

Get even more out of your AGI analysis through parallel computing with the STK Scalability Platform

The Scalability Platform allows you to scale your STK (Engine, Components) or ODTK computations vertically or horizontally. It provides the environment to distribute computations across a cluster of machines.

Accelerate STK computations

Do you perform long running STK computations taking minutes, hours or even days? You can speed up these computations by distributing them across several cores and machines. STK has out-of-the-box support for distributing coverage, volumetric, chains and deck access computations.

Increase the accuracy of STK computations

The acceleration of the computations allow you to seek greater fidelity that could not be achieved otherwise due to the long run-time required. For instance, you can now compute coverage over a higher resolution grid, handle deck access with larger number of objects, or evaluate larger numbers of strands through the chain.

Host services based on AGI analysis

Using the Web Portal you can define a function to be hosted on the platform. The function is defined by a scenario, a list of inputs and outputs, and a code snippet. This is conceptually similar to AWS Lambdas, Microsoft Azure Functions, or Google Cloud Functions, but for AGI Products. That function can then be used to define services, such as parametric studies and carpet plots.

Easily manage a secure cluster of machines

User interfaces (tray applications and web portal) allow you to configure, manage and monitor the cluster of machines.

The communication between the different nodes of the cluster can be configured to use mutual TLS 1.2, PKI certificates, and access control list. The Web Portal is accessible from any standard browser and has the ability to integrate with standard identity providers such as OIDC and LDAP.

Parallelize your own computations

If you have a custom computation (for instance using STK Engine, ODTK or STK Components logic), the .NET and Java SDKs give you the ability to parallelize your computation.

The APIs allow you to create tasks that can share a common environment, allowing for efficient use of resources. Those tasks are then submitted to a coordinator. The coordinator manages a job queue to synchronize the work of agent machines that then run those tasks in parallel in separate worker processes.

The runtime environment is responsible for executing those tasks and provides the following capabilities:

- Automatically deploys your .NET or Java code
- Executes the jobs in isolated processes
- Returns the results back to the client
- Robust error handling
- Fine grain worker selection
- Multiple scheduling algorithms
- Cancellation support
- Progress reporting
- System monitoring

The SDKs include tutorials, tools, and instructions for using the API and the runtime environment optimally.

Foundation for AGI products

The Scalability Platform is also a building block for other AGI Products.

For instance, STK offers the STK Parallel Computing extension. That extension uses Scalability Platform to parallelize Coverage, Deck Access, Chains, and Volumetric computations within STK.

The Scalability Extension is also used by ComSPOC to distribute workflows, including large-scale orbit determination and conjunction analysis computations.

By using the Scalability Platform, you can benefit from the same infrastructure to parallelize your own computations.