Using Distributed Sensor Network Architecture to Link Heterogeneous Astronomical Assets

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The internet has brought about great change in the astronomical community, but this interconnectivity is just starting to be exploited for use in this type of instrumentation. Here we present the Telescope ALert Operations Network System (TALONS), a network software suite that allows intercommunication between external and internal astronomical resources and controls the distribution of information to each of the resources. TALONS is an fundamental element of the *Thinking Telescopes System*, in operation at Los Alamos National Laboratory, and has been enabling great science for the past four years. The system allows a distributed network of telescopes to perform more efficiently in synchronous operation than as individual instruments. TALONS is designed as a merger between a standard server/client architecture and a Distributed Sensor Network (DSN). It can dynamically regulate its client base, allowing any number of heterogeneous resources to be linked together and communicate. TALONS couples that capability with collaborative analysis and maintenance modules so that it can respond quickly to external requests and changing network environments. TALONS clients connect via an intelligent agent, which acts in proxy for the scientist, allowing the telescope to analyze incoming information and respond autonomously. TALONS has a proven track record of effectively supporting the instruments at Los Alamos and other astronomical resources around the world.