e-Science Challenges in Astronomy and Astrophysics

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The astronomical community is intricately linked with e-Science by the nature of the research conducted. Efforts to formalise this relationship are highlighted by the creation of Virtual Observatory (VO) networks both locally (AusVO) and internationally (the US-based NVO, for example). The goal of these networks is to present astronomical archives as an integrated and interoperating virtual observatory, as well as to develop and deploy the tools necessary for international utilisation of the archives. This has resulted in a set of data standards being published by the International Virtual Observatory Alliance (IVOA). While much has been achieved, the VO networks can still be considered a fledgling industry in some sense as there are still many challenges to be met, especially as we move towards peta-scale data-sets. Furthermore, e-Science has now moved beyond the management of observational data to broadly encompass all computationally intensive areas of astronomy and astrophysics. The focus of the workshop will be on e-Science challenges within astronomy and astrophysics, the innovations that these challenges are producing now and the innovations that will be required in the near future. Broadly speaking this covers the creation, processing and visualization of data (via either computation or observation), which in turn relates to data-management and accessibility (and, by extension, the VO).

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