

Graham Technologies Blends ISO, Agile, and Scrum Methods with CMMI® to Improve Cybersecurity Software

Company Background

Founded in 2007, Graham Technologies LLC specializes in secure software development and IT systems integration for U.S. government agencies and the national intelligence community as well as commercial customers. Graham Technologies, based in Largo, Md., has a CMMI maturity level 3 rating and is an ISO 9001 certified company.

THE BUSINESS NEED

The U.S. Director of National Intelligence ranks cybercrime as the No. 1 national security threat, ahead of terrorism, espionage, and weapons of mass destruction.¹ The federal government was the target of more than 61,000 cybersecurity breaches in 2015, and the risks of ongoing attacks and intrusions by other nations and unauthorized groups or individuals continue to escalate.² Threats to private companies are just as high, so organizations need computer software and IT systems that are effectively managed to ensure project security controls are implemented and operated against requirements and recommended security practices.

Graham Technologies solutions enable senior leadership of federal government agencies, the national intelligence community, and private companies to observe and collaborate in real time on information technology security threats. Today's cybersecurity compliance challenges also raise the stakes for Graham Technologies. As a result, the company wanted to improve its engineering practices, artifacts, and application capabilities. This update would serve as the foundation for its Software Engineering Process Group assessment standards and guides, in addition to new project initiatives offered as Graham Technologies services, or packaged and acquired by Graham Technologies clients for mission customization.

Graham Technologies follows agile and Scrum development methods and successfully completed a CMMI-DEV maturity level 2 appraisal. The company needed an appraiser that understands how agile ceremonies and artifacts (Epics, Features, User Stories, and Tasks) can satisfy practices required for CMMI. In the spirit of continuous improvement, the company implemented CMMI again to identify any gaps or risks in its current product development and IT security processes.

“ I have participated in two CMMI appraisals and appreciate how CMMI captures the critical organizational and project success factors such as cost, schedule, scope, and quality to enable project managers and team leads such as myself to focus more on how to deliver high-quality products and services. CMMI provides me with a clear road map of what’s expected, and helps me understand improvement opportunities. ”

– RODNEY MORRIS, SOLUTIONS ARCHITECT
FOR GRAHAM TECHNOLOGIES

THE SOLUTION

Excellence in Measurement Technology (EMT) conducted appraisals for CMMI for Development V1.3 (maturity level 3) and CMMI for Services V1.3 (maturity level 2) in 2016.

Graham has engaged EMT for more than four years. The consultant specializes in agile and Scrum development methods that can be appraised against CMMI standards. The first appraisal was a multi-model appraisal for development and services in which Graham achieved a maturity level 2 in both. EMT also performs ISO 9000 audits and consulting. EMT’s understanding of the requirements of ISO 9000, ISO 27000, and CMMI made added measurable value to the organization.

CMMI was used to help Graham Technologies improve its use of agile and Scrum methodologies. In fact, 70 percent of CMMI-appraised organizations use CMMI to help improve and scale agile performance across their enterprises. The company established a tailored matrix of CMMI generic and specific practices mapped to agile and Scrum artifacts and ceremonies. Graham defined the required and optional artifacts that were used during organizational planning and assessments as well as throughout the life cycle of a critical enterprise management software project. This approach ensures the company has adequately planned for, managed, and improved upon success factors such as people, tools, and processes. After participating in the CMMI appraisal, Graham’s leaders are confident that they established defined processes and procedures, and therefore raised the maturity level of the implemented software project.



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BUSINESS BENEFITS

Achieving CMMI for Development V1.3 (maturity level 3) and CMMI for Services V1.3 (maturity level 2) ratings is a strong testament to Graham Technologies's ability to meet internal and external product security expectations.

Historically, up to three proposal opportunities are released each month that are within Graham's capabilities, but require or prefer a CMMI maturity level 3.

In addition, successfully completing the CMMI appraisals enabled Graham Technologies to:

- Realize a 75 percent increase in business opportunities each month.
- Quickly deliver to clients using Sprints, increasing customer satisfaction and revenue by reducing time to produce useable minimum viable product from two months to two weeks.
- Ensure the high quality of products and services by delivering software with 80 percent fewer defects compared to previous methods of development.
- Achieve its 2016 training objective for four employees to improve agile and software development competency and business process and procedures, resulting in a 50 percent increase in productivity.
- Improve its ability to consistently mitigate risks on complex projects with the "test first" agile technique, resulting in 80 percent fewer defects by lowering defect injection.

Early-feedback loops for its agile and Scrum projects have been highly successful, and Graham Technologies can ensure its process improvement efforts are also equally defined and iterative. This approach enables the company to sustain the high quality of its products and services and increase customer satisfaction, which drives higher revenue

Source
¹Ian Bremmer, "These 5 Facts Explain the Threat of Cyber Warfare," *TIME Magazine*, June 19, 2015, <http://time.com/3928086/these-5-facts-explain-the-threat-of-cyber-warfare/>.
²Ibid.

LESSONS LEARNED

Since more and more companies use ISO, agile, and Scrum methods in their software development processes, they need to understand how they can use CMMI practices that help strengthen their ISO, agile, and Scrum implementations and achieve performance across the enterprise. CMMI can provide the structure and stability for using ISO, agile, and Scrum together more effectively.

In Graham Technologies's case, the company was able to use a CMMI and agile mapping guide during project implementation to share early-conformance feedback. CMMI highlighted the need for a defined outline of tailored processes and procedures, which assisted with implementation and periodic organization and project assessments.

To implement recommendations from the CMMI appraisals, Graham Technologies identified additional resources that would be needed. The company allocated \$50,000 and assembled a cross-functional team consisting of its project managers and agile and Scrum masters who have the ability to engineer, implement, test, and manage all aspects of the crucial enterprise information software project.

About CMMI® Institute

The CMMI Institute (CMMIinstitute.com) is the global leader in the advancement of best practices in people, process, and technology. The Institute provides the tools and support for organizations to benchmark their capabilities and build maturity by comparing their operations to best practices and identifying performance gaps. For more than 25 years, thousands of high-performing organizations in a variety of industries, including aerospace, finance, healthcare, software, defense, transportation, and telecommunications, have earned a CMMI maturity level rating and proved they are capable business partners and suppliers. CMMI Institute is a part of the ISACA family, the global non-profit association helping professionals to realize the positive potential of technology. To learn more about how CMMI can help your organization elevate performance, visit CMMIinstitute.com.



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