SciOps Workshop: abstract of talk

Astronomy in the next decades: steps towards a benevolent (archival) panopticon

Data-starved astronomy has been grappling for centuries with the limitations caused by observations that were hard to come by, rarely replicated and almost impossible to coordinate with other observatories. The rise of multi-wavelength research has only compounded the problem by adding a new axis to a parameter space too wide to be probed homogeneously. But improvements have been impressive: discoverability, sharing and access to public, heterogeneous data allowed by technology developed with the coordination of the Virtual Observatory - VO (and their prompt adoption across astronomical archives) have become essential to facilitate science cases that tap into the panchromatic and time-variability realms and depend on the synergy between multiple facilities. The additional momentum imparted by the recent explosive growth of multi-messenger astronomy has spurred the design of new services that will permit efficient, time sensitive planning of coordinated observations. At the same time, as the size and complexity of astronomical data grow, human researchers that want to collect, interpret and present the archival data required to draw the historical and contextual backgrounds of complex astronomical events, are faced with a challenge. In this talk I will present the concept of the archival panopticon as a realistic goal for our community to support the future multi-messenger and transients-driven astronomy while continuing to push and realize the full potential of archival science per se. I will discuss practical examples showing that this objective can be achieved by leveraging already existing infrastructure and groundwork laid down by the VO, and will describe a realistic path forward.