



Contribution ID: 216 Contribution code: TUE 30

Type: Poster

PATOF: From the Past To the Future: Legacy Data in Small and Medium-Scale “PUNCH” Experiments - a Blueprint for PUNCH and Other Disciplines

Tuesday 22 October 2024 16:00 (15 minutes)

The PATOF project builds on work at MAMI particle physics experiment A4. A4 produced a stream of valuable data for many years which already released scientific output of high quality and still provides a solid basis for future publications. The A4 data set consists of 100 TB and 300 million files of different types (Vague context because of hierarchical folder structure and file format with minimal metadata provided)

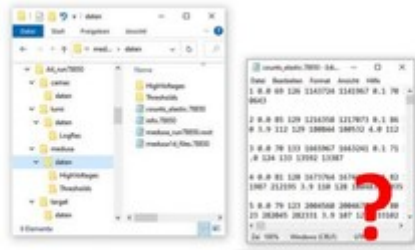


Figure 1: Figure 1:vague context because of hierarchical folder structure and file format with minimal metadata provided

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In PATOF we would like to build a “FAIR Metadata Factory

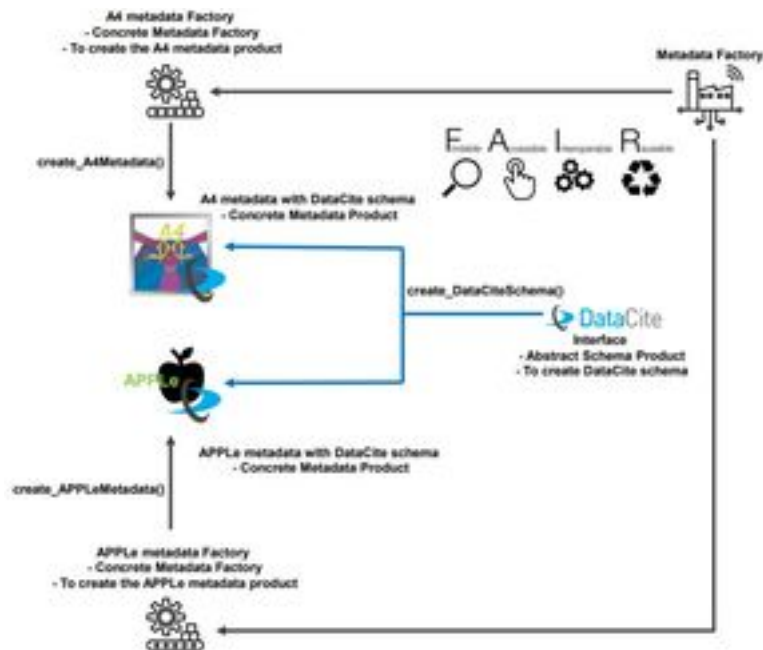


Figure 2: Figure 2: Through the Metadata Factory Pattern, we define a framework that allows us to create related or dependent products that follow a general pattern.

”, i.e. a process to create a naturally evolved metadata schema that can be used across research fields. The first focus will be on creating machine-readable XML files containing metadata from the logbook and other sources and to further enrich them



Figure 3: Figure 3: Enriching data from the logbook by providing metadata

In PATOF, we intend to conclude the work on A4 data, to extract the lessons learned there in the form of a cookbook that can capture the methodology for making individual experiment-specific metadata schemas FAIR, and to apply it to four other experiments: The ALPS II axion and dark matter search experiment at DESY. The PRIMA experiment at MAMI in Mainz for measuring the pion transition form factor. The upcoming nuclear physics experiment P2 at MESA in Mainz. Finally, the LUXE experiment at DESY planned to start in 2026. The focus of PATOF is on making these data fully publicly available.

The objectives of the project are i) a FAIR Metadata Factory (i.e. a cookbook of (meta)data management recommendations), and ii) the FAIRification of data from concrete experiments. Both aspects are inherently open in nature so that everybody can profit from PATOF results. The cookbook is expected to be further enhanced with contributions from other experiments even after PATOF (“living cookbook”).

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Session Classification: Poster session

Track Classification: Track 1 - Data and Metadata Organization, Management and Access