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Job Life Cycle Management libraries for CMS Workflow Management Projects

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Three different projects within CMS produce various workflow related data products: CRAB (analysis centric), ProdAgent (simulation production centric), T0 (real time sorting and reconstruction of real events). Although their data products and workflows are different, they all deal with job life cycle management (creation, submission, tracking, and cleanup of jobs). WMCore provides a set of common libraries to assist sub projects with the development of their job life cycle management infrastructure and incorporates experiences and lessons learned from the sub projects it serves. WMCore consists of several libraries: A model for associating workflows, jobs and files, modules for building autonomous components, communication, synchronization and database access, and other components usable by all three sub projects. WMCore does not provide specifics on how various data products need to be produced but enables developers from these sub projects to focus on this while using the basic building blocks from WMCore. WMCore is a common set of libraries for CMS workflow systems, with the aim of reducing code duplication between sub projects, increasing maintainability and enable the developers to focus on the core goals of their respective projects: analysis, production and sorting/reconstruction. This paper will introduce the concept of job life cycle management as the common theme in the CMS workflow management projects and gives an overview of the various WMCore libraries.

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