

The Open Video Project: Redesigning a Digital Video Digital Library

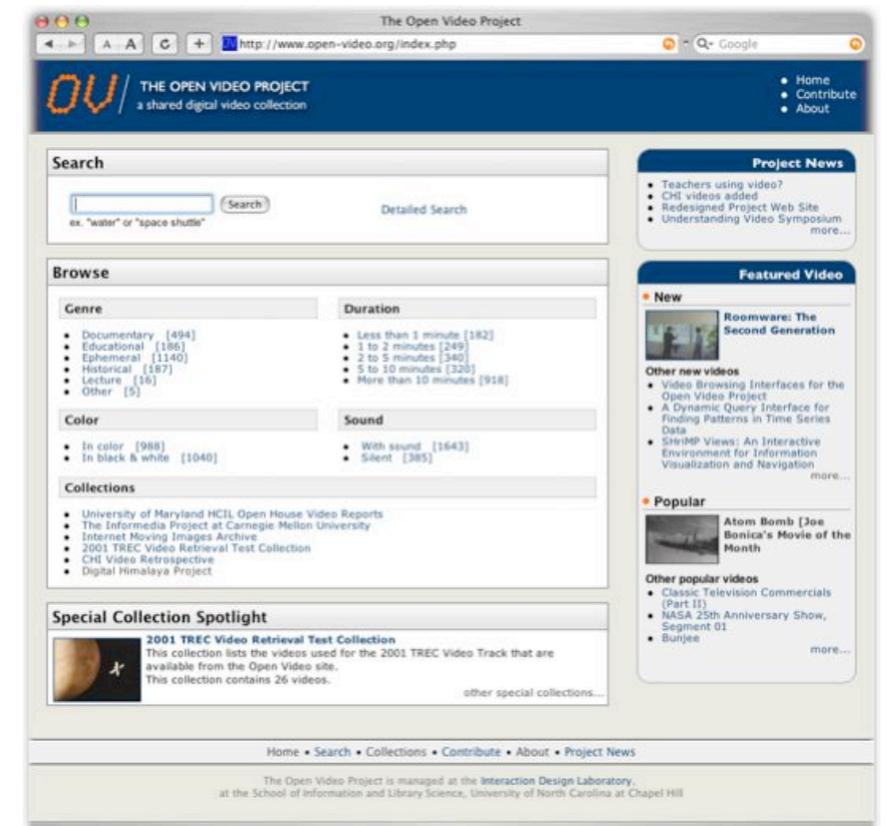
- 🛡️ Gary Geisler, Simmons College
- 🛡️ ASIST Information Architecture Summit
- 🛡️ February 28, 2004



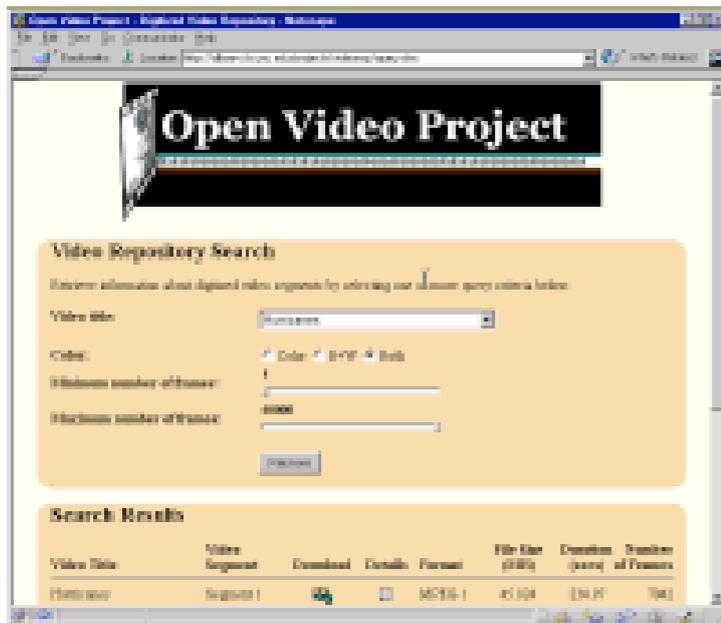


Introduction

- 
Background of the Open Video Project
- 
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Results of the redesign process
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Future work



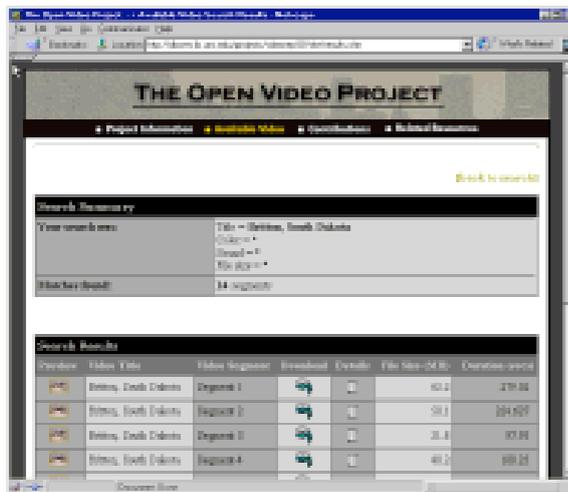
Background



History of the Open Video digital library

- Expected primary audience: Digital video researchers needing content for research
- Late 1999: Web site offered 120 videos in MPEG-1 format
- Segments from 8 different video programs
- Sources: U.S. government agencies - National Archives and NASA
- About 12 hours of content

Background



History of the Open Video digital library

2000: Substantial contributions build content to 222 videos, 40 hours

CMU's Informedia Project

Rick Prelinger's ephemeral film collection

2001: More contributions from previous and new contributors build collection

1500 videos

MPEG-1, MPEG-2, and MPEG-4 formats

Background

Current status of the Open Video digital library

2004: Broad range of topics, format, style, time periods

Currently 2039 videos, half a terabyte

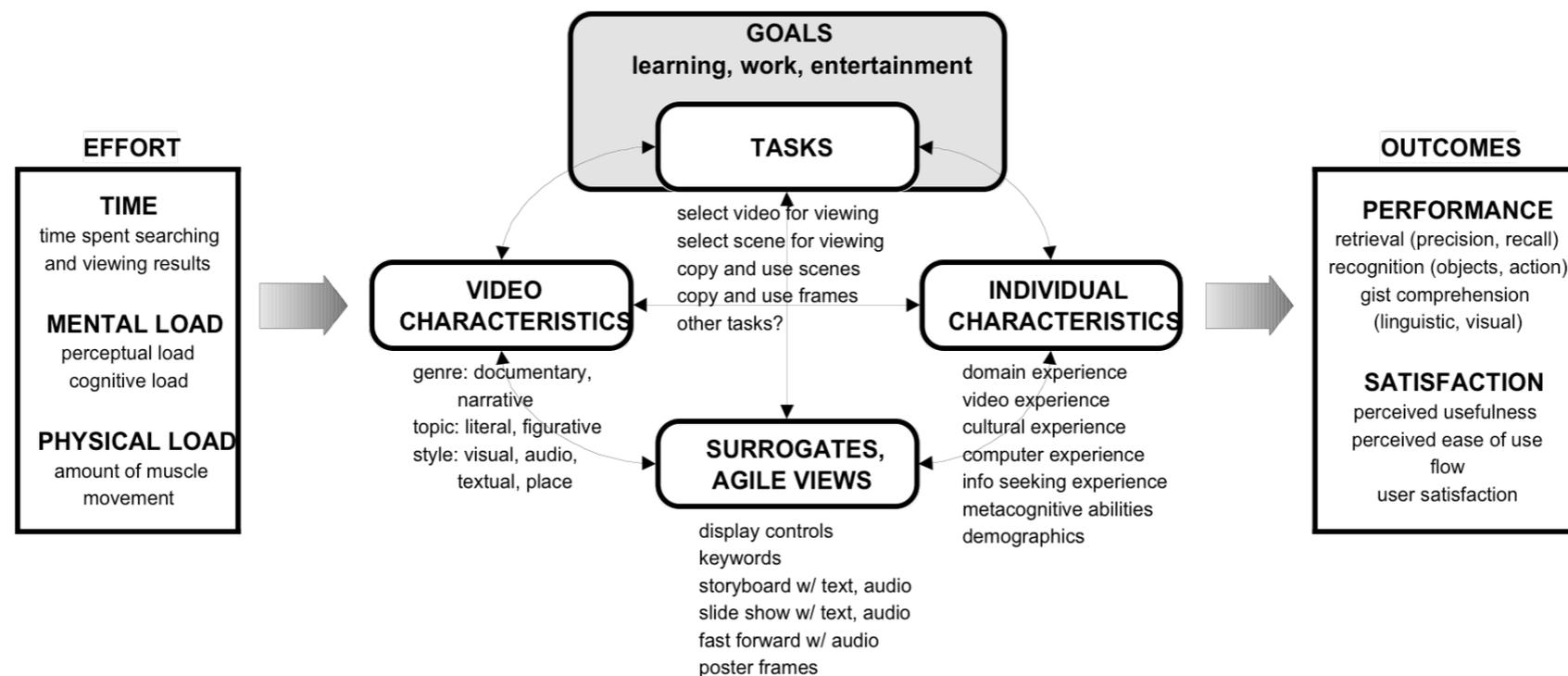
Target audience: Researchers, educators, multimedia artists, students, general Web users looking for entertainment

Genre		Duration		Color		Sound		Format	
Documentary:	494	Less than 1 min.	182	Color	988	With sound	1643	MPEG-1	1403
Educational:	186	1 to 2 minutes	249	B&W	1040	Silent	385	MPEG-2	1067
Ephemeral:	1140	2 to 5 minutes	340					MPEG-4	409
Historical:	187	5 to 10 minutes	320					QuickTime	34
Lecture:	16	More than 10 mins.	918						
Other:	5								

Background

Open Video research thread

- 2001 to 2004: Three-year National Science Foundation grant (Interactive Systems Program - NSF Grant IIS 0099638)
- Focus of grant work: Create and evaluate highly interactive user interfaces for digital video





Background

Open Video research thread

Completed user studies include:

-  Comparison of storyboards, slideshows, fastforwards
-  Comparison of four different fastforward speeds
-  Text versus visual surrogates
-  Feature metadata versus text transcript metadata

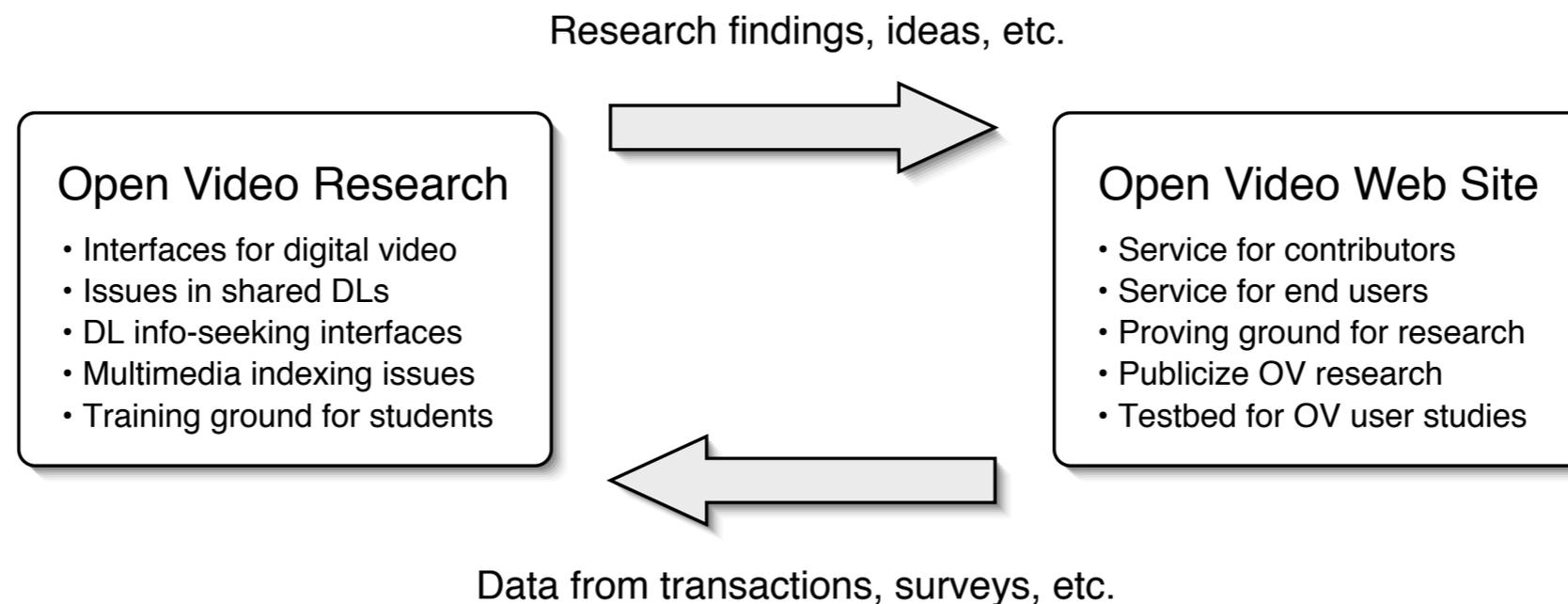


open-video.org/project_publications.php

Background

Project goals include both:

- Conducting research on range of issues associated with information seeking interfaces and digital libraries
- Developing and managing a publicly accessible digital library of digital video



Redesigning Open Video

🏠 Motivation for the redesign

🏠 Recognized limitations of current site

🏠 Desire to make site more standards-compliant

🏠 Use CSS for layout instead of nested HTML tables

🏠 Use CSS for style instead of embedded HTML

🏠 Generally, integrate ideas of information architecture community to improve usability, performance, extensibility of site





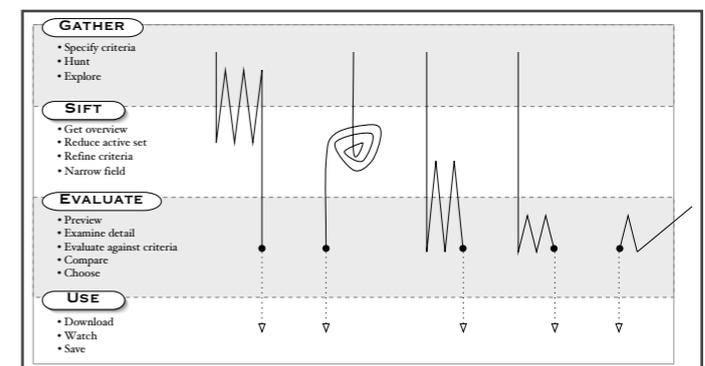
Redesigning Open Video

Stages in the redesign process

1. Brainstorm and develop prioritized list of user requirements
2. Generate user personas
3. Design conceptual models
4. Implement redesigned site

Requirement	Priority	Comments/Issues
<ul style="list-style-type: none"> Access a basic, free text search at any time Capability to perform an advanced search with multiple attributes: <ul style="list-style-type: none"> Free text terms Genre Duration Format (MP3G-1, MP3G-2, etc) Production date Color Sound Controlled vocabulary subject 	5	<ul style="list-style-type: none"> Integrated with masthead or global navigation?
<ul style="list-style-type: none"> Prioritize and customize display of returned data (sort by attribute; select number of hits to view by page) Gather video based on visual features <ul style="list-style-type: none"> Faces Superimposition Color Brightness View relevant, bubbled-up content (e.g., 5 most popular searches) Preview number of hits during search formulation 	4	<ul style="list-style-type: none"> Choose default number based on design of results page Color and Brightness depend on generating data for all segments; visual color vectors Technical challenge - need to cache hits by attribute values
<ul style="list-style-type: none"> Gather video by browsing, using various categories: <ul style="list-style-type: none"> Date Genre Duration Color Sound Prioritize and customize display of returned data (sort by attribute; select number of hits to view by page) "Browse within" a displayed browse section by other attribute categories Gather video using Special Collections 	5	<ul style="list-style-type: none"> If you browse on "Documentary" section would let you browse by Documentary and the other non-Genre categories

The Educator	Meredith Cantelupo
<p>Personal Profile Meredith grew up in a very Italian family in a suburb of Chicago. From an early age, she decided that she was not going to follow the traditional path for a female in her family. She was the only girl among all of her siblings and cousins to go to college. However, her Italian roots are very important to her and she still holds many values in common with her family. She has only recently ventured onto the internet but is excited to find a way to make it useful to her students.</p> <p>Goals Meredith wants to find video clips that will help make the countries and events come alive for her social studies students. She's hoping to show at least one new video clip a day for the rest of the year. However, she doesn't have time to go looking for clips every day so she'd really like to find them a bunch at a time.</p>	 <p>Scenario For class discussion on issues related to the Middle East, Meredith wants 2 or 3 video clips showing how people live in Middle Eastern countries.</p> <p>Behavior <ul style="list-style-type: none"> Searches using "Middle East" as free text term Reads descriptions of videos in search results Looks at visual preview for videos that seem like good candidates. </p> <p>Background <ul style="list-style-type: none"> 41, female, married, Boston, MA 8th grade Social Studies teacher </p> <p>Quote "The amount of content on the Open Video site is amazing. I know there must be some way for me to make it useful for my kids."</p>



Redesigning Open Video

Prioritized list of user requirements

Requirement	Priority	Comments/Issues
<ul style="list-style-type: none"> • Access a basic, free text search at any time • Capability to perform an advanced search with multiple attributes: <ul style="list-style-type: none"> ○ Free text terms ○ Genre ○ Duration ○ Format (MPEG-1, MPEG-2, etc) ○ Production date ○ Color ○ Sound ○ Controlled vocabulary subject • Prioritize and customize display of returned data (sort by attribute; select number of hits to view by page) • Gather video based on visual features <ul style="list-style-type: none"> ○ Faces Superimposition Color Brightness • View relevant, bubbled-up content (e.g., 5 most popular searches) • Preview number of hits during search formulation 	<p>5</p> <p>5</p> <p>4</p> <p>2</p> <p>3</p> <p>2</p>	<ul style="list-style-type: none"> • Integrated with masthead or global navigation? • Choose default number based on design of results page • Color and Brightness depend on generating data for all segments; visual color vectors • Technical challenge – need to cache hits by attribute values
<ul style="list-style-type: none"> • Gather video by browsing, using various categories: <ul style="list-style-type: none"> ○ Date ○ Genre ○ Duration ○ Color ○ Sound • Prioritize and customize display of returned data (sort by attribute; select number of hits to view by page) • “Browse within” a displayed browse section by other attribute categories 	<p>5</p> <p>3</p> <p>2</p>	<ul style="list-style-type: none"> • If you browse on “Documentary” section would let you browse by Documentary and the other non-Genre categories
<ul style="list-style-type: none"> • Gather video using Special Collections 	<p>5</p>	

Redesigning Open Video

OV site users vary widely in individual characteristics:

Age

Young, media-savvy to older people finding video with nostalgia value

Technology experience

No experience with multimedia to video editors

Individual goals

Learning, work, research, entertainment

Specific tasks

Finding a known video, finding a specific type of scene or visual style, browsing for something fun to watch



Redesigning Open Video

🏠 Create representative user personas that embody range of characteristics

The Educator	Meredith Cantelupo	
<p>Personal Profile Meredith grew up in a <i>very</i> Italian family in a suburb of Chicago. From an early age, she decided that she was not going to follow the traditional path for a female in her family. She was the only girl among all of her siblings and cousins to go to college. However, her Italian roots are very important to her and she still holds many values in common with her family. She has only recently ventured onto the internet but is excited to find a way to make it useful to her students.</p> <p>Goals Meredith wants to find video clips that will help make the countries and events come alive for her social studies students. She's hoping to show at least one new video clip a day for the rest of the year. However, she doesn't have time to go looking for clips every day so she'd really like to find them a bunch at a time.</p>	 <p>Background</p> <ul style="list-style-type: none"> • 41, female, married, Boston, MA • 8th grade Social Studies teacher <p>Quote “The amount of content on the Open Video site is amazing. I know there must be some way for me to make it useful for my kids.”</p>	<p>Scenario For class discussion on issues related to the Middle East, Meredith wants 2 or 3 video clips showing how people live in Middle Eastern countries.</p> <p>Behavior</p> <ul style="list-style-type: none"> • Searches using "Middle East" as free text term • Reads descriptions of videos in search results • Looks at visual preview for videos that seem like good candidates.

Redesigning Open Video

The Casual Browser

Brendan Dykstra

Personal Profile

Brendan grew up in Lincoln, NE where his father was a mechanical engineer and his mother had an administrative job at the University of Nebraska. Though he doesn't consider himself an artist per se, Brendan has always liked having creative projects to keep him busy. He got a communications degree from the Univ. of NE where he had a part-time job doing technical support for the computer lab. He decided to move to Omaha so he could get out of Lincoln. He enjoys the diversity of people and entertainment in the city.

Goals

Brendan is looking for entertainment. He wants to find interesting/entertaining clips to help him pass the time at work. Since he has access to all the necessary hardware and software, he's also been playing with video editing. He's especially interested in finding clips that he can splice together to make entertaining collages that he emails to all his friends.



Background

- 26, male, single, Omaha, NE
- Assistant Systems Administrator, Mutual of Omaha

Quote

"I'd really like to find some cool video clips that'll give me and my friends a good laugh."

Scenario

On a slow day at work, Brendan decides he'd like to create a spoof advertisement for a fictitious product by splicing together pieces of old advertisements and other videos.

Brendan's friend April just started dating a new guy. Brendan remembers seeing a "teen film" on the site that talks about the "dangers" of physical/sexual liaisons between teens. He thinks it would be funny to send it to April as advice for her new relationship. He can't remember the title but he knows he'll recognize it if he sees it.

Behavior

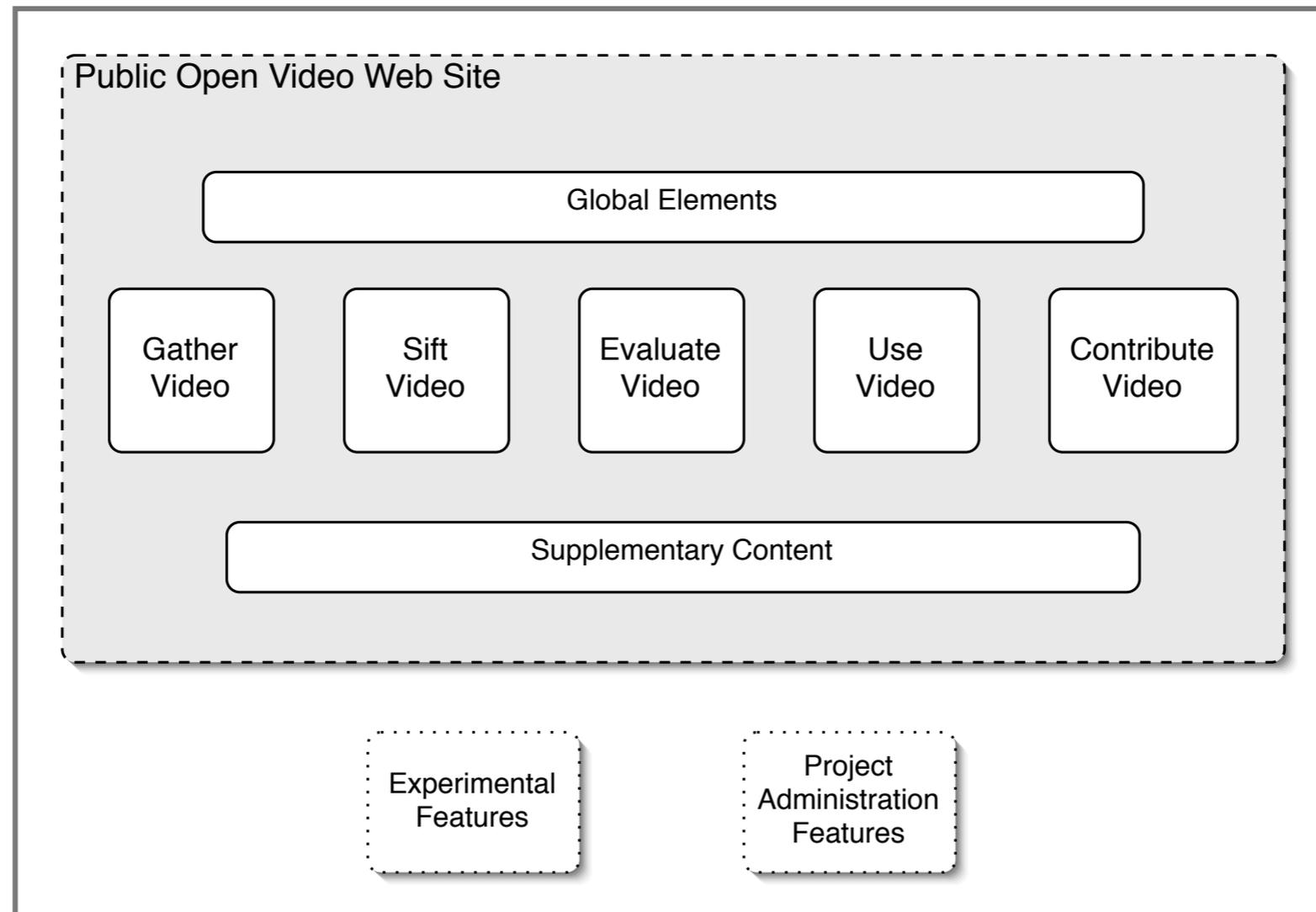
- Searches "advertisement" as free text term
- Reads descriptions of videos in search results
- Looks at visual preview for videos that seem like good candidates.
- Brendan remembers that he saw the video while he was looking at films that had to do with "social something".
- Searches "social" as free text term.
- Scans results list to find a video with a posterframe he recognizes.

Redesigning Open Video

The Non-American Novice	Silvia Furnó		
<p>Personal Profile Silvia has spent her whole life in Buenos Aires. Her father was a professor of Literature at the Universidad Nacional de la Plata and her mother owned a small art gallery. Silvia grew up with a great appreciation for the arts and decided at a very young age to pursue that path. She is in a committed relationship (but not married to) Gabriel Perosino, owner of a small art supply store. They have two children. She has used many mediums but has recently become interested in digital art, especially video. She knows very little about computers, the internet, or digital video. Because much of her time is devoted to raising her two children, she has only a few hours a week to explore computers and digital video. She has just found the Open Video site but hasn't had time to look through it at all.</p> <p>Goals Silvia wants to learn about digital video and eventually try to make her own digital video art. She doesn't have much time or attention to devote to the task so most of her time on the site will be idly browsing. However, when she does get a block of time, she is very focused and needs to make the most of it.</p>	 <p>INDEX STOCK IMAGERY © #558668 Index Stock Imagery, Inc.</p>	<p>Scenario For class discussion on issues related to the Middle East, Meredith wants 2 or 3 video clips showing how people live in Middle Eastern countries.</p>	<p>Behavior</p> <ul style="list-style-type: none"> • Searches using "Middle East" as free text term • Reads descriptions of videos in search results • Looks at visual preview for videos that seem like good candidates.
	<p>Background</p> <ul style="list-style-type: none"> • 31, female, committed, Buenos Aires, Argentina • Artist and adjunct art professor at Universidad de Buenos Aires 	<p>Quote "The amount of content on the Open Video site is amazing. I know there must be some way for me to make it useful for my kids."</p>	

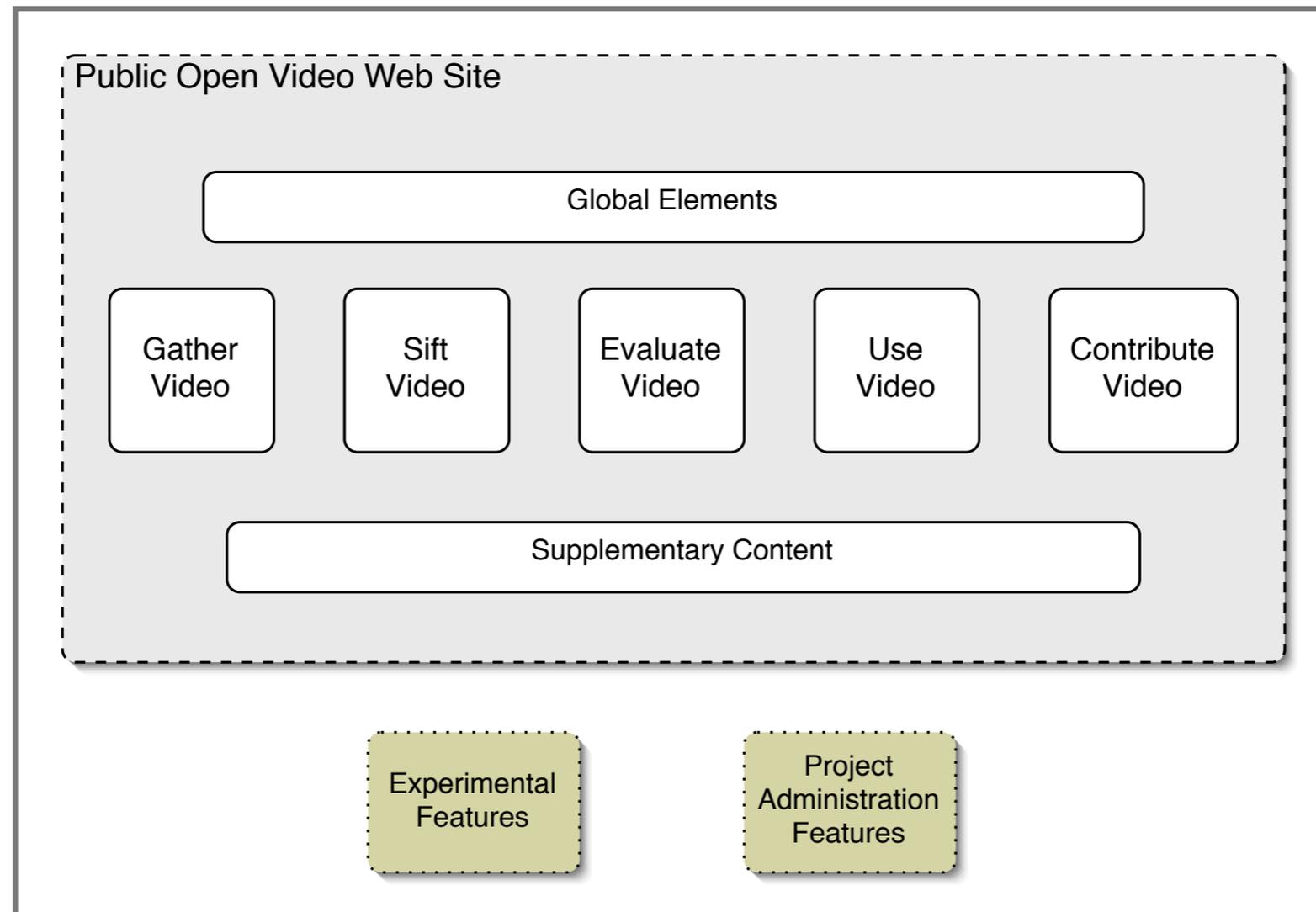
Redesigning Open Video

Conceptual model



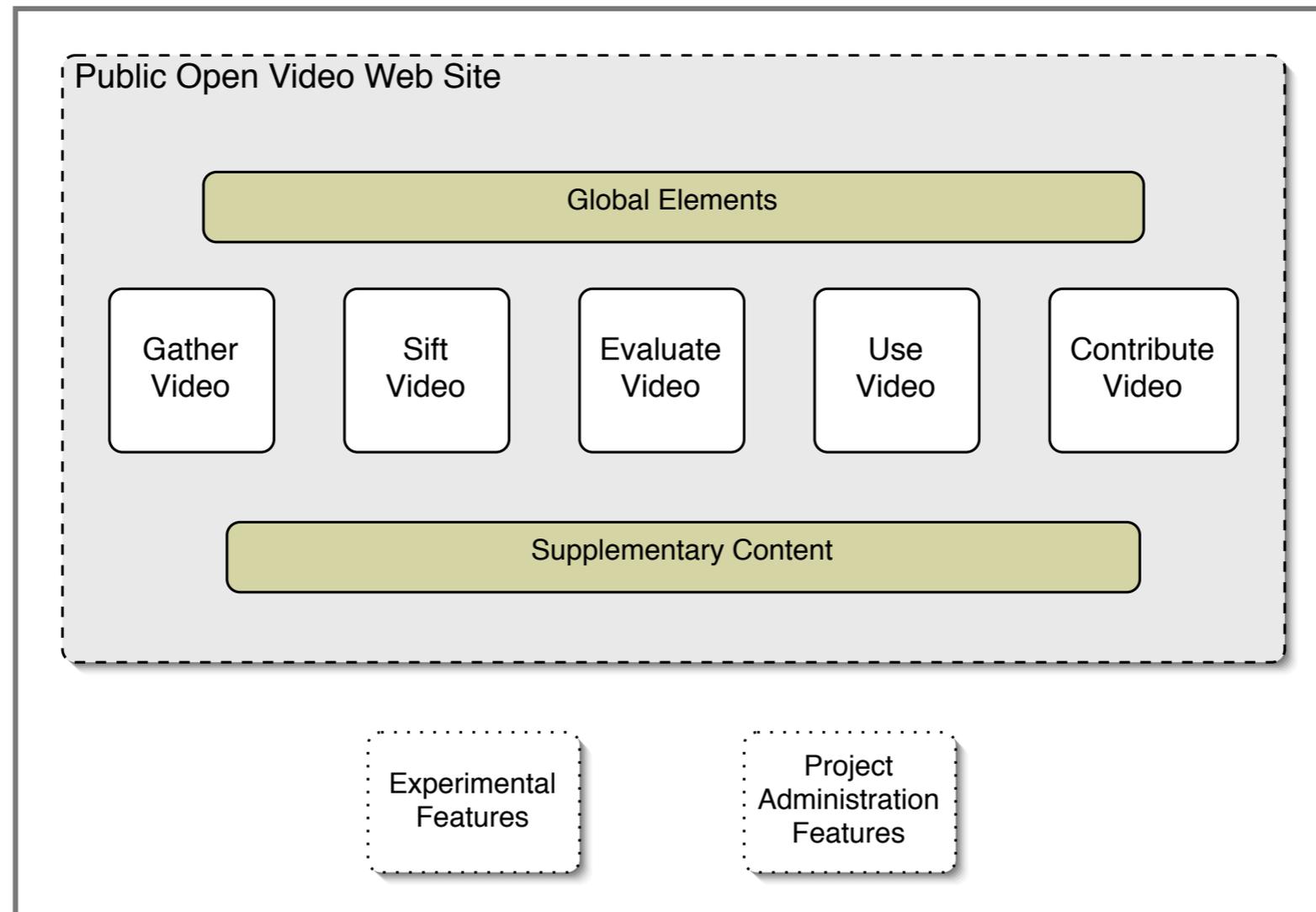
Redesigning Open Video

Conceptual model



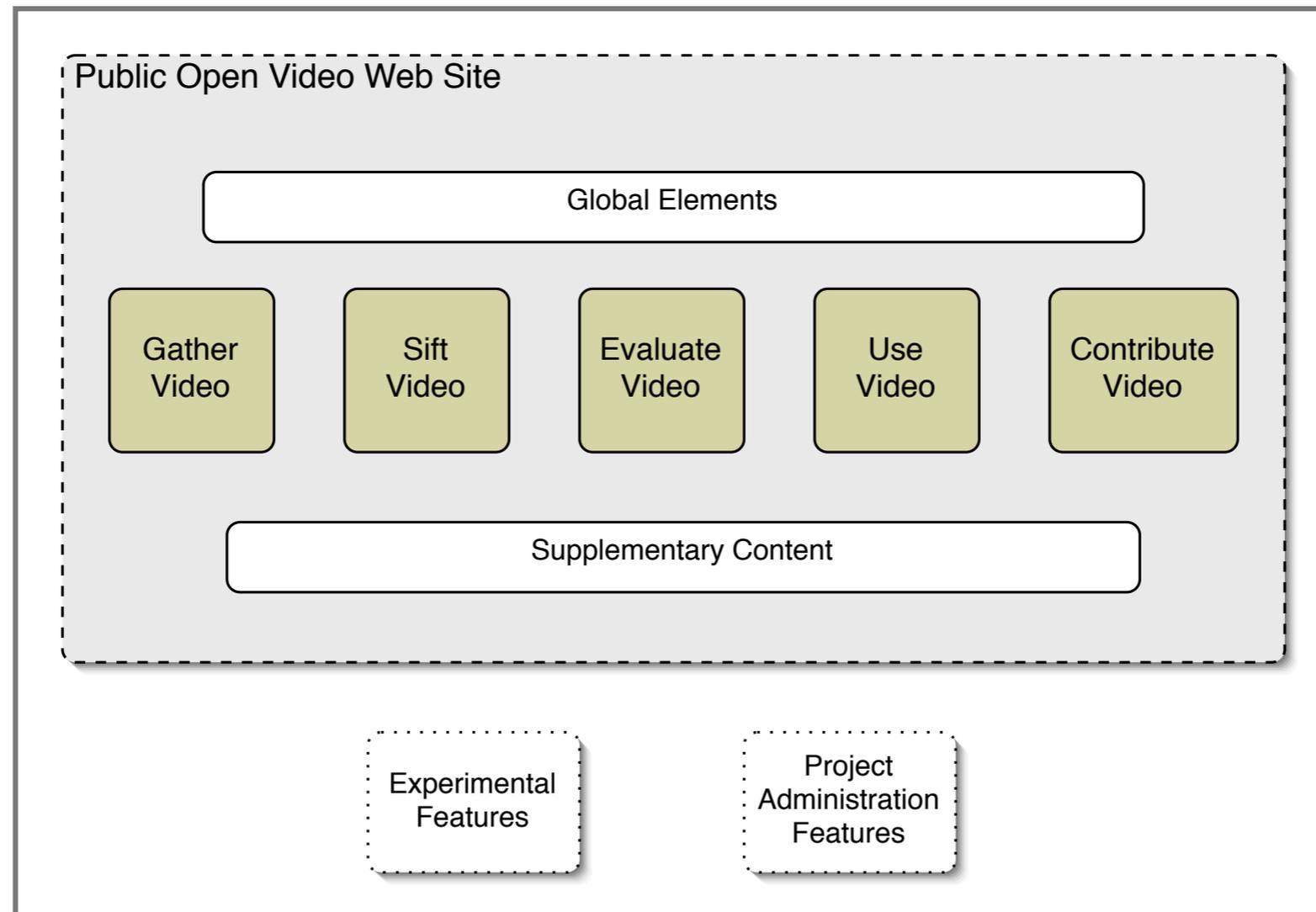
Redesigning Open Video

Conceptual model



Redesigning Open Video

Conceptual model





Redesigning Open Video

GATHER

- Specify criteria
- Hunt
- Explore

SIFT

- Get overview
- Reduce active set
- Refine criteria
- Narrow field

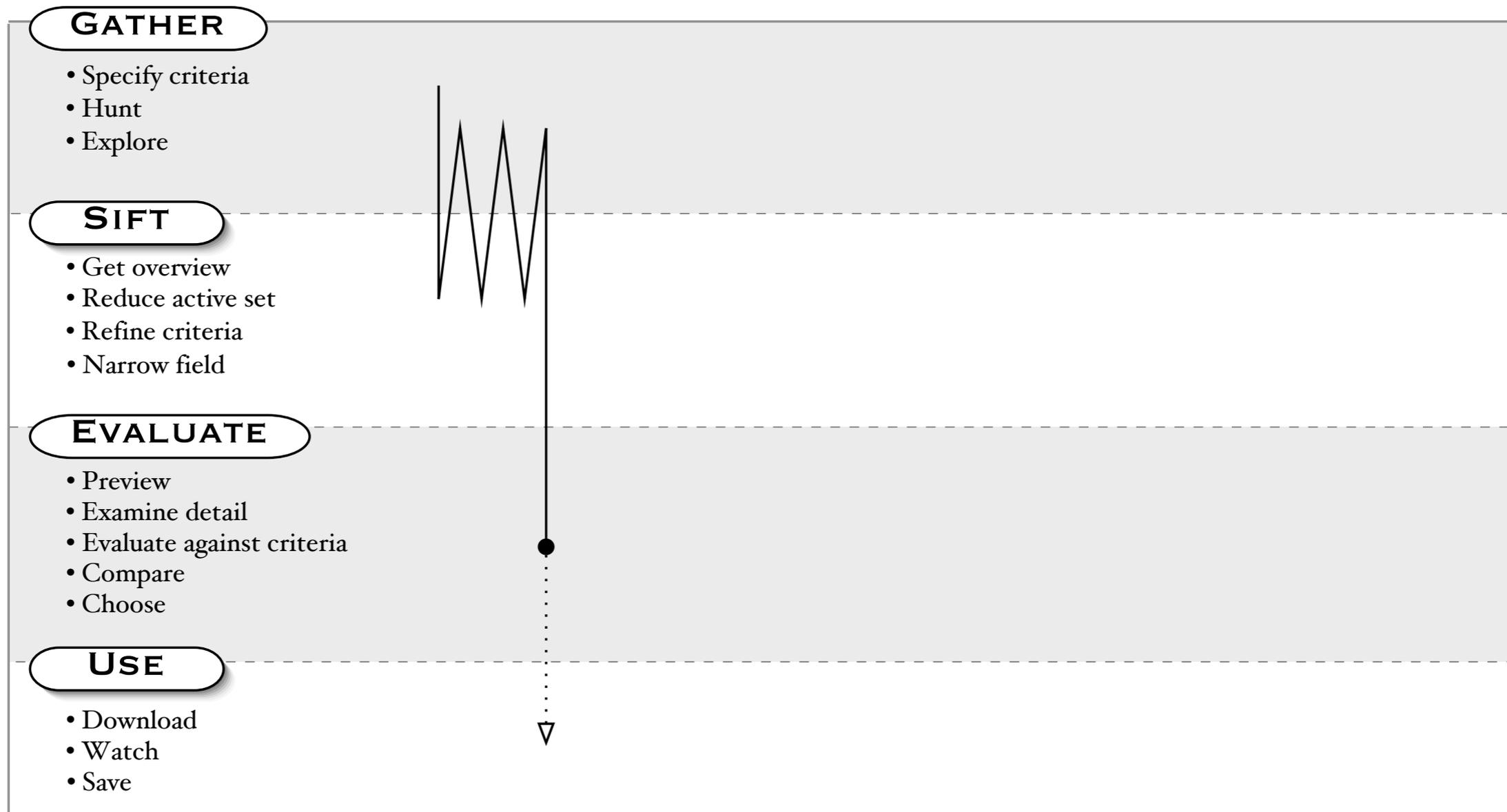
EVALUATE

- Preview
- Examine detail
- Evaluate against criteria
- Compare
- Choose

USE

- Download
- Watch
- Save

Redesigning Open Video



Redesigning Open Video

GATHER

- Specify criteria
- Hunt
- Explore

SIFT

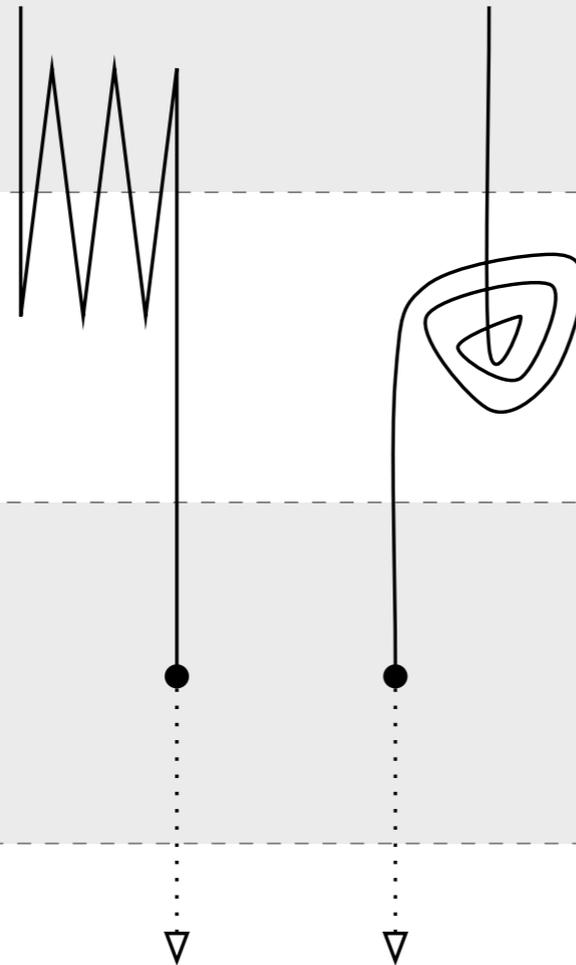
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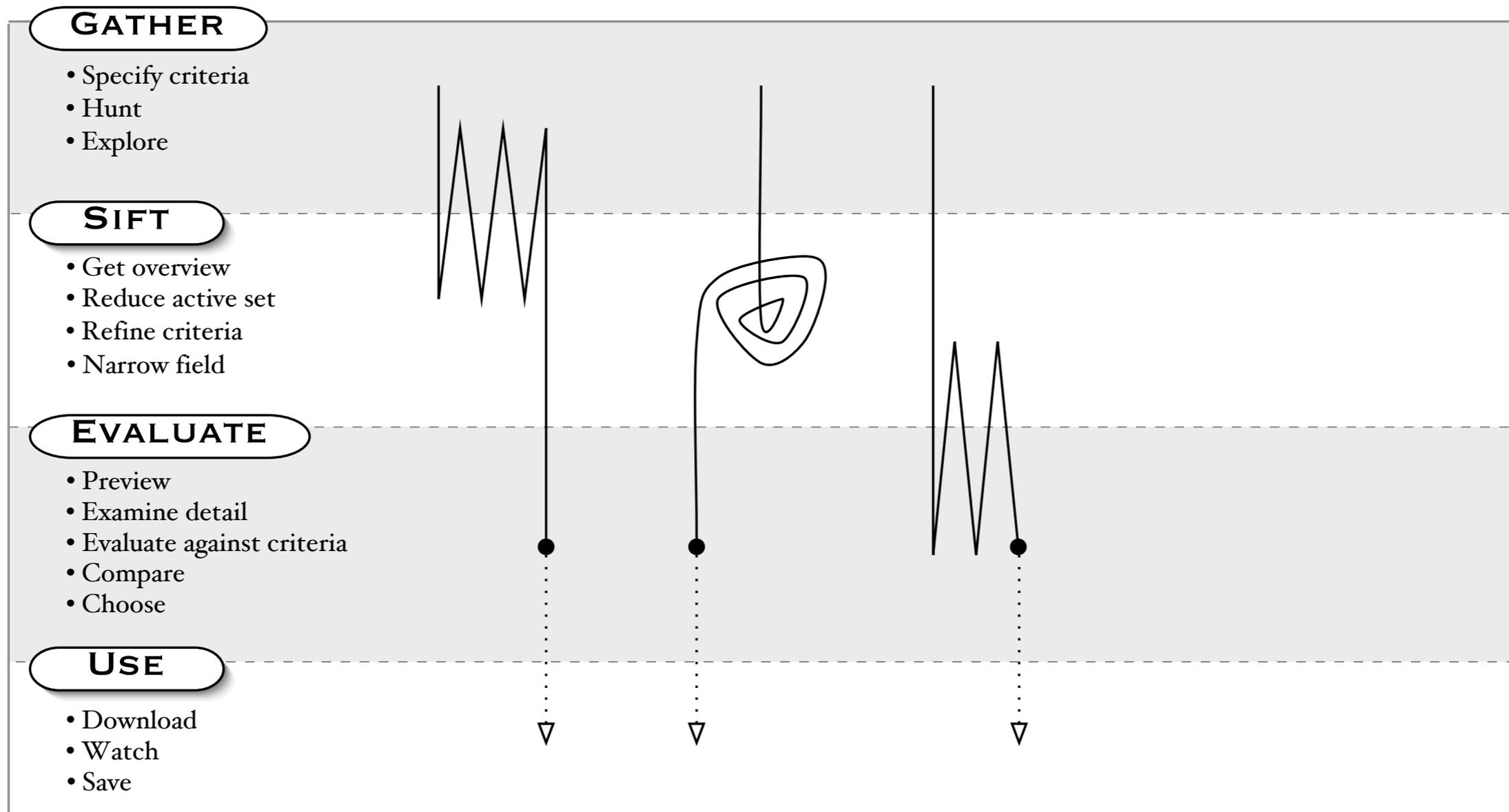
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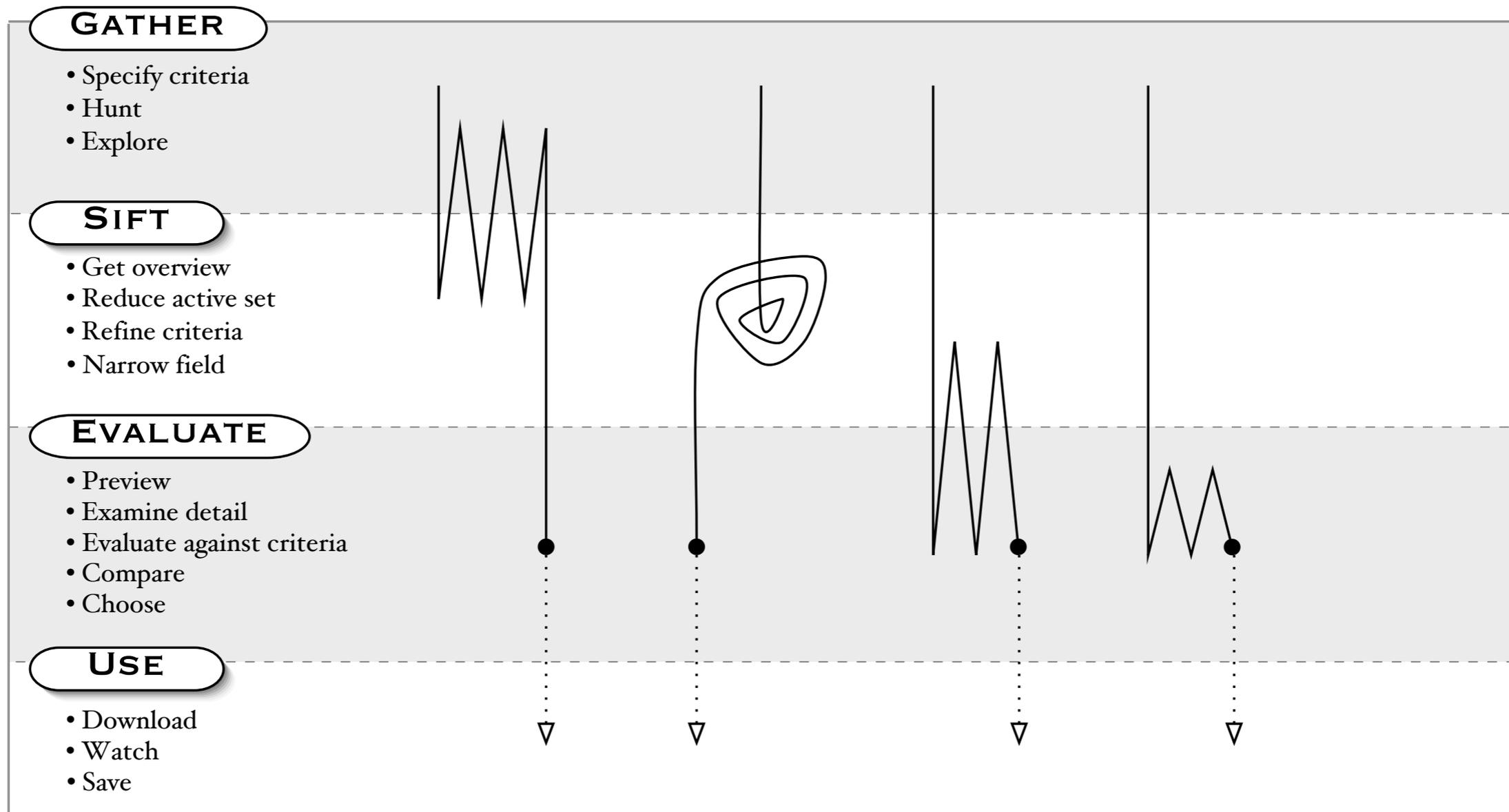
- Download
- Watch
- Save



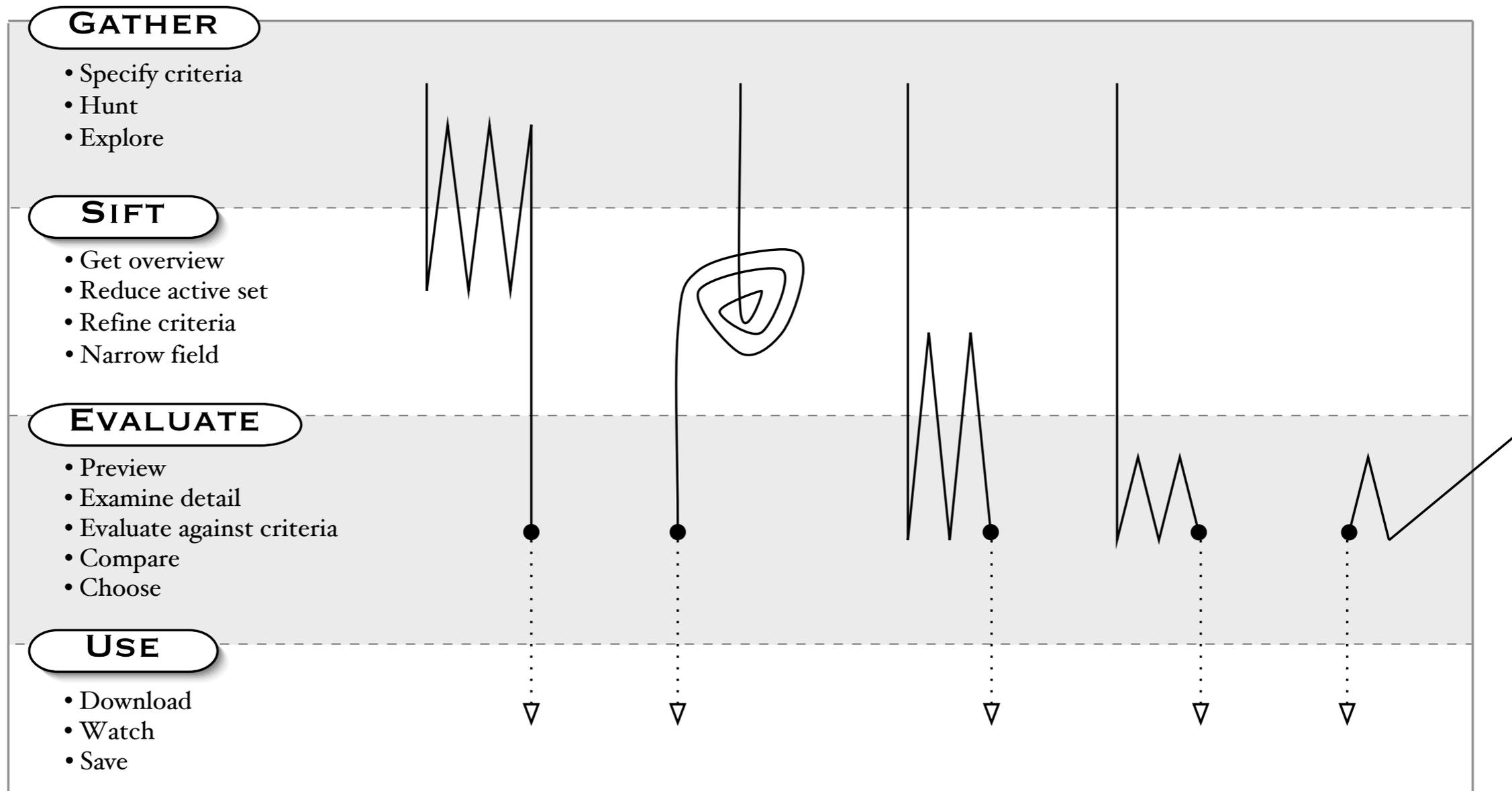
Redesigning Open Video



Redesigning Open Video



Redesigning Open Video



Redesigning Open Video

GATHER

- Specify criteria
- Hunt
- Explore

- Orientation to what is available
- Understanding of how to find video
- Quick access to video details -- no more than two clicks away

SIFT

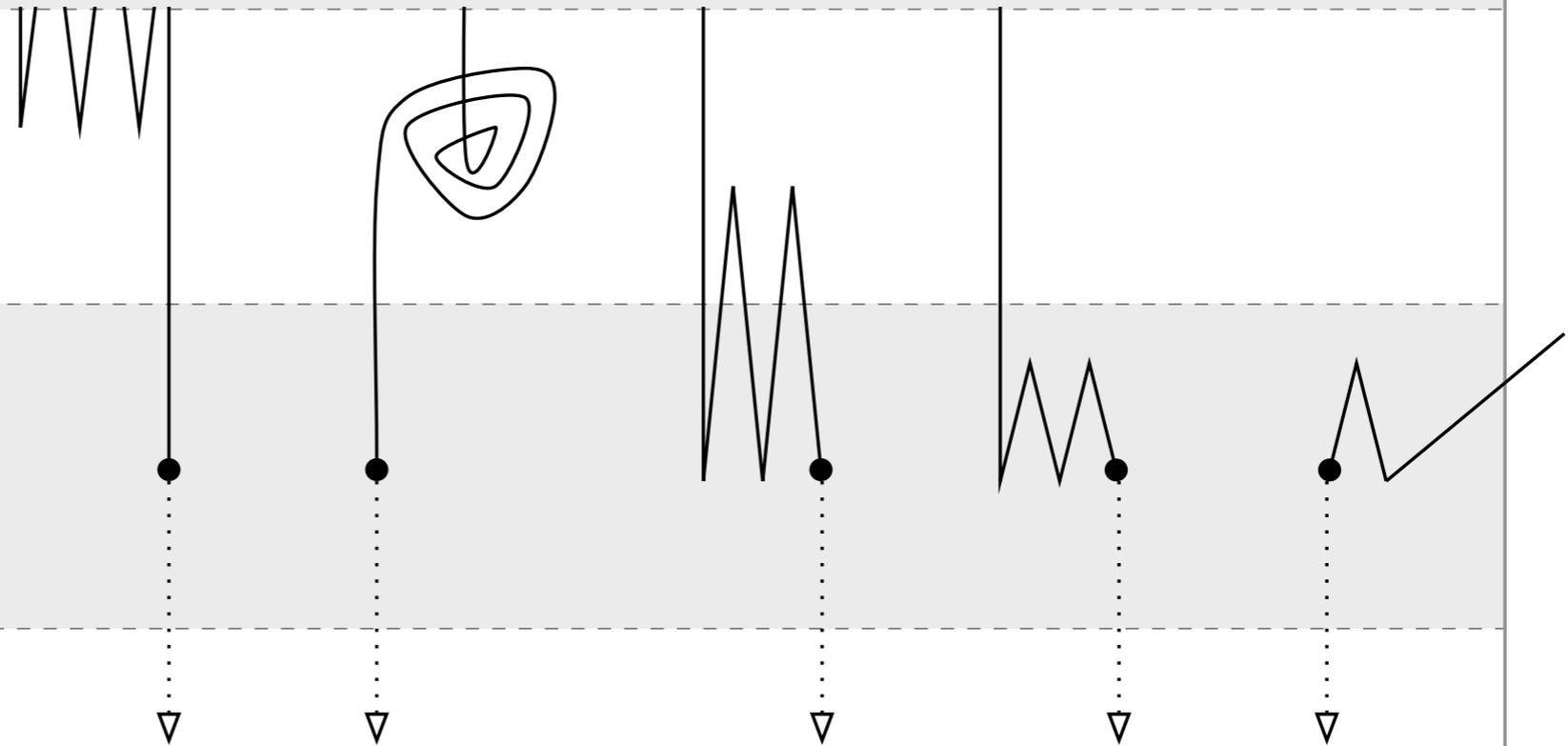
- Get overview
- Reduce active set
- Refine criteria
- Narrow field

EVALUATE

- Preview
- Examine detail
- Evaluate against criteria
- Compare
- Choose

USE

- Download
- Watch
- Save



Redesigning Open Video

GATHER

- Specify criteria
- Hunt
- Explore

SIFT

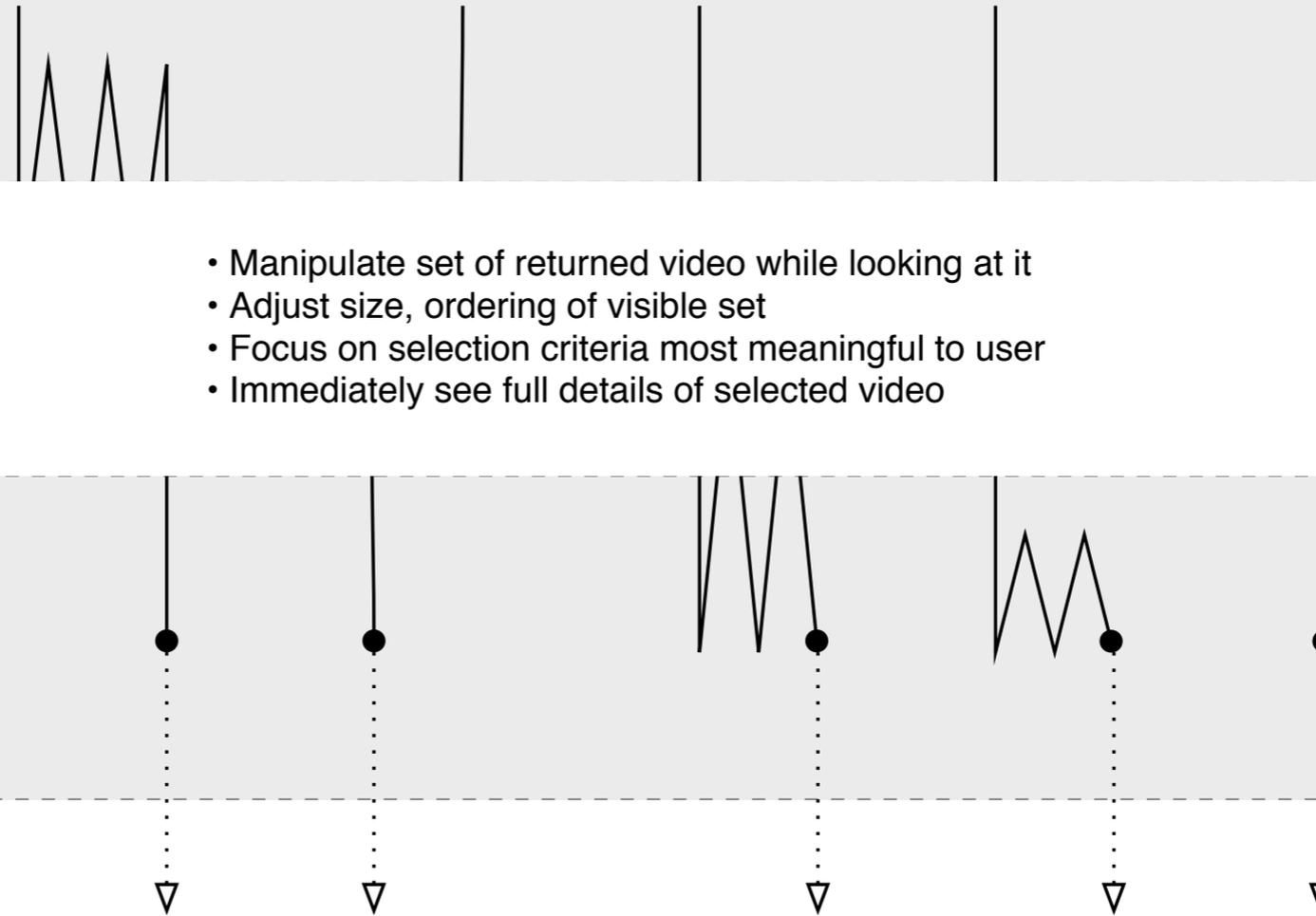
- Get overview
- Reduce active set
- Refine criteria
- Narrow field
- Manipulate set of returned video while looking at it
- Adjust size, ordering of visible set
- Focus on selection criteria most meaningful to user
- Immediately see full details of selected video

EVALUATE

- Preview
- Examine detail
- Evaluate against criteria
- Compare
- Choose

USE

- Download
- Watch
- Save



Redesigning Open Video

GATHER

- Specify criteria
- Hunt
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SIFT

- Get overview
- Reduce active set
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- Narrow field

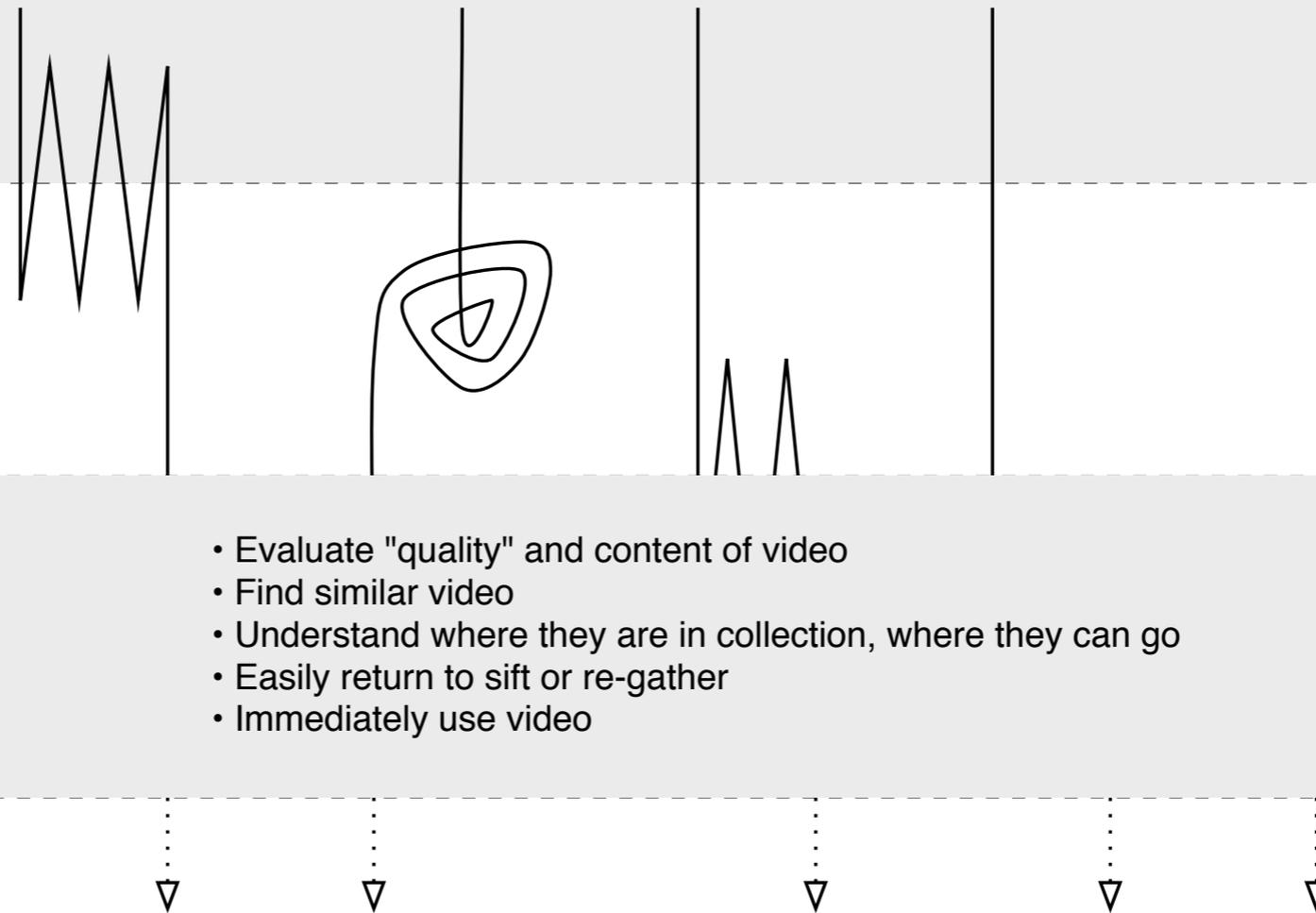
EVALUATE

- Preview
- Examine detail
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- Compare
- Choose

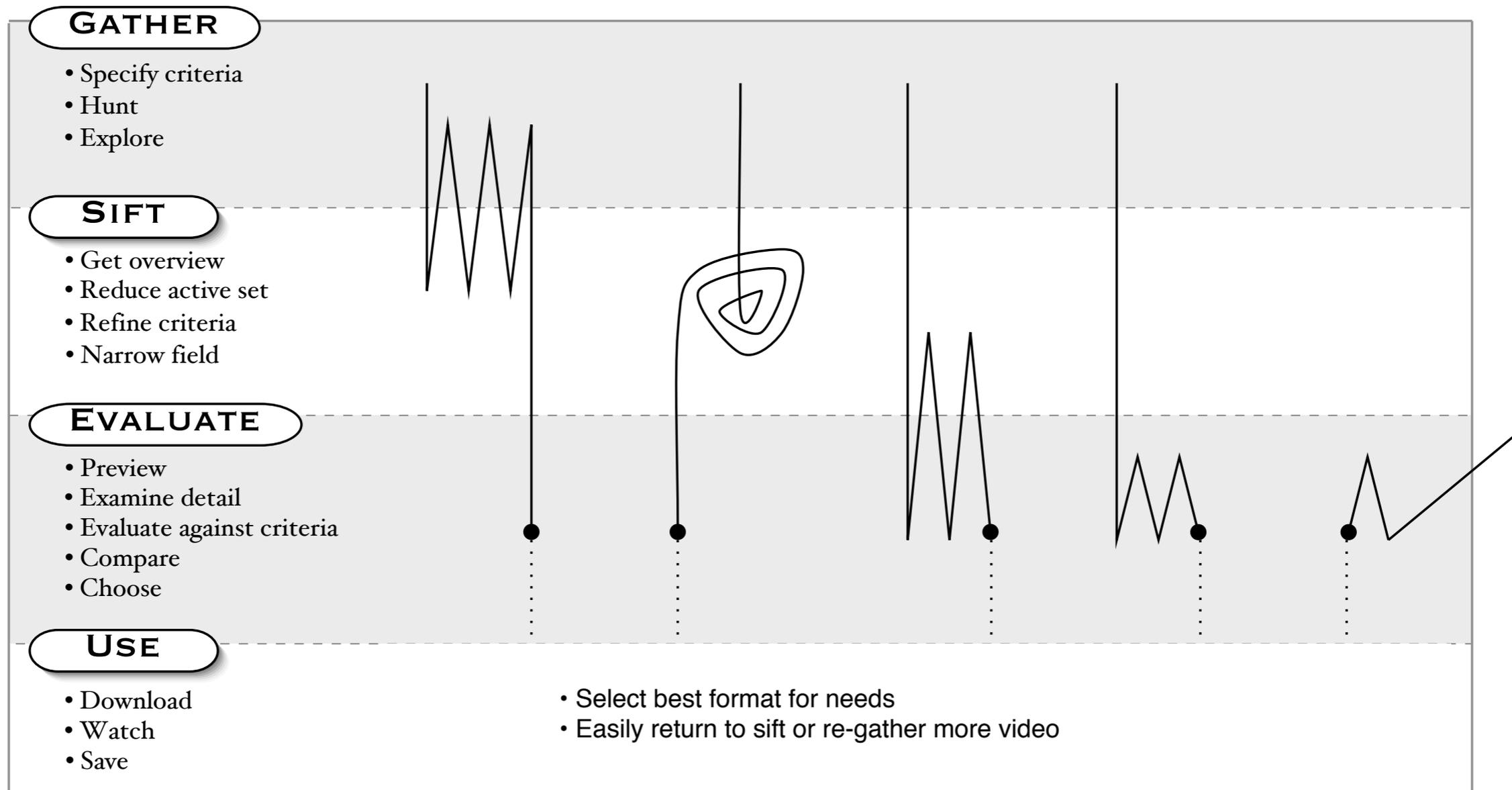
- Evaluate "quality" and content of video
- Find similar video
- Understand where they are in collection, where they can go
- Easily return to sift or re-gather
- Immediately use video

USE

- Download
- Watch
- Save



Redesigning Open Video



Redesigning Open Video

Implementation

1. Created wireframes and generic functional pages to finalize layout
2. Developed visual style
3. Created CSS files to layout and style pages
4. Tweaked CSS for best compromise appearance and functionality in supported browsers

GATHER

- Specify criteria
- Hunt
- Explore

SIFT

- Get overview
- Reduce active set
- Refine criteria
- Narrow field

EVALUATE

- Preview
- Examine detail
- Evaluate against criteria
- Compare
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USE

- Download
- Watch
- Save

Results of the Redesign

The screenshot shows the main page of the Open Video Project website. The page is divided into several sections:

- Search:** A search bar with a "Search" button and a "Detailed Search" link. An example search term "ex. 'water' or 'space shuttle'" is provided.
- Browse:** A section with filters for Genre, Duration, Color, and Sound. Genre includes Documentary (494), Educational (186), Ephemeral (1140), Historical (187), Lecture (16), and Other (5). Duration includes Less than 1 minute (182), 1 to 2 minutes (249), 2 to 5 minutes (340), 5 to 10 minutes (320), and More than 10 minutes (918). Color includes In color (988) and In black & white (1040). Sound includes With sound (1643) and Silent (385).
- Collections:** A list of special collections including University of Maryland HCIL Open House Video Reports, The Informedia Project at Carnegie Mellon University, Internet Moving Images Archive, 2001 TREC Video Retrieval Test Collection, CHI Video Retrospective, and Digital Himalaya Project.
- Special Collection Spotlight:** A featured collection titled "2001 TREC Video Retrieval Test Collection" with a description and a "more..." link.
- Project News:** A section with headlines such as "Teachers using video?", "CHI videos added", "Redesigned Project Web Site", and "Understanding Video Symposium more...".
- Featured Video:** A section with a "New" video "Roomware: The Second Generation" and "Other new videos" including "Video Browsing Interfaces for the Open Video Project", "A Dynamic Query Interface for Finding Patterns in Time Series Data", and "StrIMP Views: An Interactive Environment for Information Visualization and Navigation more...".
- Popular:** A section with a "Popular" video "Atom Bomb [Joe Bonica's Movie of the Month]" and "Other popular videos" including "Classic Television Commercials (Part II)", "NASA 25th Anniversary Show, Segment 01", and "Bunjee more...".

Annotations on the left side of the screenshot point to specific features:

- "Quick search or browse" points to the search bar.
- "Quick access to special collections" points to the Collections list.
- "Rotating highlighted special collection" points to the Special Collection Spotlight.

Annotations on the right side of the screenshot point to specific features:

- "News headlines reflecting latest site changes" points to the Project News section.
- "Direct access to newest and most popular video" points to the Featured Video and Popular sections.

Main Page - Gathering Video

Results of the Redesign

The screenshot shows the Open Video Project search results page. The browser address bar displays `http://www.open-video.org/results.php`. The page features a search sidebar on the left and a main results area on the right. The sidebar includes a 'Modify Search' section with filters for 'All fields', 'Genre' (set to 'Educational'), 'Duration' (set to '5 to 10 minutes'), 'Format' (set to 'Any Format'), and 'Color' (set to 'Color'). The main results area shows a list of video entries, each with a thumbnail, title, and metadata. The results are sorted by 'Relevance' and displayed in a grid layout. Annotations with arrows point to specific features: 'Easy modification of current search criteria' points to the search sidebar; 'Visual preview and most important metadata' points to the video thumbnails and titles; 'Customize visual format of results' points to the 'Layout' and 'Results per page' controls; and 'Change ordering of results and size of result display' points to the 'Sort by' dropdown menu.

Easy modification of current search criteria

Visual preview and most important metadata

Customize visual format of results

Change ordering of results and size of result display

Search Results - Sifting Video

Results of the Redesign

Quick access to re-gather video

Direct access to video related by keywords

Link to view or download

Choice of preview surrogates

Link to other video from same title

Textual metadata

The Open Video Project :: Video Details

http://www.open-video.org/details.php?videoid=787&surrogate=storyboard

THE OPEN VIDEO PROJECT
a shared digital video collection

Home
Contribute
About

Search

ex. "water" or "space shuttle" Search

Detailed Search

Related Video

Video Grab Bag

New Indians, Segment 112

Other random videos

- STS-53 Launch and Landing, segment 01 of 5
- On the Air
- Rural wagon giving mail to branch, U.S.P.O.

more...

Related keyword searches

- Ocean
- Radioactive waste
- San Francisco

Video Details

Oceanfloor Legacy, segment 03 of 14

7-sec excerpt
Storyboard
Fastforward

The first goal is finding a disposal site for the sediment dredged from San Francisco Bay

Download: MPEG-1 • 23.58 MB

This video is one segment of a larger video title. See all 14 parts »

Video Information

Year:	1991
Genre:	Documentary
Keywords:	Ocean;Radioactive waste;San Francisco;
Duration:	00:02:38
Color:	Yes

Details - Evaluating Video

Evaluating the Redesign

- Formal usability evaluation not yet done, but is in planning stage
- Informal data:
 - Positive reviews from variety of sources (NY Times Circuits, Yahoo Spotlight, Sydney Herald, etc.)
 - Significant increase in user traffic - at least 70,000 unique visitors since redesign
 - Logged user activity showing use of new features



Evaluating the Redesign

User activity in 4 months after redesign

 Activity from 9.05.2003 to 1.13.2004

 Total of 69,589 'unique' visitors

 Total of 140,135 downloads

Page	Views
Video Details	348,974
Search Results	276,745
Main	150,622
Popular Video	61,429
Special Collection Details	12,227
New Video	4,133
Project Information	4004
Detailed Search	3097
Special Collections	3013
Related Video	2842
Project News	2427
Random Video	1835
Contributing Video Info	1503
Help on Playing Video	1465
Project Publications	521
Browser Compatibility	390
Project Contacts	334

Evaluating the Redesign

User activity in 4 months after redesign

 Most activity occurs on three pages that support the gather, sift, and evaluate activities

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Video Details	348,974
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Main	150,622
Popular Video	61,429
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Evaluating the Redesign

🔍 User activity in 4 months after redesign

🔍 Finding video by popularity much more common than by lists of new or random video

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Video Details	348,974
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Main	150,622
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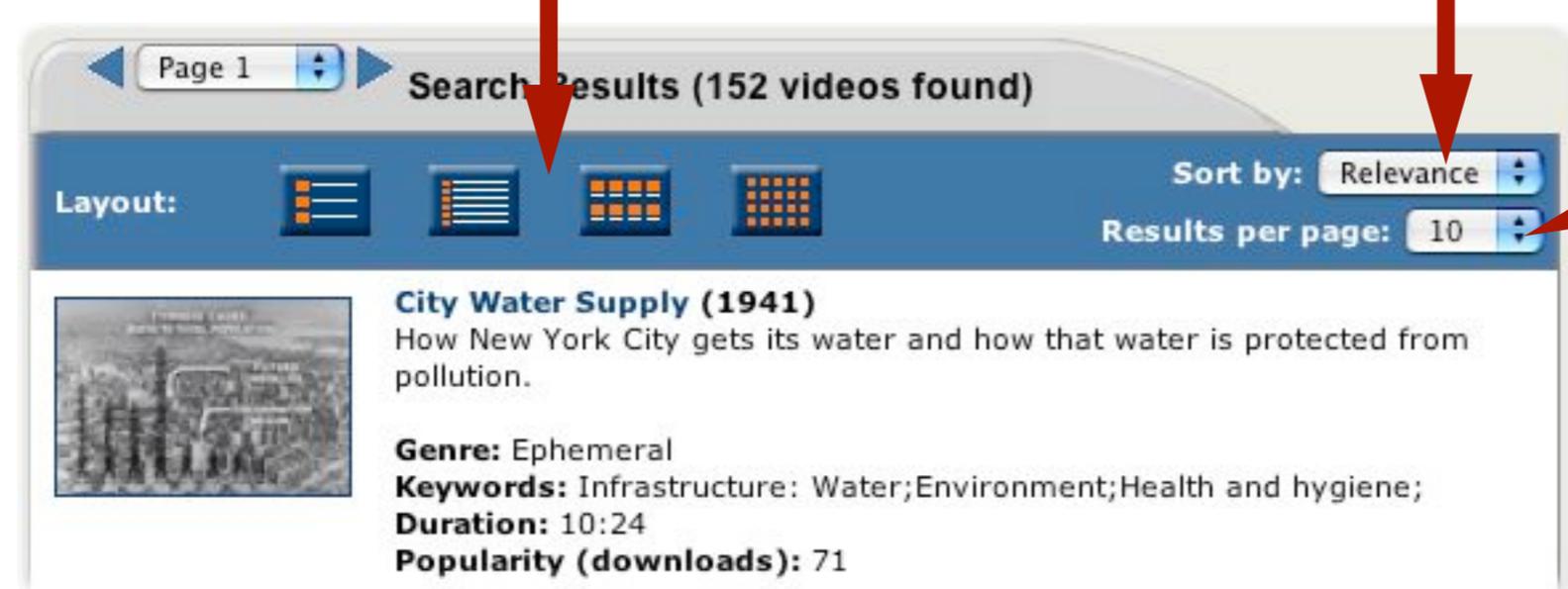
Evaluating the Redesign

Which options do users use to sift search results?

Visual layout of results

Ordering criteria

Size of visible set



The screenshot shows a search results page for "Search Results (152 videos found)". The interface includes a "Page 1" indicator, a "Layout:" section with four icons for different result views (list, grid, etc.), a "Sort by:" dropdown menu set to "Relevance", and a "Results per page:" dropdown menu set to "10". A red arrow points from the "Visual layout of results" label to the layout icons. Another red arrow points from the "Ordering criteria" label to the "Sort by:" dropdown. A third red arrow points from the "Size of visible set" label to the "Results per page:" dropdown. Below the navigation controls, a video result is displayed with a thumbnail and the following text: **City Water Supply (1941)**, How New York City gets its water and how that water is protected from pollution. **Genre:** Ephemeral, **Keywords:** Infrastructure: Water; Environment; Health and hygiene; **Duration:** 10:24, **Popularity (downloads):** 71.

Evaluating the Redesign

📦 Sifting options - User choice of visual layout of results options

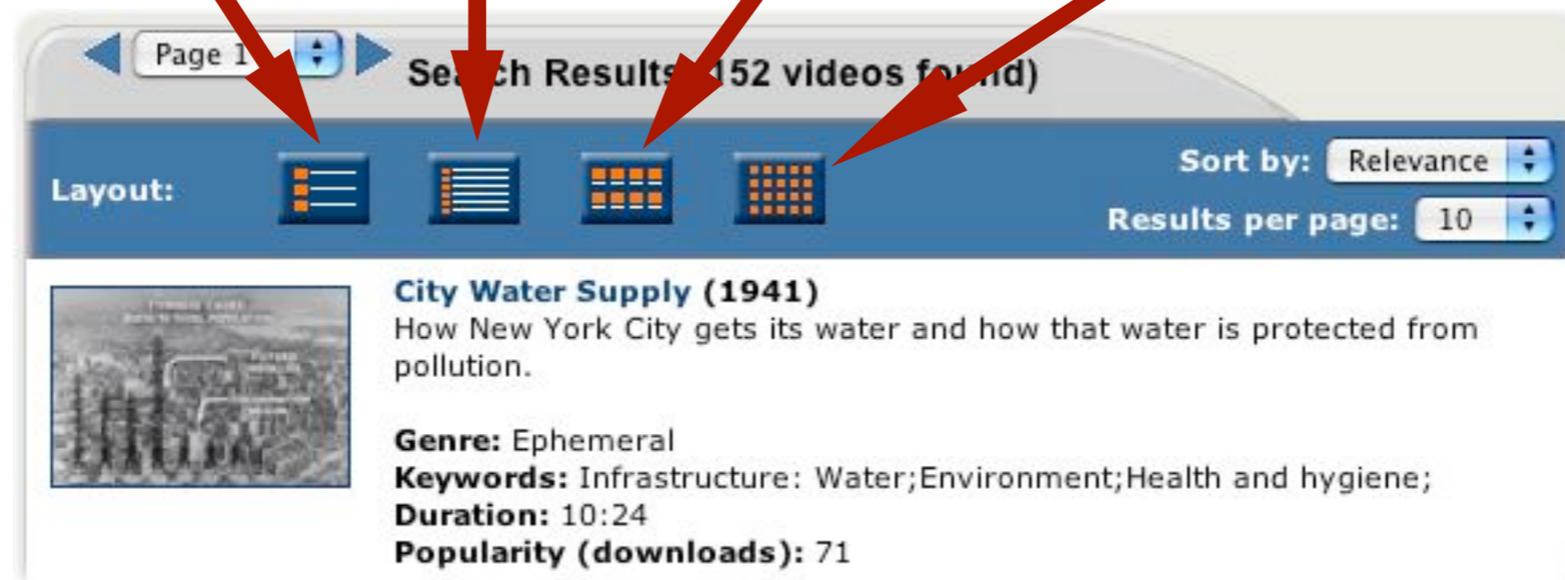
Large thumbnails
221,540 *

Text
13,223

Small thumbnails
16,029

Thumbnails only
12,730

* Default choice



Evaluating the Redesign

🗑️ Sifting options - User choice of ordering criteria of results

Page 1 Search Results (152 videos found)

Layout: [Icons for list, grid, etc.] Sort by: Relevance (checked), Title, Year, Duration, Popularity

City Water Supply (1941)
 How New York City gets its water and how that water is polluted.
Genre: Ephemeral
Keywords: Infrastructure: Water; Environment; Health and hygiene;
Duration: 10:24
Popularity (downloads): 71

Option	# of Selections
Relevance	258,386 *
Title	3,700
Year	6,735
Duration	1,320
Popularity	6,604

* Default choice

Evaluating the Redesign

🗑️ Sifting options - User choice of size of visible set of results

Page 1 Search Results (152 videos found)

Layout: [Icons for list, grid, etc.] Sort by: Relevance

Results per page: 10 (checked), 20, 30, 50, 100, All

City Water Supply (1941)
 How New York City gets its water and how that water is protected from pollution.
Genre: Ephemeral
Keywords: Infrastructure: Water; Environment; Health and hygiene;
Duration: 10:24
Popularity (downloads): 71

Option	# of Selections
10	252,207 *
20	4,923
30	3,600
50	5,585
100	7,350
All	10,430

* Default choice

Future Work

- ✦ **Redesign only incorporated our top priorities**
- ✦ **Provides foundation for adding relatively easily:**
 - ✦ **User profiles - stored results display preferences, history of videos evaluated and downloaded, personal collections**
 - ✦ **Recommended related videos on video details page**
 - ✦ **More preview surrogate alternatives**
 - ✦ **Shared views of specific video or virtual collections of videos**
 - ✦ **More advanced search choices - feature-based attributes**



Project Team

 Past and current Open Video team members contributing to the redesign work discussed in this presentation:

 Anthony Hughes

 Todd Wilkens

 Gary Marchionini

 Barbara Wildemuth

 Meng Yang

 Xiangming Mu

 Richard Gruss

 April Edlin

 Tom Tolleson



More Information

- 🏠 **Open Video Web Site: www.open-video.org**
- 🏠 **Research publications: www.open-video.org/project_publications.php**

- 🏠 **Simmons contact:**
 - 🏠 **Gary Geisler - geisler@simmons.edu**

- 🏠 **UNC contacts:**
 - 🏠 **Gary Marchionini - march@ils.unc.edu**
 - 🏠 **Barbara Wildemuth - wildemuth@ils.unc.edu**

