BRIDGING ARCHIVAL STANDARDS: BUILDING SOFTWARE TO TRANSLATE METADATA BETWEEN PDS3 & PDS4. C. M. De Cesare[1] and J. H. Padams[1], [1]Jet Propulsion Laboratory, California Institute of Technology (4800 Oak Grove Dr., Pasadena, CA 91109-8099, United States of America)

Background: In the PDS3 archiving standard, metadata was labeled using the Object Description Language (ODL). ODL is a proprietary language developed and maintained by the PDS. Variations in the useage of ODL & in the implementation of data products ultimately led to inconsistencies in the implementation of PDS standards, negatively impacting usability & interoperatbility.

In the current PDS4 standard, metadata is labeled using XML (Extensible Markup Language). XML is an international standard that provides a standard syntax and structure for describing data. The adoption of XML allows for increased consistency of metadata, which, in turn, improves accessibility and usability of the archived data.

The need for software tools: Datasets that were archived with the PDS prior to the adoption of PDS4 will retain their PDS3 metadata labels. Over time, certain datasets are being converted into PDS4.

Current & upcoming missions are using PDS4 XML labels to represent their metadata. Some of these missions will continue to produce PDS3 ODL labels alongside the PDS4 XML labels, due to the use of legacy components in their ground data processing systems.

Both of the above situations necessitate translation between PDS3 and PDS4 metadata labels. The translation process requires manual, detail-oriented work, and relies on deep knowledge of PDS4. The goal of translation is to develop a mapping between PDS3 ODL keywords and PDS4 XML XPaths. (An XPath is a reference to a specific location in an XML document.) For more complex datasets, it's not always possible to achieve a one-to-one mapping from a PDS3 ODL keyword to a PDS4 XML XPath, due to the hierarchical structure of PDS4 labels.

The complexity of the aforementioned translation process calls for a software tool capable of automating this work.

The software solution: The PDS develops & maintains a software application, the Generate Tool[1], that is used to produce a PDS4 XML label using (1) the PDS3 ODL label and (2) a template of the PDS4 label, written for the Apache Velocity[2] templating engine. The Generate Tool extracts metadata values from the PDS3 label and plugs them into the PDS4 label template, dynamically producing a PDS4 label containing the same metadata as the PDS3 original.

The PDS Imaging Node has developed the Label Mapping Tool (LMT), a software tool which leverages the Velocity template in order to produce a list of mappings from PDS3 keyword to PDS4 XPath in a CSV (Comma Separated Value) file. This software automates the comparison of PDS3 to PDS4, and also aids the developer performing the archive conversion by identifying any PDS3 keywords that may have overlooked during development of the PDS4 archive and Velocity template.

Conclusion: The Label Mapping Tool is still in development, but a beta release was completed in early 2018. The PDS Imaging Node plans to release the Label Mapping Tool as open source at https://github.com/nasa-pds.

This presentation will discuss the features and benefits of the software, as well as the challenges and successes encountered during its development.

References: [1] NASA PDS (2017) *Software*. Retrieved from https://pds.nasa.gov/pds4/software.
[2] The Apache Software Foundation. (2016) *Welcome.* Retrieved from http://velocity.apache.org.