Abstract: In this talk, I will use Montage (http://montage.ipac.caltech.edu/), an astronomical image mosaicking application that is a toolbox of independent components, to explore various application paradigms on parallel and distributed systems, as the Montage components can be used in a variety of settings, including on a single system, on a parallel system, or on a set of distributed systems, including grids and clouds. Montage, which was built to use MPI in parallel, and Pegasus/DAGman on distributed systems, has also been used as an exemplar many-task computing (or workflow) application by a number of other tool and system developers. A variety of work with Montage will be discussed, including the use of multiple types of infrastructure/middleware, the use of scripting to allow a user to easily customize their use of the Montage components, and overcoming data management issues. I will conclude with a discussion of application skeletons, an abstraction of Montage and other applications that enables easier tool and system development.

Bio: Dr. Daniel S. Katz is a Senior Fellow in the Computation Institute (CI) at the University of Chicago and Argonne National Laboratory and is currently a Program Director in the Division of Advanced Cyberinfrastructure (formerly the Office of Cyberinfrastructure) at the National Science Foundation. He was previously Open Grid Forum Area Co-director for Applications and TeraGrid GIG Director of Science. He is also an adjunct faculty member at the Center for Computation & Technology (CCT), Louisiana State University (LSU). Dr. Katz's interest is in the development and use of advanced cyberinfrastructure to solve challenging problems at multiple scales. His technical research interests are in applications, algorithms, fault tolerance, and programming in parallel and distributed computing, including HPC, Grid, Cloud, etc. He is also interested in policy issues, including citation and credit mechanisms and practices associated with software and data, organization and community practices for collaboration, and career paths for computing researchers. He received his B.S., M.S., and Ph.D degrees in Electrical Engineering from Northwestern University, Evanston, Illinois, in 1988, 1990, and 1994, respectively. His work is documented in numerous book chapters, journal and conference publications, and NASA Tech Briefs. He is a senior member of the IEEE and ACM, and serves on the IEEE Technical Committee on Parallel Processing’s Executive Committee and the steering committees for the IEEE Grid, Cluster, and e-Science conference series.