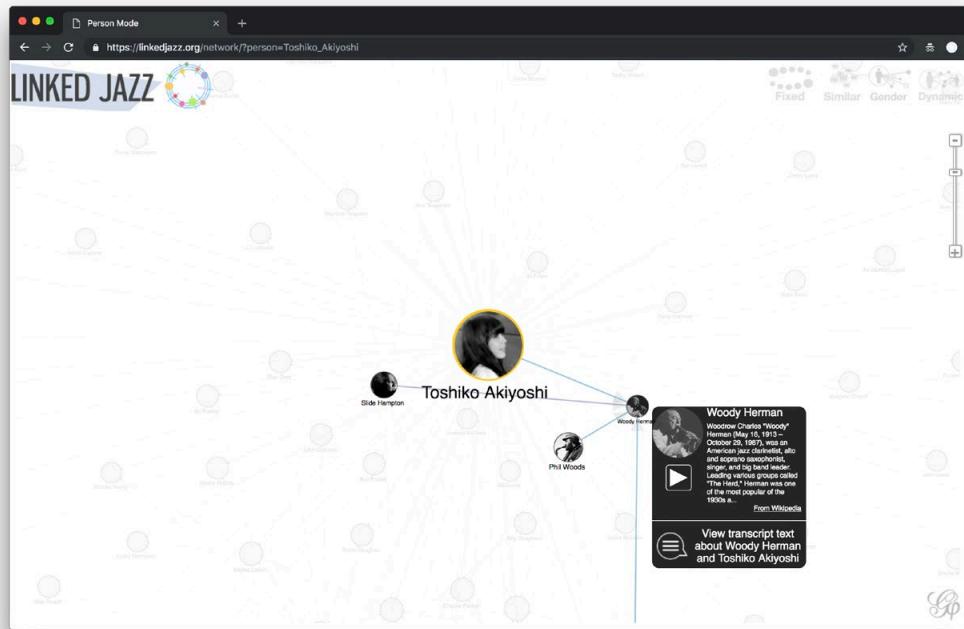
*Example collection overview:
Hovering over diagram nodes
narrows down the view of
possible relations.*



*Example collection overview:
Clicking on diagram nodes,
re-centers the node and
draws out relevant relations.*



*Example collection overview:
Hovering over diagram nodes
in this 'filtered' state narrows
down the view even further,
plus features a 'preview' data
box for the relevant node.*

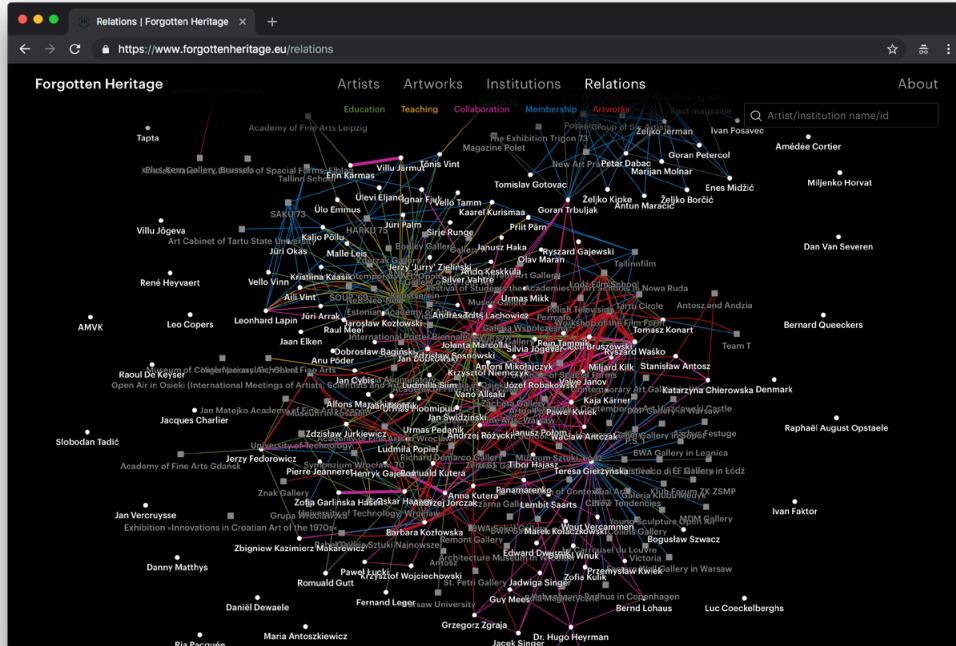


Reference URL: <https://linkedjazz.org>

Date of screenshots: 2018-11-16

Notes: This project from the Semantic Media Lab at Pratt features a few different interfaces connected to their Linked Jazz linked data dataset. This particular project uses d3.js libraries to visualize the relations between the artists (or actors in the network of relations) in the data set. The interface gives a good overview of who may have some form of relation to whom, but as with most other network diagrams reviewed here, it remains somewhat opaque as to what exactly is the nature of the relationship: this is sometimes due to the lack of more detailed data in the data model, or it may simply be a limitation of the visual design.

Forgotten Heritage (EU)



Example collection overview:
A network diagram traces the
relations between actors in
the data set.



Example collection overview:
A zoomed-in view of the sub-
set of relations which gets
highlighted once an “actor”
node is clicked.

Reference URL: <https://www.forgottenheritage.eu/relations>

Date of screenshots: 2018-11-23

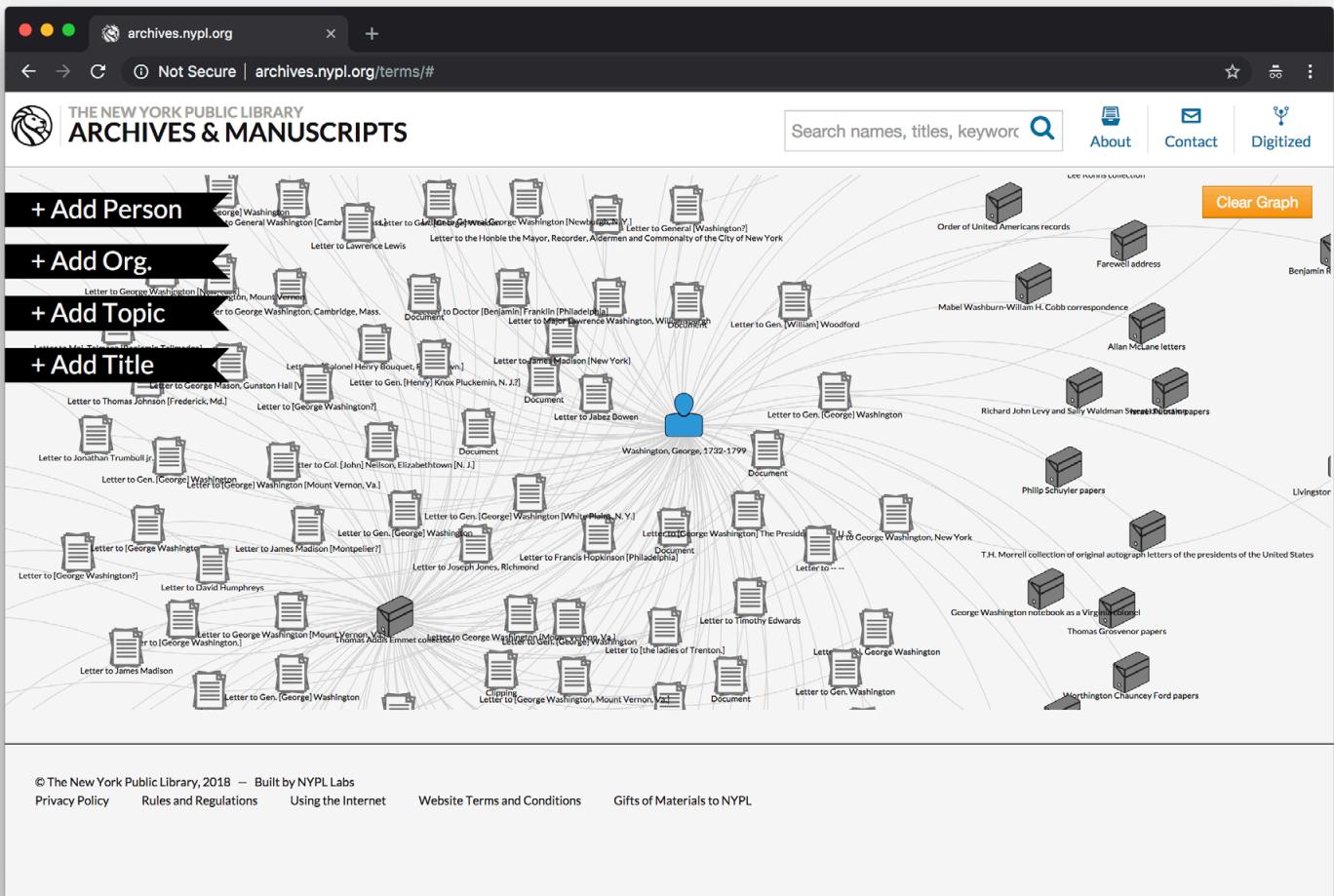
Notes: This is a joint project collecting archival information relating to Avant-Garde (mostly Eastern-)European artists among several art institutions in Europe. The project presents the data in different visualization styles, e.g. timelines and network diagrams. While at first the amount of information in the diagram makes it unreadable, there are different filters that can ‘sort’ the relations. Searching for a specific name also zooms in on just a few relations connected to that name, as does clicking on any node in the diagram. Within this zoomed-in view the ‘property’ of the relation becomes readable on mouse-over. While this is a visually sophisticated interface designed to a higher standard than most other prototypes or experimental projects reviewed here, its underlying structure is opaque – there is no information on the website about the database or the data model used. In addition, the project does not appear to be open source, making it harder to evaluate in terms of potential interoperability and usefulness as a reference point for the Artbase.

Linked data

Network diagram

Expression of relations

NYPL Labs: Beta Tools (US)



Example collection overview: A network diagram of items in the collection related to the “term” George Washington.

Linked data

Network diagram

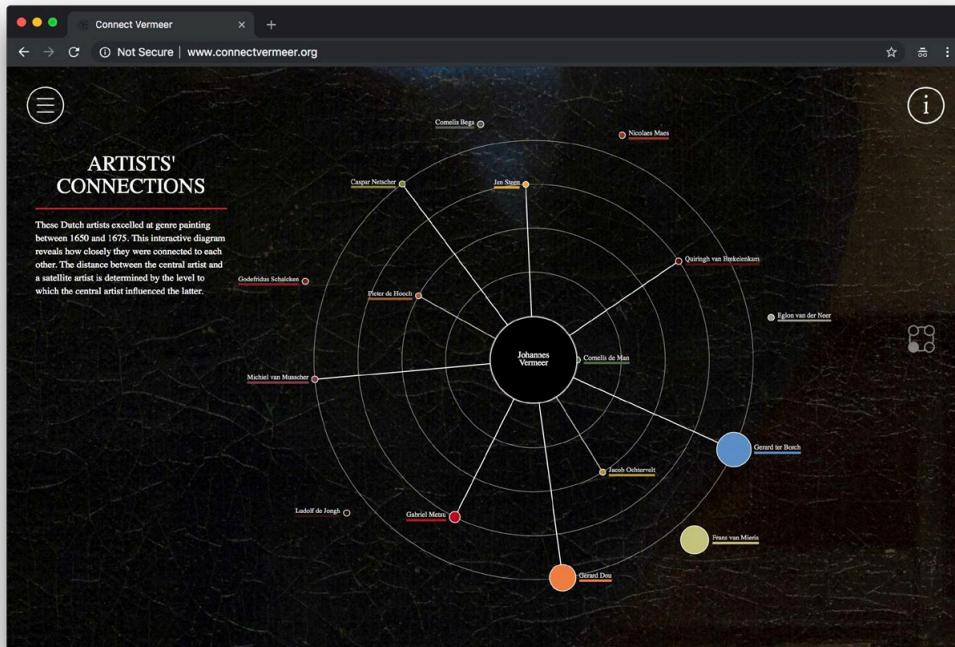
Expression of relations

Reference URL: <http://archives.nypl.org/terms/#>

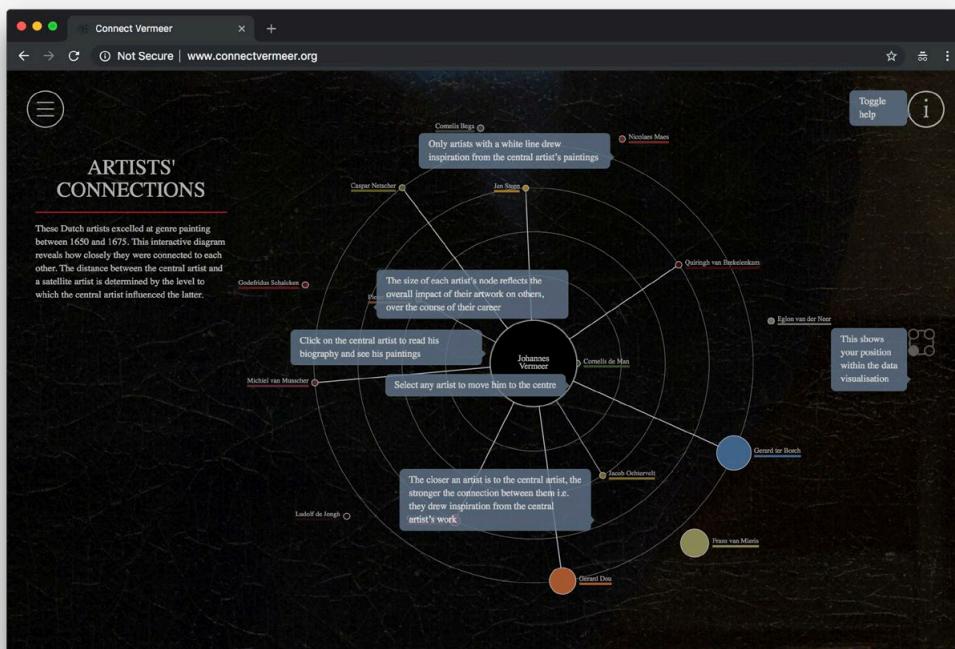
Date of screenshots: 2018-11-23

Notes: This interface is a beta tool developed by NYPL Labs to visualize relationships between related terms in their archives and manuscript collections. It utilizes a network diagram visualization and draws lines between different collection items identified by icons with short labels. While an interesting exploratory tool, like most other network diagrams, it obscures the nature of the relation between the items which makes it a less useful tool for expert researchers/ users who may be looking for specific types of relations.

National Gallery of Ireland, Dublin; National Gallery of Art, Washington; Musée du Louvre, Paris – Connect Vermeer (EU/US)



*Example collection overview:
Data visualization presenting
relations among actors in the
data set.*



*Example collection overview:
Data visualization presenting
relations among actors in the
data set with an overlay of
explanatory text.*



Linked data

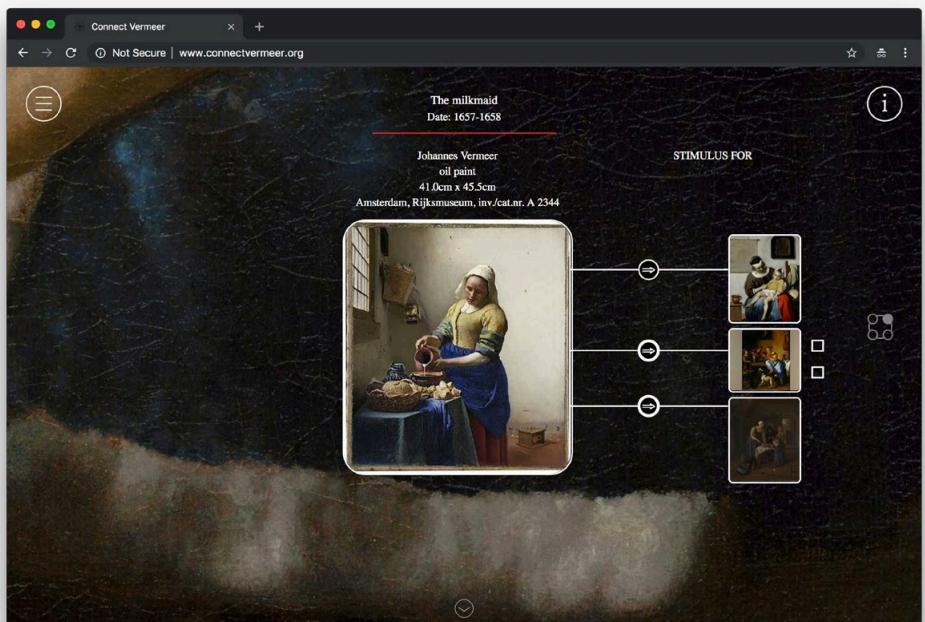


Data viz

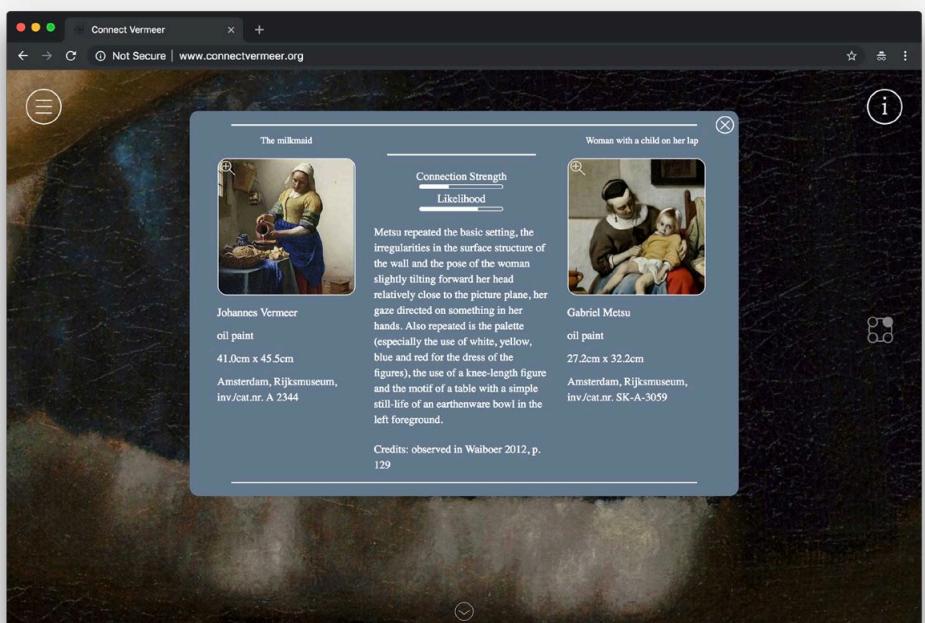


Expression of relations

Example view of an item record: Each artwork item is presented within a diagram of connections to other artworks it has influenced or has been influenced by.



Example view of an item record: An explanatory overlay provides further information about the nature of the relationship between two artworks.



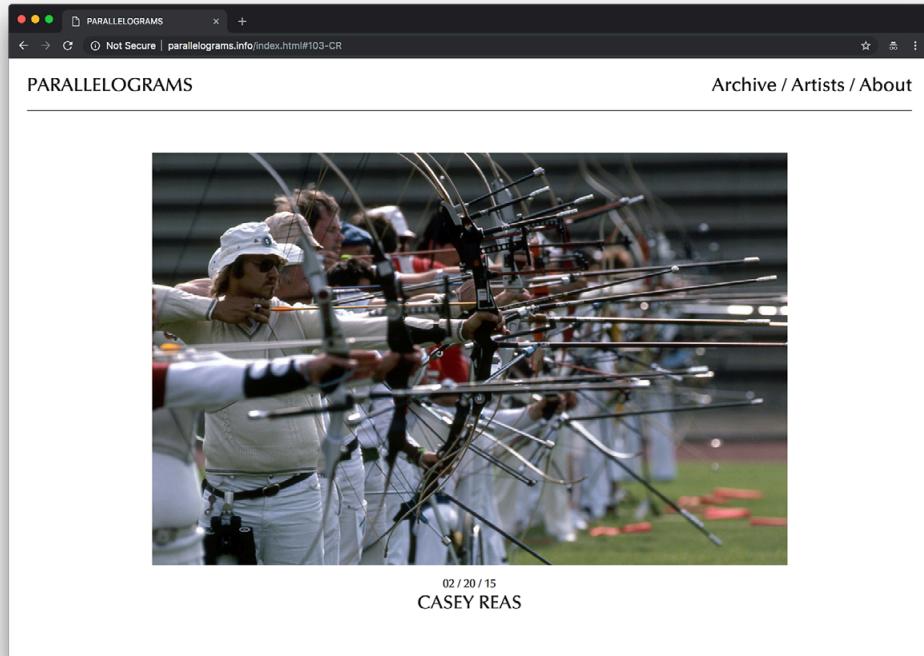
Reference URL: <http://www.connectvermeer.org/>

Date of screenshots: 2018-11-23

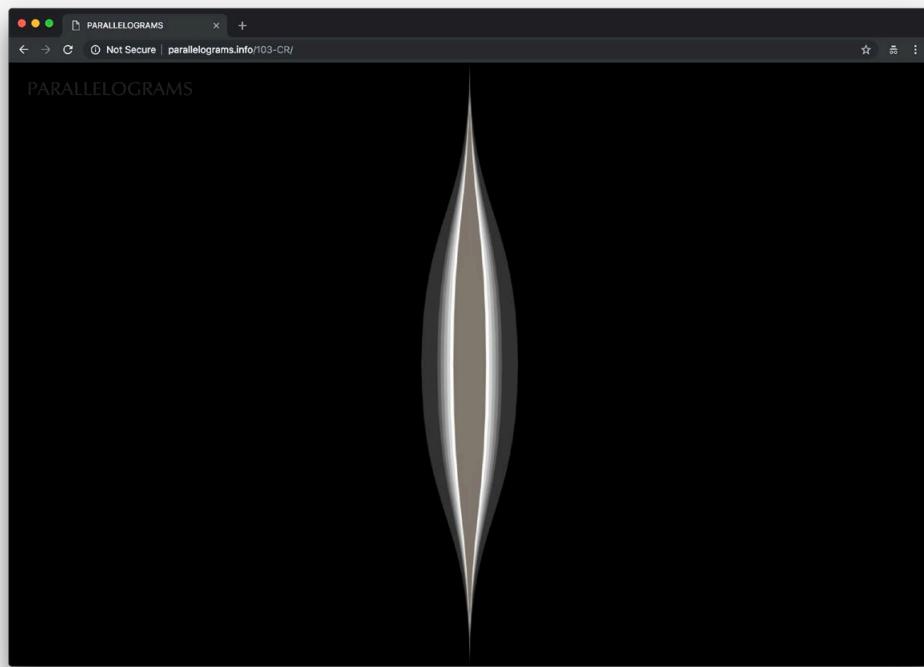
Notes: This joint project between three art institutions brings together research within a common linked data framework (using the CIDOC-CRM standard). While the visualization relating to artists remains mostly opaque (despite the explanation overlay text), the relations between artworks are clearly visualized and articulated further through a combination of qualitative historical argumentation and quantitative methods of analysis. Opting out of the more traditional approach of the network graph diagram, this interface aims to make relationships between items in the data set more explicit. Yet a lot of the backend data modelling remains opaque, thus limiting the usefulness of the interface to expert users.

7 Interfaces for net art exhibitions

Parallelograms (2010-2015)



*Landing view of the exhibition:
The site can be navigated via
a long-scroll illustrated list of
artworks, displaying the most
recent first, or via an Archive
page of thumbnails organised
chronologically.*



*Example artwork view 1:
The artwork is presented full
screen, the only reference
back to the exhibition index is
the logo just visible (gray text
upon black ground) in the top
left corner.*



“White cube” exhibition approach

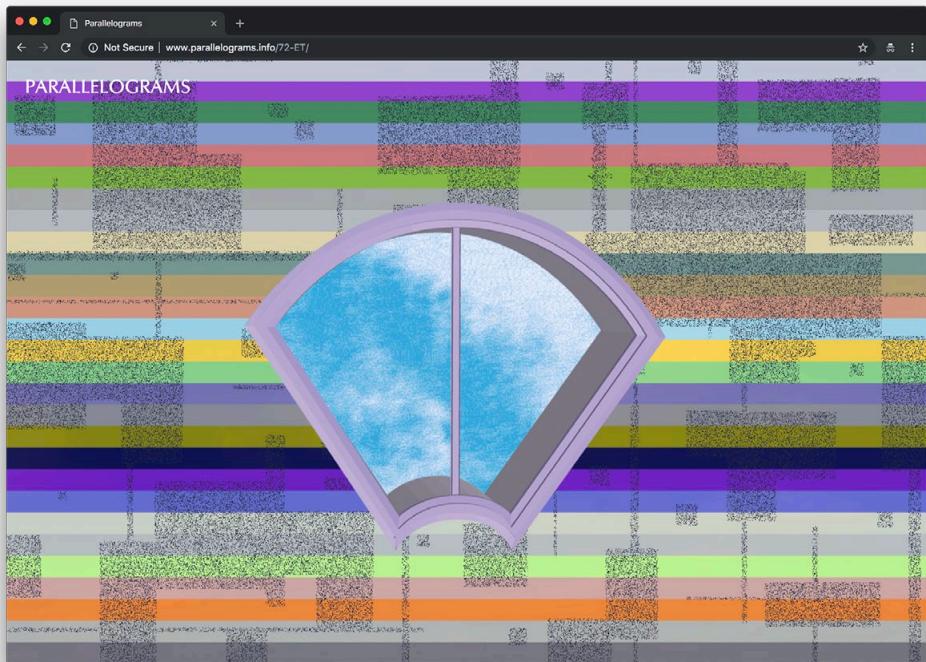


Overviews & previews



Artworks hosted on exhibition site

Example artwork view 2.



The only contextual information provided is a list of artists' names and short biographies.

PARALLELOGRAMS

Archive / Artists / About

CAREY DENNISTON

For several years, artist Carey Denniston photographed what she argued was the same male Northern Cardinal living in her Brooklyn backyard. In late Spring of 2012, she saw two.

CASEY REAS

Casey Reas' software, prints, and installations have been featured in solo and group exhibitions at museums and galleries around the world. He lives and works in Los Angeles.

CATHERINE CZACKI

Catherine Czacki is an artist living and working in San Diego. She has a BFA from the San Francisco Art Institute and an MFA from Columbia University, and has traveled to Poland on a research grant at the University of Warsaw.

Reference URL: <http://parallelograms.info/>

Date of screenshots: 2018-11-25

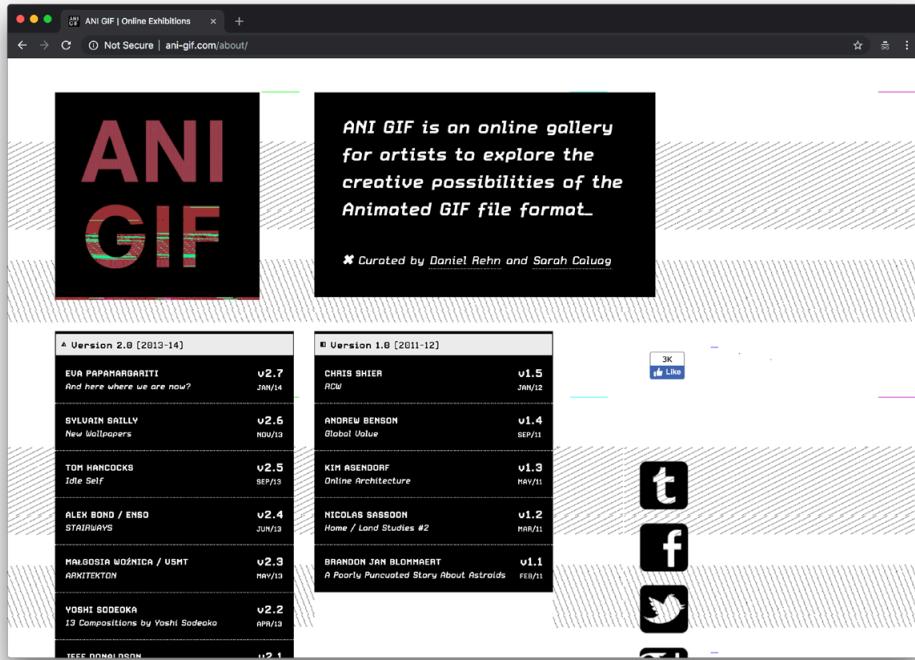
Notes: This online exhibition is organized as a series of individual commissions, developed between 2010–2015. Artwork thumbnails are presented as clickable elements, which open new, self-contained pages. The majority of the artworks are hosted on the exhibition site, but some video works are hosted elsewhere. The formula of white background, responsive image grid structure and minimal typography adhere to the portfolio and gallery websites from the late 2010s. The minimal, seemingly 'transparent' interface design adheres to the 'white cube' gallery space paradigm. No further context is provided for individual artworks.



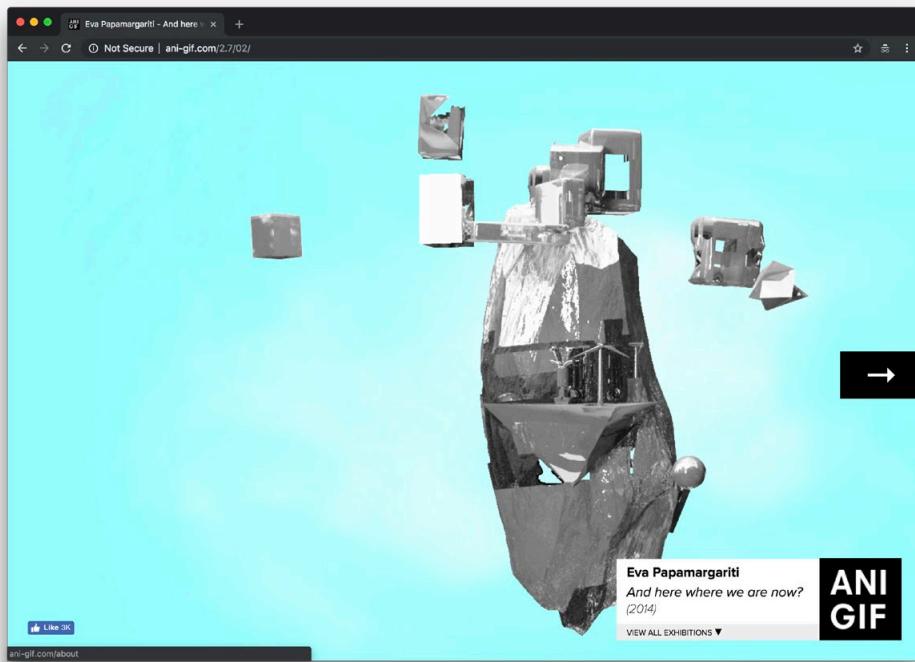
External embedded
media



ANI GIF (2011-2014)



Landing view of the exhibition: A chronological list of artwork titles serve as links to individual commissions. Thumbnail previews are not provided.



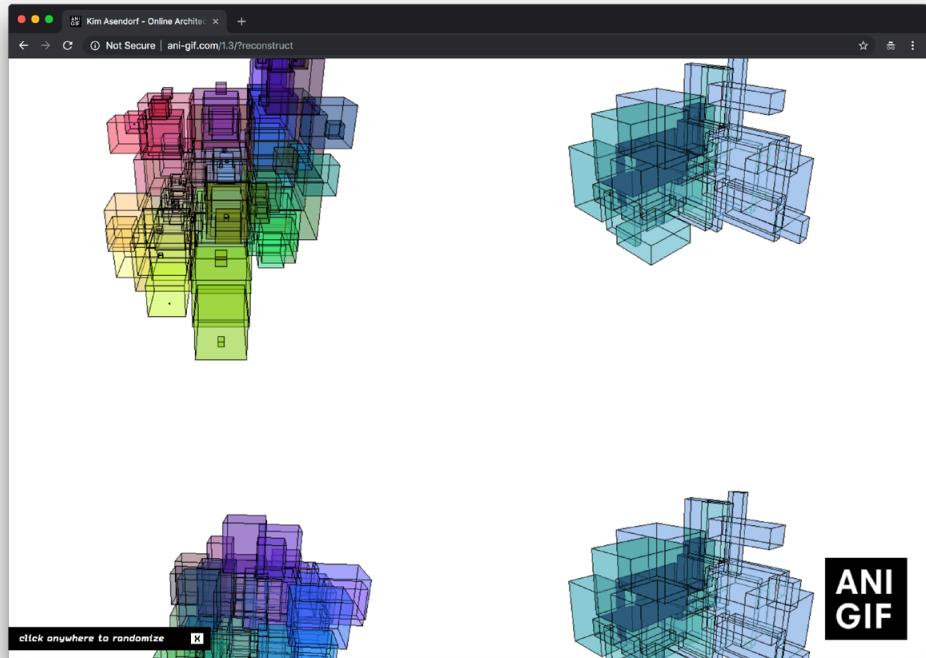
Example artwork view 1:
Each commissioned artwork utilizes the entire space of the browser window. The only fixed page element is the square exhibition logo (lower right), which provides basic information about the artwork and links back to the homepage.

★
Vertical scroll

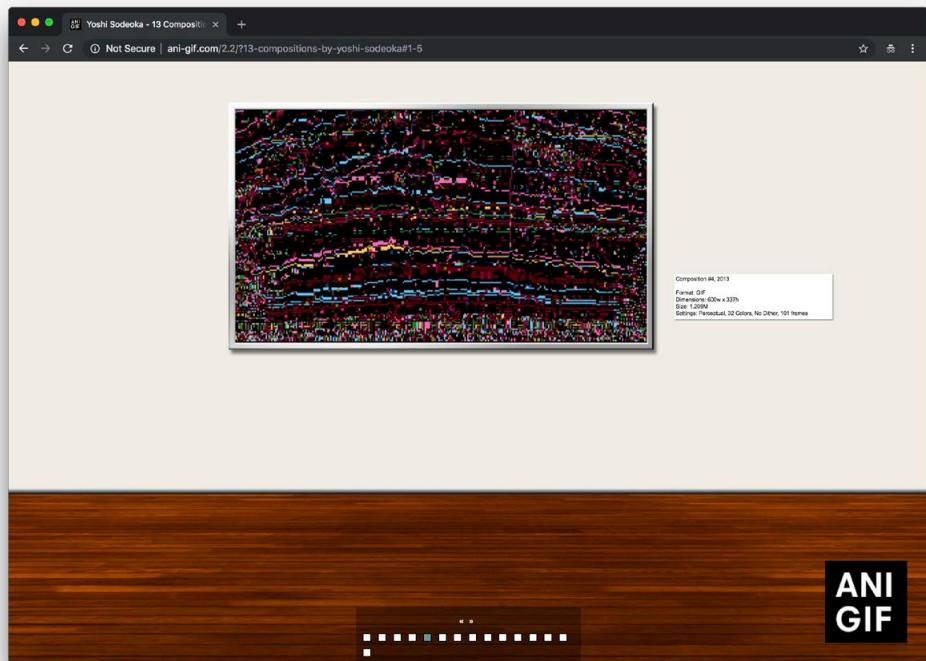
★
Horizontal “slide” transition

★
Virtual 3D gallery environment

*Example artwork view 2:
This piece responds to
vertical scrolling, and a user
click generates alternate
views.*



*Example artwork view 3:
This work utilizes a
metaphorical 3D virtual
gallery space.*



Reference URL: <http://ani-gif.com/>

Date of screenshots: 2018-11-25

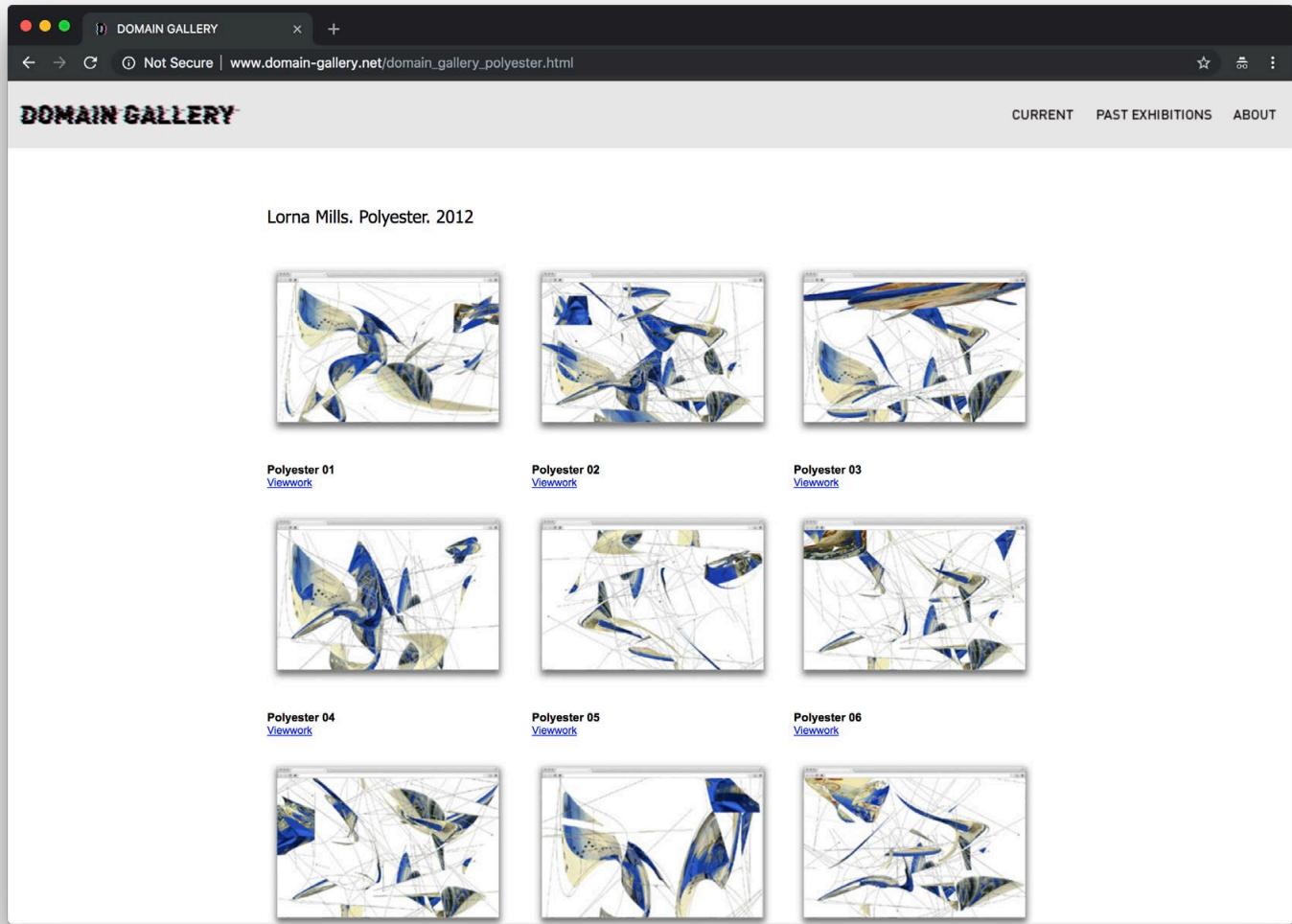
Notes: This online exhibition features multiple commissions by artists (each conceived as a small, stand-alone exhibition), which are all hosted on the main site's infrastructure. Some of the commissions use the vertical space of the browser for display (vertical scroll). Others use the horizontal space – via left/right arrows in a slideshow style. One of the commissions adds a secondary level of navigation and uses the browser window as a virtual 'gallery wall', adding mock frames around the artworks, and allowing horizontal panning of the wall left and right, to navigate between artworks in the 'space'.



**Artworks hosted on
exhibition site**



Domain Gallery – Lorna Mills (2012)



Landing view of the exhibition: The artwork previews are shown in a grid of thumbnails.



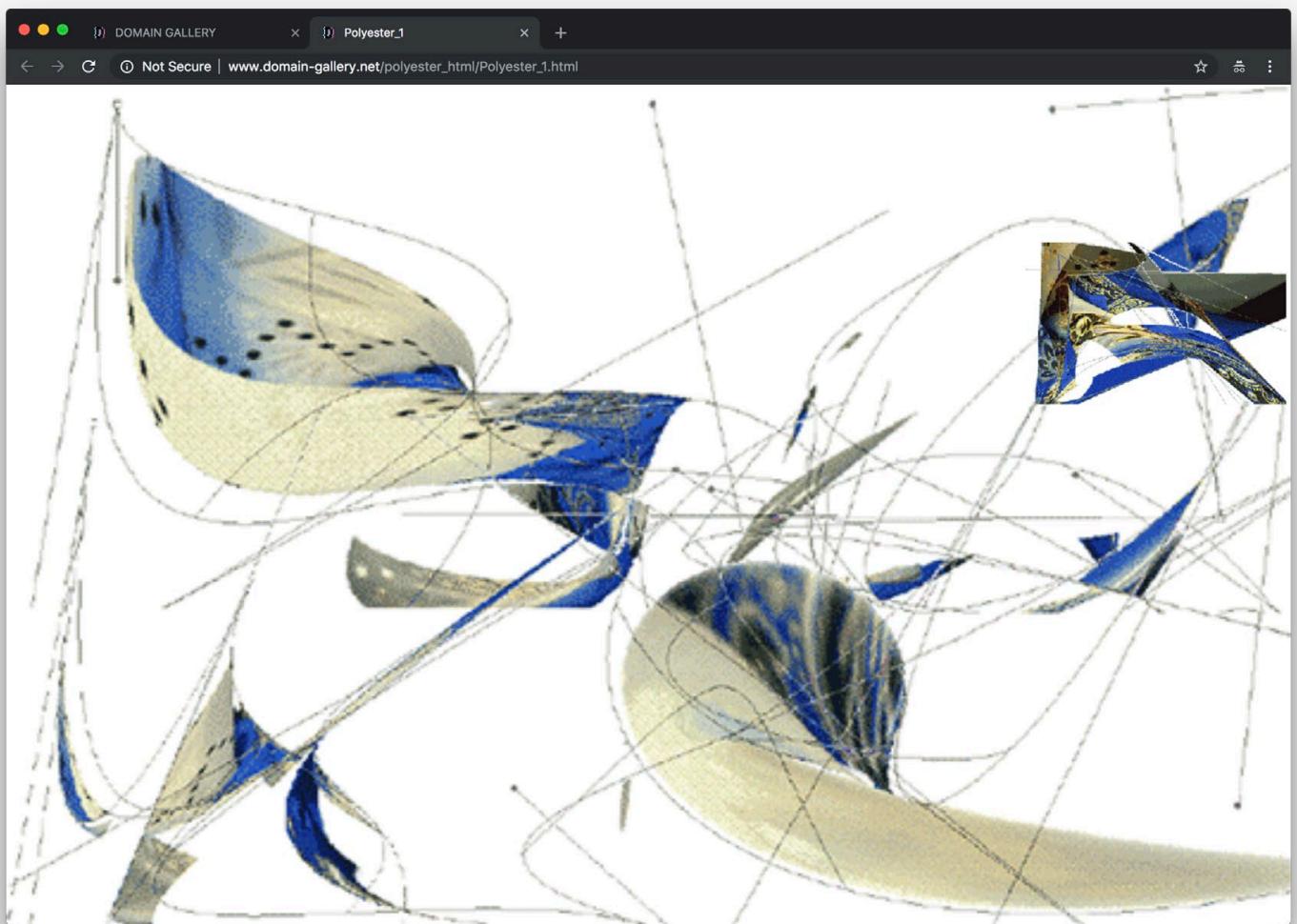
“White cube” exhibition approach



Overviews & previews



Artworks hosted on exhibition site



Example artwork view: The artwork opens up in a new browser tab and fills the entire browser window.



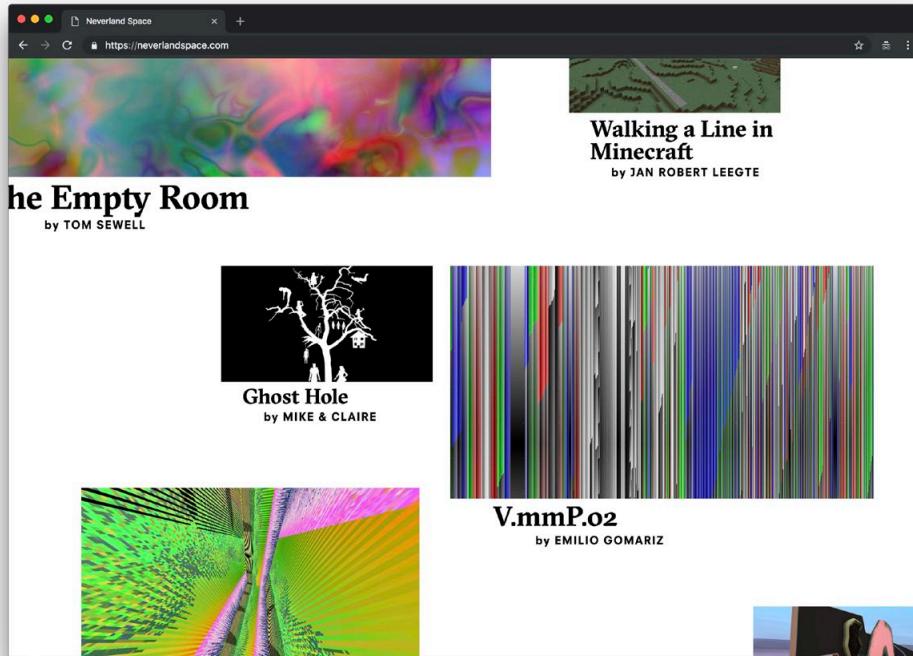
**Browser frame included
in previews**

Reference URL: http://www.domain-gallery.net/domain_gallery_polyester.html

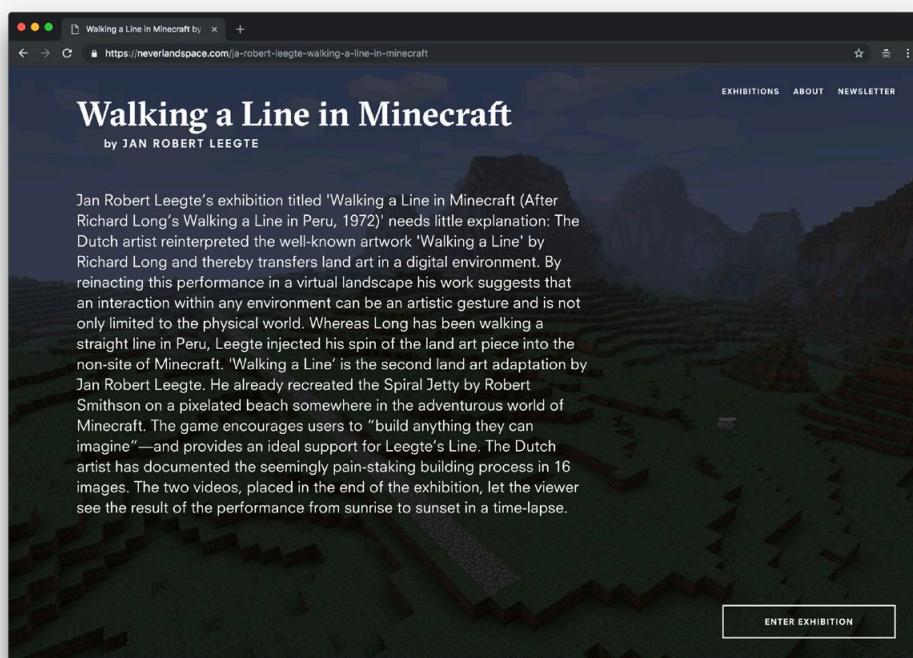
Date of screenshots: 2018-11-25

Notes: A solo show of animated gifs, all hosted on the gallery website. Artworks are accessible via links from the exhibition landing page. The landing page shows the images as a grid of screenshots including the browser window itself, which serves as a framing device and makes the landing page look like a born-digital salon wall. The overall approach is minimal – within the artwork view there is no provision of navigational instructions or additional context.

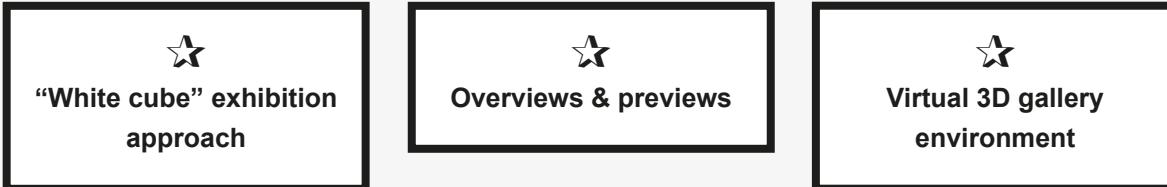
Neverland Space – Walking a Line in Minecraft (2013)



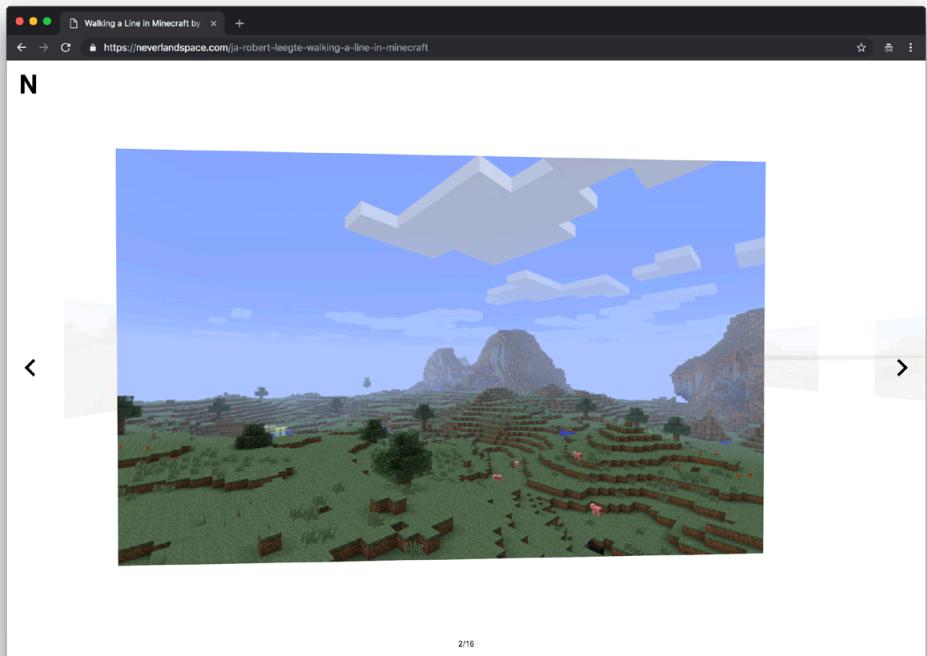
Landing view of the exhibition website: Multiple exhibitions are featured as preview images.



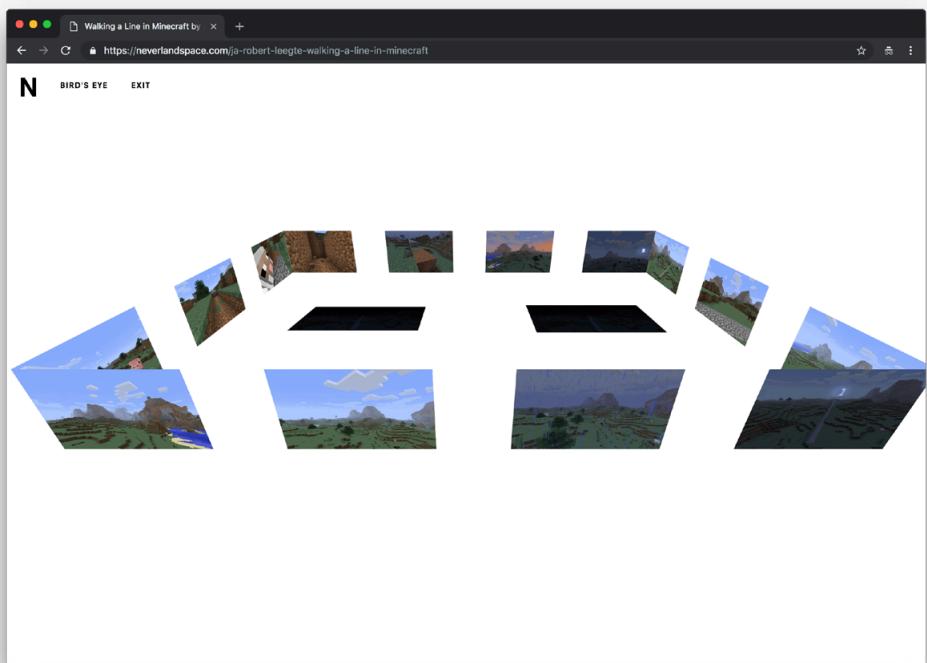
Entry point to a single exhibition.



*Example artwork view:
This screenshot shows a
zoomed-in mode, which
features left/ right navigation
arrows.*



*There is also an alternative
exhibition navigation mode,
which is a bird's eye view of
all artworks.*



Reference URL: <https://neverlandspace.com>

Date of screenshots: 2018-11-25

Notes: This is an online exhibition representative of all shows staged at Neverland Space's website. These shows include still images, videos and GIF files staged as virtual installations within a blank 3D space. Offering multiple viewing modes within an otherwise empty virtual space gestures towards Metaverse tropes and strategies utilized in multiplayer online computer games, yet the overall aesthetic of the space remains within the 'transparent'/ 'white cube' paradigm. Some context is provided on each exhibition's entry page.



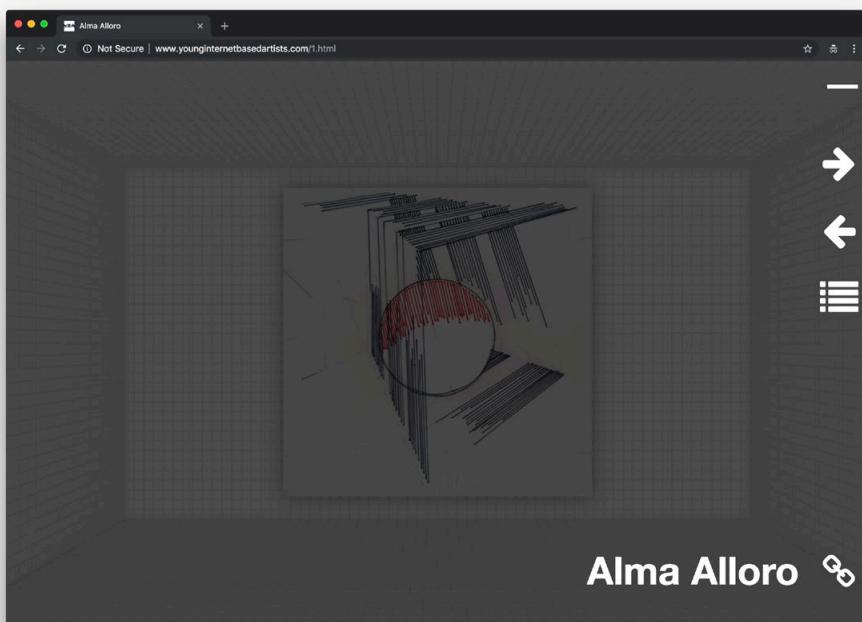
Artworks hosted on
exhibition site



Young Internet Based Artists (2013)



Landing view of the exhibition:
In this screenshot the optional
the information overlay is
switched on.

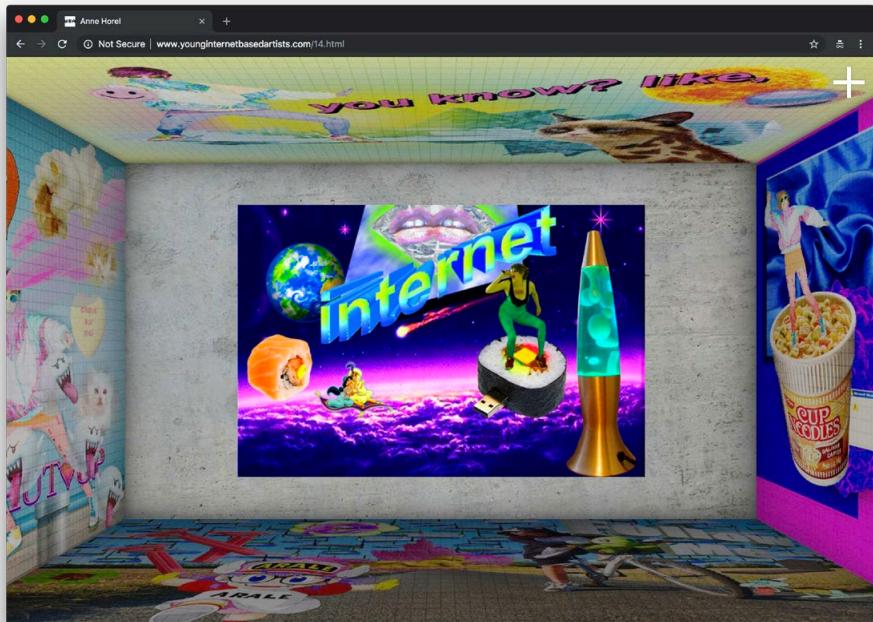


Example artwork view 1:
In this screenshot the
optional information
overlay is switched on.

- ★
Virtual 3D gallery
environment
- ★
Horizontal “slide”
transition
- ★
Overlay state for
contextual information
- ★
External embedded
media
- ★
Artworks hosted on
exhibition site

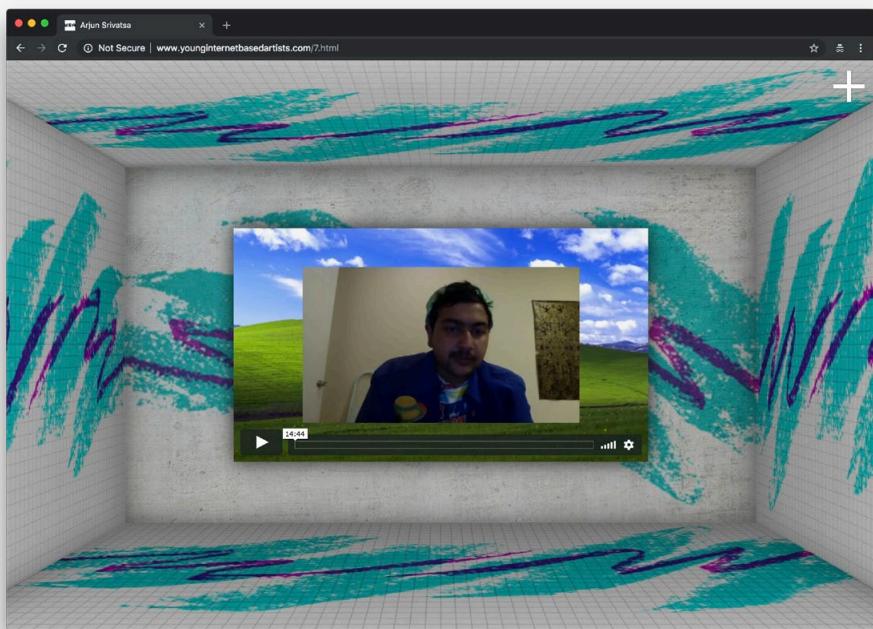
Example artwork view 2:

In this screenshot the optional information overlay is switched off.



Example artwork view 3:

This view features embedded video.



Reference URL: <http://www.younginternetbasedartists.com/>

Date of screenshots: 2018-11-25

Notes: This online exhibition utilizes Gallery 404 – an open-source, browser-based 3D exhibition space tool – offering a virtual gallery wall for artists to display their work and to modify the surrounding wall surfaces. The look and feel of the 3D space resembles Metaverse tropes, and other computer game virtual worlds, but it is not an immersive environment. More conventional web-based navigation tools allow the user to either experience the exhibition as a linear slide show – with left/ right arrow controls, or to jump between artworks via a list of artists' names. All navigation controls are accessible in an overlay state from an expandable menu button. While some artworks are hosted on the site itself, others rely on external sources being embedded in the virtual gallery space.

Body Anxiety (2015)

Landing view of the exhibition: A static sidebar on the left displays a list of all the exhibiting artists' names and functions as an index/navigation menu.

BODY ANXIETY

ABOUT

- Jen Thinks...
- Leah Says...
- Bios

Andrea Crespo
Saoirse Wall
Victoria Campbell
Endam Nihan
Aurorae Parker
Mary Bond
RAFIA Santana
Ann Hirsch
Nancy Leticia
Georges Jacotey
Erika Alexander
Hannah Black
Randon Rosenbom
Rachel Rabbit White
Faith Holland
Kate Durbin
Angela Washko
Leah Schrager
Marie Karberg
Alexandra Marzella
May Waver

Body Anxiety

"Whenever you put your body online, in some way you are in conversation with porn..."
Ann Hirsch

"This is painful: no matter how many levels of consciousness one reaches, the problem always goes deeper. It is everywhere."
Shulamith Firestone

Click down to view next, click right to view within, click info in lower right hand corner for details.

Landing
View show statement.
close info

Landing view of the exhibition:
A static sidebar on the left displays a list of all the exhibiting artists' names and functions as an index/navigation menu.

Example artwork view 1.

BODY ANXIETY

ABOUT

- Jen Thinks...
- Leah Says...
- Bios

Andrea Crespo

- Saoirse Wall
Victoria Campbell
Endam Nihan
Aurorae Parker
Mary Bond
RAFIA Santana
Ann Hirsch
Nancy Leticia
Georges Jacotey
Erika Alexander
Hannah Black
Randon Rosenbom
Rachel Rabbit White
Faith Holland
Kate Durbin
Angela Washko
Leah Schrager
Marie Karberg
Alexandra Marzella
May Waver

Celinde

General Information

- Age: variable
Sex: transsexual
Gender: variable
Sexuality: sexual
- Current residence: human-host

Tendencies

- depressive
empathic
quiet
denude
morse
restained
systematic
hyperfocused
thoughtful
persistent
atmmy
insecure

Prefers...

- solitude
calming activities
repetition
reality
neutrality
listening
reciting
suspicion
sensory deprivation
absorption

Special Abilities

- clairvoyance
systematizing
hypersensitivity
hypolexia
pattern-recognition
tolerance

Cynthia

General Information

- Age: variable
Sex: transsexual
Gender: variable
Sexuality: variable
- Current residence: human-host

Tendencies

- hyperactive
caringiving
talkative
exhibitionistic
irritable
executive
executive functioning
expanded attention
impulsive
negligent
playful
narcissistic

Prefers...

- occasional company
energetic activities
variation
flux
extremes
talking
singing
spontaneity
sensory overload
scattering

Special Abilities

- prestidigitation
elocution
extreme
seduction
camouflage
memory

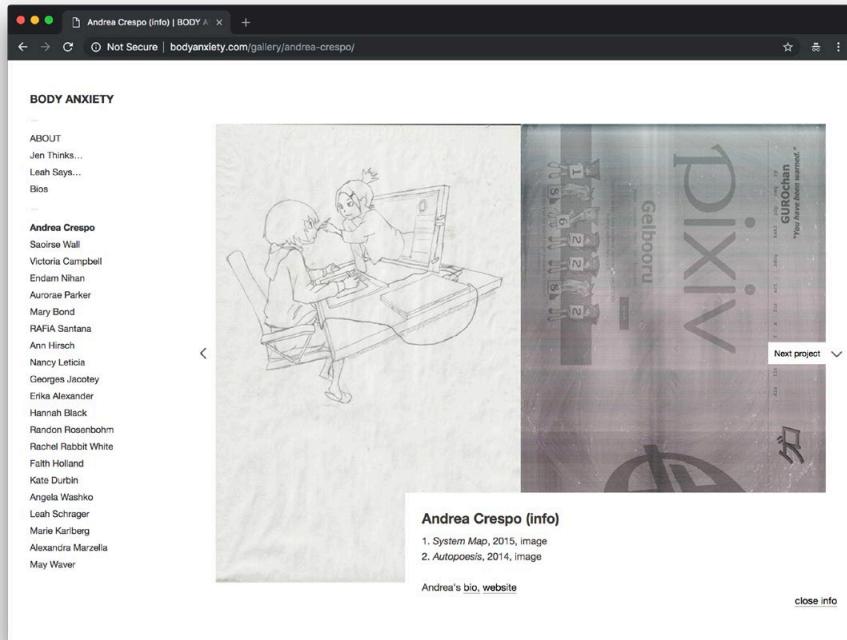
Andrea Crespo (info) 1 of 2

★
“White cube” exhibition approach

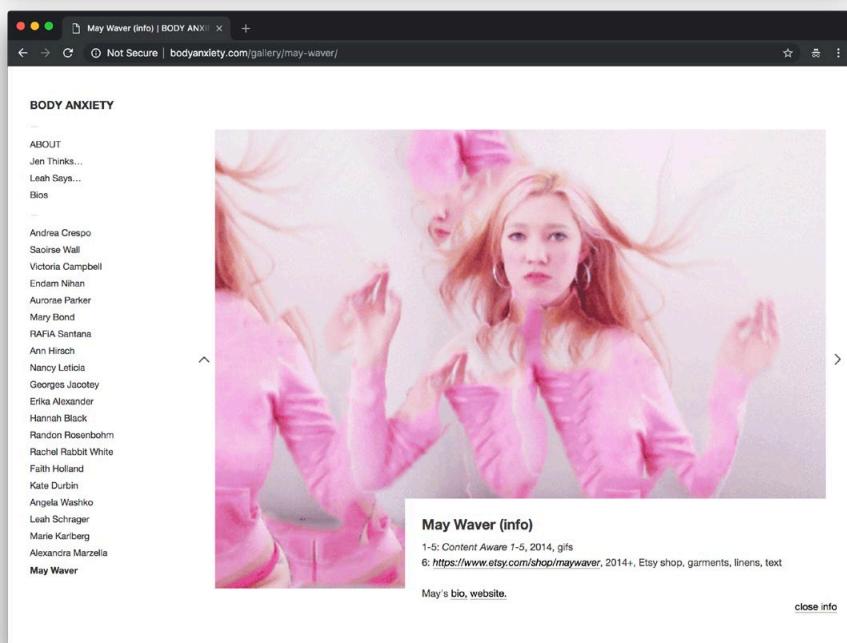
★
Horizontal “slide” transition

★
Overlay state for contextual information

Example artwork view 2:
In this screenshot, the information overlay panel is switched on. Navigation within projects is horizontal, and users are able to flip through a slideshow of images left to right. Navigation between projects is vertical. Users can click on the 'Next project' button (centre right) to auto-scroll down the page and reach the next project.



Example artwork view 3.



Reference URL: <http://bodyanxiety.com/>

Date of screenshots: 2018-11-25

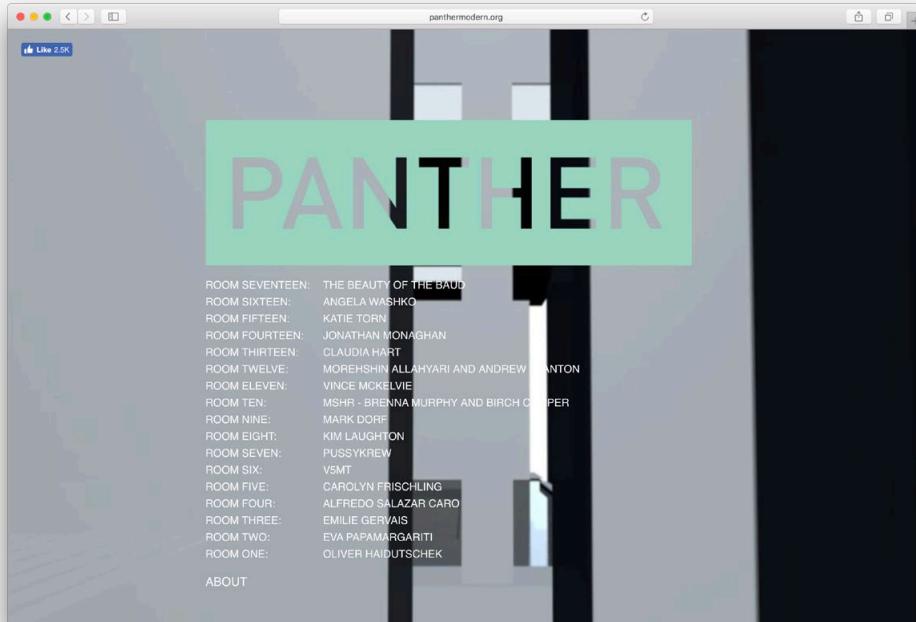
Notes: The white space and the straightforward navigation style adhere to the portfolio and gallery websites from the late 2010s. The overall layout follows the established “index + exhibit format” popularised by the Indexhibit platform, still widely used by artists and designers to date. An ‘invisible’ / ‘transparent’ approach to the interface design adheres to the ‘white cube’ gallery space paradigm. Limited contextual information is provided via the ‘info’ button (lower right) which opens an overlay panel. The medium labels suggest where the artworks are hosted – images and animated GIFs are hosted on the exhibition site; videos are embedded from external platforms; websites are added as links only.



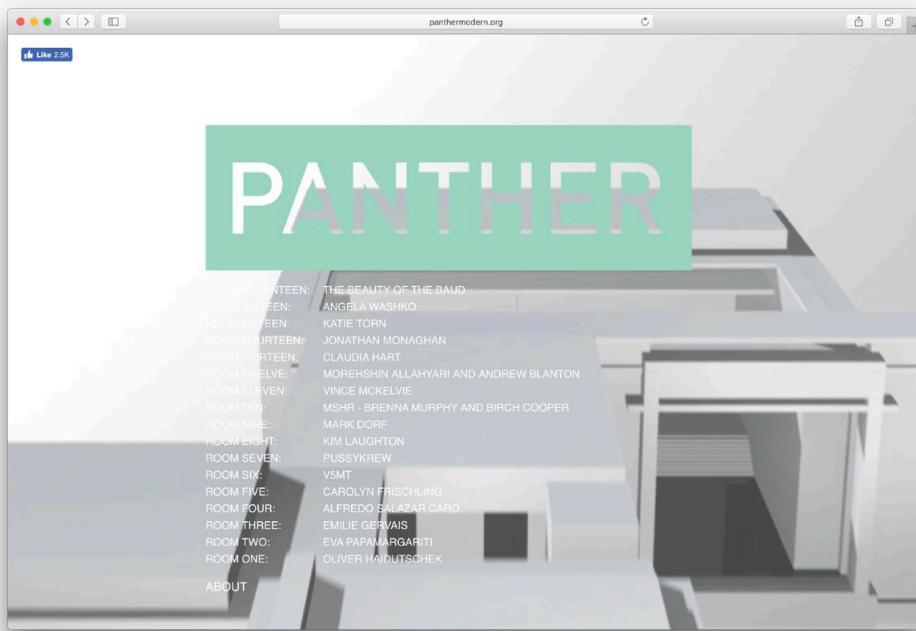
External embedded
media



Panther Modern (2014–2016)



Landing view of the exhibition 1:
Artists/ exhibition areas are listed
in an index list format.



Landing view of the exhibition 2:
A video pans around the 3D
virtual space in the background
(not available in all browsers).



Virtual 3D gallery
environment

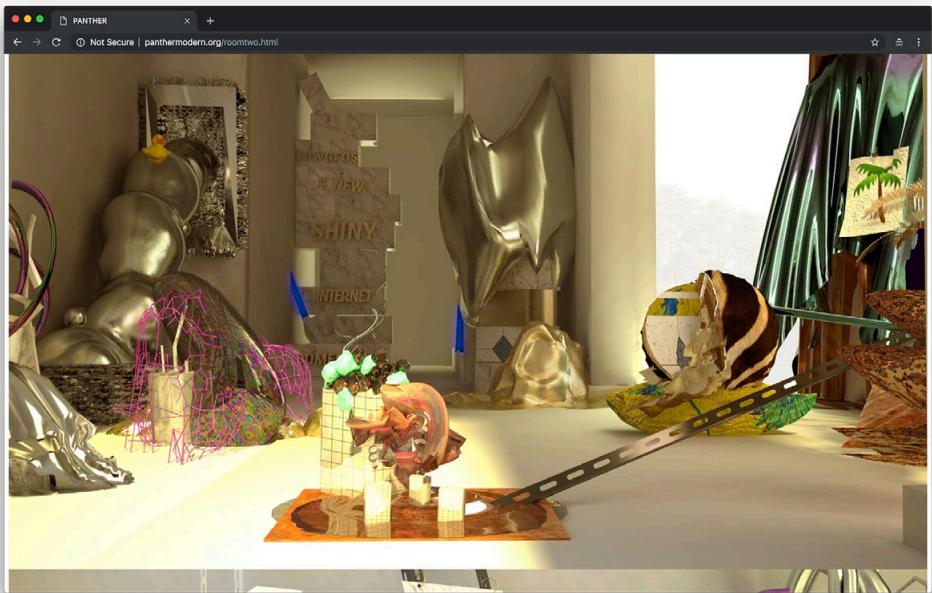


Artworks hosted on
exhibition site

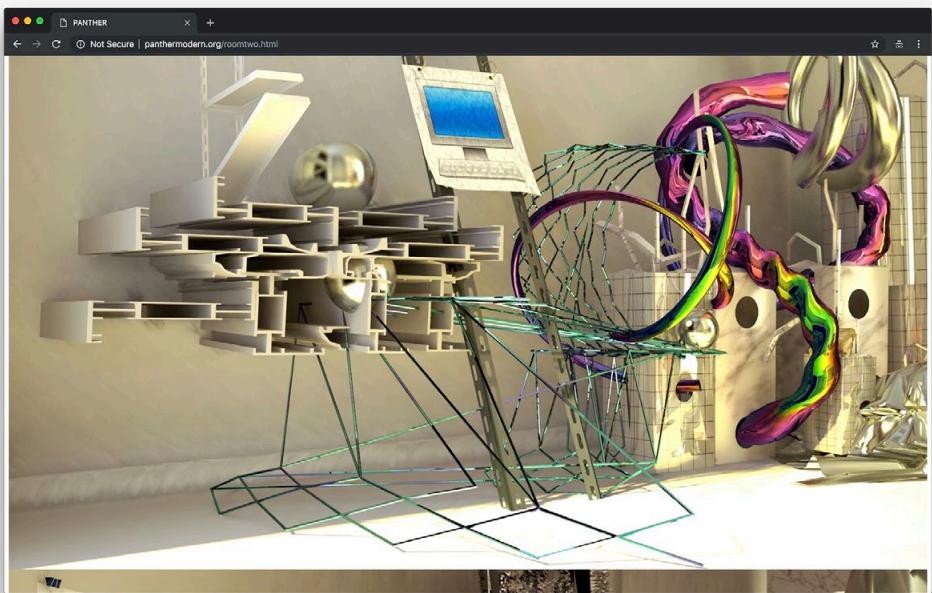


External embedded
media

*Example artwork view 1:
A series of images are
stacked vertically on the
page.*



Example artwork view 2.

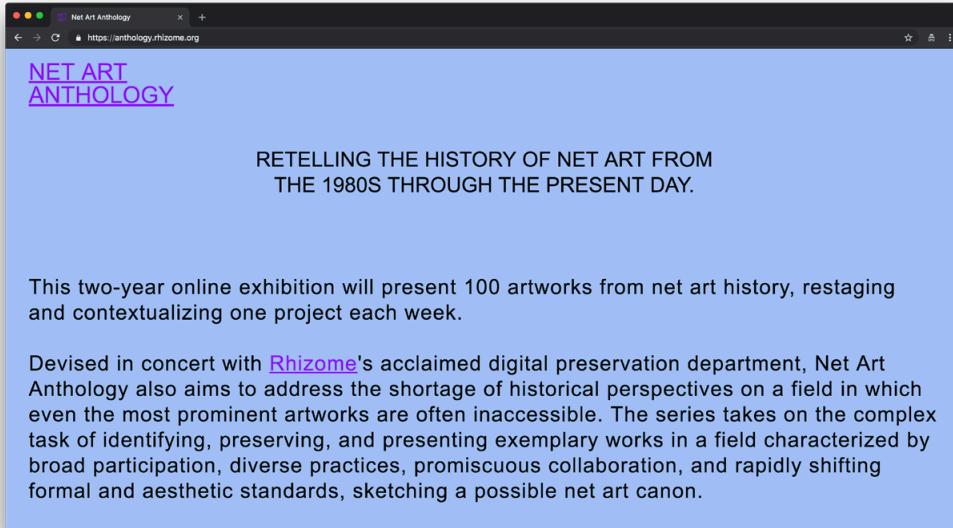


Reference URL: <http://panthermodern.org/>

Date of screenshots: 2018-11-25

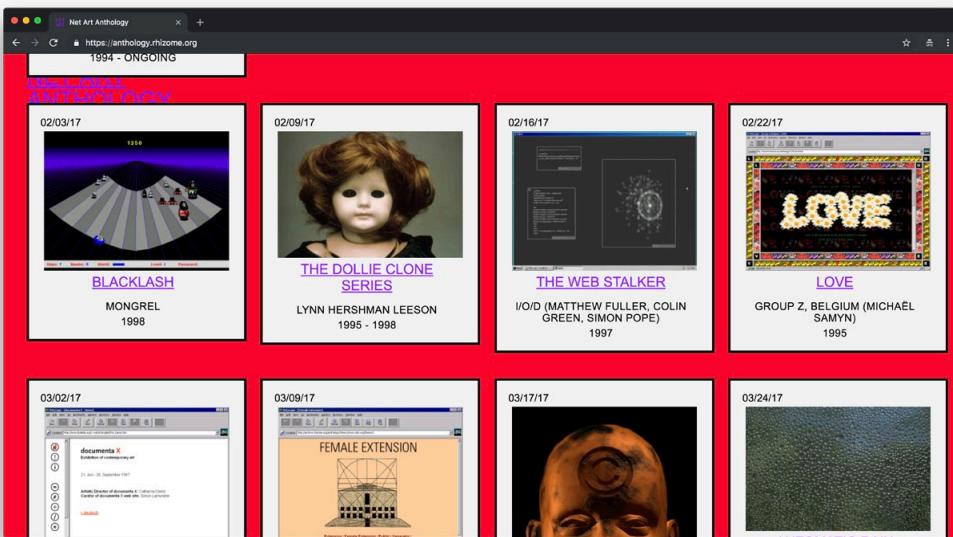
Notes: Panther Modern is a file-based exhibition space. Each artist is allocated a 'room' to create a site-specific work. Rooms are linked visually in the images rendering the 3D-modelled space, but not structurally: i.e. users cannot navigate across the 3D modelled space or from one room page to another. The works are presented mostly as a series of .jpg images stacked in a vertical scroll. Some pages (but not all) require the no longer supported Unity-3D web player browser plug-in, and in its absence load only the static .jpg images. This indicates that the exhibition was originally conceived as a fully immersive environment, borrowing paradigms from computer game virtual worlds, but due to the Unity-3D plug-in's obsolescence this level of interaction is no longer available to the user.

Net Art Anthology (2016–2018)



The screenshot shows a web browser window for the 'Net Art Anthology' website. The title 'NET ART ANTHOLOGY' is at the top left. Below it is a subtitle: 'RETELLING THE HISTORY OF NET ART FROM THE 1980S THROUGH THE PRESENT DAY.' A descriptive paragraph follows: 'This two-year online exhibition will present 100 artworks from net art history, restaging and contextualizing one project each week.' Another paragraph explains the purpose: '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.'

*Landing view of the exhibition 1:
A short text introduces the exhibition context.*



The screenshot shows a grid of artwork previews. The first row contains four items: 'BLACKLASH' (MONGREL, 1998), 'THE DOLLIE CLONE SERIES' (LYNN HERSHMAN LEESON, 1995 - 1998), 'THE WEB STALKER' (I/O/D (MATTHEW FULLER, COLIN GREEN, SIMON POPE), 1997), and 'LOVE' (GROUP Z, BELGIUM (MICHAEL SAMYN), 1995). The second row contains three items: 'documenta X' (various artists, 1997), 'FEMALE EXTENSION' (various artists, 1997), and two other unlabelled thumbnails.

*Landing view of the exhibition 2:
An overview of the exhibition is provided via chapter divisions and previews of the artworks as thumbnail images.*

★
Overviews & previews

★
Vertical scroll

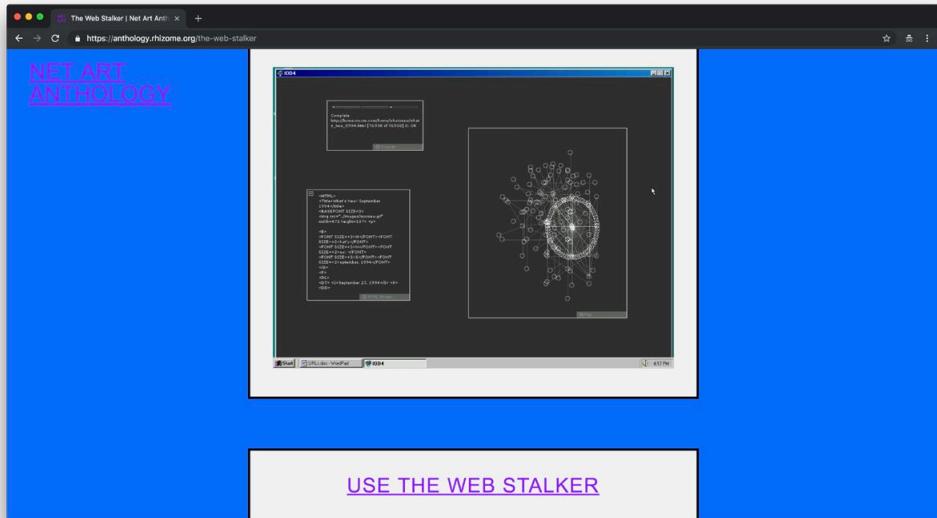
★
Browser frame included in previews

★
Rich context

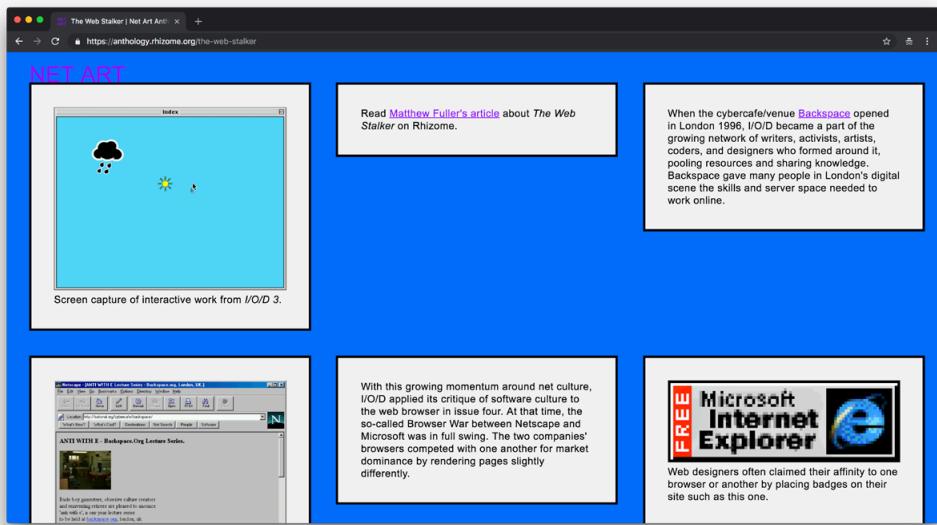
★
Artworks hosted on exhibition site

★
Emulated environments

Example artwork view 1:
A representation screenshot and entry point button are constant features across all artwork presentations.



Example artwork view 2:
Further contextual supplements are presented in bite-sized ‘chunks’ of visual/ textual information.



Reference URL: <https://anthology.rhizome.org/>

Date of screenshots: 2018-11-25

Notes: The Net Art Anthology is Rhizome’s most recent exhibition of net art. During user research sessions, users were asked to comment on the interface design. Stand-out features were: the generous size of artwork previews, which provide an at-a-glance overview of the exhibition; the rich contextual information around artworks (including supplementary literature and published texts); as well as the emulated representations of artworks in their native environments.

Summary and recommendations

Summary of the review

This report has reviewed 46 different interfaces ranging from institutional to experimental projects. The review pulled out key features from these interfaces into “feature cards” visible in the bottom of the page below each respective project. These features do not aim to describe in detail all possible interactions with the interface, but rather describe just a key concept or interaction paradigm which may have relevance to the re-design of the ArtBase archive (or in some cases – not, as discussed in attendant notes).

The cards have been assorted below into categories relating to the general structure of the data in the archive (or how the archival software has been developed), as well as to discovery and entry into the collections, to the single-record-level page and its metadata, and finally to how net art has been exhibited online. The cards have been ordered by the number of occurrences registered during the review. This order does not aim to suggest that a certain feature is more important because it is included in interfaces more widely, but rather to simply suggest what features are established already vs features which are only now starting to gain popularity. And even so – some features may be present in 7-8 examples from the review, but if all of these examples are experimental projects, those features may not always be appropriate for other contexts, such as institutional collections. This is to say that the “popularity” of features would have some impact on whether they are recommended in the ArtBase re-design or not, to the extent that features that are utilized often are most likely to be interaction paradigms which have already been tested with users and proven to be useful. But the primary criteria for selecting which features would be developed in the ArtBase re-design, is whether these reflect some of the user stories developed during the user testing sessions and whether they are compatible with the infrastructure setup already put in place by the preservation team at Rhizome.

Following the listing of feature cards organized by categories, a series of diagrams matches feature cards to user story cards from Report #2.

Finally, a list of recommendations describes some of the proposed features to be developed further during the prototyping stages of the re-design process.



Features related to database setup and data structure

★ x 13

Linked data

★ x 4

Explorable terminology

★ x 4

Capacity for contradiction

★ x 5

Invitation to contribute

★ x 4

Open source

Features related to entry points and discovery

★ x 18

Overviews & previews

★ x 10

Generous interfaces

★ x 7

Data viz

★ x 6

Multi-object timeline

★ x 7

Expression of relations

★ x 5

Sort by colour

★ x 3

Links to related queries

★ x 3

Network diagram

★ x 3

Randomization

★ x 4

Curated selections

★ x 3

SPARQL query GUI

Features related to single-record-level pages

★ x 5 Single-object timeline	★ x 4 Metadata clustering	★ x 2 Metadata richness indicator
★ x 2 Metadata related to literature & events	★ x 2 Natural language summary generated from structured data	★ x 2 Metadata in collapsible element
★ x 1 Metadata in collapsed sidepanel	★ x 1 Metadata checklist	★ x 3 Access statement

Features related to net art presentation

★ x 7 Artworks hosted on exhibition site	★ x 4 “White cube” exhibition approach	★ x 4 Virtual 3D gallery environment
★ x 4 External embedded media	★ x 3 Horizontal “slide” transition	★ x 2 Vertical scroll
★ x 2 Overlay state for contextual information	★ x 2 Browser frame included in previews	★ x 1 Rich context

Matching feature cards to user story cards

Features related to database setup and data structure

Invitation to contribute

“
As an artist, I want to see the archive as a wiki that is open rather than closed and where people can have accounts, so that they may contribute data that they might not normally disclose.

Features related to entry points and discovery

Overviews & previews

“
As an ArtBase user, I want to have multiple entry points to browsing the works, such as sort-by-colour, curated lists or a random button, so that I can discover new works in serendipitous ways.

“
As an ArtBase user, I want to filter artworks by keywords or categories, so that I can gain an overview of what types of things are present in the collection.

“
As an ArtBase user, I want to see a list of all tags used in the archive, so that I can gain an overview of what types of things are present in the collection.

Diagram key



User story from study 2: general users



User story featured as key insight



User story from study 3: researchers

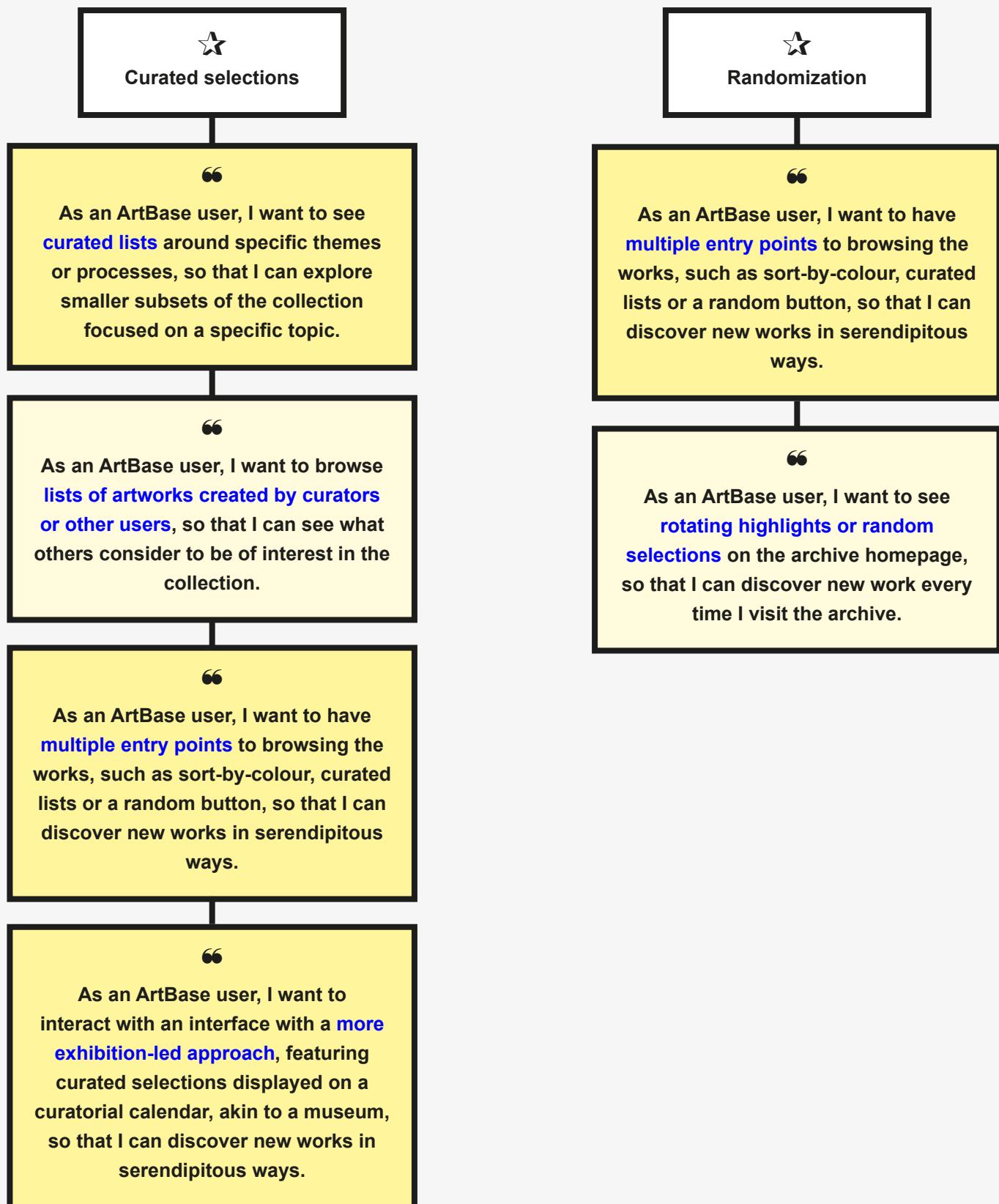


User story featured as key insight

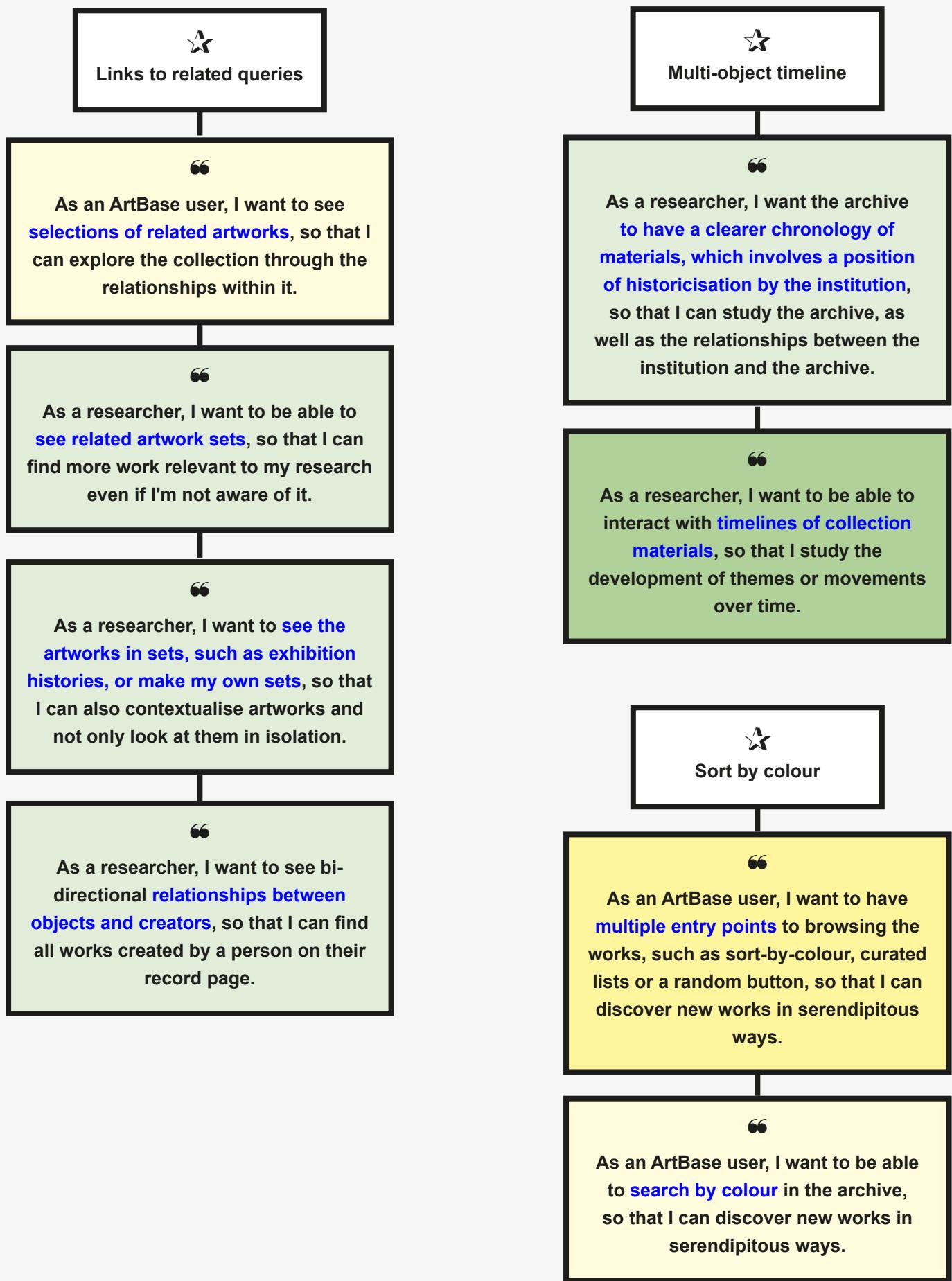


User story from study 4: artists

Features related to entry points
and discovery



Features related to entry points
and discovery



Features related to entry points
and discovery

★
SPARQL query GUI

“
As an ArtBase user, I want to interact with a **search query interface**, so that I can do research into very specific elements of the collection.

“
As a researcher, I want to use more **sophisticated search tools** with facets or filters similar to academic journal databases, so that I can create more precise search queries.

“
As a researcher, I want to have an **expanded search capability**, including keywords, subject, media, form, etc, so that it can find works in the archive relevant to my research interests.

Features related to single record-level pages

★
Single-object timeline

“
As an ArtBase user, I want to see more **temporal contextual information** around each artwork, so that I have to do less research in other sources.

“
As a researcher, I want to be able to see a **form of versioning in the archive**, so that I can study how artworks change over time, who are the actors involved in changes over time, the relationship to authorship, and also the role of the audience.

“
As a researcher, I want to see a **clear temporal dimension in the presentation**, so that I know what timeframe I am looking at in an emulated presentation when the emulator is pointing to an archival copy of the work.

“
As a researcher, I want to be able to see more **provenance or preservation metadata**, so that I can better understand the history of this work within Rhizome's collection and how it has been cared for over time.

Features related to single record-level pages

★
Metadata related to literature & events

“

As a researcher, I want to see information about **exhibition history** and **publications** featuring the work, so that I can get an idea of how the work has been shown and received over time.

★
Metadata clustering

“

As a researcher, I want the **metadata for the artwork records presented in a more granular way**, so that I can choose how much metadata to see if/when I need it.

★
Metadata richness indicator

“

As a researcher, I want to see artwork **metadata, even if it's incomplete or inconsistent**, so that I can assess the work within my understanding of the archive as a collaborative, evolving and imperfect space.

★
Access statement

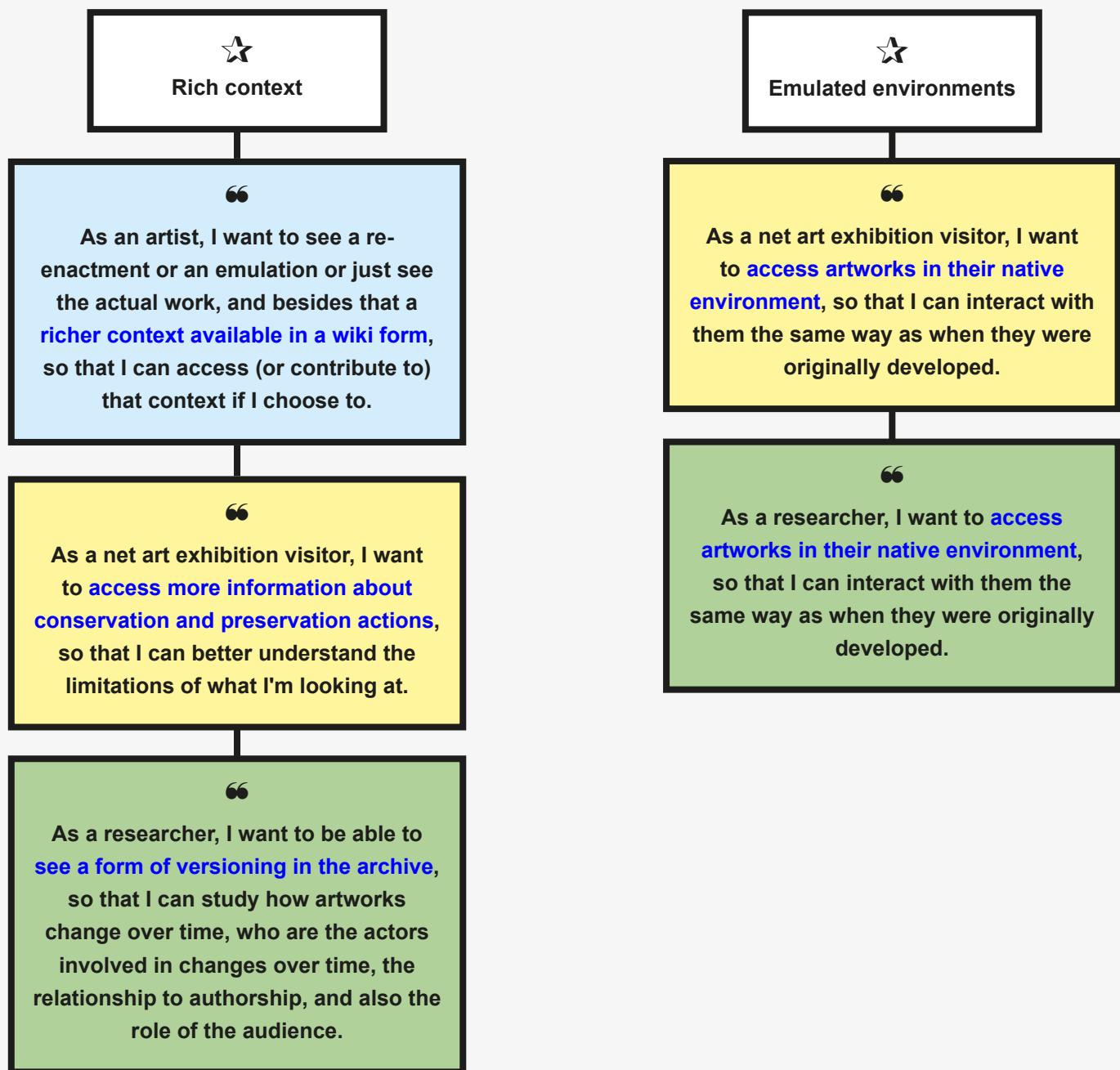
“

As an ArtBase user, I want to see functional and informative **artwork entry points**, so that I know what to expect when I try to access the artwork.

“

As an artist, I want to be able to **access the artworks quickly and easily**, so that I don't have to go through a lot of text or other context before I can look at the art.

Features related to net art presentation



Recommended features



Linked data

Features related to database setup and data structure



Explorable terminology

The following features are recommended to be implemented in the design prototype not because they directly map to user stories, but because they can facilitate many of the requirements identified throughout the Discovery and User Research Phase. **Linked data** is growing in popularity in many GLAM organizations due to its capacity to facilitate increasingly complex relationships between database items and across heterogeneous databases. In addition, the search queries which can be performed within the database are key to turning many of the user stories gathered around archive navigation and discovery into functional user interactions in the prototype interface. **Explorable terminology** can be particularly useful to providing richer metadata around conservation procedures or technical dependencies, which has been requested by users.



Capacity for contradiction

The **capacity for contradiction**, inherent in the Wikibase/ Wikidata data models, is a further useful feature for users who want to see more metadata rather than less, and want to know the origin of metadata elements throughout the history of the archive. When new metadata is added to the database, instead of supplanting older information, it can be recorded alongside it, as long as a differentiating source and point in time are also added. The capacity for recording multiple and potentially contradicting pieces of information can also be a valuable feature of the archive design, if the archive is opened once again for contributions from external users. Contributions from the public can be enabled by either providing information to an institutional representative via online forms or other communication channels, or contributing directly by logging into a user account to the database.



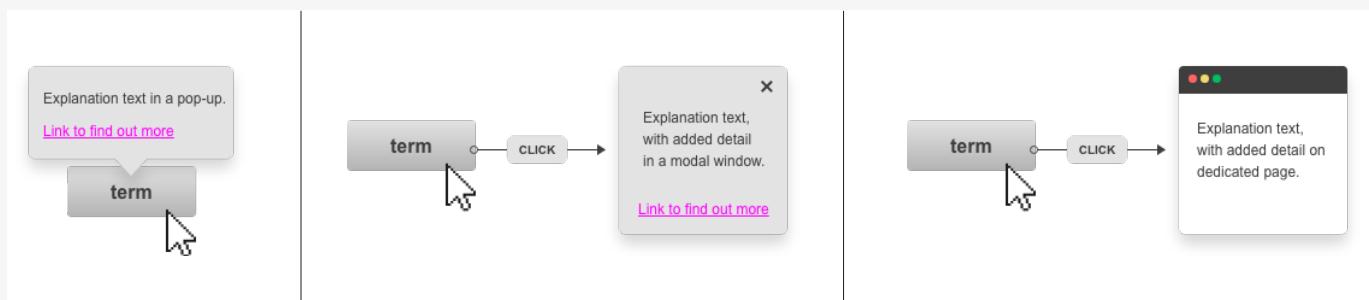
Invitation to contribute

The idea of **inviting users to collaborate** with archivists in archival systems is present in the examples reviewed in this report and has also been mapped to some user stories. The Wikibase system currently in place at Rhizome can facilitate either direct user contributions – via user login – or can simply include a prompt for users to get in touch if they want their contribution recorded in the database. Finally, it is beyond the scope of this report to go into detail as to why using **open source** software is the right choice to base their archival infrastructure on for an organization such as Rhizome. This recommendation is based on evidence from other GLAM research projects (see Bibliography), the brief interface design review conducted here, as well as conversations with staff at Rhizome.



Open source

Wireframe mock-ups

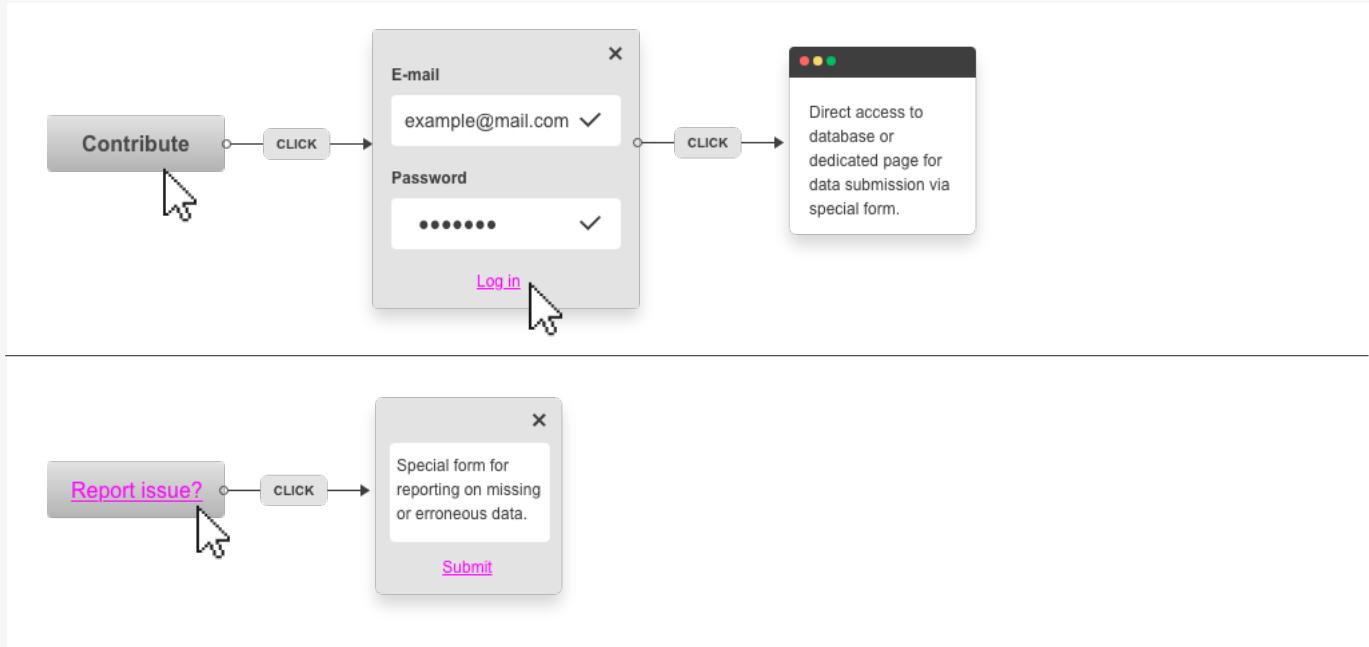


Explorable terminology

A wireframe representation of a "Metadata statement". It consists of two sections separated by a horizontal line.

- Top Section:** Labeled "Metadata value A". It contains a text input field and a link "Source A".
- Bottom Section:** Labeled "Metadata value B". It contains a text input field and a link "Source B".

Capacity for contradiction



Invitation to contribute



Recommended features



Overviews & previews

Features related to entry points and discovery



Multi-object timeline

The concept of **overviews and previews** in digital collection interfaces has been developed over a long period of time (see Green, et al, 2000) and has been well established as a standard user interaction pattern. All interfaces reviewed in this report implement variations on this pattern.

The pattern also matches a number of user stories focused on different ways of navigation and filtering a collection in order to gain a sense of its scope. Closely related to the concept of the overview, is the **multi-object timeline** featuring object previews. The timeline is another well-established user interaction pattern, present in many of the interfaces reviewed here, that has also come up in the user stories and will be a useful addition to the ArtBase interface.

While the timeline can indicate relationships between collection items based on a temporal dimension, other formats for **expressing relations** between items will also be useful in a linked data archive, where various forms of relationships can emerge organically. The idea of seeing items as “sets” has come up numerous times in the user stories,

and a design pattern which can express relations such as common exhibition histories or common technical dependencies will match closely the requirements discussed with ArtBase users. Also related to this concept, is the possibility to provide users with **links to pre-set queries**, both as a navigational tool and a tool to understand context and relationality in the archive. This is already a common interaction pattern in interfaces using linked data infrastructure.

Curated and random features are both common interaction patterns in digital collection interfaces (whether these are standard relational or linked data databases). Unsurprisingly, given the familiarity of such patterns, in the forms of featured lists, curated special collections, or just a random button, they also featured heavily in the user stories generated during the user research phase. Finally, various user stories featured requirements for more sophisticated search tools to be present in the archive.

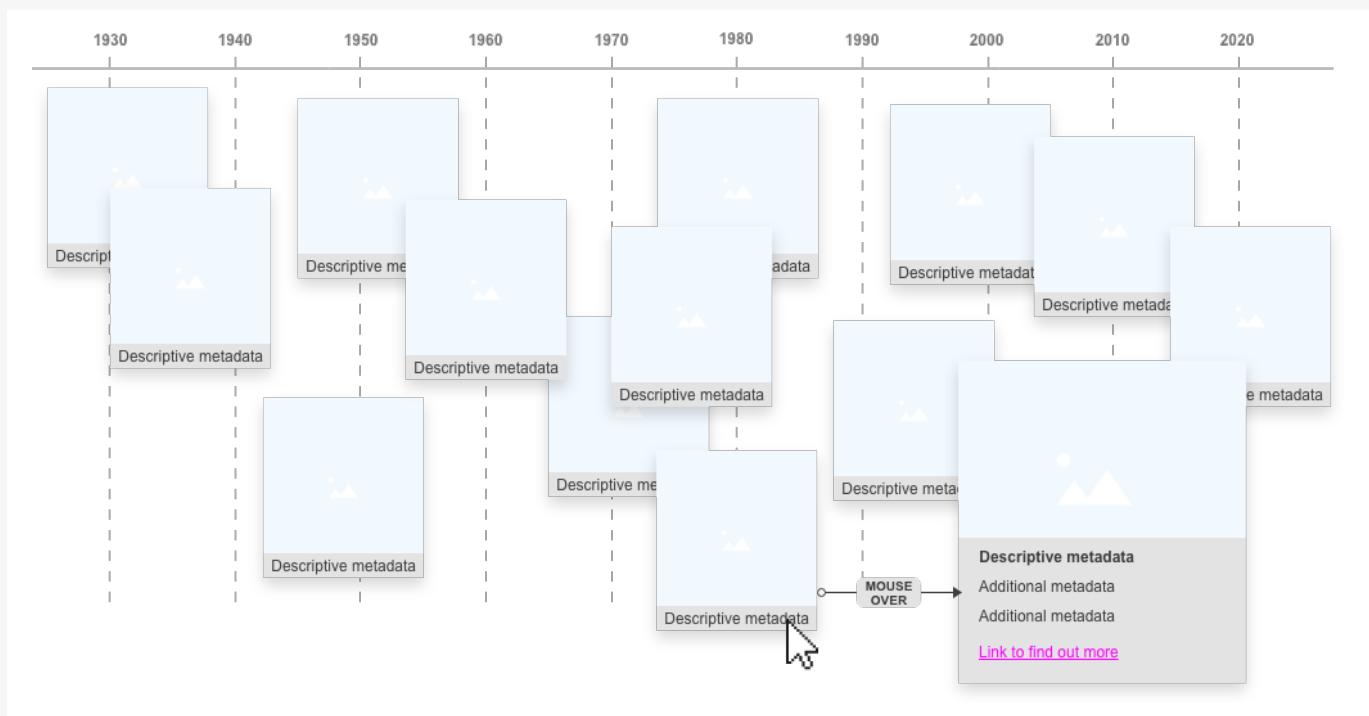
While most of the interfaces reviewed in this report feature some form of a search facility, it is rarely capable to facilitate the complex search needs some users (and particularly researchers) might have. Running search queries within a linked data database with SPARQL, on the other hand, could facilitate such search needs. However, mastering SPARQL and crucially – understanding the database model sufficiently to be able to query it, present steep learning curves, which not everyone will be able to overcome. Developing a functional GUI to run the queries would be an important goal for GLAMs who want to use linked data. So far such efforts have been few and not deeply researched.

Therefore, while developing a custom **SPARQL query GUI** for the ArtBase is highly recommended, such development will likely be a long-term goal that might not be resolved for some time yet. Features related to database setup and data structure.



SPARQL query GUI

Wireframe mock-ups



Overviews & previews / Multi-object timeline

This wireframe shows a section titled "Related works" containing three categories of related items:

- Common quality A:** Displays four items, each with a small preview image and a "Descriptive metadata" box below it. A right-pointing arrow indicates more items.
- Common quality B:** Displays four items, each with a small preview image and a "Descriptive metadata" box below it. A right-pointing arrow indicates more items.
- Common quality C:** Displays four items, each with a small preview image. A downward-pointing arrow indicates more items.

Expression of relation / Related queries

Recommended features



Single-object timeline

Features related to single record-level pages



Metadata related to literature & events

Of all the features present in the reviewed interfaces, the **single-object timeline** is the one which could address a number of user needs (reflected in user stories around temporal context, versioning of artworks and preservation history), and yet has been utilised the least for precisely such purposes in existing collection interfaces. The examples reviewed here, which featured a timeline, usually relate only to person records – where the timeline is a way to record events during a person's lifetime. For digital cultural heritage objects which also undergo various events throughout their lifecycle in archives and collections, the single-object timeline can also be a concise and impactful visual tool to represent those events. Related to that need for metadata positioning an object in a temporal and historical context, is the concept of featuring **metadata related to literature and events**, such as exhibitions and reviews, on the artwork record page. This feature is established in some examples of archival interfaces and will meet some of the needs expressed in user stories.



Metadata clustering

Within the context of the linked data database, it is also straightforward to implement. The richer the metadata provided on the record-level page, the greater the need for this data to be visually organised, so users can navigate through it and pick up only the data they are interested in quickly. This is where the concept of **metadata clustering** can be useful in meeting user needs around granular access to data. The features



Metadata in collapsible element

where metadata is presented in **collapsible elements or sidepanels** were not directly referenced by users in the user stories that came out of the user research, nevertheless these features are well-established interaction patterns already in use in archival interfaces and they can be useful in implementing the concept of metadata clustering as well. Connected to the question of how



Metadata in collapsed sidepanel

much metadata is available per each artwork record and how that is made visible to users is the question of how to represent incomplete or "less rich" records without compromising the reliability of the archive and the user's trust in the archive. The approach to use visual **metadata "richness" indicators** in some collection interfaces is a useful interaction pattern in such cases. A clear indicator tool will respond to the user requirement for representing as much data as possible, even if that may sometimes be deemed incomplete or not properly referenced by the standards of the internal staff at the organisation. Finally, the



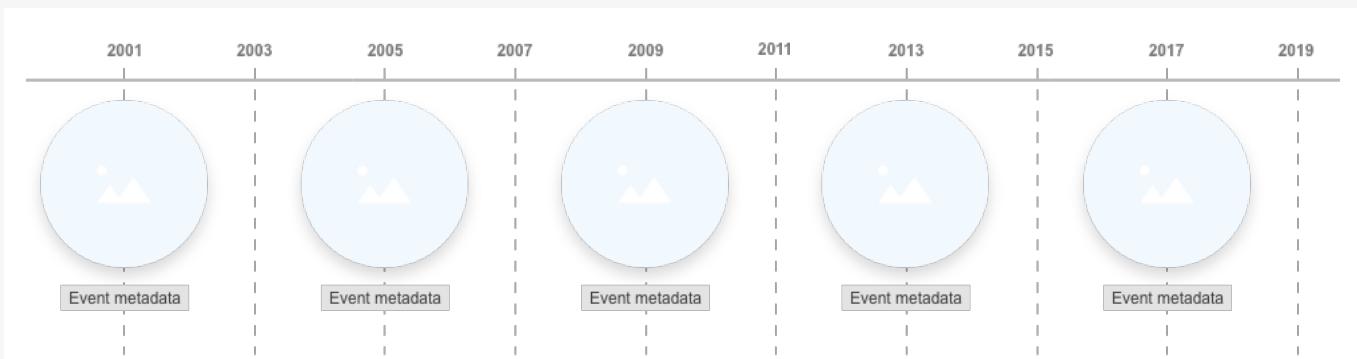
Metadata richness indicator

concept of the **access statement**, which has been implemented to some extent in existing interfaces, will need to be developed even further in order to serve the needs of ArtBase users and their concern around access to different versions of the artworks present in the archive expressed in the user stories. An access statement will be a crucial feature of the re-designed ArtBase and it will have to address questions around functional state and version origin, as opposed to simply stating whether an artwork is "on display" or not.

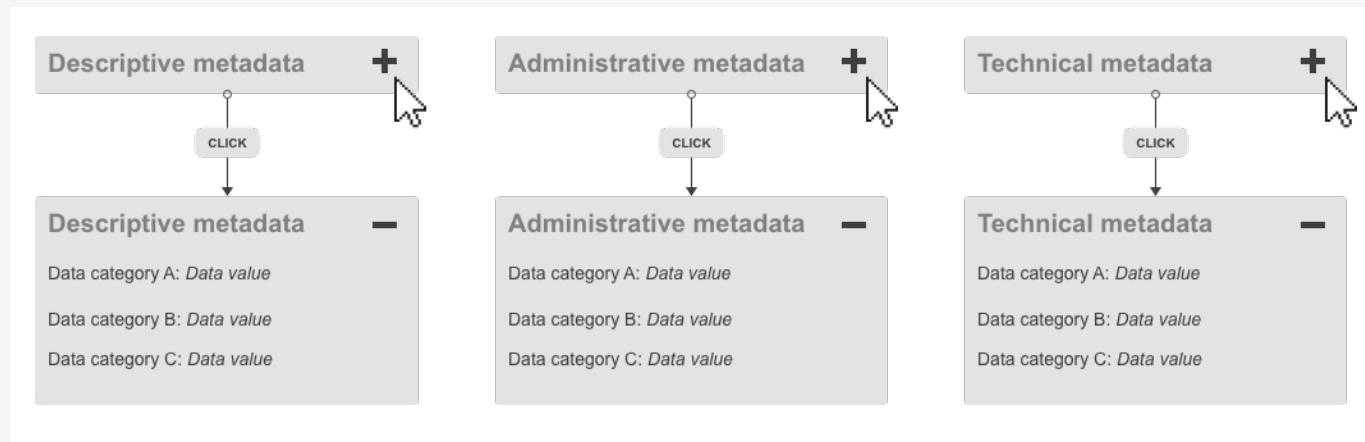


Access statement

Wireframe mock-ups



Single-object timeline



Metadata clustering / Metadata in collapsible element



Metadata richness indicator

Access statement



Recommended features



Emulated environments

Features related to net art presentation

Because the ArtBase will not only be an archival repository for metadata, but rather an archive which also enables its users to access functional versions of the artworks, the re-design will have to consider interaction patterns related to exhibiting net art online. The primary user story that came up in the user research phase in connection to net art presentation was the users' appreciation of the access to **emulated environments** which was facilitated in Rhizome's Net Art Anthology exhibition. Users universally enjoyed interacting with the emulators and experiencing the artworks in such a historicised context. The only other comments that users made were in relation to the additional context (usually in the form of text) provided alongside the artwork re-performance. The concept of "**rich context**" alongside an artwork presentation is a feature that is only partially present in other examples of exhibition interfaces reviewed in this report, but nevertheless can facilitate user requirements reflected across a few user stories. The question of how that context is presented in the interface remains open. One possible interaction pattern to consider in this regard is the **overlay state for contextual information**, which is well established in existing interfaces, and provides some of the benefits associated with collapsible elements or sidebars in terms of facilitating a granular approach to data presentation. Finally, while the matter of representing net art in the form of screenshot images was not picked up by users in the user stories, it is an open question for the interface, which needs to feature previews and overviews of the collection. One visual paradigm adopted only in two of the exhibition examples here, is nevertheless a useful cue to consider – **including the browser frame** in thumbnail or static screenshot representations of net art works provides visual representation of a specific temporal context, which has emerged as an important element in multiple user stories. Furthermore, in many instances the specificity of the browser is integral to the user experience of the artwork, and could be argued that the browser is not just a frame for the artwork, but a critical part of it as well, hence the need to include the browser in screenshots of the artwork, rather than cut it out.



Rich context

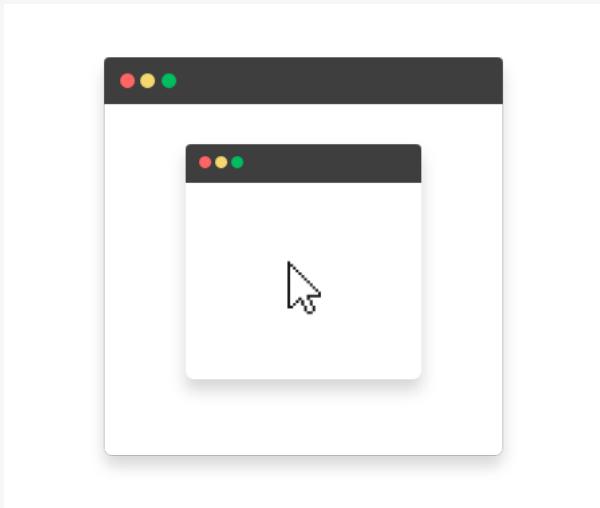


Overlay state for contextual information



Browser frame included in previews

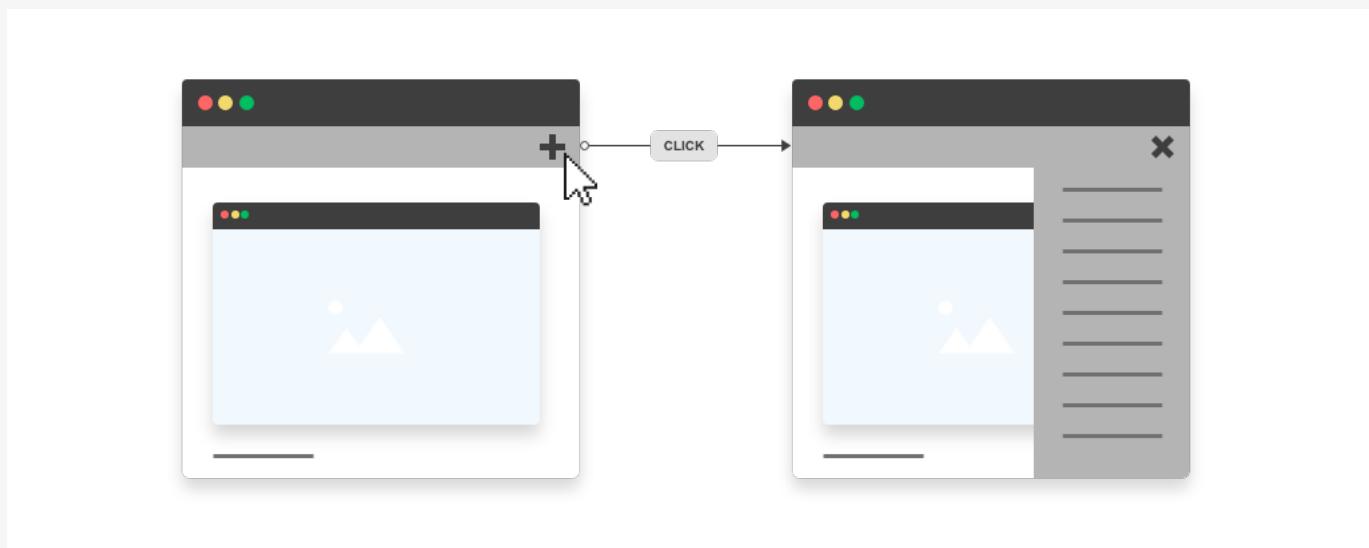
Wireframe mock-ups



Emulated environments



Browser frame included in previews



Overlay state for contextual information

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