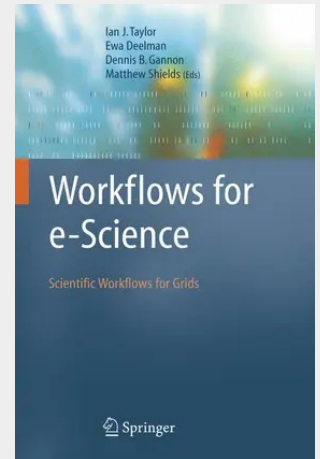


Workflows for e-Science

Scientific Workflows for Grids

Workflow is becoming extremely important within coarse-grained distributed system models for e-Science applications. As the technological backbone of the Grid infrastructure becomes standardised, scientists need the ability to specify flows of control within the chains of applications that constitute their experiments. This timely book presents an overview of the current state of the art within established projects, presenting many different aspects of workflow from network users to tool builders. This book aims to provide a broad overview of active research, from a number of different perspectives e.g. from application requirements to representations, infrastructures and tools for aiding the workflow composition process. The topics covered represent a broad range of aspects of workflow and will be of interest to a wide range of practitioners, from computational experimentalists in the multitude of e-Science fields, to the computer scientists and engineers within Grid and peer-to-peer computing.

This collection of articles on 'Workflows for e-Science' is very timely and important. Increasingly, to attack the next generation of scientific problems, multidisciplinary and distributed teams of scientists need to collaborate to make progress on these new 'Grand Challenges'. Scientists now need to access and exploit computational resources and databases that are geographically distributed through the use of high speed networks. 'Virtual Organizations' or 'VOs' must be established that span multiple administrative domains and/or institutions and which can provide appropriate authentication and authorization services and access controls to collaborating members. Some of these VOs may only have a fleeting existence but the lifetime of others may run into many years. The Grid community is attempting to develop both standards and middleware to enable both scientists and industry to build such VOs routinely and robustly. This, of course, has been the goal of research in distributed computing for many years; but now these technologies come with a new twist service orientation. By specifying resources in terms of a service description, rather than allowing direct access to the resources, the IT industry believes that such an approach results in the construction of more robust distributed systems. The industry has therefore united around web services as the standard technology to implement such service oriented architectures and to ensure interoperability between different vendor systems.



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