Human Rights Media Central Workshop Summary Report

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Executive Summary: This document is a report of a workshop held at Carnegie Mellon University on July 29-30, 2015 to discuss the current state (and future) of the use of video and images in human rights advocacy, accountability and fact-finding. It begins with a brief background note, and then provides a summary of the some of the main points that emerged during two days of conversation. We hope that participants will provide us with additional questions, issues and challenges that ought to be added to the ones that we included. The third section includes a compendium of current projects in the human rights media domain along with a description of their workflows and component tools. The fourth section is comprised of ideas and opportunities for moving forward that emerged during discussion. It includes both short-term, incremental steps to improve what already exist (i.e., low-hanging fruit), and medium and long-term proposals that will require more significant outlays of time and resources. Finally, we include a references and resources section that serves as a bibliography and a list of tools that participants currently use on a regular basis. This report is meant to be a living document and common log of the conversations held during the workshop. Its main purpose is to promote further dialogue as well as to enhance the group's ability to device projects that can be moved forward collaboratively. We welcome your feedback and request that you send us suggestions for making this report more useful (especially by alerting us to resources and tools that we may have missed) via email or through Google Doc's commenting function.

Note: This report is a living document. We posted an editable version online on October 1, 2015 and asked for comments. Since then, we have received numerous suggestions and additions, and have incorporated them as they have been posted. This PDF version was created on December 22, 2015. If you would like to participate in the community editing process, you can do so here: https://docs.google.com/document/d/1oQ2rgaral-bMTJQ1OyjknKyic0ywy2jxnU09YEG0raE/.

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Section 1: Background

The Center for Human Rights Science at Carnegie Mellon University (CHRS) brings together scientists and human rights practitioners committed to rigorous assessment of the state of human rights around the world. The Center encourages interdisciplinary collaboration in order to promote the development and application of scientific methods for collecting, analyzing, and communicating human rights information.

In the context of such efforts, the Center organized a workshop in July 2015 to discuss and explore the viability of a coordinated approach to the acquisition, authentication, archiving, analysis, and utilization of human rights-related media by activists, attorneys, journalists, human rights defenders, and ordinary people.

The fundamental premises of the meeting were that there is significant work taking place in the human rights media space, but that such work is done without great coordination between actors. There is an opportunity to increase the positive impact of these projects by increasing their coordination. The ultimate goals of the meeting were to:

1. identify the most pressing technical needs of the human right practitioners and defenders as they increasingly make use of digital media in research, advocacy and accountability efforts;
2. discuss the notion of an ecosystem, or systems, approach to human rights media utilization (e.g., Human Rights Media Central); and
3. begin to develop strategies to address the ethical, legal, political, security and epistemological challenges associated with the widespread and ever-increasing use of digital media in human rights practice.

Section 2: Summary of Workshop Discussions

The workshop discussions were guided by the sessions in the program, which was available in advance to attendees. There was an emphasis on participation during the workshop and participants were invited to modify the format when valuable to the group.

During the sessions it was palpable that while the human rights media landscape may lack coordination, the practitioners within it have reached a great level of sophistication, and in many cases effectiveness. These facts, which showcased the great deal of experience that attendees have acquired, enhanced the group’s ability to sustain a valuable discussion. The content of the sessions and affiliation of the participants also highlighted the great diversity of opportunities and challenges that lie at the intersection of human rights, media and technology. Attendees came from academia, civil society, government and private sector; the focus of each project ranged from national and local issues to global problems and active conflicts; projects used a diverse set of tools, including both proprietary and Open Source solutions.

Each one of the sessions, listed below, created key takeaways that could benefit from further discussion or collective action. This list is not comprehensive, so please let us know if you have comments or suggestions.
DAY ONE

- **Acquisition, Preservation, and Authentication of User Generated Content**
  
  ○ Although there is great deal of human rights-related audiovisual material available on social media and traditional websites, collecting data from the Internet is just part of the process. We will still need to link it up with other technical and contextual information to understand its full meaning and authenticate it for use in advocacy, accountability, and research efforts.
  
  ■ There were questions about whether the human rights community ought to adopt a uniform set of standards for media collection, such as those suggested by the International Criminal Court [link/citation to be added].
  
  ■ Two other issues raised were: discovery (not in the legal sense, but as in "how to find what you’re looking for"); and selection/appraisal (i.e. how to identify what has information value, evidential value, no value, etc. so you’re not collecting everything)
  
  ○ How to deal with data that lives outside of social media and stable websites, like in messaging apps or live streams?
  
  ○ There are people who know how to do acquisition, preservation, and authentication/verification well, but how to make standard skill sets for content creators, human rights advocates/practitioners, lawyers, and journalists more broadly?
  
  ○ The human rights community needs to develop effective methods and protocols for communicating with content creators/uploaders (especially when they do not have extensive knowledge of how human rights advocacy and accountability efforts work). These procedures will both aid in the authentication process and make it easier to ask for permission/informed consent to use the material in a variety of contexts. Just saying “Hi can we use this video” isn’t adequate. Further, this process needs to happen at scale and potentially needs to be dynamic as media collected in one context (say journalism) may get taken up in another (say criminal tribunals).

- **Analysis of Human Rights Media**
  
  ○ Data collection is driven by interest. What gets verified is what has enough data to verify, not a random sample. How do we address this?
  
  ○ Early detection of patterns based on social media data seems technically feasible and advancing at a rapid pace, but how useful and valuable they are for specific-domain experts? They are useful remotely, but how do they benefit local human rights practitioners and defenders? Can remote, technified early detection be detrimental toward the agency of local actors?
  
  ○ As one participant said about the “what” that is needed: Anything that helps a small team do a big job. Thus, should we focus on efficiency and make existing methods and tools available to all?
  
  ○ There was also a lot of discussion about who benefits from the analysis, to what/whose ends analysis is performed, who decides what is allowed to be collected and how it is used, and when “greater good” outweighs individual
consent/security/privacy. And there will always be differing views about what constitutes the "greater good."

- **Archiving Human Rights Media: Ethical, Legal, Political and Practical Considerations**
  - What are human rights community’s responsibilities to the media creators?
  - Do we need to maintain a direct link between archived media and the original instance of that media to keep track of changes in its status. For example, if a public video goes private, or is taken down by the host, what should the archiving institution do?
  - Training of human rights defenders and practitioners is paramount. From methodology and risk/security assessment to equipment management and filming. How can this be scaled up? Should it be?
  - Can we/how do we guarantee long term preservation of born digital material, especially that which is liable to disappearing due to technical/legal/economic reasons or malicious intervention (e.g., hacking)?
    - WITNESS and other groups have been discussing the idea of an “Evidence Locker”--a repository for threatened human rights media, but questions remain about the long-term governance of such an archive, as well as legal/ethical issues around collection and retention of content, access to the archives, and who pays to sustain the collection over time.
  - As a community, we need to advance our collective understanding of Archiving and Preservation? Traditional academic and research libraries/archives have long wrestled with similar questions and will likely be able to provide standards and proven methods.
  - How can we collect media ethically and in a way that preserves its long term evidentiary value when we aren’t sure how legal standards may change over time?
  - There was also discussion about whether we might be able to leverage a Creative Commons type license to give content creators more agency in deciding how their media is used once they upload it to the Internet.
  - Finally, one participant commented: “Trust is the underlying foundation of an archive. An archive is only effective if it is trusted by the producers who submit their content, and by the consumers who access the archive. Otherwise there is no assurance of authenticity and reliability and the whole system falls apart. (nb: note that "producer who submits content" in the UGC scenario might be the technology provider, not the content creator). So the first step is identifying who an archive’s designated communities of producers and consumers are, and building those trust relationships.

- **Classification and Tagging**
  - What is classifiable is not the same as what is going on in the world. How do we correct for what we’re excluding?
  - How can computer vision and machine learning improve the efficiency of classification and tagging.
Most data is not structured enough to be considered information. What are the right tools to help us make sense of what we collect?

**Creating a Coordinated Ecosystem of Tools and Approaches for Human Rights Media**

- What is the value of all of this technology for small and mid-size NGOs, particularly those located in the places where human rights abuses are taking place? Unless we are careful, we may end up exacerbating existing power and resource imbalances within the human rights community. How do we make the tools and methods we’re developing available to, and useful for, organizations that don’t currently have the resources or expertise to exploit the full potential of human rights media?
- What is the adequate limit or level of collaboration we should aim for?
- Centralization of technological systems is difficult to coordinate and maintain. In the absence of unification, is it possible to ensure interoperability? One solution to this problem is going the Open Source. Is it possible to do so given the diversity of tools and methods needed to make use of human rights media?
- Can we establish peer review of projects and tools? Could peer feedback and feature requests be a build trust and pave the way towards interoperability?
- A key impediment to the full-scale utilization of human rights media is the lack awareness of the existence of a potential piece of evidence. How can data sciences and machine learning help improve the search, collection, and sharing processes?

**Human Rights Media in Advocacy and Accountability Efforts**

- Should we systematically collect stories were media has been effectively used in advocacy and accountability efforts? If so, how to do it without straining the resources of the organization involved? Can we create a simple reporting mechanism? Should funders support a large effort to collect such success stories and document best practices? Can the community somehow incentive the reporting of case studies--either good or bad--perhaps through the promise of peer review or provision of advice?
- Patrick Ball forcefully reiterated his long-standing argument that “bad data is worse than no data.” Is that something that can agree on? Is limited or incomplete data necessarily “bad?”
  - How do we feel about tapping to each other for peer-review before making claims?
- Should we make an industry push to remove indices and indicators?

**Systems for Intentional Production of Human Rights Media**

- How do we balance security of creators and transparency of methods in the context of intentional systems like the IBA’s EyeWitness app?
- Is it realistic to expect ordinary people to adopt the kinds of intentional production systems that are available today?
○ If a lot of these systems are created and operated independently, do we run the risk of creating many small pools of data that are accessible by only a few people and cannot be linked up to other data sources that may provide additional context, meaning and power? In other words, will the power of human rights media be diluted by the existence of several such systems?
○ What can we do to ensure that the kinds of technology and protocols necessary to safely produce human rights media get integrated into the tools that most people use to record videos and take pictures (i.e., their phone cameras)? What kind of lobbying to technology producers should we be doing?

DAY TWO
During the second day of the meeting it was proposed that the group focused on incremental interoperability of tools and methods rather than complete integration. This shift was justified by the premise that in order move toward meaningful and effective collaboration we needed to take feasible initial steps. The ideas around incremental and discrete steps towards interoperability are:

1. **Mapping the Field**
   a. Locating existing guides, protocols, projects and evaluations
   b. Taking inventory of tools currently used in the human rights domain
   c. Developing a matrix of their characteristics (current and ideal)

2. **Ensuring Equitable Access to Existing Tools and Datasets and Input into Those Being Developed or Repurposed from other Domains**
   a. For use:
      i. Access to E-LAMP and BungeeView
      ii. Access to Video Vault
      iii. e.g. Access to CameraV and EyeWitness
   b. For Feedback:
      i. Peer review of projects and tools
      ii. Feature requests

3. **Interoperability**
   a. Common or compatible collection or archive protocols?
   b. Common Application Programing Interfaces, repositories and/or databases?
   c. Feature specific interoperability:
      i. e.g. Video Vault preserved videos available to ELAMP
      ii. e.g. Montage-originated tags and video IDs sent to ELAMP
      iii. e.g. CameraV to ELAMP or Video Vault
      iv. e.g. Montage to Checkdesk
Section 3: Current projects and their workflows

The following section is in response to favorable reactions to the call for coordination in the form of interoperability. It contains a self-documented workflow authored by a member and/or lead of each of the projects described.


Bungee View uses a custom script to query the E-LAMP database and generate its own database, which has links back to E-LAMP URLs.

2) CameraV - [https://guardianproject.info/apps/camerav](https://guardianproject.info/apps/camerav)

CameraV is an easy and reliable way to capture and share verifiable photos and video proof on a smartphone or tablet, all the while keeping it entirely secure and private. This is the official app from the InformaCam project.

The core workflow for the CameraV is:

- **Capture media**: take pictures or video with synchronized sensor metadata capture for later use in verification, analysis, proof or other “blackbox” purposes.
- **Fingerprint identifier**: notarize captured photos and videos by sharing the unique ID and sensor metadata through email, SMS or social media.
- **Sharing**: share photos and videos privately or publicly with the sensor metadata embedded in the media, for later verification and use.

InformaCam is a system that uses the built-in sensors in modern smartphones for tracking movement, light and other environmental inputs, along with Wi-Fi, Bluetooth, and cellular network information to capture a snapshot of the environment around you, while you are taking a photo or video. This extra metadata (the data about the data) helps verify and validate the date, time and location of capture, and provides an entirely new layer of context and meaning out of “invisible” energy for use in any way you choose. Finally digital signatures and encryption ensure that your media hasn’t been tampered with since capture and that it can only be seen by the people you choose.


**Collaborative Fact-checking**: human rights orgs and media collectives can use Checkdesk in a closed group or including community contributions for fact-checking, tagging, and annotating contended media.

**Workflow:**
- Link submission via bookmarklet or social network push to Checkdesk bot
- Link curation (grouping) via ‘story’ container - enables teams of journalists and permissioned citizen journalists to group a lot of links related to a single event or investigation
- Fact-checking annotations at the individual link level - teams are able to add time-coded annotations to an embed attached to the link. These checklogs offer readers a view of the investigative conclusions of the team.
- Assign a status to the link - editors are able to attach a status to the fact-checking (verified, in progress, false)
- A report - complete with its status and footnotes can be embedded on other platforms and websites using the embed code.
4) Citizen Evidence Lab Media Analysis Workflow - http://citizenevidence.org/
Content Collection/Monitoring: individual country researchers/teams monitor country situations, including social media. Share relevant content (from internet or directly from field sources) with analysts for review.

Analysis and tools:
- Preservation: Video Vault
- (Meta)Data Review: MedialInfo, Exif Viewers, YouTube DataViewer, JPGESnoop, HEX Viewers
- Provenance and Source: Storyful Multisearch, Reverse Image Search (Google, TinEye), YouTube Data Viewer
- Content Analysis: VLC; Google Search, Google Earth, Google Streetview; WikiMapia; WolframAlpha, GeoNames, Time Zone Converter, Pipl.com.
- Additionally, relevant experts (digital image forensics; medical; weaponry, etc.) are consulted on a case by case basis Exchange with country researchers (and their sources in field.)

Use for internal documentation OR Public Output: Consideration of internal policies and professional standards

The principal function of E-LAMP is to autonomously detect a predefined event in a large collection of video material of varying quality. For our purposes, an event is defined as “a complex activity occurring at a specific place and time which involves people interacting with other people and/or object(s).” Such event detection is computationally complex because it involves the detection of numerous semantic concepts (i.e. objects, sounds, scenes and actions) taking place in a dynamic environment.

The E-LAMP process can be summarized as follows:
- **Training:** an operator begins by providing the system with a set of videos or video shots that depict a particular activity and a set of null videos that depict other unrelated activities.
- **Feature detection:** E-LAMP analyses these videos for a variety of different features (most of which are totally unrelated to the way that human would carry out the same process), which can be combined into a computational machine learning model of the relevant action or event.
- **Creation of classifier:** E-LAMP then delves into a larger collection of videos to look for other potential examples of this model. It then returns a set of videos to the operator that it thinks match the activity in question. The operator confirms whether the proposed matches are correct or incorrect, and E-LAMP takes this information into account and tries again. Once the system returns mostly correct results (which are rarely 100% accurate for a variety of reasons), this set of patterns is labeled as a classifier for the particular action.
- **Search:** This classifier, which can be visual, aural, or semantic, can then be used to search for particular instances of it in any other video collection. The classifier may need to be modified to work well in these other contexts. In addition to this kind of search capability, E-LAMP can also be used to detect duplicates or near-duplicates,
which is valuable in human rights contexts because it is possible to see how similar footage is used in different videos and how various users edit scraped footage. It also makes it possible to gain multiple perspectives on a single event.

- **Additional features**: In addition to visual classifiers, E-LAMP currently has the ability to perform speech recognition in English and Arabic (together with preliminary versions of Spanish, German, French, Mandarin Chinese, Cantonese, Turkish, Pashto, Tagalog), and can detect a variety of unique sounds, such as gunfire, explosions, airplanes and helicopters. Text found in videos, whether as subtitles, titles, or signs is processed through optical character recognition and rendered searchable. Speech is also analyzed by automated speech recognition software and is similarly rendered searchable. Our preliminary testing in the context of human rights related videos has shown that the accuracy of OCR varies tremendously based on the quality of the video, the quality of the actual text, and the alphabet being used, while the accuracy of speech recognition varies depending upon sound quality, the dialect or accent of the speaker, and the state of speech recognition systems for the language being spoken.

6) Susanne Burger, **Language Technologies Institute at CMU**, works with the audio track of videos showing weapons as part of the E-LAMP project.

- **Acquisition**: she gets these videos from the Carter Center.
- **Audio extraction**: she extracts the audio from the video, using Open Source unix software. She uses ffmpeg and SoX to extract the audio track from the video, and to sample the video to a 22 kHz sampling rate.
- **Labeling and classification**: to label relevant audio segments Susanne uses Pratt, a free scientific computer software package for the analysis of speech in phonetics. In Praat, she looks at the time signal and the spectrogram of the audio tracks. She tags the beginning and end of relevant noises and speech segments. She then labels the speech parts as speech, transcribe parts that are understandable and also label the speaking style (/pray/, /exclam/, /report/, /cheer/, etc.) She uses a set of noise labels, partly derived from the set of Noisemes described in "Noisemes: Manual annotation of environmental noise in audio streams by S Burger, Q Jin, PF Schulam, F Metze". She also use onomatopoeia descriptions of weapons sound to distinguish between different weapon sounds.
- **Automated analysis**: The segmented and labeled sounds are available to develop an automatic weapon sound recognizer. The data also is used to find tendencies in noise patterns. (e.g. /pray/ shot /cheer/). The labels are in Praat "TextGrid" format, which is a pure text format.

7) **eyeWitness to Atrocities** - [http://www.eyewitnessproject.org/](http://www.eyewitnessproject.org/)

 eyeWitness’ workflow is dependent on uptake of the app, the resources of the team and external interest in the data received. The proposed outcome of the eyeWitness to Atrocities project is that it will provide evidence relating to atrocity crimes to credible tribunals, investigations and media publications. The time, date, location and authenticity of the evidence would be verifiable so that it meets basic evidence standards.
• **Download:** Android cell phone user downloads the **eyeWitness to Atrocities** phone app free from the Google Play store or directly from the eyeWitness team if requested. eyeWitness app users are likely to be NGOs documenting human rights violations/ citizen journalists/ media activists/ other members of the public. Workflow protocols may differ slightly depending on the relationship of the app users to the eyeWitness project team."

• **Record:** app user uses the app to record footage tagged with a geolocation, time, date and authentication code. The user can opt to remain anonymous.

• **Upload:** app user then uploads the encrypted footage taken using the app to the eyeWitness secure server using the internet or hand delivers the SD card to the eyeWitness team.

• **Sharing:** app user now has the option to share the footage with other people, websites and organizations using the internet or other communication method. They may also delete the footage and the app from their phone.

• **Processing:** eyeWitness staff will copy and decrypt footage from the eyeWitness server to a secure internal system and process the footage in accordance with internal protocols.

• **Preliminary review:** eyeWitness analysts undertake a preliminary review of footage received to prioritize and categorize it.

• **Secondary review:** eyeWitness analysts undertake a secondary review of the footage to analyze, annotate, tag and catalogue it using protocols still to be determined.

• **Contact:** eyeWitness staff may email the app user if the user opted to provide an email address, to request further information. App user may send additional information to the eyeWitness server using the app or to eyeWitness staff by email. eyeWitness analysts to append any additional data received from the app user.

• **Analysis:** eyeWitness staff to analyze the data and gauge its probative value including aggregating submissions by location, date, perpetrator or other identifying information.

• **Search and audit trail:** eyeWitness internal software to track information about what searches have been run to create a Search Trail. eyeWitness internal software to create an Audit Trail. This will record every time a file is accessed, by whom, what action is taken and the number of copies made.

• **Domain experts:** eyeWitness staff to identify credible tribunals/ investigations/ NGO researchers/ (and or, if appropriate and in exceptional circumstances, a media outlet) with whom to share data.

• **Credibility and security assessment:** eyeWitness staff to evaluate the credibility of such bodies, the security of app users and the security of individuals appearing in the footage. Identities may be protected.

• **Request to share:** eyeWitness staff may accept incoming requests from credible tribunals/ investigations/ NGO researchers/ (and or, if appropriate, media outlets) to share data.

• **Credibility:** eyeWitness staff to evaluate the credibility of bodies requesting data, the security of app users and the security of individuals appearing in the footage. Identities may be protected."
8) SITU Research Workflow Summary - [http://www.situresearch.com](http://www.situresearch.com/)

SITU Research workflows vary with each case. That said, there are some paths that have emerged over the past few years.

- Abbreviated **procedural outline** of how SITU’s research normally begins:
  - **Data collection**: At the beginning of all projects SITU collects any and all data that might be relevant. Because SITU works across platforms they cast a broad net and grab and catalog anything that may be useful to a spatial analysis – including but not limited to testimony, geospatial information, videos, photos, digital models, demographic information, specifications, pre-existing reports, weather data, historical maps, satellite imagery, aerial imagery, sketches, etc.
  - **Domain-specific knowledge**: SITU works early to define the legal question that will drive the analysis and then begin to evaluate the primary documents through the framework of the legal questions or advocacy goals.

- Analysis related workflows:
  - **Tools selection**: In terms of tool workflow, while cases are quite different from one another, they almost always involve an oscillation between scales – from the macro to the granular and back. This often means the need to make geospatial software (macro) talk to modeling software (granular). Workflows that involve satellite imagery or Digital Elevation Models often involve translation of shapefiles or geotiffs worked on in [arcGIS](http://www.arcgis.com) (or another geospatial tool) into file types that can be opened in [Rhino](http://www.rhino3d.com) (modeling software). It is also often the case that SITU links the databases associated with geospatial information to a parametric tool called [Grasshopper](http://www.grasshopper3d.com) when they want to visualize something iteratively. Work flows in both directions.
  - **Integration**: We often also interface with experts working in related fields to integrate spatial analysis – they may work in software that we don’t use in house (fluid dynamics or drift modeling tools for example). While not always seamless, we have so far been able to find ways to make the various tools interoperate. This ability to integrate analysis and read it against the other work in the project is an essential part of our workflow.
  - **Analysis visual outputs**: In addition to geospatial and modeling software, we are frequently working in parallel in [After Effects](http://www.aftereffects.com), [Maya](http://www.autodesk.com/maya) and [3D Studio Max](http://www.autodesk.com/3dsmax) for generating, editing and assembling animations. Because most of our analysis ends up having a temporal component, different types of editing and animation software become essential. Of course, the **Adobe suite** is leveraged pretty heavily as well.

- **Report creation**: Finally, there is the workflow that surrounds the creation of the report itself, which in most cases is distinct from the analysis related workflows described above. They are not entirely separate processes but the generation of the reports, especially if they are online platforms, tends to rely more heavily on coding and scripting languages (CSS, HTML, Python, Javascript) to develop formats in which to present the work. Sometimes we will integrate packaged applications such as [Mapbox](http://www.mapbox.com) and [Tilestache](http://tilestache.org) other times we code from scratch. Work on the report format begins about halfway through the project once the various types of content we plan to include have more or less been established. At that point in the process
continued analytical work often proceeds in parallel to the development of the report itself.

9) Syria Justice & Accountability Centre - http://syriaaccountability.org/

- **Data collection and indexing** - collected data (documents, records, and media) are indexed prior to processing. This data would enter into the processing queue. This information would ideally include chain of custody information.
- **Data selection** - Data Manager decides the next set of data to be ingested into the system.
- **Extract, Transform and Load (ETL)** - Data import system ingests data for processing - ingested data includes reference identifiers to Indexing system.
- **E-LAMP** - During the ETL step we plan to include E-LAMP outputs to help speed up the manual work.
- **Pre-processing** - Once ingested, senior data analyst will assign batches of records to reviewers (including E-Lamp labeled data).
- **Processing** - Analysts will complete processing a set of records, resulting records are labelled, reviewed and annotated.
- **Post-processing** - Data can now be analyzed and visualized further using Big Data techniques.

10) **Video Vault 0.3, from RightsLab** - https://www.bravenewtech.org/

Video Vault helps human rights practitioners, journalists and researchers to collect, preserve and annotate online videos. Operations can be performed for a single video or in batch mode. The following workflow reflects the iteration that will be released as beta in Fall 2015. The following release, expected for early 2015, will impact the workflow based on the constructive feedback received during the CMU workshop that this report is based on.

- **Collection**: users can collect a video directly from the browser via a browser extension; users can pass a URL via an online public submission system; users can submit a URL from their emails; users can pass a URL from their mobiles; users can submit files directly via sftp, submission form or a dropbox folder. Users can provide a PGP key to encrypt communications. All notifications are at a minimum digitally signed to enhance the verifiability of the collection process as well as to protect users to be targeted with spear-phishing and/or malware.

- **Preservation**: Video Vault evaluates the URL submitted and obtains the video in the highest quality available, all publically available metadata and creates a snapshot of how the resource looked at the time of collection. These files are cryptographically hashed to increase archival and authentication value of the preservation package. Users are notified by email and plugin notification of the location of their preserved video. Users are able to access and download a copy of their preservation package or any of its individual components. Users can send their files to dropbox with a single-click button.

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1In computing, Extract, Transform and Load (ETL) refers to a process in database usage and especially in data
- **Analyze:** a preservation package is offered online for users to make initial analysis of the preserved material by splitting the video in keyframes thus allowing rapid review of material. The video is displayed in a player that allows for zoom, rotation and speed-controlled playback.

- **Annotation:** users are allowed to create annotation for selected frames and/or the overall email. Users can share the video and its annotation via email.


- **Research:** Videre conducts in-depth research along with experts and civil society partners to identify places at risk and what type of images could have the greatest impact. When projects are fully active, they conduct ongoing research to understand the political situation, threats, incidents, perpetrators and victims in our project areas.

- **Supplying equipment, training and support:** Videre’s local networks work daily to gather specific, verifiable footage illustrating patterns of abuse. Their filming process begins with setting detailed operational and filming plans that consider what images are needed; where they can have the most impact; and what risks are involved. After filming, partners deliver their footage to designated points for processing. All footage is verified by a variety of means — from forensic analysis of the material to special verification teams on the ground. This footage is also catalogued into Videre’s archive, enabling it to be easily retrieved for future use, everything from court cases to briefings.

- **Gathering and processing of footage:** Videre locates local groups willing to implement our rigorous methodology and security protocols. They then distribute video cameras and communications equipment to partners and provide customized training and continual support in security, filming and verification. The security aspect of their training covers everything from data storage and communication encryption to counter-surveillance. In addition to filming training, the verification training ensures participants can capture footage that meets the high standards of authenticity and security that required for distribution to media, decision-makers and lawyers.

- **Strategic distribution:** Footage is distributed free of charge to key stakeholders including international decision-makers, courts, lawyers, civil society, local communities and a global media network of 100+ media outlets. Distribution is decided in consultation with partner organizations and trusted advisors who have in-depth knowledge on the materials’ potential impact. Recognizing the need for security vigilance, Videre hides the identity of sources and never takes public credit.


- **Collections Policy:** The make-up and development of the WITNESS Media Archive collection is based on our collections policy. This policy defines WITNESS’s acquisition priorities.

- **Acquiring Video and Metadata:** Video is acquired from staff and/or partners, and occasionally third-parties (e.g. media outlets that produce pieces on our work). Videos recorded by staff are work-for-hire, while videos by partners/third-parties
are either co-owned by contract or simply acquired with permission. When possible, the Archive advises submitters on how to organize and document the video before delivery. Video is usually delivered by hand on hard drives, or using a third-party service like Dropbox. Metadata is either delivered with the essence files, or collected via meeting/interview with the submitter at the time of submission.

- **Archival Ingest:** Original video files are organized according to principles of original order into Archival Information Packages (AIPs) and ingested into the archive. During the ingest process, unique identifiers are assigned to the AIP by the system. Technical metadata is extracted from the files and populated into the cataloging database. A script is launched to queue each file for MD5 checksumming (these also get reported to the database) and creation of a low-res, bugged, and time-coded H.264 proxy file.

- **Cataloging:** Descriptive, technical, administrative/rights, and preservation metadata for each AIP is cataloged in a FileMaker database. The catalog is primarily meant to facilitate internal WITNESS use, but is designed to export PBCore 1.2-, PBCore 2.0-, and MODS- complaint XML (as well as unstandardized PDF reports) for external metadata exchange.

- **Storage:** AIPs are stored on a RAIDed SAN, and copied to offline LTO6 data tape and 3TB hard drives.

- **Preservation:** WITNESS plans to sustain its archive indefinitely. To ensure long-term preservation, we have also partnered with the University of Texas Libraries to serve as the eventual repository for all of our digital masters.

### Section 4: Ideas and Opportunities

- **Standard schema:** If organizations are finding data management challenges, it would be helpful to develop a standard schema for Human Rights databases. Groups can take this as a starting point in their efforts.

- **Air gap:** for more sensitive data: i.e. air-gapped systems, it would be good to publish a set of tools that are recommended.

- **Virtualization:** developing container or virtual technology (e.g. Vagrant) to create 'boxes' with standard tools installed in them, so that smaller organizations without dedicated tech can use these.

- **Media metadata as a service:** This is a potential service that would allow search for video/photo metadata held across organizations (in the absence of a centralized repository). It can help identify if Group X or Y has in its private collection a video relevant to an issue or situation of interest to another group, institution or researcher. The video might not be shared at the outset, just the metadata so that the relevant parties can enter into a conversation about the use of the media.

- **Creative Commons (CC):** There was interest in connecting with CC to understand what practices could be translated into the human rights media space and/or how to tap into CC from existing workflows.

- **Tool mapping, resource catalogue and peer review:** Human Rights Technology Consortium (http://humanrightstechnology.org) can coordinate this work.

- **Collection automation and persistent search:** Creating a meaningful collection is a challenge and some suggested creating automated alerts/tags on certain topics or
certain channels so that they can be ingested to other systems. This system will require training, but could ultimately save hundreds of human hours regularly examining newly uploaded video/photos.

- **Prototypes:** During the sessions, as well as during, sideline conversations, there several ideas for interoperability or integration. Among those ideas:
  - Bring the ICC guidelines to Video Vault
  - Integrate SJAC’s Database with E-LAMP
  - Create *LAMP-NET* to integrate other tools with E-LAMP

- **Collect:**
  - Upload
  - Bulk Upload
  - Upload by URLs
  - Automated Uploads from Social Media
  - Recording Phone & Analog Sources Directly

- **E-LAMP:** Video Search
  - Search by Example

- **Bungee View**
  - Explore by Common Metadata

- **Tags**
  - Subscribe to Relevant Tags
  - Saved (Persistent) Search

- **Sharing:** Each party decides to keep or share
  - Share once via expirable link
  - Share with certain parties
  - Share with everyone in the network – Share publicly

- **Share what?**
  - Content
  - Metadata
  - Sample Frames – Trained Model

- **Collaborative tagging, subscription and automated recommendations**
  - Using the work of the Event and Pattern Detection Laboratory to proactively search for relevant content

- **Create a matrix of needs, sources and approaches:** participants were interested in the matrix used to describe how Video Vault was framed as a solution to specific issues around human rights media. Based on attendees feedback, a matrix of this type could be of use to further the discussion about where we can collaborate based on what areas are underserved or where projects overlap, for example.
Section 5: Resources and Available Tools (as of December 22, 2015)

Articles and documents

- **Reference Model for an Open Archival Information System (OAIS):** This document is a technical Recommended Practice for use in developing a broader consensus on what is required for an archive to provide permanent, or indefinite Long Term, preservation of digital information. [http://public.ccsds.org/publications/archive/650x0m2.pdf](http://public.ccsds.org/publications/archive/650x0m2.pdf)

- **Trustworthy Repositories Audit & Certification (TRAC):** This is a document describing the metrics of an OAIS-compliant digital repository that developed from work done by the OCLC/RLG Programs and National Archives and Records Administration (NARA) task force initiative. [http://public.ccsds.org/publications/archive/652x0m1.pdf](http://public.ccsds.org/publications/archive/652x0m1.pdf)

- **Human Rights Made Visible:** An article discussing new dimensions to anonymity, consent and intentionality, by Sam Gregory. [https://www.dropbox.com/s/e0z4x4issiajy5n/HumanRightsMadeVisible_SensiblePolitics.compressed.pdf?dl=0](https://www.dropbox.com/s/e0z4x4issiajy5n/HumanRightsMadeVisible_SensiblePolitics.compressed.pdf?dl=0)

- **Video Analytics for Conflict Monitoring and Human Rights Documentation (ELAMP article):** describes how a powerful machine learning and computer vision-based video analysis system called Event Labeling through Analytic Media Processing (E-LAMP) can be used to monitor conflicts and human rights abuse situations: [http://humanrightstechnology.org/wp-content/uploads/2015/08/ELAMP_IEEE-MM-article.pdf](http://humanrightstechnology.org/wp-content/uploads/2015/08/ELAMP_IEEE-MM-article.pdf)

Tools

- **3D Studio Max:** a professional 3D computer graphics program for making 3D animations, models, games and images. [http://www.autodesk.com/products/3ds-max/](http://www.autodesk.com/products/3ds-max/)

- **Activists’ Guide to Archiving Video:** A website that walks activists through a workflow for safely managing and preserving their human rights digital video, written in plain, easy-to-understand language. Available in English, Spanish, and Arabic. [http://archiveguide.witness.org](http://archiveguide.witness.org)

- **Adobe After Effects:** a digital visual effects, motion graphics, and compositing application developed by Adobe Systems and used in the post-production process of filmmaking and television production. [http://www.adobe.com/products/aftereffects.html](http://www.adobe.com/products/aftereffects.html)

- **ArcGIS:** a geographic information system (GIS) for working with maps and geographic information. [https://www.arcgis.com](https://www.arcgis.com)

- **CartoDB:** a Software as a Service (SaaS) cloud computing platform that provides GIS and web mapping tools for display in a web browser. [https://cartodb.com/](https://cartodb.com/)

- **Checkdesk:** An open source platform for collaborative fact-checking and context building on top of any URL. [https://meedan.com/checkdesk-en/](https://meedan.com/checkdesk-en/)

- **Gephi:** Gephi is an interactive visualization and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs. [https://gephi.github.io/](https://gephi.github.io/)

- **GeoNames:** A worldwide geographical database with a search function, browsable maps, and downloadable data files available free under a Creative Commons
attribution.

http://www.geonames.org/

- **Grasshopper & Rhino:** Grasshopper is a graphical algorithm editor tightly integrated with Rhino’s 3-D modeling tools. Forensic architects use it to create interactive reports.
  http://www.grasshopper3d.com/

- **JPEGsnoop:** a detailed JPEG image decoder and analysis tool. It reports all image metadata and can even help identify if an image has been edited.
  http://sourceforge.net/projects/jpegsnoop/

- **Mapbox:** offers commercial mapping services. Many of them use OpenStreetMap data and involve large open-source efforts.
  https://www.mapbox.com

- **Praat:** a free scientific computer software package for the analysis of speech in phonetics.
  http://www.fon.hum.uva.nl/praat/

- **Reverse image search, Google:** Search Google with an image instead of text.
  https://images.google.com/

- **Reverse image search, TinEye:** Image recognition and automated search of over more than 12 billion images.
  https://www.tineye.com/

- **Sentinel Visualizer:** perform link analysis, data visualization, Social network analysis (SNA), temporal analysis, and integrated Google Earth geospatial mapping.
  http://www.fmsasg.com/Products/SentinelVisualizer/

- **SoX:** a cross-platform command line utility that can convert various formats of computer audio files into other formats.
  http://sox.sourceforge.net/

- **Storyful Multisearch:** The Multisearch extension helps you quickly query keywords across Twitter, YouTube, Tumblr, Instagram and Spokeo, in the comfort of your own browser.
  https://chrome.google.com/webstore/detail/storyful-multisearch/hkglibabhninbjmacpajiakojeacnaf?hl=en

- **TileStache:** a Python-based server application that can serve up map tiles based on rendered geographic data.
  http://tilestache.org/

- **Vagrant:** software that creates and configures virtual development environments.
  https://www.vagrantup.com/

- **Video Vault:** an online system that helps human rights practitioners and journalist to preserve and analyze online videos.
  https://www.bravenewtech.org/

- **VideoJS:** Open source media player with useful plug-ins.
  https://github.com/videojs/video.js

- **Youtube Data Viewer:** The YouTube Data Viewer is a simple tool to extract hidden data from videos hosted on YouTube.
  http://www.amnestyusa.org/citizenevidence/