



AGIS: Integration of new technologies used in ATLAS Distributed Computing



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AGIS is the information system designed to integrate configuration and status information about resources, services and topology of the computing infrastructure used by ATLAS Distributed Computing (ADC) applications and services. Being in production during LHC Run 1 AGIS became the central information system for Distributed Computing in ATLAS and it is continuously evolving to fulfill new user requests, enable enhanced operations and follow the extension of ATLAS Computing model.

• Main AGIS Concept

The main concept of AGIS is the implementation of Distributed Computing Information Model used by ATLAS experiment. One of the key features of the system is that it makes clear distinction between physical computing resource *provided by* sites and ones *used by* the experiment. Providing an abstraction layer from the physical resources AGIS allows the Experiment to define their own real organization of the resources.

AGIS automatically collects information required by ATLAS, caches and keeps it up to date (removing the external source as a direct dependency for clients) and establishes a relationship between these *resources* to *experiment objects*.

Additional data models, object relations are introduced into the system to fit requirements of ADC applications. Flexible approach of resource definitions allows the transparent declaration of any virtual resource, like opportunistic Cloud and HPC, which have become widely used by ATLAS Computing.

• Key capabilities of AGIS



DEFINE

Define the topology of Distributed Computing resources. AGIS masks the heterogeneity of computing infrastructures and provides a consistent Computing model definition for application services and developers.



CONNECT

Connect physical computing resources to its experiment specific organization. AGIS declares information structures and relationships between physical computing resources provided by various sites and ones used by the experiment.



COLLECT

Collect topology relations and static information about site specifics from various databases and external information sources like gLite BDII, GOCDB, MyOSG, REBUS.



INTEGRATE

Integrate site status and other dynamic information of site resources and services into the system (site downtimes, DDM/PanDA blacklisting, PanDA queue dynamic properties). Automatically keep information up to date.



DECLARE

Declare various site configurations structures related to experiment usage of site resources (Squid Configuration, Frontier Configuration, PerfSonar Configuration, DDM Access Protocols).



COMPLETE

Complete, organize, store and generalize information model to cover any Experiment specific use-cases and simplify user operations.



OPERATE

Operate information via User oriented WebUI portal to easily browse and manage data.



DISTRIBUTE

Distribute data through unified interfaces (REST API and WebUI portal).



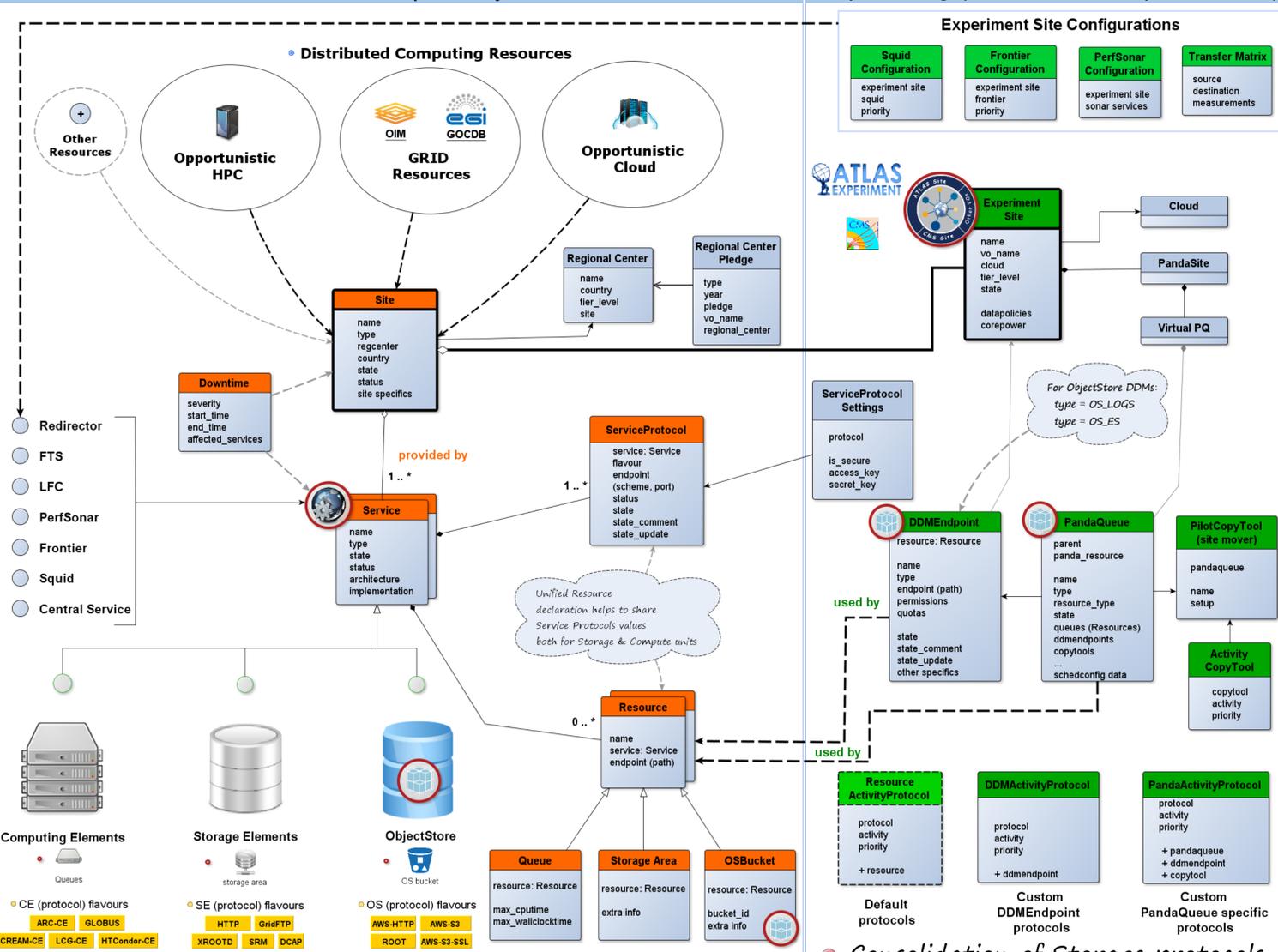
ACT!

Play. Full support for ATLAS Experiment. AGIS is central information system for ATLAS Distributed Computing.

<http://atlas-agis.cern.ch>

HW & SW Resources provided by Sites

Experiment usage (Resources linked to Experiment models)



• Consolidation of Storage protocols

The system provides flexibility to link and declare Storage Protocols at various levels for different activities (read, write, delete, pilot read/logs etc).

By default, the ATLAS workflow management system (PanDA) consumes the same SE protocol definitions used by the ATLAS data management system (Rucio).

For corner cases, (testing, local protocols, specific Pilot sitemover settings, etc) the system also allows to customize the configuration at the level of PandaQueue.

• ObjectStore integration & Resource unification

Recent AGIS updates include the implementation of new type of Storage (ObjectStore) and its integration into the Information model as regular DDMEndpoint entry to be consumed by Rucio and PanDA systems.

Newer Resource-based implementation of Service protocols and general Storage reorganization have been succeed with ObjectStore services. The next step of ongoing implementation is to migrate regular Storage Elements declaration into new resource based approach.

• AGIS evolution: a generic solution for other communities

AGIS concept and architecture based on python and Django have proven to be flexible enough to easily evolve it into a more generic service that could be adopted by other communities. The Computing Resource Information Catalogue (CRIC) is the result of reusing the AGIS core architecture and main features to build a generic information system. There is an ongoing effort to adopt CRIC as the new information system for both the CMS experiment and the WLCG project. For more details about CRIC, please see "Consolidating WLCG topology and configuration in the Computing Resource Information Catalogue" (#302 contribution).

