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Experiment STAR

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Reaching its 16th year of operation and data taking, the STAR experiment, at the Relativistic Heavy Ion Collider (RHIC), faces daunting data processing challenges. The data accumulated so far is in excess of 24 PetaBytes of raw data and projected to reach 40 PetaBytes in 2020. The CPU needs are as challenging –STAR estimates that, at flat funding profile, resources up to 20% level of its 118 Millions hours of total CPU power at its main facility is needed from external sites to achieve a mere 1.2 production passes. However, high quality dataset production is best achieved in HEP/NP communities with 2 or more passes, implying a dire need to harvest resources far beyond what already exists –remote facilities, accessible via the Grid, may very well accommodate the anticipated data reproduction needs and accelerate scientific discoveries.

To this aim, STAR has successfully exploited its Tier-1 center at NERSC/PDSF as well as KISTI/Korea and is now in the process of evaluating the usability of the resources available at Dubna/JINR. JINR offers a possible avenue to distributed resource integration and growth as a contribution to the experiment's needs. We will present our workflow approach, modeled after the KISTI exercise and success, show our results to date as well as the obstacles encountered and how they were resolved. To help identify the issues, we will show stability and efficiency decomposed into STAR-specific workflow, infrastructure, and Grid interface-related issues. Solutions and perspective for a path forward will be discussed.

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