**Moderator prompt: How should data be published for a journal or data repository?**

**Participants:** Angel, Nicholys, Ed Triplett, Doug B, Adam S.

* **Annotation is huge.**
* We’re not at a point where the visual information is required for the arguments
* Reviewers might not look at or understand data.
* Journals might not have ability to manage (Journal of the Society of Architecture Historians)
* Journals need to enforce review of data.
* **Are you qualified to review each others data?**
* **Boyer:** feel qualified to see whether measurements are accurate. But beyond that time investments about whether

IF 3d model is just used as a figure/illustration, it’s easier to evaluate

In some ways there’s intimidation factor for researchers not familiar with data type---might be best researcher in the field, but not familiar with 3D technologies

**There is a problem that some people might see 3d as purely illustrative, as opposed to integral to the research findings/assertions**

**Summer:** [name of academic publisher] wanted new journal to support 3d, but they just wanted it all in sketchfab after promising that they would support review of 3d models

**The model is a scholarly work unto itself--needs its own DOI and citation**
Granularity of DOIs is an issue. Each data set is DOI, so 100 DOIs for one paper, or list all datasets in one DOI.

**Summer:** If it’s in supplemental material, it won’t be indexed in google scholar

**Polys:** OSF has a lot of potential. Currently moving seasonal variations of stream bank into framework. 3d data is central to the argument

If you’re in a 3d model in a doc, there are lots of accessibility issues. And usability issues

**CC LICENSING**

Some models are just expression of facts

Summer is advocate for giving data away. If you’re the only person in your field, it’s lonely, so wants more people to play with the data.

Some factual data is controlled through contracts and service agreements.

What is citable? What about citability of versions

Need version control

Jenny’s Group

1. How libraries support 3d model?

Provide sustainable archiving infrastructure.

Jeff: NSF PIs meeting, educate grad students and young faculty? Lots of defensiveness: how dare librarian understand my data? Why would I put the data in the library? A hard fight!

IU: Library open access publishing program, library publish journals…. Libraries provide resources.

Stu: professional identity and mobility. Move from institute 1 to 2, etc. Instinct to go with the discipline.

Zhiwu: cross institutional repo, OSF model

Jeff: solvable problem, we choose not to solve…. Separation from where stuff lives and metadata, identifier, discover interfaces, can build layered collections.

Viewer that can be embedded in articles.

Get metadata in line, persistent identifiers, affiliation identifiers, etc.

Library support long-term embedding technologies.

Working together, consolidate metadata and developing resources, to produce an open 3D model archiving system, down to file format, one uniform way to archiving 3D models. Existing open technology is not as user friendly as commercial product. Open Office vs Office, gimp vs Photoshop. ArcGIS vs QGIS. Product oriented role. Library comes as product developers to bridge the gap. Tie to dollars.

Make recommendation on output but can hardly control the creation.

Libraries can’t control the creation. A lot of money behind it, can hardly compete. Researchers want to use commercial tools.

With some partnerships, there are opportunities to work with researchers. Need to meet researchers where they are. Not half-way. Make creation automated… Engage early.

Stu: building a system connect grant management to vivo then repo.

Library provide tools and expertise, and best practices.

Blind leading blind?

Huge value linking silos. Need leadership, say we can do this, manage the constant changing environment. Commercial companies are building it now. But can’t open source scanner. Too early to pick an open format.

Manage migration. Tracking fast changing field.

Timing: this is going to be big, libraries have to go in now. Otherwise we will be pushed aside.

**Non-profit/Cultural Heritage Group:**

**Doug, Scott, Vincent, Zack**

***Any specific licensing roadblocks or cultural protocols with regards to educational 3D content?***

Vincent: Everything that is scanned

SI terms of use: non-commercial, personal, educational use.

Trying to reach a billion people!

Licensing group.

Tensions between groups. Decisions can restrict how content can be used.

VR growth may encourage more licensing of content.

Policy need more development.

Doug: Cultural copyright, native rights. Potential conflicts.

Meet with tribal officials first, before even planning or writing a proposal. Never include them as an afterthought. Need to deal with differing levels of traditional beliefs. New leaders may be elected, and want to shut down project. Trend in moving to privacy and secrecy, having to

destroy data already collected. Make compromises (e.g. only show outside, no inside).

Scott: Some tribes will not allow for photography at all.

Can the technology change repatriation debate? What would institutions need to encourage them to give artifacts to the tribes?

Z: Any technological solutions? Dark archives, embargoes on data?

-Doug: Not allowed to photograph any native american remains, but Lidar is okay.

Scott:

-Crowdsourced photogrammetry, missing important angles, licensing form professional photographers, or stock houses. US Law and International law need to catch up with 3D.

-Fair Use, since you are only a small set

Vincent: Look at CS3DP notes; discussion on licensing and legal issues for 3D data.

Michael Weinberg, Public Knowledge, white papers.  3D printing boom… trying to get Congress to understand that the 3D scanning and printing, technology is not a piracy box.

Doug: Mentioned ceramic 3D printing.

Vincent: Ancient coin printing! Stamp “replica” in 3D file.

***How would your organization/institution use CC licensing on 3D content produced in-house?***

-Vincent: We don’t impose our own copyright; pressure for CC-0, or attribution. Wikimedia is now taking 3D, Facebook is using glTF.

-Scott: does scanning reduce demand to visit the original?

-Doug: Building in different viewpoints into the model and how you present it. Bring in native viewpoints.

-Scott: How to do that with VR?

-Vincent & Doug:

-Vincent: Replicate first person perspective of museum, expand access. How to expand access.

-Doug: CC, non-commercial.

-Scott: Licensing? Still evolving. Help monetize content to support local stakeholders?

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**Summary:**

**Main themes:**

-Licensing and cultural protocol restrictions as evolving. Tensions between institutional units and imperatives.

-Terms of Use at SI: Tensions around licensing; restrict uses and licensing (e.g., 3D printing, but not VR). VR may encourage changes in policies. Make allowable restrictions (based on cultural protocols).

-Restrictions on what you can capture and keep.

-Bring indigenous communities into the conversation at the beginning.

-Tribal leadership may change and revoke permissions.

-How technological tools might help with supporting cultural codes.

-3D as tool for repatriation.

-Licensing still evolving at Arc/K Project: questions around licensing for 3D creation, with crowdsourcing, etc.

[Based on discussion about replicability vs. reproducibility, Robert, Doug, Jeffrey Spies, interesting idea for white paper: what does replicability/reproducibility mean for 3D creation, VR?]

* Group is Vendors and Trainers
* Attendance: Matt - Robert - Carla (CHI) - Rami (Arc/k) - JD (Online Resources) - Jarrod (Creaform) - LIz (BCPL)
	1. Researchers: How should data be published for a journal or data repository?

Training on vendora tools within VR to show people how to do that -

Reproducibility - Replicability - definitions

CHI -

Discussion of shadowing -

Discussion of Training  -

Rami - oil and gas company - blowout preventor - want to streamline this through AR and VR -

Transparency - is that better for vendor use -

Creaform - have cultural heritage customers but barely visible to those doing the work -

JD - transparency for cultural heritage 3D scans - is all about the calibration- suggested that we could use point clouds -

* What technology?
* Understanding of real world object
* Settings for scanning
* From capture to creation of model

Difference between photogrammetry and scanning -

What makes 3D model transparent

Rami - verify integrity of point cloud - validation of calibration method

JD - can create color map to show differences in capture

What kind of metadata would you want to see from reality capture product?

* 1. Librarians: How should libraries support data model?
	2. Vendors/trainers: How should hardware and software support metadata, replicability, and reproducibility?

Rami - verify integrity of point cloud - validation of calibration method

* 1. Non-profit/cultural heritage: Have you run into any specific licensing roadblocks or cultural protocols with regards to educational 3D content?
	2. How would your organization/institution use Creative Commons licensing (regardless of level) on 3D content produced in-house?

Vendor Group/trainers

-Supporting replicability

-Need for training on VR/scanner best practices-remote training

-Would be cool-VR training component to learn technology

-Variability of technology-Replicability/Reproducibility are difficult

Jeff Spies has lots to say about this (get with him on details)Peng- Identify vs statistical similarity ACM- CDP definition

Librarians

How to support 3D models

-sustainable infrastructure for archiving

         -cross institutional

         -open source (but fighting concept)

-Strategies-Office of Research-compliance-

-Develop rules or guidelines? Or take what comes

Non-profit/cultural heritage

-licensing roadblocks

-cultural protocols

-Bring groups together before planning-

-need to know project plan may change within the project including project managers with partners

-CC license

-Crowdsourcing

-Wikimedia-stl viewer

Researcher

-Elsevier is bad

-Richer interaction in a published manuscript

-what expectation do we have of reviewers to also review technical or scientific 3D data

-granularity of DOI-item-level description

-question of pretty visual rather than integral part of the research

-find experts in the field that won’t be intimidated by the 3D model

-peer review questions are being addressed