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"Product Lifecycle Management and the Digital Curation Lifecycle"

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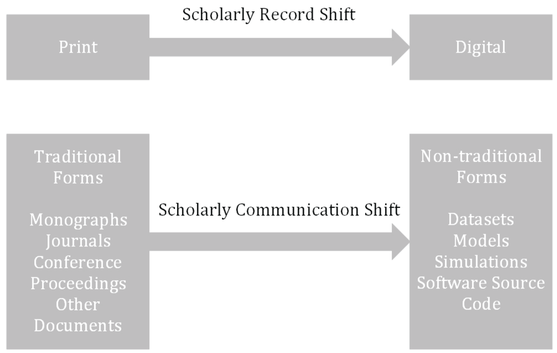
For hundreds of years, libraries and archives have served to record, preserve, and steward human knowledge. While print on paper can be preserved by simple conservation and environmental control, the complexity of capturing, managing, and future-proofing digital information may be the greatest challenge facing academic and research libraries if they are to continue to serve their current function of stewarding knowledge into the coming decades.



This is a similar challenge facing Product Data Management (PDM) for products where requirements for supporting data may outlast the software environment that produced the data.

Challenges	
Academic and research libraries	Product Data Management (PDM)
The complexity of capturing, managing, and future-proofing digital information	Requirements for supporting data may outlast the software environment that produced the data

Examples of Requirements		
Ensuring long-term regulatory compliance, e.g., for aerospace or pharmaceutical products	Maintaining prior art for patent defense	Archiving a historical record to support future product research and development

This research proposes to evaluate digital preservation standards in libraries and their application in PDM as well as to identify opportunities for adoption or adaptation in industry.

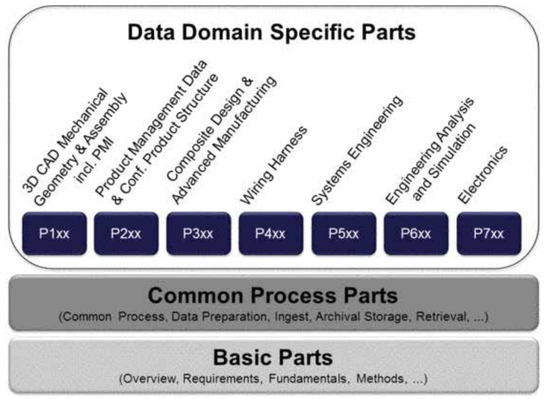
The file formats, software, and computing environment that are used to create and document a product today are rapidly obsoleted tomorrow as new technologies replace the old ones and render past data inaccessible, incomprehensible, and unusable. Examples of standards, tools, and best practices that have been developed and adopted by cultural heritage institutions (libraries, archives, museums) for effective, long-term digital preservation that may be applicable to and useful for PDM include:

- Open Archival Information System (OAIS) reference model
- The description and maintenance of preservation metadata using the PREMIS Data Dictionary
- The audit and certification of trustworthy digital repositories through ISO 16363
- File format registries such as PRONOM
- Tools described in the Community Owned Preservation Tool Registry
- The Data Curation Profile developed at Purdue

Parallels between Product Lifecycle Management (PLM) and the Digital Curation Lifecycle (Higgins, 2008) suggest similarities between the conception of this problem space that are beneficial to purposefully explore and compare between industry and the academic research domains. In particular, work around the EN/NAS 9300 standards (Delaunay, 2013) and other outputs and activities of the LOng Term Archiving And Retrieval (LOTAR) international working group present an opportunity for the cross-pollination of ideas and approaches to data management (LOTAR International, 2015).

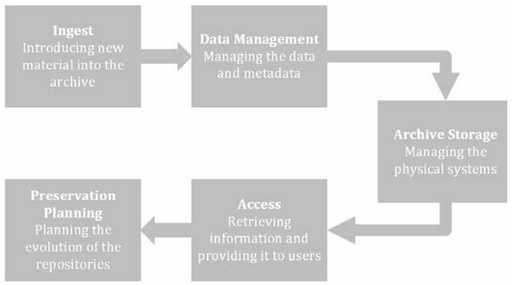
LOTAR

The objective of LOTAR is to develop, test, publish and maintain standards for long-term archiving of digital data such as 3D CAD and PDM data. LOTAR is a project being conducted by leading international OEMs and suppliers in the aerospace and defense industry under the joint auspices of ASD-STAN, AIA, PDES Inc. and the ProSTEP iViP Association. Its standard and documentation are split into agreed-upon work packages in different parts:



EN 9300

EN 9300 is a standard for long term archiving and retrieval of digital technical product documentation. Since technical product documentation, such as design documents, are generated, exchanged and used digitally, architecture, technology, processes, data formats, rules and regulations need to be adapted to enable digital retention and long term archiving. The archiving process is structured into sub processes:



FUTURE WORK

By comparing these standards in industry and libraries, we hope to identify at least one gap in each that can be filled by the other. The goal is to benefit industry by informing PDM practices with current standards, tools, and best practices for digital preservation from library and archival sciences. It may also serve to enhance and extend the set by evaluating it in the context of PDM, which would be a novel approach from the perspective of libraries and archives. After this exploratory study concludes in August 2016, we will consult with industry partners to fill the gaps in the second year of the project.

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