

GENCO Systems Inc. Response to FTA's Project Management Oversight Solicitation

GENCO SYSTEMS is an 8(a) Business Development [8(a)BD] and Small Disadvantaged Business (SDB) certified by the U.S. Small Business Administration (USSBA). Established in 1994 GENCO provides the Government and industry with **superior professional services** in engineering and computer-related technologies. We offer complete life-cycle services from concept to system design, development and implementation, project management, quality assurance as well as documentation and training. Our GSA Schedule in Professional Engineering Services makes it easier for Federal Government Agencies to do business with us.

GENCO's efforts have always provided excellent value to the customers. Some times, value is in terms of saving significant amount of money, some times getting the project deployed on time, but always helping the agency getting better quality products from the contractors. GENCO has excellent quality control procedures focusing on the processes and products. GENCO's specialty is Independent Verification and Validation (IV&V) and we have the diverse and extensive experience in the subject and have earned a great reputation with our clients.

Capability Statement

GENCO Systems is an IV&V company; our basic paradigm for IV&V is briefly described here. We look at the processes and products of the development contractors to provide decision support, management support and recommendations to the agency based on our extensive technical analyses of the processes and the products. Because of our expertise as an unbiased observer and sound technical knowledge, we provide valuable consultations, which helps the agency to make right decisions.

GENCO's IV&V skills are best suited for the FTA's project management oversight requirements as we are experienced, knowledgeable, and hard working technical people who can provide independent, and objective valuable technical evaluation of the of grantee and FTA processes to ensure compliance with statutory, administrative, and regulatory requirements. We are well equipped to perform oversight of grantee project management that focuses on the management of major investments (New Starts, rail modernization, etc.). The results of our services will be of great value to Government personnel so that they can make sound decisions based on our robust technical analyses. Our experience described here is for development of systems, which easily are applicable to the operations of the FTA as we will bring subject matter experts (SMEs) to help us evaluate the FTA required evaluation and oversight services.

Our basic IV&V paradigm is evaluating in the systems as following:

- Process
 - Program Management
 - Management and Reporting
 - IV&V Planning
 - Tools & Techniques
 - Process Evaluation & Assurance
 - Contractor Techniques & Tools, Plans, Standards, and Procedures
 - Process Analysis
- Product Verification & Validation for all phases
 - V&V activities for each phase (concept, requirement, design, test phase etc.)

GENCO has performed IV&V on several projects and below is a list of software/analysis tools we are experienced on. The tools help us in analysis, organization of data, and bring efficiency in our efforts.

- Requirements Tracing and Management
 - DOORS, RTM, CORE, VITAL LINK, Rational RoseDatabase Development
 - Access, Oracle, Sybase, MS SQL Server

- Configuration Management
 - ClearCase/ClearQuest, PCMS, PVCS, Serena Change Management Tool
- Code Analysis
 - TivoliNet, Rootcause, Aprobe, Vectortcast, adamat, McCabe
- Simulation/Modelling
 - ATCOACH, PCSA, SES Workbench, Stp.**Relevant Experience**

Following are the IV&V projects we have handled or are currently working on:

a. Weather and Radar Data Processor (WARP) IV&V

Program status: Fielded, Engineering Change Proposal (ECP) or enhancements work in development

Program size and complexity: About 315,000 SLOC newly developed while 135,000 were modified from WARP stage 0 code and ESLOC of 382,500. WARP has 7 CSCIs, 6 HWCIs, WARP has been installed at 21 ARTCC, one system at ATCSCC and one at WJHTC.

Relevant Performance tasks:

- Development of an IV&V plan which follows IEEE standards and defines the IV&V activities for the lifecycle of the WARP program keeping in view the WARP's statement of work and contract structure set up with the development contractor,
- Setting up a software tools (Dynamic Object oriented Requirements System (DOORS), Software through Picture (StP), and Project Control Management System (PCMS)) environment to maximize utilizing development contractor's tools and electronic access to the contractor's development environment,
- Evaluation of development contractor's plans (software development plan, configuration management plan, program plan, quality assurance plan risk assessment and risk abatement plan, master test plan etc.),
- Evaluation of development contractor's periodic contract deliverable (CDRL) items such as software management indicator report, program status report, and network logic schedule,
- Evaluation of software related documents for each phase (requirement phase, preliminary design phase, detailed design phase, code and unit testing phase, software integration phase and system integration phase, operation and maintenance phase) of the program life cycle and provide recommendation to program office,
- Perform traceability analysis from system requirements to software requirements, then to preliminary design and to detailed design and finally to code. Provide statistical results/graphs to the program office regarding the outcome of the analysis results,
- Perform on-line evaluation of software development folders and provide informal feedback to the contractor to resolve the issues before the documents are delivered formally,
- Perform evaluation of C code for requirements and quality, the code is accessed through online interface via Project Control Management System (PCMS) tool.
- Support the formal reviews such as Systems Requirement Review (SRR), Software Requirement Review (SSR), Preliminary Design Review (PDR), Critical Design Review (CDR) etc., Program Management Review (PMR) and Technical Interchange Meetings (TIM). Provide a trip report indicating observations, evaluation and recommendations to the program office,
- Provide evaluation and support to WARP test program including monitoring of selected test activities of the contractor (e.g. unit testing, integration testing, system factory acceptance testing and site acceptance testing),
- Support the program office in planning and conducting Functional Configuration Audit /Physical Configuration Audits (FCA/PCAs). Supported preparation of Govt FCA/PCA plans and reviewed contractor's FCA/PCA plans and reports.
- Provide management support regarding the execution of the IV&V plan, quality control of IV&V findings, planning, reporting and coordinating with other project entities.
- Provide support to WARP program office in making the decisions about the program.
- Support the WARP team in resolving all software related issues.
- Support the evaluation of the engineering change proposals (ECPs) and help the Govt in negotiations.

b. Integrated Terminal Weather System (ITWS) IV&V and Software Engineering

Program status: system being deployed, ECPs are in development state

Program size and complexity: 286,000 new developed code of C++, ESLOC of 294,600. 5 CSCIs, 6 HWCIs, 38 systems are to be installed at different airports and TRACONs plus one system at FAA academy at Oklahoma and one system at WJHTC.

Relevant Performance tasks:

- Evaluation of development contractor's plans (software development plan, configuration management plan, program plan, quality assurance plan risk assessment and risk abatement plan, master test plan etc.),
- Evaluation of development contractor's periodic contract deliverable (CDRL) items such as software management indicator report, program status report, and network logic schedule,
- Evaluation of software related documents for each phase (requirement phase, preliminary design phase, detailed design phase, code and unit testing phase, software integration phase and system integration phase, operation and maintenance phase) of the program life cycle and provide recommendation to program office,
- Perform traceability analysis from system requirements to software requirements, then to preliminary design and to detailed design and finally to code. Provide statistical results/graphs to the program office regarding the outcome of the analysis results,
- Perform on-site evaluation of software development folders and provide informal feedback to the contractor to resolve the issues before the documents are delivered formally,
- Support the formal reviews such as Systems Requirement Review (SRR), Software Requirement Review (SSR), Preliminary Design Review (PDR), Critical Design Review (CDR) etc., Program Management Review (PMR) and Technical Interchange Meetings (TIM). Provide a trip report indicating observations, evaluation and recommendations to the program office,
- Support Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA),
- Provide evaluation and support to ITWS test program including monitoring of selected test activities of the contractor (e.g. unit testing, integration testing, system factory acceptance testing and site acceptance testing),
- Provide management support quality control of IV&V findings, planning, reporting and coordinating with other project entities and prepare quality process initiatives input.
- Support the ITWS team in resolving all software related issues.

c. Open Skies Management and Planning System (OSMAPS) IV&V

Program Status: Deployed

Program size and complexity: This is a small project with about 160,000 SLOC of Java code and only implemented on a PC in Window environment.

Relevant Performance tasks:

- Verifying correctness of conversion of Ada into Java on a PC environment
- Reviewed all requirements and design documents
- Maintaining and Verifying traceability
- Monitoring contractor's testing activities
- Performing IV&V testing to support Government acceptance of the system
- Support formal reviews and technical meetings
- Support Government decision making about the program

d. En Route Automation Modernization (ERAM) IV&V

Program status: Under development

Program size and complexity: ERAM system has more than 1.2 million SLOC when developed. There are 29 CSCIs and 16 HWCIs. The systems will be installed at 21 ARTCCs, at William J. Hughes Technical center (WJHTC) and FAA training academy at Oklahoma City.

Relevant Performance tasks:

- Development of an IV&V plan specifying tasks, techniques, tools and resources for duration of this 5 years contract effort.
- Criticality analysis to determine the areas of IV&V coverage for maximum benefits to the project.

- Development of static and dynamic metrics to be used for the duration of the ERAM project. This includes measurement methodologies, tools used and the qualities of code issues addressed, and interpretation of metrics.
- Systems Requirements Analysis to determine completeness, consistency, correctness of system level requirements and traceability of higher level documents to contractor's requirement documents.
- System requirements analysis, modeling, design and architecture evaluation
- Software Design Analysis.
- Code Analysis (automated and manual) to determine the requirements compliance and quality of Ada and C code.
- Reviewing all contract deliverables (CDRLs)
- Risk Analysis and Reporting
- Test Plan development
- Test and Evaluation
- Technical Documentation Development
- Project Management

Our Quality Assurance Procedures

Summary of Quality Assurance Program

GENCO Systems Inc. has a quality control plan in place to ensure high quality services and deliverables. It has a system of management review, corrective and preventive measures and has the capacity to handle multiple task orders. It is the policy of GENCO Systems to deliver products and services to our customers under strict quality control system. Our reputation with our present and past customers is testimony to the success of our quality control process. Our quality control plan is flexible enough to grow with increased contract activity and formal enough to provide an audit trail. Even though the Program Manager exercises overall responsibility for the quality, completeness, and timeliness of tasks, there is an independent quality assurance officer spending reasonable time on each project. There is provision of getting customer feedback on all projects where corporate officers meet the customers on a periodic basis to ensure that our services are to complete customer satisfaction. GENCO's President is responsible for the proper degree of quality function to be established in each project depending upon its complexity. The organization plan of GENCO is structured in a way to ensure quality control checks at all levels of Task order execution. The Vice President is responsible for taking steps to ensure that employees understand the quality policy of the company.

GENCO Quality Policy:

As GENCO is mainly an IV&V company, realizing the significance of quality assurance for IV&V team, we put very high emphasis on the quality assurance. We have the policy of ensuring that every product generated by us is not only defect free but demonstrates professionalism.

Methods of Quality Assurance:

Formal quality management programs cover work over the life cycle of a task from requirements definition through delivery of the product. The Group Manager ensures not only that the program team understands the contract requirements and the customer's expectations, but both can be met also. Task leaders are responsible for maintaining close contact with their customer to maintain agreement on the definition of the deliverables. Following techniques are used in general for assuring quality in processes and products

(i) Peer Review

It is a practice at GENCO to perform peer review of every product. Peer review means that a different person than who generated it reviews every product. This gives an independent scrutiny by another person who is knowledgeable in the subject area. Questions are raised and resolved driving out the inadequacies of the product.

(ii) Management Review

A senior level person knowledgeable in the subject matter performs management review. This person has a different perspective, as he/she is not only looking at the technical aspects but also how this product is to be

received by the customer by looking at customer focus, corporate focus and overall quality of the product. Chances are that products become better after the issues raised by management review are resolved.

Besides management review, corporate quality assurance officer will be involved in assurance the quality of our products and processes. He will be involved in each project's quality assurance in several ways; periodic quality review of the projects, feedback from the customers and coordinating corrective and preventive initiatives, ensuring project team understand the quality aspects of the project, tailoring quality assurance plan for each project.

(iii) Quality Assurance Plan

This plan is an inhouse document used for each project. The QA plan is a tailored version of our general QA plan to specifically address the quality aspects of each project. The focus of this plan for each project will be customer expectations of quality. This effort ensures that the employees clearly understand the customer's expectations and requirements. Interaction with the customer and with in the team organization continues as the work progresses towards task completion. The program manager interacts personally with employees to ensure team focus, timeliness and responsiveness. Review of deliverables begins at the start of the task. Depending on the complexity of the project GENCO has the policy of retaining the services of a Subject Matter expert specific to the Task order. This helps the program team to quickly understand the expectations of the customer. The subject matter expert is responsible for giving feedback on the quality of service and deliverables, which helps the team to improve their performance. This is a unique feature of GENCO's services.

General Services Administration IT 70 or 871 PES Schedule Contract Number

GENCO has IT 70 (**GSA Contract Number: GS-35F-0976R**) and 871 PES GSA Schedule (**GSA Contract Number: GS-23F-0019P**). These are an 8(a) GSA schedules, any contract awarded through these vehicles will be an 8(a) contract for the agency.

GENCO's business strategy is based on following:

1. Lower Prices: Offering our services at consistently lower prices. This will be achieved by controlling the procurement costs, maintaining higher productivity and efficiency due to well-defined processes, keeping the overheads under control and by keeping low profit margins.
2. Quality Service: While keeping the price of our services low we will make sure that quality of the service is not compromised. The focus will be to give little extra to the customer than asked.
3. Customer Focus: GENCO does not believe in making a fast buck. Our focus is to win the trust of the customers and we are always prepared to take smallest assignment and complete it with full attention and dedication.

In summary, GENCO Systems can provide, implement, and manage project management oversight program as required by the FTA Our discriminators of being a valuable project management oversight contractor are as following:

- GENCO has extensive and broad IV&V and oversight monitoring experience,
- GENCO is an exclusively IV&V/oversight company, and is better prepared to provide these services than some other organization whose primary focus is something else,
- We have successful IV&V on Advanced Automation System (AAS), WARP, ITWS, ERAM (four major FAA projects involving millions of dollars), and OSMAPS
- We have proven effectiveness of IV&V methodologies,
- GENCO is a well managed, financially sound company,
- Quality focused organization to always meet/exceed customer expectations,
- With our IV&V persons network, we can quickly put together a team to handle FTA's project management oversight program,
- GENCO has very competitive GSA labor rates.