bwFLA – Practical Approach to Functional Access Strategies

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ABSTRACT

The goal of the bwFLA project is the implementation and development of services and technologies to address Baden-Württemberg state and higher education institutes' libraries' and archives' challenges in long-term digital object access. The project aims on enabling diverse user groups to prepare non-standard artifacts like digital art, scientific applications or GIS data for preservation. The project's main goal is to build-on ongoing digital preservation research in international and national projects to integrate workflows for emulation-based access strategies.

1. MOTIVATION

The Baden-Württemberg Functional Longterm Archiving and Access (bwFLA)[1] is a two-year state sponsored project transporting the results of ongoing digital preservation research into the practitioners communities. Primarily, bwFLA creates tools and workflows to ensure long-term access to digital cultural and scientific assets held by the state's university libraries and archives. The project consortium brings together partners across the state, involving people of university libraries and computer centers, library service facilities and archives providing a broad range of backgrounds and insights into the digital preservation landscape.

The project builds on existing digital preservation knowledge by using and extending existing preservation frameworks. It will define and provide a practical implementation of archival workflows for rendering digital objects (user access) in their original environment (i.e. application) with no suitable migration strategies available, like interactive software, scientific tool-chains and databases, as well as digital art. Thereby, the project focuses on supporting the user during object ingest to identify and describe all secondary objects required [?]. This way technical meta-data will be created describing a suitable rendering environment for a given digital object. The technical meta-data will serve as a base for *long-term access through emulation*.

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[1]bwFLA homepage, `http://bw-fla.uni-freiburg.de`.

2. PROJECT SCOPE

In most cases the best way to render a certain digital object is using its creating application, since those cover most of the objects' significant properties thus ensuring rendering of a better quality. Existence of alternatives is even not guaranteed in many cases due to the proprietary nature of the objects' file formats or its interactive nature. Preservation of the original environment is therefore crucial for the preservation of digital objects without suitable migration options, e.g. singular digital objects or digital art. The project develops workflows, tools and services required to safeguard future access of a digital object's rendering environment.

For current computer environments and applications plenty of user knowledge is available. More specifically owners of specific digital objects have good knowledge on the object's significant properties and their desired functions and utility. If such an object becomes subject to digital preservation, a defined workflows should support the preservation process of the object's rendering environment by

1. making use of the user's knowledge to identify all necessary components of the object's rendering environment such that the rendering environment is complete and there are no dependency conflicts,

2. preserving the knowledge on installation and configuration of the software components,

3. providing a preview of the emulated / recreated environment, such that the user is able to test if the chosen setup is meeting the desired rendering quality.

3. USE-CASE EXAMPLES

Archives and libraries keep digital objects like PhD theses since a few years and have new well established workflows e.g. to ingest PDFs into their collections and long-term storage. This procedure is often, at least partly, run by the contributor of the object. But what if the dissertation is complemented with an optical medium containing primary research data and the application which is able to render or interpret such data? Ensuring functional long-term access to such objects is a challenge. A similar problem is posed by digital art objects or GIS data, e.g. part of students' master theses or as an outcome of a research project.

4. WORKFLOWS

In order to describe a digital object's rendering environment technical meta-data has to be generated. This data
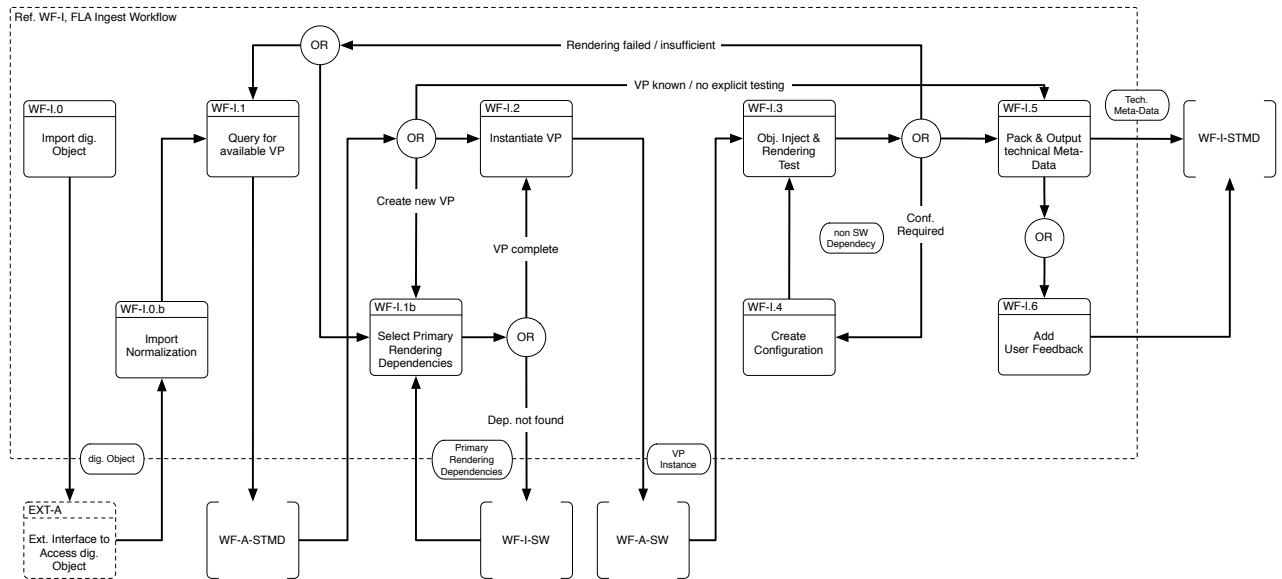
Figure 1: bwFLA ingest workflow; creating a description of a rendering environment for a given digital object.

will be generated through a constructive approach; the contributor is required to rebuild the objects original environment on a virtual or emulated machine. Through this guided process (e.g. ingest workflow) meta-data on the recreated environment is created in an automated way (cf. Fig. 1).

1. Relying on the contributor's knowledge of the object, the contributor chooses the *primary rendering dependencies*, which are known to render the digital object properly. If all or some dependencies can not be satisfied, the contributor is directed to the software-archive workflows to ingest missing software components.

2. In a second step the software environment containing the primary rendering decencies is prepared either manually or in an automated way [2] and the digital object is prepared for transportation into the emulated environment.

3. Finally the user is able to access the digital object through an appropriate emulation component [1] to rate and approve the rendering quality. If the rendering result is signed off, the description of the rendering environment is available for the given object.

While this procedure involves a significant amount of manual labor, preservation planning costs will be reduced due to focusing on emulator software. Furthermore, by integrating a feedback loop with the original contributor, rendering quality and long-term access options may be guaranteed at ingest time.

5. CONCLUSION & OUTLOOK

After a number of successful national and international initiatives and projects on digital preservation and access it is time to leverage the results to an average memory institution having to deal with these matters. As the bwFLA

project is comparably small it focuses on the extension of existing workflows to enable efficient ways to open these processes to be compliant with more complex digital material delivered. Building on the basis of existing frameworks such as PLANETS and KEEP [2] encourages the project's sustainability.

In the project's first phase, a functional prototype for selected classes of digital objects will be delivered. Based on the experience gained, documentation and training material to enable a structured development of new workflows for future classes of digital objects will be provided.

Acknowledgments

6. REFERENCES

[1] D. von Suchodoletz, K. Rechert, and I. Valizada. Remote emulation for migration services in a distributed preservation framework. In *Proceedings of the 8th International Conference on Preservation of Digital Objects (iPRES2011)*, pages 158–166, 2011.

[2] D. von Suchodoletz, K. Rechert, R. Welte, M. van den Dobbelsteen, B. Roberts, J. van der Hoeven, and J. Schroder. Automation of flexible migration workflows. *International Journal of Digital Curation*, 2(2), 2010.

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[2]Currently maintained at `http://www.openplanetsfoundation.org` for follow up activities.