The Curricular Asset Warehouse At The University Of Illinois

A Digital Archive's Sustainability Case Study

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Abstract – What happens to the devices that host digital objects – hard drives, monitors, computer peripherals, storage media – when it is time to upgrade digital preservation environments and workflows? Each step of the production and stewardship of digital objects requires devices and software that have short life cycles and multiple drivers of ever faster obsolescence. These devices flow out of digital repositories and contribute to the fastest growing waste stream of the 21st century: electronic waste or "e-waste."

The Center for Innovation in Teaching and Learning (CITL) at the University of Illinois at Urbana-Champaign is currently working with the head of the university's Sustainable Design program to perform a case study of the sustainable management of its large volumes of digital video and image content production and preservation, within an analysis of its institutional purchasing and waste management paradigms. The purpose of this analysis is to determine how device obsolescence at CITL can be mitigated to avoid future costs and to minimize the department's contribution to the global e-waste problem.

Keywords – Media Asset Management; Sustainability; Electronic Waste

Conference Topics – Sustainability: Real and Imagined; From Theory to Practice

I. Introduction

Over the past five years, the Center for Innovation in Teaching and Learning (CITL) at the University of Illinois at Urbana-Champaign has been developing a system called the Curricular Asset Warehouse (CAW), which is a suite of software that serves as the backbone of its production and archival needs. CAW uses several open-source software tools to serve as an all-in-one production, cataloging, preservation and discovery tool. CAW is useful to CITL's media producers and archivists because it helps facilitate collaboration on media production projects while also minimizing extraneous data in CITL's digital storage.

Digital audiovisual files are large and resource-intensive to manipulate and store. Because CAW integrates software and hardware to maximize the efficiency of its audiovisual production and storage, CITL is participating in a case study to determine how environmentally friendly the CAW software is. The

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sustainability case study also assesses CITL's media production and preservation workflows as well as the hardware the department uses for these purposes.

This panel lays out the development of CAW and describes the current case study of CITL's incidental and intentional sustainability practices. The study began with a general analysis of the three classic pillars of sustainability: environmental impact, social equity, and economic benefit that preserve the potential of sustained economic, environmental and social benefit into the future. The primary area of inquiry was e-waste impacts related to hardware and software choices. Many of these choices for procurement and responsible stewardship of electronic devices at CITL were rooted less in a conscious selection for lowest environmental impact but instead were driven by access to reusable or repurposable, high-quality electronics and the ability to maintain uniformity across team access. The case study depicts the choices made by the CAW development team, within specific budget constraints, as an accretive process over time, within a state institution. The findings are a start at analyzing many of the current methods of e-waste management, how and why organizations make the choices they do for device procurement, reuse and discard, and where there can be greater flexibility of choice toward more sustainable outcomes.

The case study analysis focuses on hardware, core devices and peripherals, and software used by CAW between the (hot) production stage, in the accessible distribution and archive stages and, through the long-term (cold) storage process. The environmental impacts are determined by the length of time electronics are used before they need to be replaced and the energy efficiency of devices and electronic resources. The equity part cannot be overlooked though it is a fixed feature; everything they do is open source. The team is committed to making their methods and documentation of equipment accessible and usable by people across multiple organization types, within primary and higher education spaces and other organizations. This research grows from that spirit of collaboration and open access.

II. About The panel

This panel will feature professionals from the University of Illinois at Urbana-Champaign, who will discuss the digital media asset management practices at the Center for Innovation in Teaching and Learning (CITL), a high-throughput video production unit, and how those practices relate to environmental sustainability.

Robyn Bianconi will talk about the history of asset production and management at CITL, from the days of mini-DV tape video capture to the current era of tapeless production and LTO tape storage. Robyn will give context for the development of CAW.

Jimi Jones and Liam Moran will talk about how CAW's role in the digitization and preservation workflows at CITL are an effective strategy for minimizing CITL's digital storage needs, and, by extension, the amount of electronic waste produced by the department. Jimi will also discuss CITL's choice of LTO for digital preservation, its utility as air-gapped storage that needs little maintenance and how it helps to save space (and write-cycles and longevity) on CITL's production servers.

Karin Hodgin Jones will talk about CAW as a case study in sustainable management of large volumes of digital video and image content production and preservation, within an institutional purchasing and waste management paradigm with foresight into the drivers of device obsolescence to mitigate future costs and redundancies.

While this panel is in dialogue with current waste study and standards development theory, the panelists will also give participants real-world sustainability tips and solutions that they can implement. These tips and suggestions will be informed by the design of the CAW hardware and software suite and can be a roadmap for how to locate reuse strategies at multiple scales within and between institutions.