Topic: N141-055

SimVentions, Inc.

Automated Function Point Analysis

The Navy fields complex, software-intensive systems undergoing constant, expensive modifications and upgrades. Source Lines of Code (SLOC) has been in use for decades to estimate software cost. However, SLOC based cost estimates have been shown to be widely variable in estimating overall costs. More reliable methods of cost estimation are required to minimize cost overruns. SimVentions' unique experience in maintaining and re-hosting tens of millions of lines of code has enabled us to develop our Automated Function Point Analysis (AFPA) product which fuses traditional estimation methods with functional analysis and the mining of source code and documentation with Big Data techniques. This provides a more scientific and data driven methodology for performing software scope and cost estimation to help ensure programs of record are executable.

Technology Category Alignment:

Advanced Computing/Software Development

Contact:
John Klaczynski
jklaczynski@simventions.com
(540) 372-7727
http://www.simventions.com
SYSCOM: NAVSEA
Contract: N00024-16-C-4009

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00024-16-C-4009

Department of the Navy SBIR/STTR Transition Program

Statement A: Approved for Release. Distribution is unlimited.
NAVSEA #16-600

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WHO

SYSCOM: NAVSEA

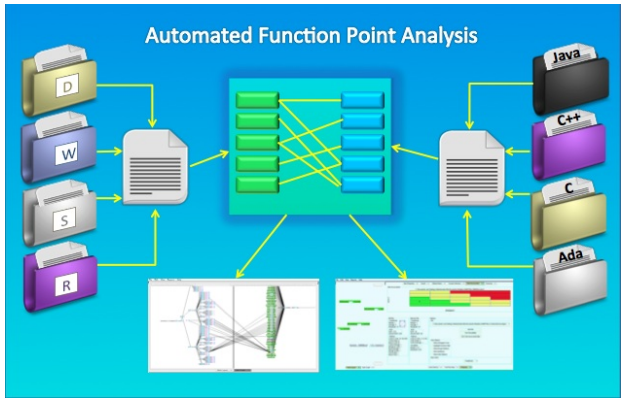
Sponsoring Program: Integrated Warfare Systems (IWS) 1.0 AEGIS

Transition Target: AEGIS Combat System

TPOC:
(540)653-6134

Other transition opportunities: Foreign Military Sales (FMS): For export conformance and customer requirements, significant software effort for existing systems is typical.

Cyber applications: As part of risk assessment, our Automated Function Point Analysis (AFPA) generates metrics which may be indicative of problematic programming practices.



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Notes: This technology enhances the user understanding in estimating complex software systems and provides risk mitigation metrics to improve cost/resource analysis for software development.

WHAT

Operational Need and Improvement: The Navy fields complex, software-intensive systems undergoing constant and expensive modifications and upgrades in a process often lasting decades. Modifications and upgrades to these systems typically affect multiple existing systems. Source Lines of Code (SLOC) has been in use for decades to estimate software cost. However, SLOC based cost estimates have been shown to be widely variable in estimating overall costs. More reliable methods of cost estimation are required to minimize cost overruns.

Specifications Required: OMG Automated Function Points Standard: OMG Document Number: formal/2014-01-0; http://www.omg.org/spec/AFP

Technology Developed: SimVentions' unique experiences in maintaining and rehosting tens of millions of lines of code has enabled us to develop our AFPA product, which fuses traditional estimation methods with functional analysis, the mining of source code and documentation with Big Data and Machine Learning techniques to help ensure programs of record are executable.

Warfighter Value: There are multiple areas of cost-savings and efficiencies enabled by this technology that will result in value to the warfighter. Better initial cost estimates will result in fewer overruns and better planning resulting in more money available for operations. A more accurate and efficient estimation process will result in time back to the engineering cycle and allow engineers to focus on the implementation and functional aspects of the systems rather than code estimation.

WHEN

Contract Number: N00024-16-C-4009 **Ending on:** November 4, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Generation of function points from source code with associated SLOC; Function points influenced by associated documentation.	Low	Number of Function Points Associated	4	October 2016
Algorithm-assisted (Machine Learning) mapping of requirements to function points. Use of Aegis BMD code and documentation as a test set in for verification of methodology	Med	Number of Function Points Associated, Cost Estimate Correctness	5	March 2017
Refined filter algorithms / Cost algorithms	Low	Estimate Correctness	6	October 2017
Proposed: Improved Estimate Correctness / Usability	Low	Improved Estimate Correctness	7	April 2018

HOW

Projected Business Model: SimVentions will deliver the Automated Function Point Analysis product as a Shrink Wrapped product, Software as a Service (SaaS) or as an engineering service.

Company Objectives: The company intends to develop software tools to enable efficient and accurate software estimation based on the results of the research techniques discovered. These tools will be available for commercial and government application enabling a variety of sales models from services using them, services to upgrade, and potential license sales.

Potential Commercial Applications: SimVentions believes that the resulting tool will have broad commercial appeal and would directly market to heavily regulated industries including Freight Carriers, Healthcare and Finance. These are industries where regulatory requirements demand significant documentation and where SimVentions' personnel have experience.

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