HUBBLE LEGACY ARCHIVE PROJECT @ STSCI

System Architecture for a Hubble Legacy Archive

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System Architecture: Drivers

- Science and Service Objectives
  - –High-Level Science Products: catalogs, image sets
  - –Data Availability: fast query/request, data online
  - –Data Quality: improved WCS, calibration campaigns
  - –Data Discoverability: footprints, literature links
- Programmatic Objectives
  - –Plan, develop, operate system in an agile way
  - –Build flexibility into the system at all levels
  - –Reduce engineering footprint by building only the portions of the system that we do best
  - –Create an exploratory environment for archive users
  - –Present a coordinated set of archive services to the community

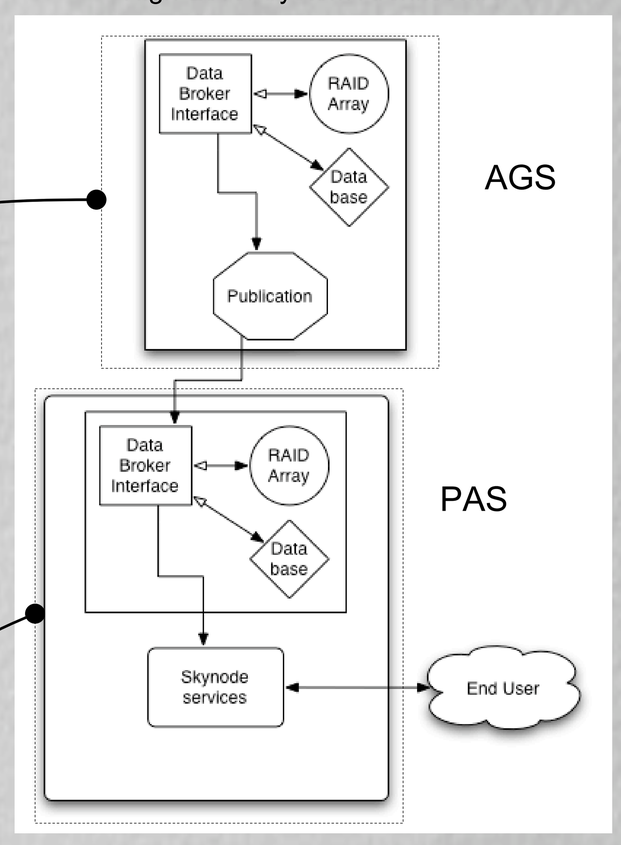
System Architecture: Components

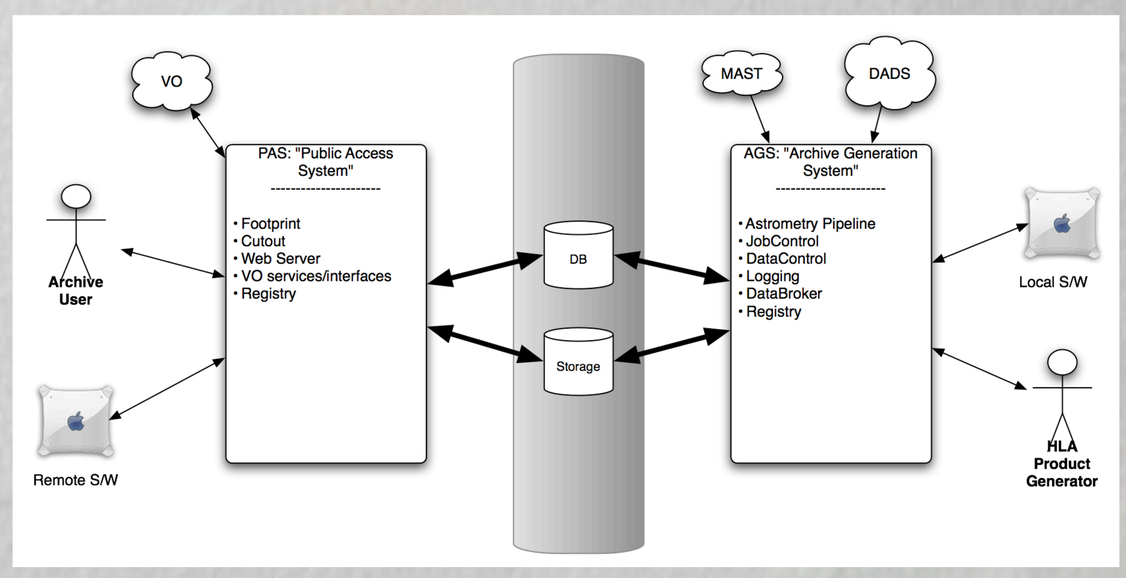
- Build on HST ground systems (DADS/OTFR)…
  - –…without requiring major modifications to them
  - –…while remaining separate enough to build/operate with agility
- Create a sandbox (“AGS” = *Archive Generation System*)…
  - –…to support exploration/creation of high-level science products
  - –…in which to store (meta-)data and intermediary products
- Create a community access portal (“PAS” = *Public Access System*)…
  - –…to hold the services/(meta-)data accessible to the community
  - –…to decouple the experimental from the production environment

Strategic Objectives

- Fully integrated into the Virtual Observatory (VO)
  - –Existence of VO standards and service definitions enable integration from the start
  - –Emphasizes importance of machine-friendly interfaces
- Built End-to-End as Service Oriented Architecture (SOA)
  - –Mature technologies/concepts ready for application beyond simple people/machine interfaces
  - –Employ robust, scalable technologies that supply crucial capabilities like security, transactions, persistence, messaging (e.g., .NET, J2EE)
  - –Development/maintenance practices congruent with programmatics and the VO architecture (service-oriented)
  - –Will make it easier for distributed participation and less fragile when others contribute

High-Level System Architecture





The HLA architecture consists of a “sandbox” system (AGS) that provides an environment for “offline” experimentation. Potential new products are created and/or contributed products are ingested in this system. Vetted products and services are exposed to the community through publication from the AGS to the PAS. Both systems are implemented as SOA to achieve flexibility.