Towards a Sophisticated Grid Workflow Development and Computing Environment
(Invited Talk)

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While Grid infrastructures can provide massive compute and data storage power, it is still an art to effectively harness the power of Grid computing. Current application development for Grid commonly requires the programmer to deal with many low level and complex details such as selecting software components on specific Grid computers, mapping applications onto the Grid, explicitly specify data transfer operations, etc.

In this talk we will present the ASKALON environment whose goal is to create an invisible Grid for both Grid users and application developers. ASKALON is centered around a set of high-level services for transparent and effective Grid access, including a Scheduler for optimized mapping of workflows onto the Grid, an Enactment Engine for reliable application execution, a Resource Manager covering both computers and application components, and a Performance Prediction and Analysis service based on a traing phase, analytical models and dynamic measurements. A sophisticated XML-based programming interface that shields the user form the Grid middleware details, allows the high-level composition of workflow applications. ASKALON is used to develop and port scientific applications as workflows in the Austrian Grid. Experimental results using several real-world scientific applications to demonstrate the effectiveness of ASKALON will be demonstrated.