

INTEGRATED GRAPHICS, OPERATIONS, AND ANALYSIS LAB

Tietronix supports the Integrated Graphics, Operations, and Analysis Laboratory in the Automation, Robotics, and Simulation Division (AR&SD) at NASA's Johnson Space Center. This team provides NASA projects with software development support and visualizations that assist with mission concept design, analysis, and operational support.

The team creates and works with 3D models to produce realistic still images and animations that currently support Shuttle, Crew Exploration Vehicle (CEV), and James Webb Space Telescope (JWST). Modeling and animations are performed with AGEA, an integrated 3D modeling, animation, and visualization tool, developed in-house by the team, which can be tailored to fulfill the requests of the customer. For example, AGEA has the capability of importing data log files from simulators which evaluate the movements of the Shuttle and International Space Station robotic arms. The imported data files are then used to animate the detailed movements of these robotic arms during each shuttle mission. AGEA also supports the import and export of various industry standard file formats.



AGEA can be used as a modeling and animation tool, or the graphics library can be used separately to create special use, stand-alone tools at the client's request. The graphics in AGEA are displayed by the Interactive Graphics Library, a library of graphics routines written by the team. In addition, an application program interface (API) is provided, which allows other programs to drive AGEA, using it as their display tool. For example, one customer uses the AGEA API to drive the Shuttle and Space Station robotic arms in their simulation.

Previous and current projects include:

- Lunar and Mars concept animations
- Space shuttle payload modeling and animation
- ISS modeling and animation
- Hubble Space Telescope animation
- JSC facility modeling and animation
- CEV modeling and animation

Animations are rendered digitally, and can be output to:

- HD video
- SD broadcast quality video (NTSC)
- DVD format
- AVI / WMV for output to CD or posting to the web.

