

Chimera

Flight Software

A MODULAR AND RESILIENT FLIGHT SOFTWARE FRAMEWORK

Chimera is an Axient developed flight software framework that includes a collection of modular components that are used to build a set of networked applications for each mission.

This modular framework enables improved testing and reliability using modern software tools. One such tool is Leash which serves as a testing environment for the flight software applications. Because of the flexibility of the framework Leash is able to connect over ethernet and act like another application in the network to facilitate hardware in the loop (HIL) testing.



On-Orbit Updates



Updating flight software on orbit can be a very risky operation. Chimera flight software helps to reduce the risk by supporting a flexible upgrade process. Multiple versions of flight software applications can be configured to run in parallel allowing for old software to test new software and verify it's behavior before committing to the update.

For applications that control hardware individual applications can be updated one at a time stopping and starting the old or new version while the rest of flight software is still running.

CHIMERA ENABLES MISSION SUCCESS



PORTABLE

Primarily written in C# Chimera is capable of running on any hardware and operating systems the .NET runtime supports. For example, x86,Arm, Linux, Windows, etc.



RESILIENT

Each application is capable of adapting to the presence or absence of other components as necessary.

Has your central command scheduling app gone down?

No problem. We can distribute the schedule among the destination apps.



FLEXIBLE

Developing new functionality in Chimera is easy. We can develop new features in house or you can utilize the software development kit (SDK) and develop your own components and applications yourself.

THE FEATURES OF CHIMERA



- Many other flight software options are either monolithic or dependent upon a core set of centralized services. → Chimera is a resilient collection of distributed services that allows for graceful degradation
- Developing new features in unfamiliar software often involves a steep learning curve. → Chimera's modular architecture makes it easier for external developers to implement new features without requiring a complete understanding of the whole system
- Many frameworks require additional dynamic analysis tools to validate the software such as valgrind. → Chimera being developed in C# helps to prevent certain types of bugs and errors such as memory leaks