

Preserving Interactives

White Paper

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The interactive artwork is each time restructured and re-created by the actions of its viewers - each person becomes raconteur and auto-biographer of one of its possible scenarios.¹



¹ Jeffrey Shaw, 'Interactive Digital Structures', in Book for the Unstable Media (V2_publishing, 1992), <http://v2.nl/archive/articles/interactive-digital-structures>.

Executive Summary

This white paper seeks to answer the question of how we can preserve interactive documentaries — a loosely undefined amalgam of works that are represented online, via browser applications or mobile apps. It gives a critical outline of current preservation practices for complex interactive documentaries that are supported through an industry loosely affiliated with film and documentary festivals: IDFA, Tribeca, Sundance, and in the East certain markets focusing on VR. It describes what solutions we currently have available and identifies lingering problem areas. It points to practical examples of works that have been stored and preserved and, where possible, kept accessible on-line. It also proposes categories of works that could benefit from the same approaches.

This white paper has come into existence thanks to the mutual interest in preserving novel documentary creations of the International Documentary Film Festival Amsterdam's DocLab programme and the Netherlands Institute for Sound and Vision. In 2016 and 2017, the Netherlands Enterprise Agency's *Dutch Media Innovators* programme supported a series of activities to explore and counter the challenges to ensuring long-term access to interactive works. IDFA DocLab hosted two expert sessions on preserving interactives during the festival. On November 21, 2016, IDFA DocLab and Sound and Vision brought together a group of experts to discuss what it would take to future-proof some of the works that had found their way to the Amsterdam DocLab stage. We asked archivists, curators, producers, publishers, software developers and scholars to look at three specific cases with the goal of laying out the options that exist for keeping these creations alive for the future.

The MIT Open Documentary Lab had meanwhile initiated the *Update or Die* conference, hosted at Montréal's Centre Phi on May 5, 2017, which explored the topic of preserving interactives in-depth. As part of the conference, MIT Open Documentary Lab hosted a workshop where selected participants discussed the theme in a guided conversation. On November 20, 2017, IDFA DocLab and Sound and Vision organized a second expert session, this time taking the canon of interactive works² as a starting point to discuss the extent to which preservation of interactive works can be approached by means of curatorial processes. Outcomes of these workshops were presented at the 2018 *Personal Digital Archiving* conference in Houston, Texas.

Paraphrasing and building on the work developed by our colleagues in the field, this white paper sets forth with a comprehensive list of approaches that can work for individual creators, producers and commissioning editors alike.

² <http://www.doclab.org/100-2>

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FROM GENRE TO CANON

PRESERVING INTERACTIVES, A DECADE IN

Interactive documentaries are as complex to preserve as they are slippery to define. They constitute a genre as much as they do not. They move in circles where descriptive elements are at risk of being overly marketed—stretched so far beyond their original meaning that they could potentially apply to any and everything; like “storytelling”, or “transmedia”. Few of the hotbeds of their presentation forms allow for a neat fit within pre-set confines. IDFA DocLab sticks to describing the works it showcases as “interactive documentaries and other new digital art forms that successfully push the boundaries of documentary storytelling in the age of the interface.”³ The Sundance Institute’s New Frontier Lab speaks of “narrative worlds that leverage new technologies, visual aesthetics, social media cultures, immersive designs, game theory, transmedia activism and shifts in the boundaries of authorship.”⁴ MIT Open Documentary Lab’s 2015 report on interactive documentary and digital journalism⁵ lists a set of concepts it can be alternated with: “big-signature interactives,” “interactive features,” “web-first journalism,” “long-form digital storytelling” and “multi-media storytelling”.

The technologies that underpin them are equally varied and complex, with storytelling experiments thriving on the hype cycle of digital technologies that hope for baseline business potential. Technological acronyms ending with the R of (mediated) reality range from AR over VR to XR. With such endlessly itinerant terminology, single definitions are quickly rendered obsolete. This core reliance on contemporary technologies - preferably technologies just out, or still in the box; not yet mainstream; unproven - makes it the trickiest of fields to consider from a long-term access perspective.

In discussing interactive documentary forms, a variety of practices and technologies come to mind. In pondering their safekeeping we therefore need to consider approaches from the entire digital preservation spectrum—library and archival as well as digital art conservation domains. For some works, applying them all at once seems the only strategy for success we have. The digital arts domain has grappled with conserving individual artists’ and artist groups’ digital legacies for close to two decades.⁶ The interactive documentary network overlaps as much with this media art community as it does not. The main platforms for showcasing many of these works, besides direct-to-browser or exposure via app stores, have initially not been art galleries and festivals as much as film and documentary film festivals across the globe. During the 2016 IDFA DocLab expert meeting, curator Caspar Sonnen recalled why the documentary festival programme came up with the idea of inviting directors to navigate storytelling formats in the browser in front of a live audience. Having to buy a ticket for an event bearing a festival stamp would stimulate the attention and reverence we in our daily browsing habits rarely have to spare.

³ About IDFA DocLab’, IDFA DocLab, accessed 22 April 2018, <https://www.doclab.org/about/>.

⁴ ‘New Frontier’, 2018, <https://www.sundance.org/programs/new-frontier#/>.

⁵ William Uricchio et al., ‘Mapping the Intersection of Two Cultures: Interactive Documentary and Digital Journalism’, 2015, 114, opendoclab.mit.edu/interactivejournalism.

⁶ Colin Post, ‘Preservation Practices of New Media Artists: Challenges, Strategies, and Attitudes in the Personal Management of Artworks’, *Journal of Documentation* 73, no. 4 (10 July 2017): 716–32, <https://doi.org/10.1108/JD-09-2016-0116>.

Lessons from media art net artists have paved the way for reconstructing very specific machineries as they have struggled with how to overcome dying technologies and frameworks. Tool sets like the *Variable Media Questionnaire*⁷ allow artists to indicate the exact changes to the work that they would or would not allow. Digital artist Rafael Lozano-Hemmer compiled a fantastic list for digital artists about how they can approach and develop their own preservation approach in a digital artists' studio context. He discusses "versioning" artworks by means of using version control and making contracts with collectors about the extent to which support is included in their acquisition.⁸ Some of the canonical works have in the meantime been adopted by the museum world: Jonathan Harris & Sep Kamvar's *We Feel Fine* was bought by New York's MOMA, and Vincent Morisset is currently preparing a 2018 retrospective at Zürich's MuDA.

Interactive documentaries share preservation challenges with digital art works as much as with video games—at the cusp of technological innovation and prone to rapid release cycles. There is not one singular game experience: every player goes through the environment at his or her own pace, while the environment allows for countless interactions and storylines. Often, the game's community is an integral part of the game's experience. Without it, playing that game becomes a lonely sit-down in a digital desert. Archiving games therefore comes with particular challenges. Solutions can mean not just emulating the operating environment or withdrawing the core code from obsolete carriers such as tapes and disks, but also documenting the way current generations interact with that game's environment. This can happen in an organized fashion, such as what the Netherlands Institute for Sound and Vision is doing with the *Game On!* project. It can also be seen in the practice of gamers documenting their own gameplay on Twitch or immensely popular YouTube channels. For interactive producers, capturing the interplay between project and user may well also be part of their preservation approach.

As small a community as its creators may form, the new media storytellers are a vanguard of sorts. They are showing us potential futures, experimenting with the could-be's at the intersection of storytelling and technology:

- The *could-be's* of cinema—never replacing that original rectangle of linear immersion, but unfolding potential segues, into 360-degree video, into VR, into web browsers and stories cut up into 10-minute fragments.
- The *could-be's* of the music video, that most experimental form of popular media.
- The *could-be's* of books unfolding into multimedia texts.
- The *could-be's* of performance, inserting video and technology interactions into live sets, live music into the documentary film.
- The *could-be's* of radio, unfolding the podcast and narrative audio into an area of discovery.

⁷ <http://variablemediaquestionnaire.net/>

⁸ Rafael Lozano-Hemmer, 'Best Practices for Conservation of Media Art from an Artist's Perspective', GitHub, 28 September 2015, <https://github.com/antimodular/Best-practices-for-conservation-of-media-art>.

- The *could-be's* of journalistic expression—experimenting, going beyond the intersection of text and video by extending its tentacles to see how real-life stories can find their shape and forms into the digital platforms on which we lead our lives.
- The *could-be's* of games, a world in and of its own, and an industry behemoth dwarfing classic media in size.

All these form potential pathways for developing media technologies, which is of interest to creative tinkerers as much as businesses interested in innovative directions for their media and platforms. Interactive documentary's context differs and overlaps with all of the above. These are funky, non-conforming animals in the online publishing world—works that depend on, forge forward with and sometimes abuse aspects of computational infrastructures in such a way that existing preservation solutions have limited answers.

During DocLab's 2016 opening night, US-based director and photographer Zackary Canepari remarked that his 2011 nomination for the festival *California is a Place* is now "a website that barely even loads anymore". The death of Adobe Flash, announced for many years, was suddenly happening rapidly and for real, with popular browsers pulling support. Which led Sonnen to remark that Flash was now "the nitrate of the digital era." During the 2017 expert meeting, DocLab's Michael Zbieranowski indicated that in the two years he had been working with virtual reality, some of the projects he had originally looked at were already a lot harder to watch, a lot less accessible.

If a story is told via video's beeping into your SnapChat feed the way POV's *The Way It Should Be* does, or tells you about the bus journey to a New York prison via videos delivered over a real-time WhatsApp or Messenger feed, like *A Temporary Contact* does, trickling down into your phone like a friend's conversation would, how are you going to preserve that record? Will future media archaeologists need to recreate the entirety of our social media landscape in the same way film museums have re-created the film pavilion at a country fair experience, rattling projector and fairground entertainers included, as the *Crazy Cinématographe* once did?



Crazy Cinématographe performance in Luxembourg, 2009.
Image by the author.

A story of love and friendship as lived and told by queer women of colour,
by Terence Nance and Chanelle Aponte Pearson.



TO CURATE AND PRESERVE

The Netherlands Institute for Sound and Vision first started working on the topic of preserving interactive documentaries in 2012, when staff member Jesse de Vos was awarded a research grant to mobilize experts and ponder the problems of archiving these multi-fractured works.⁹ In the same year, IDFA's DocLab and MIT's Open Documentary Lab launched their website *Moments of Innovation*.¹⁰ The site presents seven themes that digital documentary artists are exploring and connects these to movements, works and creations of the past—from the cinematic tradition as well as other, both playful and more solemn domains. The website was updated in 2017, the year DocLab turned 10, which marked an opportunity for the festival programme to look back. In an effort to answer the always open question of what an interactive documentary finally is and to continually inspire the future of documentary art, the DocLab team gathered a selection of curators to choose 95 works to constitute the “canon” of this undefined, semi-open corner where documentary meets the technological avant-garde. To celebrate ten years of undefined non-fiction storytelling and art at its anniversary edition, DocLab presented a selection of 95 works in canonical form. Such a list of key works allows us to clarify the status of both recent and early proponents of the interactive documentary. The canon includes milestone creations of its history, like Jonathan Harris and Andrew Moore's experimental storytelling interface *The Whale Hunt* and widely recognised game changers like *Journey to the End of Coal*, an interactive documentary that puts its audience in the perspective of an investigator looking into the deaths of Chinese coal miners.

Over this decade, society's response to our digital era's technological advances evolved—with the enthusiasm around the participatory web of the latter half of the 2000s, the rise of social media and hopes for its potential for social impact, to the distrust and privacy concerns of the latter half of the 2010s. These societal changes are mapped out in some of the works DocLab and other podia for emerging documentary forms present. They document and reflect the ways we communicate with each other, live with each other and respond to each other. A part of 'digital convergence' is that people working across many disciplines have similar debates and are working through similar issues: How to balance authorial intent with user choice and autonomy? What are the ethics around documenting or even creating communities? How do we help people learn? How do we foster change and impact with our work? Where are the boundaries between art, academic research, journalism and advocacy? It is the mapping and evolution of these conversations through works that use the full power of digital technology that we aim to preserve. As Gifreu-Castells notes,¹¹ the production landscape in which interactive projects thrive is changing: short story forms are on the rise and mobile means of accessing stories are at the

9 Jesse de Vos, 'Preserving Interactives: Preserving Audio-Visual Materials in a Post-Broadcasting Paradigm' (VU University, 2013), <http://publications.beeldengeluid.nl/pub/31/>.

10 <https://momentsofinnovation.mit.edu/>

11 Arnau Gifreu-Castells, 'Exhibition and Preservation of Non-Fiction Interactive and Transmedia Forms of Expression', *Collection and Curation* 37, no. 2 (3 April 2018): 85–92, <https://doi.org/10.1108/CC-08-2017-0037>.

forefront of media distribution, rather than desktop browser experiences.¹² At the same time there is an onslaught of 360-degree video works and a demand for upcoming VR innovations. As with preceding novel technologies moving faster than standardisation efforts, this leads to conversations amongst archivists¹³ and further preservation research.¹⁴

Challenges to preserving electronic records have been building up at the same rate that the tech industry keeps updating its platforms and devices. “Preserving”, a term that refers to a host of actions to make objects future-proof, has to start early, almost in tune with the creative process. With software, net art, or any digital work, the creation process must be accompanied by some accounting for how the machinery can be made future-proof, unless the work is designed to live in the moment only; never to be admired again. Some of DocLab’s canonical works are being archived as part of national efforts to archive the web—e.g. the legal deposit in France, others by the producers themselves—e.g. ARTE or NFB. Some of these works form part of private creators’ development and have no institutional support. Everybody struggles with the bleeding edge of preserving interactives. Nobody can do it alone. The people who best understand the technology they have created and worked with, are the ones that can best advise on how to use it.

12 As an example of how that can lead to experimentation, there’s the 60 seconds competition NFB and ARTE’s organized twice, titled Very Very Short

13 Erwin Verbruggen, ‘360° Web Video Format Selection’, 31 January 2018, <https://lsv.uky.edu/scripts/wa.exe?A2=ind1801&L=AMIA-L&P=R46560>.

14 Candice Cranmer, ‘Preserving the Emerging: Virtual Reality and 360-Degree Video, an Internship Research Report’ (Hilversum, NL: Netherlands Institute for Sound and Vision, 18 December 2017), <http://publications.beeldengeluid.nl/pub/584>.

ACCEPTING THE CHALLENGE

INSTITUTIONS THAT HOLD

The challenges of archiving interactives are induced by their very nature: part of why they intrigue us is the way they make use of rapidly changing technologies to transmit stories. It is a tricky business to keep digital objects useful over long periods of time. The challenges are alike for private individuals, production houses, government bodies, museums and archivists: technology changes and it changes fast. Drives will not spin up, connectors will not fit the machinery, software will not work well with old operating systems, etc. Fully functioning play-out is never certain with programmes that did not get to catch up—ones that were not updated or migrated in time. Linear media in a digital environment need careful tending. They need to be migrated over to a next generation carrier and/or format before the current one becomes obsolete. They need redundant backups in case anything goes wrong with the primary copy, and all versions need to be checked regularly to make sure at least one of them is not corrupted. They need strong descriptive info to make sure future generations can find them and know how to handle them. Interactive media productions pile onto these challenges the properties of networked media operating in complex environments.

Interactive media productions brought along the promise of breaking down publishing silos. Photographers no longer only shoot still images. Writers no longer produce letters on paper. Likewise, transmedia forms and formats deeply unsettled tried and tested preservation and presentation tactics. Media archivists have decades of experience with storing often unstable moving images. Yet a carefully labelled tape or film reel in top-notch climate-controlled conditions is a far cry from safeguarding interactives that draw on GPS, webcams, touch screens and APIs. Brett Gaylor's *Do Not Track*, a personalized web series about privacy and the web economy, is connected to an estimated 15 of them. Online works of any kind become obsolete at an ever-increasing pace due to, for example, changes in ownership or platforms being switched off for various reasons. Browser versions bring updates at neck-breaking speeds. Services disappear in the blink of an eye. APIs change their tune before you can type the words "Twitter feed." The speed at which our media environment evolves makes ensuring that this type of production can confidently be re-represented in a far-flung future particularly difficult. This situation requires organisations endowed with the task of caring for interactive media to ask the question how to preserve this unique, undefinable selection of storytelling feats.

An outcome of two decades of studying, researching and implementing solutions for archiving born-digital materials is the fundamental notion that archiving and preservation actions can no longer be a mere afterthought:

- In the lifecycle of broadcast television, archives receive the material after broadcast, but more and more broadcast archives insist on receiving production metadata with it, thus effectively beginning the archival processes at the programme's point of origin.
- For digital film, film museums and archives have by now learnt that they need to reach out to producers by the time of their funding in order for post-production houses to be able to deliver the source files for safe storage before movies hit the cinemas and/or online platforms.

- Governmental archives have for a long time made agreements with government bodies to deliver materials according to specifications.

In the case of interactive documentaries, their point of origin varies—some are produced by public broadcast institutions, other by small design firms, research groups or individual creatives. Their formats and dependencies differ. But that should not keep archives from trying to come up with solutions that work for this specific community. If at all feasible, including preservation strategies in the creation process would be the most ideal starting point. In today's fast-paced technological development, things we'd like to keep for the future need as much as possible to be captured at the source. To paraphrase the French audiovisual archive Ina's former head of R&D Daniel Teruggi: our age represents the first time in history where producers need to be concerned with the preservation of their creations *while they're still making them*.

| WEB BROWSER | | | MOBILE APPLICATION | VR | OTHER |
|----------------------------------|---|---|---------------------------|--------------------------------|---|
| (The And) | Hollow | Refugee Republic | Barcode.tv | Assent | Cue China (seamless reality installation - video) |
| #Alleman | Human Birdwings | Serial | Farewell Comrades | Clouds | Door into the Dark (sensory installation) |
| 17000 Islands | I know where your cat lives | Seven Digital Deadly Sins | Fort McMoney | DMZ: Memories of No Man's Land | Famous Deaths (seamless reality installation - smell) |
| 18 days in Egypt | I love your work | Sheriff Software | In the Eyes of the Animal | Drawing Room | Robots in Residence (robots) |
| 6 billion others | In the Eyes of the Animal | Snowfall | Just a Reflektor | Hunger in Los Angeles | Serial (radio podcast) |
| 9-Eyes | Insitu | Soldier Brother | Karen | In the Eyes of the Animal | Type:Rider (playstation game) |
| A Childhood Walk | Interview Project Germany | Street Ghosts | Kiya | Kiya | Via PanAM (radio broadcast) |
| A journal of insomnia | Journey to the End of Goal | Thanatorama | Somebody | Notes on Blindness VR | |
| Alma, a tale of violence | Just a Reflektor | the block: stories from a meeting place | That Dragon, Cancer | Strangers with Patrick Watson | |
| Barcode.tv | Lagos wide and close | The Dumpster | The Enemy | The Enemy | |
| Bear 71 | Last Hijack | The Johnny Cash Project | Type:Rider | The Machine to be Another | |
| BLA BLA | Learning to love you more | the ninth floor | Ushahidi | Waves of Grace | |
| California is a place | Les Communes de Paris | The Scared is Scared | Via PanAM | Witness 360: 7/7 | |
| CIA: operation AJAX | Life on Hold | The Sochi Project | Waves of Grace | | |
| Clouds | MAFI.tv | The Whale Hunt | word.camera | | |
| Do Not Track | man with a movie cameraL the global remake | The Wilderness Downtown | | | |
| Dream Homes Property Consultants | Molovot alva and his search for the creator | thru you too | | | |
| Empire Interactive | Oh My Gosh, Zilla | Tracking Transcience | | | |
| Enemy Within | One in 8 million | Ushahidi | | | |
| Exhausting a Crowd | Out of sight, out of mind | V.O.S.E | | | |
| Farewell Comrades | Planet Galata - a bridge in Istanbul | Via PanAM | | | |
| filmmaler in residence | Pointer Pointer | We Feel Fine | | | |
| Fort McMoney | prison valley | Welcome to pine point | | | |
| Gaza/Sderot | Question Bridge | word.camera | | | |
| HIGHRISE/ Out My Window | Quipu Project | | | | |

| Works mentioned in the DocLab Canon, broken down by main distribution technology.

A large part of the works mentioned in the DocLab Canon is browser-based. The size of information on the web is vast, ever in flux and ephemeral. The average lifespan of a web page is estimated to be 100 days.¹⁵ Archival organisms are by their very nature slow to adapt—the first film museums making it their business to safeguard the rising medium of cinema only cropped up some three decades after the medium of cinema arose.¹⁶ The first notions of safeguarding broadcast radio and television only appeared after many of the early works impacting people's lives had been recorded over, with countless examples of programmes tragically overwritten. If there was a technology that could record the signals transmitted over airwaves, it was so expensive that reusing them seemed better value than safeguarding what was on them. The internet, rapidly taking over the public sphere throughout the last decades of the twentieth and first decades of this twenty-first century, only became an object of study after the demise of so many platforms people had poured their energy, stories, livelihoods and friendships into.¹⁷

Major players like Google insisted on moving technology forward, while the budgets and technological capacity of librarians and archivists were slow in catching up with the rapid upheavals sweeping through platforms like Myspace, GeoCities¹⁸ and other forms of expression, with implications for their survival. The scholarly domain invented ways of freezing online content—creating persistent identifiers, bringing publications to the web and creating networks like LOCKSS¹⁹ to create multiple instances safeguarding those ephemeral creations. The Internet Archive, as a non-profit founded by dotcom entrepreneur Brewster Kahle, urged libraries and archives to reconsider the speed and scale with which they were approaching the problem of storing the web's contents. Web archiving-conscious institutions have been cooperating on tackling the challenges of web archiving since 2003, by addressing common challenges in the context of the International Internet Preservation Consortium (IIPC). Net art, the experimental internet vanguard that came out of the nineteen-nineties, was investigated and seen more and more as a museum object, whose performativity needed to be kept alive somehow – with or without the eager collaboration of artists interested in keeping their backlogs up.

PRODUCERS WITH PROBLEMS

Who makes these ephemeral productions we call interactive documentaries? An amalgam of organisations is involved. Not just because the funding of these productions can at times – like so many contemporary audiovisual productions - require a smorgasbord of funders and sponsors. The resulting hybrid forms are experimented on by various institutions, organisations as well as creative and commercial enterprises. Some productions are made by a small team or a single artist. Some productions are commissioned. Festivals increasingly provide spaces where interactive projects can be pitched to funders of various sorts.

15 Nicholas Taylor, 'The Average Lifespan of a Webpage', webpage, *The Signal*, 8 November 2011, <http://blogs.loc.gov/thesignal/2011/11/the-average-lifespan-of-a-webpage/>.

16 C. Frick, *Saving Cinema: The Politics of Preservation* (Oxford Univ Pr on Demand, 2011).

17 Niels Brügger and Ralph Schroeder, *The Web as History: Using Web Archives to Understand the Past and the Present*, 2017, <https://www.ucl.ac.uk/ucl-press/browse-books/the-web-as-history>.

18 Archive Team, 'GeoCities Archive Project', 4 December 2017, <https://archiveteam.org/index.php?title=GeoCities>.

19 'LOCKSS | Lots of Copies Keep Stuff Safe', accessed 8 May 2018, <https://www.lockss.org/>.

Some of the more consistent commissioners are public broadcasters like ARTE and funding bodies like the Canadian film board (henceforth NFB), who have taken a special interest in furthering the form. At the NFB, this is seen as a way of keeping the organisation relevant in the 21st century while continuing the organisation's identity as a "place for filmmakers to experiment and important stories to be told."²⁰ ARTE's editorial manager Marianne Lévy-Leblond indicated as her reason for pushing the form that interactive documentaries "can bring stories to life from a world that is far away when seen from our sometimes very abstract western preoccupations" using "new tools to make viewers meet characters on very different terms from the ones we're used to through papers or television."²¹ Some outstanding works have been funded by Google to show the boundaries of the web giant's Chrome browser functionalities - such as Arcade Fire's *The Wilderness Downtown* video from 2010, or LCD Soundsystem's 2017 *Dance Tonight* video in WebVR. Non-profits find in the format a novel way of drawing attention to complex societal problems, as in UNHCR and Google's *Searching for Syria*, which explores the world's top questions about the Syrian refugee crisis. Journalistic entities especially have taken an interest, with some just starting while others have already built up a legacy of interactive works to safeguard. The New York Times, a digital journalism front-runner, besides embracing VR as a medium for journalistic stories, recently showed its awareness about conserving online formats and content by producing archival versions of its less recent articles.²²

Securing the longevity of these works is not necessarily the responsibility of these organisations, but for a few it is. Organisations such as ARTE or the NFB have long had archive departments responsible for safeguarding the assets they commissioned—knowing all there is to know about cold storage for film carriers, the life expectancy of magnetic tapes, and so on. While funding the technological vanguard, they are also keenly aware of the risks and problems involved in safeguarding interactive content. At the 2017 IDFA DocLab expert meeting Hugues Sweeney explained how at NFB, publishing around 15 new productions annually, the current approach is trying to identify the low-hanging fruits for every project, beginning by making sure that all the assets are located, identified and stored in a durable manner. After the buzz of the production phase is over, elements are all over the place—on different hard drives at different addresses. The organisation has started making sure that every project has a demo or a click-through. Then the second layer is having a commented navigation video, made by the creator or the producer.

But preservation is not just making sure that all the assets are secure in some place and accessible at any time. The next step is determining which projects can be kept accessible, for example by capturing Flash projects in another programming language. Which is where the economics start to bite—as creating these new versions could take large chunks out of the budget of interesting new creations. The team at ARTE is exploring a process of working with its producers to prepare for the archival afterlife—asking them to use open source technologies to ensure that playout reliance is more stable. And focusing on bigger assets: creators of VR projects will be asked for 8K even if that's not a resolution current devices support. Which all requires more work and more money—but for interactive projects it pays off to work with creators and help them to choose the right technology.

20 Jeff Beer, 'How Canada's NFB Became One Of The World's Hippest Digital Content Hubs', *Fast Company*, 10 February 2012, <https://www.fastcompany.com/1679850/how-canadas-nfb-became-one-of-the-worlds-hippest-digital-content-hubs>.

21 'EDN Honors ARTE France Web Production Head', accessed 31 May 2018, <http://realscreen.com/2016/03/18/edn-honors-arte-france-web-head/>.

22 Shan Wang, 'Here's How The New York Times Is Trying to Preserve Millions of Old Pages the Way They Were Originally Published', Nieman Lab (blog), 12 April 2018, <http://www.niemanlab.org/2018/04/heres-how-the-new-york-times-is-trying-to-preserve-millions-of-old-pages-the-way-they-were-originally-published/>.

CASE STUDY 1

ALMA — A TALE OF VIOLENCE (UPIAN)



| Still from *Alma*

Upian & ARTE's story of Alma is a powerful and timeless one. The technology it is built with is less so. At the IDFA DocLab Expert Meeting, one of the groups discussed porting the project from iOS to Android. Because of the differences between the two platforms, the producers were forced to fully rebuild parts of one when they updated the other. A number of important questions around interactive documentary preservation came up in the group: Should you, as a producer, recode a piece? Film the director's cut? Is it your role to do so? Do you have the time? And money? Will you be forced to do it all over again in three years' time? The group looked at the possibilities of Rhizome's Webrecorder software as a solution for preserving a project like Alma. Its encapsulated browser has a version of Flash that is running inside an emulated environment: a browser inside a browser that records the user interactions of the original piece. For interactive documentaries to be fully preserved with Webrecorder, you need to execute every possible user interaction. Programs where the user

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can take multiple paths can seem problematic as they might well contain millions of possible interactions.

There is also the question of how to preserve the emulator software: will that exist in another ten years' time? For other web-artworks that Rhizome has successfully preserved, the artists provided them with the entire server. Which makes archiving a problem, as these servers have likely been lost, or changed. A piece like *Alma* or *Do Not Track* has network data of each user, which is essential to the piece. The group proposed to add the term 'user's cut' to the existing idea of creating a "director's cut" - the way in which the Live DocLab events have brought a director's vision of how the interactive should be approached to the stage. Another element that came up with Alma's case is security. The protagonist of the story has a violent background, and to protect her safety, the story is locked out of certain parts of the world. A protection measure that, when recorded with software like Webrecorder, is unlikely to be preserved if not given the appropriate amount of attention.

FACING THE CHALLENGE

What does it mean to preserve something? There are few lucky accidents when it comes to surviving the sands of time. History has left us some cultural artefacts thanks to a combination of lucky neglect and ideal atmospheric conditions. Think of frescoes excavated millennia after their abandonment, film reels unearthed from deep-frozen areas or terracotta armies uncovered thanks to the utmost secrecy they were hidden with. More recent survivors however found their way to our day and age through careful copying, tracking, and tending.²³ The time frame that allows us to preserve the contemporary record has shortened drastically. Analogue video carriers have been estimated to reach their expiration date in 2025.²⁴ Digital objects not cared for have an even more limited time span: cloud storage and backup service provider Backblaze's yearly consumer-level hard drive statistics show that drives over 4 years old start to fail at a higher rate.²⁵

The question of how a work is preserved depends a lot on the assumption of which of its properties are significant enough to be taken into consideration for preserving. As Guttenbrunner argues, for interactive content these can range from the technical as well as social properties, with potentially different weighing for different types of works.²⁶ When archiving web productions, for example, some do demand the careful, file-by-file approach that net art seems to require rather than the blanket approach taken by national libraries and internet archives. At the IDFA DocLab 2017 expert meeting, Sarah Wolozin wondered about the existence of a 'base preservation' for all works in the DocLab canon, to then pick and choose which ones one would really invest in. The core tension that exists in archiving web objects is in scalability. Solutions currently available for emulating browser-based creations or storing interactive installations with web components, require a piecemeal approach—including but not limiting themselves to interviewing the makers, creating digital 'scores' out of the won information, transferring and checking elements and components.

Some museums have gone so far as to print out software-based objects' source code on acid-free paper in an attempt to show how it could also be done. As Dekker and Falcao note with regards to storing the source code for software-based artworks, "its value and usefulness vary greatly depending on the artwork and the type of software it is written for—analysis of the code base is required to assess its utility for preservation purposes."²⁷ Preservationists urge artists to use open source code sharing platforms like GitHub in order to allow code review and checking the documentation quality—an approach more embraced in some industries than others. And still,

23 Trevor Owens, *The Theory and Craft of Digital Preservation*, 2017, <https://osf.io/preprints/lissa/5cpjt/>.

24 Mike Casey, 'Why Media Preservation Can't Wait: The Gathering Storm', *IASA Journal*, no. 44 (January 2015): 14–22.

25 'Hard Drive Failure: Analysis of 49,056 Hard Drives', *Backblaze Blog | Cloud Storage & Cloud Backup* (blog), 14 October 2015, <https://www.backblaze.com/blog/hard-drive-reliability-q3-2015/>.

26 Mark Guttenbrunner, 'Preserving Interactive Content: Strategies, Significant Properties and Automatic Testing', in *Proceedings of the 8th International Student Workshop*, 2008, 9.

27 Annet Dekker and Patricia Falcao, 'Interdisciplinary Discussions about the Conservation of Software-Based Art: Community of Practice on Software-Based Art', 2017, http://pericles-project.eu/uploads/files/PERICLES_SBA_CoP_report_2017_FINAL.pdf.

this approach requires a decent understanding of the language and decisions used by the archiving team in place—a challenge shared with production teams like that of Upian, who, in order to recreate their works in a new paradigm, require the skills of code-bases no longer fresh in programmer’s memory.

As William Uricchio pointed out, there are a few different elements and strategies one can lean on when thinking about safeguarding an interactive:²⁸

Interdependency: While some interactive projects are effectively closed systems, many others are integrated with APIs such as Google Maps; operating systems such as Android and iOS; platforms such as Twitter; and services based on time-bound standards such as GPS. These autonomous, often transient (in the sense of frequent updates), and always conditional (e.g., legal terms) factors are outside the control of individual projects, yet intrinsic to them. Interdependency perhaps more than any other feature distinguishes the preservation and access needs of interactive documentaries, compared to analogue media or even digital games and art.

Maintenance: Who should assume responsibility for maintaining these projects, in paying for their hosting, covering their server costs, curating possible interfaces with the public, and so on? Most of these canonical works are offered freely online—does that aid in making their preservation a blind spot? The complexities of ‘ownership’ and the mixed responsibilities on the production and distribution fronts seem to have led to a situation where everyone and no one has a say in the fate of these forms. We need to establish protocols and norms for artefact maintenance. An important sub-question regards how ongoing data acquisition will be maintained (to the extent that it is a relevant part of the project). If user data is relevant to a particular project, who ‘owns’ and can dispose of it? How will it be maintained as part of the preservation project?

Letting go: Which aspects of an increasingly ephemeral culture do we need to be prepared to abandon? Many digital artefacts regularly morph over time, with upgrades, user modifications, and platform shifts. “Completionist” strategies of the past are not particularly helpful in this regard. Yet it is imperative that we answer this question if we are to decide among preservation, documentation and creative interpretation, and determine which relevant analogies to other media practice to draw upon (emulators and games; migration and certain art projects, and so on).

How need we then consider the interactive documentary? Is it an artwork that needs to be stored, file by file, piece by piece, with the proverbial gloves on of the museum conservator? Can one approach it with the one-size-fits-all approach by means of which the library would scoop up and process a batch of the daily increasing number of published books? The outcome of this puzzle is seldomly or-or: as our technologies, our budgets, our attention spans, the networks and knowledge we have access to rarely cover the entire domain, it’ll usually be the combination of the following tactics that will be necessary to guarantee the survival of these objects.

²⁸ Erwin Verbruggen, ‘Future-Proofing Interactive Works’, *Beeld en Geluid* (blog), 1 February 2017, <https://www.beeldengeluid.nl/en/knowledge/blog/future-proofing-interactive-works>.

1. DOCUMENT, DOCUMENT, DOCUMENT

Like music, like dance, like theatre, like multiplayer games, interactive documentaries have a level of performance. As Rinehart and Ippolito indicate, this means that some of the challenges of preserving interactive works are inherently shared with “predigital era” artworks and are informed by solutions coming from neighbouring fields.²⁹ While the physical or digital core of these projects can be captured with one method or another and placed on an archival shelf for safeguarding, the performative interaction and time-based behaviours that are essential albeit external elements of each work, ask for another preservation layer. Accounts by audiences, drawings, scores with assignments for recreation. Books with photographs, re-telling the process of showing and creation. Video recordings of someone navigating through the website, if possible showing not just the screen, but also the interface through which one navigates; even better if it includes the navigator’s reactions to the story told or including a director’s experience and story of decision making, much like the director’s voice-over so popular during the heyday of the DVD bonus for cinematic forms.

This kind of documentation allows the original object to fade away, as for some forms it is sheer impossible to keep what was once their original experience in existence—say with multi-player role games, or with Miranda July’s social experiment masked like an app *Somebody*, both of which rely on a critical mass of contemporary players willing to engage with you in the process. How? Document what was there before definitely turning off your site or app. Spend precious resources on making a work that was supposedly ready to be left behind whole again—or put a plan in place that foresees future changes in the work’s environment. The maker’s commentary is precious in giving the creator’s perspective. Sound and Vision adopted the *Let’s Play* video approach,³⁰ where people play and have voiceovers and comment on their gameplay. A very powerful tool for preservation as you have a conscious reflection of someone in a contemporary space playing that game—adding a layer of information that otherwise would also be lost, which is how people interact with it. At the 2017 DocLab Expert Meeting, Sound and Vision preservation expert Jesse de Vos indicated that as an additional bonus, it would serve as a reference for any type of emulation. Is it authentic? Does it look the same? Does it act the same? Not only can documentation supplement preservation strategies such as emulation, but even more importantly, it can serve as a reference point to a specific point in time in the history of media development.

2. CAPTURE

The web has a history, large swaths of which have already been erased from the record. The Internet Archive started its archival project of collecting web pages in 1996. The public-facing part, its Wayback Machine, saw the light of day in 2001, a decade after the first browser came to life. National institutions, such as the Library of Congress, the Bibliothèque nationale de France, and the UK’s National Archives (both France and the UK have legal deposit laws for web content) have

²⁹ Richard Rinehart and Jon Ippolito, *Re-Collection: Art, New Media, and Social Memory*, Leonardo (Cambridge, MA ; London, England: MIT Press, 2014), 21.

³⁰ R. Glas et al., ‘Playing the Archive. “Let’s Play” Videos, Game Preservation, and the Exhibition of Play’, in *The Interactive Past. Archaeology, Heritage and Video Games* (Netherlands: Sidestone Press, The, 2017), 135–151.

all set up large-scale web scraping projects: approaching websites with crawlers that browse and copy what is on their pages.

In the lifecycle of a standard website, its preservation action is usually a crawl. A robot passes by the website's URL or a human activates a service like Archive-It to crawl that part of the web. For more intricate web productions, someone would point Rhizome's Webrecorder software³¹ to the site and navigate throughout the entire object, preserving much of the interactivity ingrained in the object. This type of front-end approach has its advantages: it can be operated at a large scale and is thus cost-effective, a bonus for cash-strapped public institutions. It is estimated that the Internet Archive, which provides the global public an incredible service with close to no public funds, currently holds more than 30 petabytes of information.³² Yet that is not nearly enough. Preservationists estimate that not even 50% of world wide web content is subject to this type of hunting and gathering by archival organizations. The dynamic, interactive web applications that make up our canon constitute the height of challenges for automated front-end crawling: user interaction, creating a vast amount of possible experiences, dependency on specific frameworks, externally hosted content. The New York-based organization Rhizome, well-acquainted with the challenges of media art works, developed Webrecorder to overcome some of those limitations. Rhizome's tool "records" the experience of browsing through a website, saving every applet that is called up—closely keeping the experience of one site visit, or multiple, depending on the amount of time one has to click through.

Whether through the browser or by storing the object's source code and all information coming with it, browser capture requires specific software - a crawler, whether static or dynamic like Rhizome's Webrecorder, and a framework in which to replay the created file—usually a WARC or Web Archive file type. Server-side capture requires a failproof process to transfer and describe the contents, much like any digital object's preservation pipeline requires an archivist to have proof of its authenticity and integrity. The challenge here lies in recreating that object in a browser or museum setting when the time is there. Some digital artists have made keeping these objects alive part of the deal: upon capture by the museum, they make maintenance part of their job description. The MOTI museum in Breda agreed on a 5-year maintenance contract with the Moniker team after buying their work. The same goes for works by digital artist Rafael Lozano.³³ For the long term it might not be ideal - what happens when these artists move away, or leave this planet, after all, but for the short term it is necessary to have the capacity to recreate these objects and, if possible reinstate them in a new technological paradigm - recreating a Flash-based creation like *Bear 71* in webVR, say.

The most scalable web archiving solutions out there read what is on a web page and store it in a packaged format, most usually the WARC container format.³⁴ The crawling itself ideally happens in a blink of an eye. Double checking the procedure's outcomes, on the other hand, making sure that every element on a page, whether existing in the website's source code or

31 [Webrecorder.io](https://webrecorder.io)

32 'Internet Archive: About IA', accessed 31 May 2018, <https://archive.org/about/>.

33 Lozano-Hemmer, 'Best Practices for Conservation of Media Art from an Artist's Perspective'.

34 Yunhyong Kim and Seamus Ross, 'Digital Forensics Formats: Seeking a Digital Preservation Storage Container Format for Web Archiving', *International Journal of Digital Curation* 7, no. 2 (6 December 2012): 21–39, <https://doi.org/10.2218/ijdc.v7i2.227>.

CMS, or embedded from external platforms, consisting of text, of code interactions, of video, Flash objects designed to move along the page as you browse, is represented as it were in the source, is a time-consuming (and, as many archival activities, iterative) procedure. To give an example of how the French audiovisual institute Ina handles its obligation to provide a legal deposit for websites born in the country: the organisation combines different crawling tools and a two-level approach in order to increase the number of interactions it can archive. Its main crawling tool (phagosite) has capabilities similar to what the Heritrix software, which powers the Internet Archive, does and lets it crawl millions of pages a day without much stress, but fails to trigger some important interactions such as complex JavaScript. In order to address these types of rich interactions the organisation uses automated browsers. One is based on an earlier version of Firefox and the other on the phantomJS toolkit. All these bots are managed within the same crawling scheduler, so that the organisation can freely assign a given website to one bot or another. Ina developed a live archiving proxy (LAP) letting it archive everything that goes through it, so that it can use any crawler or HTTP tool, from curl to a full-fledged web browser, and use it as an archiving crawler its format. They also use specialized crawling scripts to crawl very specific websites or events and use manual browsing from time to time to capture small web documentaries—which is often faster than developing a specialized script if it finds the capture will be unique.

At the Netherlands Institute for Sound and Vision, the size of our crawls is comparably much smaller, and since 2017 we make use of external services of *Archiefweb* for our crawls, often manually adding websites where and when needed, and investigating whether we could plug Webrecorder captures into the repository. Capturing complex and dynamic web creations requires thus a sizable number of technical tricks to mimic a human browsing experience, as well as human eyes to verify whether what was alive in this day and age was captured as comprehensively as possible.

3. EMULATE

Artworks created for presentation on CTR screens are now habitually shown on either fake CTR or recreated on plasma screens, as the hardware evolution's lifespan did not keep up with the intended lifespan of these works in a museum context. Likewise, emulators have cropped up for machines whose lifeblood is the interaction between specific sets of hardware with specific source code.

The challenges of storing works, of keeping their potential alive within the walls of the museum, are significantly smaller than keeping those works buzzing, accessible, not within the walls of the museum, but out there, on the throes of the world wide web. The cost of servers, and the ability to provide necessary updates to guard against vulnerabilities are an

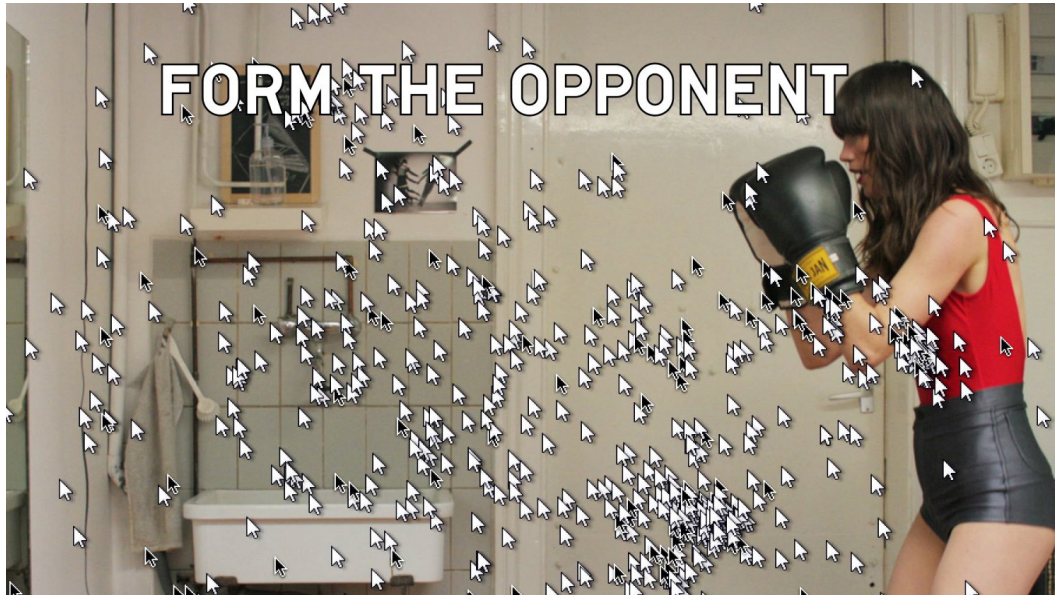
incremental complication for an online museum of net art and interactive productions. Other organisations found partial solutions to address this challenge by wrapping online works into WARC file packages that can be read and played back by WARC reading web archive systems. The remaining challenge then lies in allocating the adequate resources to contain whatever information exists in said uniform environment.

As web productions vary in size, scope and technological reliance, the efforts needed to capture them will equally vary in size. In France, the national audiovisual archive Ina, together with then national library BnF, optimized its web crawling algorithms to capture and quality check the materials that it has been legally required to archive since 2006. Further on, as a national audiovisual archive, it asks for the source materials such as videos and design elements from creators like the digital design studio Upian, who created some award-winning interactives throughout the years. The combination of the two preservation approaches, however, portrays only part of the picture that projects like *Alma* or *Gaza Sderot* paint. Both works use technical means to relay a daily, complicated reality. *Gaza Sderot* uses the browser like an exhibition space, showing two sides of the conflict side by side. *Alma* employs a unique scrolling technique to display the violence in the witness's life whose story is protected by the thin layer of geo-blocking, preventing gang members from hearing it, an aspect that needs to be safeguarded for at least her lifetime by organisations willing to take on the challenge of recreating this personal story.

Archiving the web comes close to making the Borgesian attempt at creating a map of the world so detailed that its size spans the world it is so intent on capturing. Having an ever-expanding copy of the domain through which we navigate our daily efforts is a gargantuan undertaking that can require near endless efforts. Organisations responsible for capturing its legacy are therefor always making a trade-off in order to do what they can to keep these materials at the ready.

CASE STUDY 2

DO NOT TOUCH (MONIKER)



| Still from *Do Not Touch*

Moniker presented the project *Do not touch*, an interactive crowdsourcing experience, consisting of the capture of the movements of the computer's cursor of the user to generate a video that is uploaded on a Vimeo account linked to the website of the project. A new video is generated every day according to the data gathered, so it is never the same video. As key components of the work they have the private company server where the data is uploaded in order to generate the video, a Vimeo account where the videos are posted and a HTML website that hosts the project. Some relevant things that happened along the process of the project: the studio received a call from Vimeo because every night the "same" video was being uploaded into the account, storing the 4k master of each video was useless as at the end the video shown was in a lower quality compression.

When asked what was becoming outdated in the project, the producer replied that to their surprise, as desktops are used less and less and replaced by mobile touch screen technologies, the use of the mouse and therefore of a cursor was disappearing. This is a fact they never considered when developing the project and so it now has been transformed into a monument to the cursor. The preservation of this work could therefore be framed as the celebration of the end of something - in this case the end of the use of the cursor. Another question that arose at the table was related to the risk assessment of the technologies involved in the project. What would happen if Vimeo went down? Or what if HTML5 moves on? How are they handling the documentation of the evolution of the project? All agreed that as both technologies - essential to the project - are still valid, the project still has some years of life. The documentation process and its organization will however prove to be vital for its future existence.

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Moniker indicated that documenting the creation and evolution processes of their works has always been important. Specifically for *Do not touch*, they document the code and its changes, as well as store all the generated videos. Earlier, the Breda-based MOTI Museum had approached the studio in order to preserve a work of theirs. After first wanting to buy the code but never having thought about the cost of maintenance and hosting, they agreed to a 5-year maintenance contract. Sonnen asked whether for future audiences, who will not even know what a cursor is, this work should even be preserved? As a curator, part of his work is trying to detect timeless masterpieces. *Do Not Touch* was clearly not created for that purpose - but is now becoming so because of the way technology changes.

THE AFTERLIFE OF ARCHIVED WORKS

Over the past ten years, the IDFA DocLab programme has presented a host of ground-breaking storytellers and tech-savvy creators. Their works engage us, amaze us, draw us in with creations at the ever-forward-edging front of what consumer technologies allow them to do. These ten years have produced a showcase of talent, inventiveness and often playfulness from digital creators around the globe. When we speak of preserving on-line works of art, or works of story, we necessarily speak of keeping these materials accessible, open, viewable by a wide audience. Preservation means presentation. The latter cannot happen without the former. So far, only a handful of works in the non-fiction interactives domain deliberately play with limiting access. Jonathan Harris's piece *I Love Your Work*, following nine adult performers in rigorous ten-minute intervals, deliberately set up a performance-like viewing situation, in which a viewer buys access to a specific timeslot. Upian's *Alma* was, because of the sensitivity of the protagonist's story, geo-blocked to audiences in her home country. And technologies such as mobile applications - for phone, phone-as-virtual-reality glasses, or tablet - can only be distributed via an intermediary sort of marketplace. The majority of works, however, remains freely accessible on the web.

The challenge to keeping them accessible is tied up with (1) rapidly evolving browser technology and (2) the costs that come with hosting, software licensing and bandwidth, especially for smaller creators. Preserving web materials for access is a costly endeavour, surmounted by the expense of reengineering a project for a new base technology. Moreover, the perfectly archivable item is a dead item. As David S. Rosenthal indicates, archivists, repositories and preservationists still expect to some extent to receive, at the end of the ride, a perfectly frozen, final end-product, while many elements online are dynamic, ever-changing.³⁵ The trick with dynamic works is often their reliance on external elements: Open Street or Google Maps loading localization elements, YouTube videos or Giphy gifs displaying from external platforms. For a successful preservation action, one could preserve the entirety of Google Maps or YouTube—sources vast in size and even vaster in their velocity of change cycles.

Computer scientists and artists Jonathan Harris and Sep Kamvar built their seminal 2006 work *We Feel Fine*, which harvested blogs and Twitter feeds for emotions in a self-enclosed manner. As the work includes a self-contained database, all data (anonymised to a certain extent) travels along with the work. In 2009, when the work was bought for the MoMA collection, Harris and Kamvar decided to no longer update the stream, as the internet infrastructure, with closed environments like Facebook, and with it the places where people expressed their emotions, had changed too much. In itself then, the work had unintentionally become a statue of what the internet had

³⁵ David S. H. Rosenthal, 'Harvesting and Preserving the Future Web', 7 May 2012, <https://blog.dshr.org/2012/05/harvesting-and-preserving-future-web.html>.

looked like for a brief period of time. Other creators, such as Moniker and Studio Puckey, take the conscious decision to develop only works that work in a web browser, which makes life easier for later web archiving by means of standard web scraping tools.

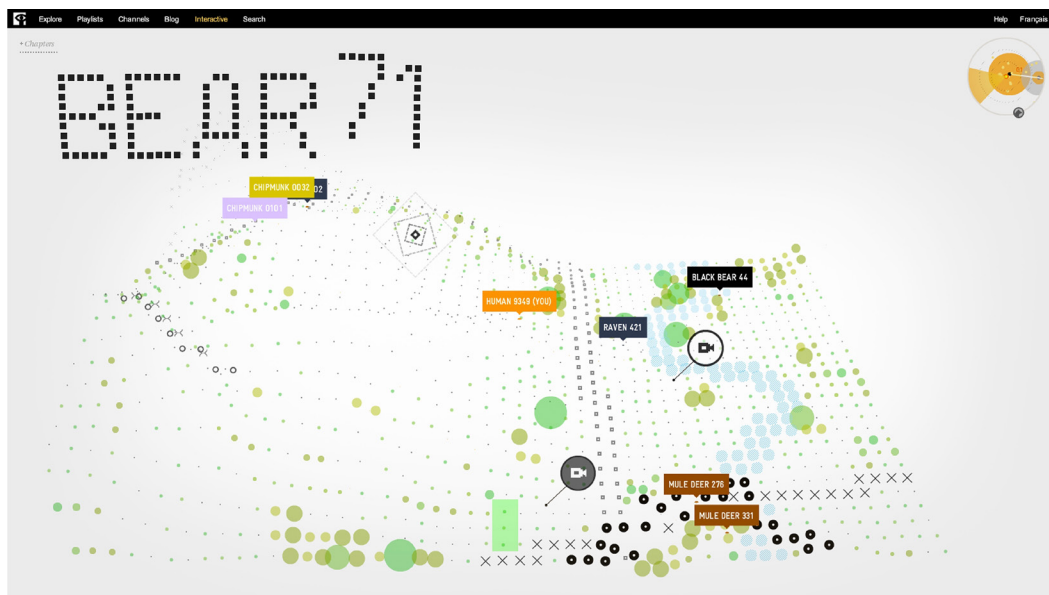
At the *Update or Die* conference, an event organised by MIT Open Documentary Lab in collaboration with IDFA DocLab and Sound and Vision, hosted by the Phi Centre in Montréal, one of the topics that was a constant throughout the conversation was the understanding that festivals could be immensely important in the safeguarding of emerging documentary forms. The interactive documentary domain has a vibrant network of festivals, showcase events and institutions, all with a strong interest in assisting with recording its culture, documenting its findings, and helping creators to explore the needs of long-term archiving responsibilities. The festival as a platform is where they come together and find their moment under the sun. In the arts domain it is common to make use of the interview as a technique to know what the artist's intents were and understanding the technological implications of having a work seen again. The Variable Media Questionnaire 'accommodates the unpredictable' by having a prepared set of questions for net and installation artists to indicate the parameters within which they would like their works to be shown.³⁶ The Amsterdam-based platform for sustainable access to media art LIMA recently translated the approach regarding their *Artwork Documentation Tool* to help empower artists to preserve their own work.³⁷ The festival submission form for interactive documentary forms could perform the same role - besides giving the festival selection information, it is valuable to know the extent to which this work will rely on more steady or more experimental conservation methods. If festivals could forge collaborations with archival institutions and make tactical use of a festival date's urgency to organise assets, documents and information, there might be a world to win.

³⁶ Jon Ippolito, 'Accommodating the Unpredictable: The Variable Media Questionnaire', in *The Variable Media Approach: Permanence through Change*, 2003

³⁷ 'Introducing the Artwork Documentation Tool', LIMA, 2017, <https://www.li-ma.nl/adt/>.

CASE STUDY 3

BEAR 71 (NFB)



| Still from *Bear 71*

Even though the interactive web documentary *Bear 71* was created as recent as 2012, its producers pro-actively tried to preserve their project by building a reimagined and re-released virtual reality experience. This, first of all, raises the question: is this actually preservation, an adaptation or a whole new project? The main difference in this adaptation is obviously the transition from Flash to HTML5 on the front end. The Apache, JSON and PHP backend remained largely intact. The webcam, navigation, multi-user server and the interactive security wall were lost in the adaptation. In terms of platform, Virtual Reality as a medium cannot be considered stable or accessible yet. Group members stressed that the goal of WebVR is to be platform agnostic but that Flash used to be more accessible to inexperienced designers while WebVR still is not.

For new media, such as web-based projects, there are virtually no public repositories or archives being produced. There is a real need for 'archival nerds', as one of the groups at the IDFA DocLab Expert Meeting called them, who could set these web projects up. This is because the mere materiality of aging technology: even if you build and publish everything on open standards, it is not possible to just download projects on your computer and run them. Initiatives like the Internet Archive's Wayback Machine are promising to fulfil this need, but do not provide full functionality for interactive elements as of yet.

Before *Bear 71* VR, there were two iterations of the project: a live event with music performed on stage and an interactive wall. These iterations have not been preserved but might offer creative solutions for other, more durable versions of the project like a book. Group members stressed that each audience has a specific use case. Other makers who want

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to learn from the creation process would approach archived content different from for example historians. In the Netherlands, both Sound and Vision and LIMA have been recording audiences and players interacting with a video game or artwork - *Let's play* videos - that add layers of meaning to the archived materials. Some of the creators (game designer, developers) ARTE is working with have already streamed live session of their work on twitch while working on project co-produced and edited by ARTE. One light-hearted suggestion was to simply store all these materials on celluloid again.

The group talked about the difference in the pace of development of standards in the industry versus institutions. More collaboration between these partners could lead to better preservation practices. A final note that came up was how oftentimes 'pirates', as is the case in many other areas of internet expertise, are very progressive when it comes to preservation. They can be and sometimes already are a useful ally to gather information on archival practices.

FROM HERE, TO WHERE?

Learning from specialized institutions and applying their innovations and findings to the “canon” of interactive documentaries will be necessary to keep being able to savour these works in futures to come. The challenge we are faced with after talking to experts - at DocLab, in 2016 and 2017, and at the *Update or Die* conference in Montréal, in May 2017 - is to what extent the apps, games, interactive novels, eBooks, installations and VR works covered under the indefinite realm of interactive storytelling (transmedia, XR) can at all be uniformly approached. We have thus far spoken to game developers and service providers in this field and explored the experiences of commissioning editors as well as individual artists and creators concerned with their own legacy archives. While the archivists around the table are confident in resources and approaches developed to tackle the issues at hand (not saying that the solution is not complicated), there is still some work to do to translate the insights and solutions that exist to a framework that is useful for daily practitioners.

The *Freeze! Manifesto*, written as an outcome of a Dutch collaboration to recreate early web platform *The Digital City*, asks industry, makers, and archivists for actions to preserve born-digital content by stimulating ways of working together - pointing out the risks of certain works, maybe creating an archival judging panel that could identify which works are at risk and which ones are in the clear. Finding workable models to be created, perhaps by means of automated testing, perhaps by means of a festival intake questionnaire à la the one that the art world has developed. Finding ways of supporting both the creative side and the archivist side of the comparison. As a community, supporting open source endeavours. Supporting and multiplying the strength of initiatives such as the Internet Archive - should we endeavour to craft a space of interactives on there, much like there is a separate environment for games and open books? - or Webrecorder. And inform: find a proper way of translating tools and knowledge for creators to let them know where they can or cannot find help, where they can or cannot know what to do with these materials. Archival practice for born-digital materials is in flux and in development, but existing solutions that exist can be of help to the individuals who desire to safeguard their works for the future.

In that vein, we can extend the call to ask of:

Digital artists: to keep close track of their work and at all times be aware of its need to update or upgrade

Archivists and conservators: to broaden their skillset and work with artists and festivals on recommendations for long-term preservation. Have frank conversations and clear guidelines on what the terms of ‘ownership’ for the collection are – with each other as well as with funders and the media platforms promoting and showcasing these works

Festivals: to create a space to consider the track record of these forms, in documenting its lifeline, and reaching out to artists with suggestions for preservation.

Any digital product is at risk of being lost from the moment it is created.³⁸ Interactive documentaries compound the complexities of preserving born-digital heritage. In its ecosystem consisting of makers, funders, festivals, archives and service providers, it is of the utmost importance that stakeholders work together to tackle threats to long-term access at scale. In the same way that reels of nitrate have survived thanks to concerted efforts to preserve film culture, online creations merit sizeable efforts in order to sustain their existence for future generations.

Keeping digital materials accessible online and legible over the long term can be a costly affair. One that requires effort, knowledge, skill and involvement. Deciding when and where to invest the right amounts of effort and knowledge is therefore crucial. Let us approach the preservation of these inquisitive works reflecting our multi-platform times with the same creativity and openness its makers do.

³⁸ Judikje Kiers et al., 'Freeze! A Manifesto for Safeguarding and Preserving Born-Digital Heritage' (Amsterdam, NL, November 2017), <http://hart.amsterdam/freeze>.

Bibliography

'About IDFA DocLab'. IDFA DocLab. Accessed 22 April 2018. <https://www.doclab.org/about/>.

Archive Team. 'GeoCities Archive Project', 4 December 2017. <https://archiveteam.org/index.php?title=GeoCities>.

Beer, Jeff. 'How Canada's NFB Became One Of The World's Hippest Digital Content Hubs'. Fast Company, 10 February 2012. <https://www.fastcompany.com/1679850/how-canadas-nfb-became-one-of-the-worlds-hippest-digital-content-hubs>.

Brügger, Niels, and Ralph Schroeder. *The Web as History: Using Web Archives to Understand the Past and the Present*, 2017. <https://www.ucl.ac.uk/ucl-press/browse-books/the-web-as-history>.

Casey, Mike. 'Why Media Preservation Can't Wait: The Gathering Storm'. *IASA Journal*, no. 44 (January 2015): 14–22.

Cranmer, Candice. 'Preserving the Emerging: Virtual Reality and 360-Degree Video, an Internship Research Report'. Hilversum, NL: Netherlands Institute for Sound and Vision, 18 December 2017. <http://publications.beeldengeluid.nl/pub/584>.

Dekker, Annet, and Patricia Falcao. 'Interdisciplinary Discussions about the Conservation of Software-Based Art: Community of Practice on Software-Based Art', 2017. http://pericles-project.eu/uploads/files/PERICLES_SBA_CoP_report_2017_FINAL.pdf.

'EDN Honors ARTE France Web Production Head'. Accessed 31 May 2018. <http://realscreen.com/2016/03/18/edn-honors-arte-france-web-head/>.

Frick, C. *Saving Cinema: The Politics of Preservation*. Oxford Univ Pr on Demand, 2011.

Gifreu-Castells, Arnau. 'Exhibition and Preservation of Non-Fiction Interactive and Transmedia Forms of Expression'. *Collection and Curation* 37, no. 2 (3 April 2018): 85–92. <https://doi.org/10.1108/CC-08-2017-0037>.

Glas, R., J. de Vos, J. van Vught, and H. Zijlstra. 'Playing the Archive. "Let's Play" Videos, Game Preservation, and the Exhibition of Play'. In *The Interactive Past. Archaeology, Heritage and Video Games*, 135–151. Netherlands: Sidestone Press, The, 2017.

Guttenbrunner, Mark. 'Preserving Interactive Content: Strategies, Significant Properties and Automatic Testing'. In *Proceedings of the 8th International Student Workshop*, 9, 2008.

'Hard Drive Failure: Analysis of 49,056 Hard Drives'. Backblaze Blog | Cloud Storage & Cloud Backup (blog), 14 October 2015. <https://www.backblaze.com/blog/hard-drive-reliability-q3-2015/>.

'Internet Archive: About IA'. Accessed 31 May 2018. <https://archive.org/about/>.

'Introducing the Artwork Documentation Tool'. LIMA, 2017. <https://www.li-ma.nl/adt/>.

Ippolito, Jon. 'Accommodating the Unpredictable: The Variable Media Questionnaire'. In *The Variable Media Approach: Permanence through Change*, 2003.

Kiers, Judikje, Julia Noordegraaf, Johan Oomen, and Marleen Stikker. 'Freeze! A Manifesto for Safeguarding and Preserving Born-Digital Heritage'. Manifesto. Amsterdam, NL, November 2017. <http://hart.amsterdam/freeze>.

Kim, Yunhyong, and Seamus Ross. 'Digital Forensics Formats: Seeking a Digital Preservation Storage Container Format for Web Archiving'. *International Journal of Digital Curation* 7, no. 2 (6 December 2012): 21–39. <https://doi.org/10.2218/ijdc.v7i2.227>.

'LOCKSS | Lots of Copies Keep Stuff Safe'. Accessed 8 May 2018. <https://www.lockss.org/>.

Lozano-Hemmer, Rafael. 'Best Practices for Conservation of Media Art from an Artist's Perspective'. GitHub, 28 September 2015. <https://github.com/antimodular/Best-practices-for-conservation-of-media-art>.

'New Frontier', 2018. <https://www.sundance.org/programs/new-frontier#/>.

Owens, Trevor. *The Theory and Craft of Digital Preservation*, 2017. <https://osf.io/preprints/lissa/5cpjt/>.

Post, Colin. 'Preservation Practices of New Media Artists: Challenges, Strategies, and Attitudes in the Personal Management of Artworks'. *Journal of Documentation* 73, no. 4 (10 July 2017): 716–32. <https://doi.org/10.1108/JD-09-2016-0116>.

Rinehart, Richard, and Jon Ippolito. *Re-Collection: Art, New Media, and Social Memory*. Leonardo. Cambridge, MA ; London, England: MIT Press, 2014.

Rosenthal, David S. H. 'Harvesting and Preserving the Future Web', 7 May 2012. <https://blog.dshr.org/2012/05/harvesting-and-preserving-future-web.html>.

Shaw, Jeffrey. 'Interactive Digital Structures'. In *Book for the Unstable Media*. V2_ publishing, 1992. <http://v2.nl/archive/articles/interactive-digital-structures>.

Taylor, Nicholas. 'The Average Lifespan of a Webpage'. Webpage. *The Signal*, 8 November 2011. <http://blogs.loc.gov/thesignal/2011/11/the-average-lifespan-of-a-webpage/>.

Uricchio, William, Sarah Wolozin, Lily Bui, Sean Flynn, and Deniz Tortum. 'Mapping the Intersection of Two Cultures: Interactive Documentary and Digital Journalism', 2015, 114. opendoclab.mit.edu/interactivejournalism.

Verbruggen, Erwin. '360° Web Video Format Selection', 31 January 2018. <https://lsv.uky.edu/scripts/wa.exe?A2=ind1801&L=AMIA-L&P=R46560>.

———. 'Future-Proofing Interactive Works'. *Beeld En Geluid* (blog), 1 February 2017. <https://www.beeldengeluid.nl/en/knowledge/blog/future-proofing-interactive-works>.

Vos, Jesse de. 'Preserving Interactives: Preserving Audio-Visual Materials in a Post-Broadcasting Paradigm'. VU University, 2013. <http://publications.beeldengeluid.nl/pub/31/>.

Wang, Shan. 'Here's How The New York Times Is Trying to Preserve Millions of Old Pages the Way They Were Originally Published'. *Nieman Lab* (blog), 12 April 2018. <http://www.niemanlab.org/2018/04/heres-how-the-new-york-times-is-trying-to-preserve-millions-of-old-pages-the-way-they-were-originally-published/>.

Works Cited

Bollendorff, Samuel, and Abel Ségrétin. Journey to the End of Coal, 2008.
<https://docubase.mit.edu/project/journey-to-the-end-of-coal/>

Brett Gaylor. Do Not Track. Personalized documentary series, 2015.
<https://donottrack-doc.com/en/>

Chris Milk. The Wilderness Downtown. Music video, 2010.
<http://www.thewildernessdowntown.com/>

Drea Cooper, and Zackary Canepari. California Is a Place, 2011.
<http://californiaisaplace.com>

Harris, Jonathan. I Love Your Work, 2013.
<http://number27.org/ilyw>

Harris, Jonathan, and Sep Kamvar. We Feel Fine. August 2015. Interactive software.
<http://number27.org/wefeelfine>

Harris, Jonathan, and Andrew Moore. The Whale Hunt / A Storytelling Experiment. 2007.
<http://thewhalehunt.org/>

Jonathan Puckey, Moniker, and Google Data Arts Team. Dance Tonite. Music video, 2017.
<https://tonite.dance/>

July, Miranda. Somebody, 2014.
<http://www.somebodyapp.com>

Leanne Allison, and Jeremy Mendes. Bear 71, 2012.

Miquel Dewever-Plana, and Isabelle Fougère. Alma - A Tale of Violence, 2012.
<http://alma.arte.tv/en/>

MIT Open Documentary Lab, and IDFA DocLab. 'Moments of Innovation: When Documentary and Technology Converge', 2012. <https://momentsofinnovation.mit.edu/>

Nirit Peled, and Sara Kolster. A Temporary Contact, 2017.
<http://temporarycontact.com>

Roel Wouters, Luna Maurer, and Jonathan Puckey. Do Not Touch. Music video, 2013.

Terence Nance, and Chanelle Aponte Pearson. The Way It Should Be. SnapChat video. POV / American Documentary, Inc., 2017.

UNHCR, and Google. Searching for Syria, 2017. <https://searchingforsyria.org/en/>

