

# AN ASSESSMENT OF THE BENEFITS ASSOCIATED WITH SOFTWARE BY ANALYTICAL GRAPHICS, INC. (AGI)



A Frost & Sullivan White Paper

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## **METHODOLOGY**

### **Frost & Sullivan's Expertise and Relationships**

Frost & Sullivan has more than 40 years' experience monitoring and evaluating the dynamics of the aerospace and defense markets. In that time the company has developed expertise in many diverse areas including C4ISR, Commercial Aerospace, Avionics, Unmanned Systems, Modeling and Simulation, and Homeland Security.

Across the industry, Frost & Sullivan has built long-standing relationships with large system integrators, OEMs, suppliers and key government and private sector end-users. Its relationships and expertise are not bound to a specific region, as Frost & Sullivan has a global presence with 32 offices in 21 countries, on six continents.

### **Frost & Sullivan's Research Methodology**

Frost & Sullivan conducted research, using primary and secondary sources to establish the benefits associated with the use of software developed by Analytical Graphics, Inc. (AGI). The focus of the research was on the primary side, where Frost & Sullivan reached out to ten end-user organizations that were well-versed with AGI's software and willing to comment on their experiences with it. The organizations represented a broad cross section of AGI's customer base and included U.S. and European organizations consisting of government agencies, first-tier prime contractors, subcontractors, and research organizations. As such, this report summarizes the results of in-depth interviews, not a comprehensive survey.

In ten interviews Frost & Sullivan attempted to drill down to a level where a quantifiable return on investment (ROI) was available—these instances will be highlighted throughout the paper. In the absence of hard numbers, Frost & Sullivan used qualitative statements and survey data to assess the benefits associated with AGI's software.

Frost & Sullivan is an independent analyst, and the results of its analysis are based on its own research and assessment of findings regarding AGI. The results presented in this paper are an accurate, unbiased representation of the market and the end-users' experiences. They identify and validate the ROI related to the use of AGI's software.

## EXECUTIVE SUMMARY

Analytical Graphics, Inc. (AGI) provides commercial-off-the-shelf (COTS) software that models, computes, and analyzes data and shows the results in a moving 3D computer display. The software is used most frequently by the national security, defense, and space communities to analyze relationships and interactions among land, sea, air, and space assets for mission planning, operations, battlespace visualization, and post-mission analysis.

Frost and Sullivan found that customers using the software accelerated their time to market for developmental efforts by as much as four times compared to other options that included developing software in-house; using government-built software; and purchasing other commercial products. The software was also linked to substantial increases in productivity (up to 69.8x), and in one case nearly eliminated design costs for a project. In most instances, the software paid for itself within weeks of becoming operational.

End users told Frost & Sullivan that AGI's customer service provides substantial added value to its software. All end-users spoken to ranked AGI's support department as excellent and reported that the AGI team as a whole is customer-centric. They stated that AGI helped them overcome issues ranging from scripting edits to overhauling the high-level approach to a project. The quality and flexibility of the company's customer service came at no cost to the customer beyond the annual maintenance fee, which is approximately 20 percent of the upfront cost yearly.

Many respondents reported that the software provided benefits that were not directly quantifiable, but were significant, nonetheless. They attributed this to the COTS nature of software, which contains features and functions that often are not called for in the original requirements but provide substantial benefit as the program/project progresses.

Reported Benefits of AGI Software	
Customer Benefit	Result
Time to market	Up to 4x faster
Productivity	Up to 69.8x more productive
Reduced cost	Up to 99.9% savings
Return on Investment	Up to 500%

## QUANTITATIVE RESULTS: REPORTED BENEFITS RELATED TO AGI'S SOFTWARE

According to AGI, its market presence has grown to approximately 35,000 registered users since 1989. Through this study, Frost & Sullivan learned that AGI's software produced measurable benefits for customers in three primary areas: accelerated time to market, increased productivity, and reduced costs.

### Faster to Market

Delivering a product to market quickly was an overarching benefit cited by Frost & Sullivan's interview subjects. On average, customers reported delivering their development products to market 2.2 times faster than with other options. In three cases, customers reported that the use of AGI's software led to winning contracts; in another, the customer reported that the accelerated delivery time and/or time to market was directly responsible for repeat business;

Examples of Accelerated Time to Market		
Application Area	Case	Results With AGI Software
Space Systems (Mission Planning, Risk Analysis)	Anticipated 1+ month development	Completed in weeks <b>2+ weeks accelerated time to market</b>
Space Systems (Mission Planning and Operations)	Anticipated 3-year project using internal tools and legacy FORTRAN-based systems	Completed in 18 months <b>2x faster delivery</b>
C4ISR	Original project timeline of 6-12 months	Completed in 90 days <b>2x – 4x accelerated time to market</b>
Missile Defense (Mission Planning & Operations)	6+ week anticipated effort to develop a deployable turnkey solution	Deployed in 4 weeks <b>1.5x accelerated time to market</b>
Space Systems (Satellite Operations)	Cost-effective upgrade needed to increase capabilities of a legacy system	New system operational in <b>6 months.</b>

## Increased Productivity

According to the majority of interview subjects, increased productivity attributed to AGI's software was a contributing factor in the success of their businesses and/or missions. Productivity increases led to internal cost and time savings on projects, faster contract turnaround and avoidance of technical computational errors. All factors helped increase profitability and brought repeat business.

Examples of Increased Productivity		
Application Area	Case	Results With AGI Software
Space Systems (Satellite Operations)	Existing system monitored 7 of 35 satellites daily; 35 satellites once a week	35 satellites monitored daily <b>7x</b> productivity enhancement
C4I/GEOINT	Multi-sensor mission operations tool required 48-hour mission planning cycle	2-hour planning cycle <b>24x</b> increase in efficiency
Space Systems (Satellite Operations)	Two-day product generation for operational system Several-day training cycle for operators	2-hour product generation <b>24x</b> productivity enhancement <b>30-minute</b> training cycle for new users
Space Systems (Satellite Operations)	3-day satellite mission scheduling	18-hour satellite mission scheduling <b>4x</b> increase in productivity
Missile Defense	Required simulation times of: <ul style="list-style-type: none"> <li>• 17 minutes to create 100 facilities</li> <li>• 33 minutes to create 100 satellites</li> <li>• 100 minutes to create 100 missiles</li> </ul>	Simulation times with automated process: <ul style="list-style-type: none"> <li>• 25 seconds to create 100 facilities</li> <li>• 70 seconds to create 100 satellites</li> <li>• 86 seconds to create 100 missiles</li> </ul> <b>28.6x – 69.8x</b> productivity enhancement
Space Systems (Satellite Operations)	Satellite tracking took approximately four hours	With automated processes, satellite tracking takes 30 minutes <b>8x</b> productivity enhancement

## Reduced Costs

A number of the benefits that customers experienced were attributable to the off-the-shelf nature of AGI software. Much of the cost savings came from reduced design and development cycles and reductions in ongoing costs for operational systems.

Examples of Reduced Costs		
Application Area	Case	Results With AGI Software
Space Systems (Satellite Operations)	Baseline operational concept included 2 fulltime employees per year	Operation supported by one half-time employee <b>75%</b> savings for maintenance and operations
Space Systems (Satellite Operations)	Initial projected cost of \$10 million for development and \$1 million annually for operations	\$5 million savings for development and \$500,000 savings annually for operations <b>50%</b> savings in overall cost
Missile Defense	Cost estimate of \$150 million to design and deploy a proprietary system with AGI's software capabilities	<b>\$150,000</b> cost for simulation system <b>99.9%</b> savings
Space Systems (Satellite Operations)	Anticipated legacy system upgrade requiring more than a year to design and deploy	<b>6-month</b> upgrade completion <b>50%</b> reduction in cycle time <b>90%</b> less cost to buy versus build

## Return on Investment

Identifying and stating a specific return on investment associated with AGI's software is challenging. As is apparent from the previous examples, customers currently experience a range of benefits depending on the application, the type of software being used and how they are using it. However, there were instances where a return on investment could be quantified.

Examples of ROI		
Application Area	Case	ROI
Space Systems (Mission Planning and Risk Analysis)	<p><i>Cost:</i> Expenditures of \$1.5 million for initial procurement of AGI software, 3 years of maintenance fees, and 3 years of operating costs</p> <p><i>Gain:</i> At least \$8 million in new-business revenue and \$1 million in cost avoidance.</p>	<b>500% (\$7.5 million)</b> over three years
Missile Defense	<p><i>Cost:</i> Expenditure of \$144,000 on AGI software since 2006</p> <p><i>Gain:</i> Cost savings totaling \$214,000 to date.</p>	<b>48.6%</b> in less than two years
Space Systems (Satellite Operations)	<p><i>Cost:</i> Initial implementation cost of \$5 million for the AGI solution</p> <p><i>Gain:</i> Development and operational cost savings of \$6.5 million over 2½ years</p>	<b>125%</b> over 2½ years

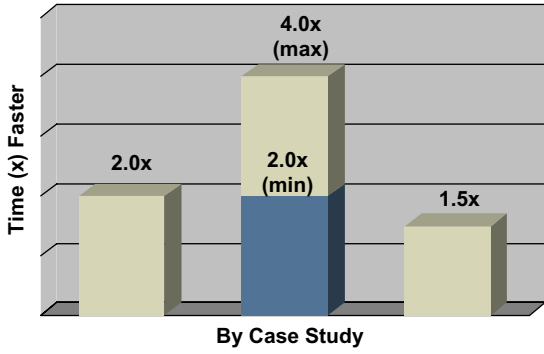
## **SUMMARIZATION OF THE IMPACT OF AGI'S SOFTWARE**

In this white paper, Frost & Sullivan examined the benefits associated with the use of commercial off-the-shelf software developed by Analytical Graphics, Inc. The ten customers interviewed described numerous benefits, some more quantifiable than others. Participants reported accelerating time to market by as much as four times; enhancing productivity by up to 69.8 times; deeply reducing development costs, and garnering ROI of up to 500 percent.

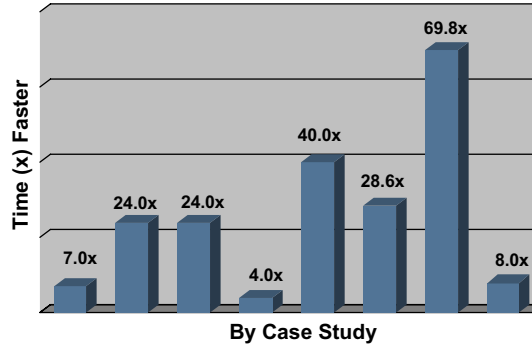
Among the qualitative benefits, several interviewees reported that they could not do what they do now without AGI and that the software contained features that were highly beneficial even though not originally perceived as requirements. Customers also said they experienced accelerated decision-making and an improved ability to capture repeat business. The perception of extended software lifetime was also cited by several customers. According to them, the ongoing software enhancements and customer service included in the AGI maintenance agreements allowed them to adapt quickly to the changing needs of their end-users, and gave them a level of confidence that the capabilities for many of their future requirements already exist within the software. AGI's customer service was rated "excellent" by all interviewed customers.

**APPENDIX**

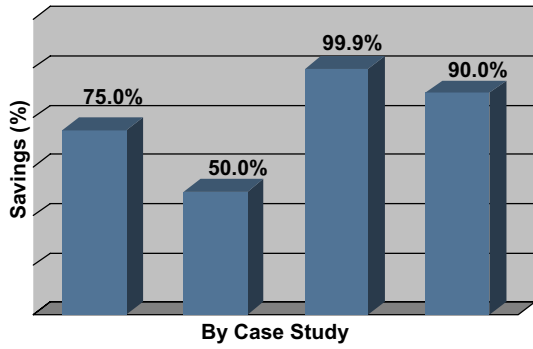
**Faster Time to Market**



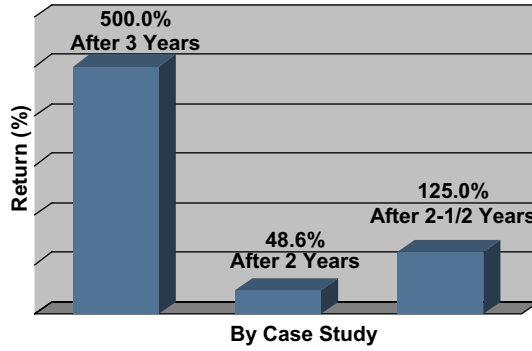
**Increased Productivity**



**Design Cost Savings**



**Net Return On Investment (ROI)**



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