Title: "Usability, Reusability and Reproducibility of Bioinformatic Applications"

Novel biotechnologies allow creating data in exascale dimension with relatively minor effort of human and laboratory and thus monetary resources compared to capabilities only a decade ago. While the availability of this data salvage to find answers for research questions, which would not have been feasible before, maybe even not feasible to ask before, the amount of data creates new challenges, which obviously need new software and data management systems. Such new solutions have to consider integrative approaches, which are not only considering the effectiveness and efficiency of data processing but improve usability, reusability and reproducibility especially tailored to the target user communities of biological data. Science gateways address such challenges and are intuitive graphical user interfaces offering a single point of entry to distributed job, workflow and/or data management across organizational boundaries. Their overall goal is to increase the usability of applications allowing users to focus on their specific research question instead of becoming acquainted with command line tools and diverse access mechanisms to infrastructures. The talk will give an overview on existing technologies, on current issues regarding reusability and reproducibility as well as on results of two user surveys. It will especially highlight key challenges and the characteristics cutting-edge developments should possess for fulfilling the needs of the user communities to allow for seamless data analysis on a large scale.