

Designing artfully-mediated interactive surfaces organizing media collections

Christian Frisson, Eric Schayes, Simon Uyttenhove,
Stéphane Dupont, Rudi Giot, and Thierry Dutoit

¹ University of Mons, numediart Institute Boulevard Dolez 31 B-7000 Mons, Belgium

² ISIB Eng. School, LARAS lab Rue Royale 150, 1000 Brussels, Belgium

Contact: christian.frisson@umons.ac.be

Abstract. This position paper compares past and future designs of interactive surfaces for and beyond media libraries, questioning design patterns and technologies through a taxonomy. Based on this insight, it opens towards works in progress that also feature media content organization, for creative recomposition, potentially collaborative.

1 Foundations

Paul Otlet (1868-1944), the founder of Mundaneum, a paper-based ancestry of Google in Belgium, among other notable achievements, wrote two treaties on how to classify knowledge, *Traité de Documentation* (1934) and *Monde: Essai d'universalisme* (1935), long before nowadays online search engines. He theorized a whole workflow on documentation, including: the Universal Decimal Classification, and 3×5-inch cards to label items in catalogs. What could be written on such cards? There are different means for organizing media data:

- metadata: factual data on media items, generic such as: author, title, album or collection, location or geographical origin... and often the date of creation or publication; or specific to the media collection;
- semantic data: such as tags, add subjectivity to media elements, and can often be organized into ontologies, which provide a relational structure to data that can't be classified into mutually-exclusive categories;
- content-based features: from low-level criteria close to the signal properties, to higher level including perceptual criteria adapted to the human perception: mean color or shape for images, motion orientation for videos, energy or loudness in audio.

2 Design cues

More recently, concerns for understanding and building digital libraries have been outlined in several books such as [6] and [10]. What is a library space today? What is a media library today? La Médiathèque ASBL, non-profit organization of Belgium, recently turned into *PointCulture*, beyond media on demand, hosting artistic events and cycling thematic collections.

Table 1 classifies interactive media browsers projects into which some of the current authors have been involved to different extents. For instance, doctoral studies question whether tangible/free-form interaction [4] is suitable to given use cases, with or without cues inferred from content-based analysis to the organization of, visualization of and interaction with media collections.

<i>Co-designers</i>	La Médiathèque	Bud Blumenthal	Mundaneum
<i>Project</i>	Archipel	Dancers! Browser	Medianeum
<i>Media</i>	Music	Video	Mixed
<i>Organization</i>	Glossary/Tags/Text	Content-based	Chronological
<i>Visualization</i>	Clustered graph	Galaxy	Timeline
<i>Surface</i>	Booth	Booth/Projection	Booth
<i>Interaction</i>	Touch	Touch	Free-form

Table 1. Comparison of use cases of interactive surfaces for media libraries, ordered by chronology

Archipels, a work of La Médiathèque, consists into curating “unclassifiable” music, through a visualisation clustering albums into thematic “islets” based on expert cues from musicologists. The position of the albums on the 2D space was initially random and slowly moving as in an ocean of sounds, so as to stimulate users to make discoveries. A subsequent revision now groups all “islets” in the same view, discriminated through a node-link structure. Browsable online anywhere, *Archipels* can also be experienced at the locations of La Médiathèque where booths fitted each with a desktop-sized touchscreen and a pair of cubic seats and headphones seemingly invite two users to browse the collection simultaneously, these can be a combination of visitors and/or librarians.

The interactive browser [9] of Bud Blumenthal’s *Dancers!* project has been designed in collaboration with the numediart Institute. It consists in providing a library of dancers recordings, sorted by content-based features extracted from the videos, for instance the occupation of the space regarding the stage or the varying height of the barycenter the dancer. The position of each video is content-based, the background and style remind of a galaxy. This browser can either be accessed from the web, or at venues where a desktop-sized multitouch screen on a booth allows essentially one user at a time to select the video to be projected on a large screen.

Medianeum [11] is an interactive timeline, comprising a TV-sized LCD screen and a depth-sensing camera for single-user bodily gestural control. It was first designed for the Mundaneum so as to present historical themes.

We understood through such projects that multimedia information retrieval, while surveyed for video browsers in [8] and evaluated competitively [2] for instance through the Video Browser Showdown ¹, might not be felt robust enough by artists wanting to present media collections or for the analysis of specific content (for instance electroacoustic music in *Archipels*).

¹ <http://www.videobrowsersshowdown.org>

3 Towards collaborations in media manipulation

Table 2 follows the same classification as the former table, this time with works-in-progress, some of which fosters collaborations between users to some aspects.

<i>Co-designers</i>	Larbits Lab	#gezidocumentARy	Les Baltazars	L’Art-Chétype
<i>Project</i>	<i>MetropolitanViews</i>		On <i>plastic theater</i>	<i>CADastreExquisse</i>
<i>Media</i>	Multimodal	Videos/Tweets	Images/Videos	Audio/Images
<i>Organization</i>	Crowd-sourced data	Crowd-sourced data	Expert annotation	Content-based
<i>Visualization</i>	Map	Map/3D/Timeline	Timeline	Media Buckets
<i>Surface</i>	Mobile phones	Tabletop	Booth	Workbench
<i>Interaction</i>	Multimodal	Tangible/Augmented	Free-form	Pen/Touch

Table 2. Comparison of use cases of interactive surfaces for media manipulation, ordered by chronology

MetropolitanViews [5] aims at gathering urban pathways of people through their mobile phones packed with various sensors, represented in a visualisation made of concentric layers of circular representations of the sensors signals and the mood of the users. “*MetropolitanViewers*” somehow contribute collectively to provide impressions of the city they browsed physically.

The goal of the *#gezidocumentARy* project [1] is to propose a tabletop system, that can be replicated easily and that is targeted to artistic venues, with which visitors/users can relive the events of the “Spring of Turkey” that occurred in 2013, notably the protests against the destruction of the Gezi Park in Istanbul. Crowd-sourced videos, sometimes localised through the tweets these are attached to, can be browsed through tangibles on different views: a timeline, a 2D geographical map, a 3D rendering of the neighbourhood. Multiple users may share the browsing process by assigning themselves to each view.

On *plastic theater* [3] by Les Baltazars aims at proposing an extended version of the programme usually distributed in theatre and performance venues before these artistic acts begin, often summarizing the artistic intention and providing references. This would provide an overview of the genre through other artistic works, featuring images or videos, and textual analyses from experts.

CADastreExquisse [7], crossover project between L’Art-Chétype non-profit artistic association and the numediart Institute, invites visitors entering a dome to collaboratively experience or create exquisite corpses, projected on the dome, conceived on pen-and-touch workbenches situated inside the dome and proposing buckets of elements (limbs, object, sceneries) to create the exquisite corpses.

4 Opening

The techniques for instilling collaboration through the future interfaces of these projects is to be determined, the authors of this paper seek at gaining insight on such methods throughout the workshop.

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References

1. Alaçam, S., İpek, Y., Özgün Balaban, Kayalar, C.: Scenarizing gezidocumentary: organising crowdsourced media content via a tangible desktop application. In: Proceedings of the Multimedia Modeling Conference (MMM), special session Mediadrom: artful post-TV scenarios, Dublin, Ireland (January 7-10 2014)
2. Bailer, W., Schoeffmann, K., Ahlström, D., Weiss, W., Fabro, M.: Interactive evaluation of video browsing tools. In: Advances in Multimedia Modeling. Volume 7732 of Lecture Notes in Computer Science. Springer Berlin Heidelberg (2013) 81–91
3. Baltazar, A., Baltazar, P., Frisson, C.: An interactive device for exploring thematically sorted art-works. In: Proceedings of the Multimedia Modeling Conference (MMM), special session Mediadrom: artful post-TV scenarios, Dublin, Ireland (January 7-10 2014)
4. Frisson, C.: Designing tangible/free-form applications for navigation in audio/visual collections (by content-based similarity). In: Graduate Student Consortium of the ACM Tangible, Embedded and Embodied Interaction conference (TEI-13), Barcelona, Spain (February 10-13 2013)
5. Jacobs, B., Jacobs, L.A., Frisson, C., Yvart, W., Dutoit, T., Leleu-Merviel, S.: Scenarizing metropolitan views: Flanographing the urban spaces. In: Proceedings of the Multimedia Modeling Conference (MMM), special session Mediadrom: artful post-TV scenarios, Dublin, Ireland (January 7-10 2014)
6. Lesk, M.: Understanding Digital Libraries. 2 edn. Multimedia Information and Systems. Morgan Kaufmann (2004)
7. Sabato, C., Giraudet, A., Delattre, V., Desnos, Y., Frisson, C., Giot, R., Yvart, W., Rocca, F., Dupont, S., Bemden, G.V., Leleu-Merviel, S., Dutoit, T.: Scenarizing *CADastre Exquise*: a crossover between snoezeling in hospitals/domes, and authoring/experiencing soundful comic strips. In: Proceedings of the Multimedia Modeling Conference (MMM), special session Mediadrom: artful post-TV scenarios, Dublin, Ireland (January 7-10 2014)
8. Schoeffmann, K., Hopfgartner, F., Marques, O., Boeszoermyeni, L., Jose, J.M.: Video browsing interfaces and applications: a review. *SPIE Reviews* **1**(1) (2010) 018004–1–018004–35
9. Tardieu, D., Siebert, X., Mazzarino, B., Chessini, R., Dubois, J., Dupont, S., Varni, G., Visentin, A.: Browsing a dance video collection: dance analysis and interface design. *Journal on Multimodal User Interfaces* **4**(1) (2010) 37–46 Special Issue: eNTERFACE'09.
10. Witten, I.H., Bainbridge, D., Nichols, D.M.: How to Build a Digital Library. 2 edn. Multimedia Information and Systems. Morgan Kaufmann (2009)
11. Zajéga, F., Picard-Limpens, C., René, J., Puleo, A., Decuyper, J., Frisson, C., Ravet, T., Mancas, M.: Medianeum: gesture-based ergonomic interaction. In: Proceedings of INTETAIN. (2013)

² <http://mmm2014.org> / <http://www.mediadrom.tv>