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A Validation Framework to facilitate the Long Term Preservation of High Energy Physics Data (The DESY-DPHEP Group)

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In a future-proof data preservation scenario, the software and environment employed to produce and analyse high energy physics data needs to be preserved, rather than just the data themselves. A software preservation system will be presented which allows analysis software to be migrated to the latest software versions and technologies for as long as possible, substantially extending the lifetime of the software, and hence also the data. Contrary to freezing the environment and relying on assumptions about future virtualisation standards, we propose a rolling model of preservation of the software. Technically, this is realised using a virtual environment capable of hosting an arbitrary number of virtual machine images, built with different configurations of operating systems and the relevant software, including any necessary external dependencies. A significant fraction of the work involved requires a deep level of validation of the experimental software and environment, and in particular the progress made by the participating experiments will be presented. Such a system is by design expandable and able to host and validate the requirements of multiple experiments, and can be thought of as a tool to aid migration that will detect problems and incoherence, helping to identify and solve them by the joint efforts of experiments and computer experts.

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