# The Federal Government Electronic Tag (FedElecTag)
# A Federal Fleet Business Transformation (FFBT) Initiative

**Project Technical Development**


**Contact Information**
The Federal Government Electronic Tag (FedElecTag) Team
O: 202.461.9959 l M: 240.486.6476 l E: admin@fedelectag.com

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# The Federal Government Electronic Tag (FedElecTag)

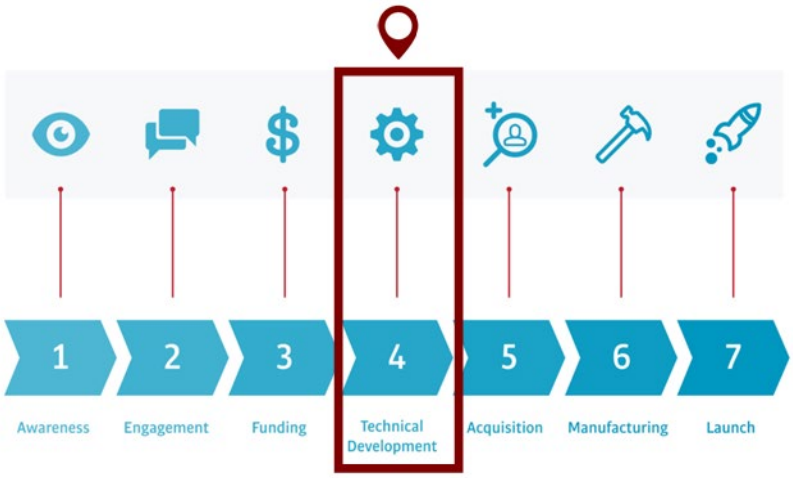
## -- A Multi-Function Electronic Display License Plate System --

*An Innovative Technology Recommendation*
*for*
*Federal Government Motor Vehicles*

# Contents

# The Federal Government Electronic Tag (FedElecTag)

## *Project Technical Development*




## 1 Purpose of the Total Project

The purpose of this project is to conduct pre-production research, develop first prototypes, and demonstrate the utility of the E-license plate. The patented E-license plate or the Federal Government Electronic Tag (FedElecTag) represents a forerunner with Federal fleet mission-capable technology designed to automate and improve underlying business processes resulting in increased efficiency and budgetary savings. The project addresses the growing concern for Federal fleets to achieve high operational efficiency, reduced Greenhouse Gas (GHG) emissions, and reduced cost; while doing so during a climate with a growing number of fleet vehicles, increased maintenance cost, rising cost per mile, more fuel consumption, volatile prices, and misuse of vehicles. There also are a growing number of regulatory mandates for vehicle safety and security.

The digital license plate revolution has already begun. This industry traction and momentum is highlighted as the Arizona, California, Florida, and Texas Department of Motor Vehicles (DMV) also are developing similar E-License Plates – "Governor Brown signed the Electronic License Plate Pilot Program extension bill into law… Senate Bill 1399 extends sunset date to January 1, 2019. Even Dubai of the United Arab Emirates has launched its version of the California model.

For more information, visit https://www.fedelectag.com.

# 2 Results to be Achieved by the Total Project

The project objective is to develop an E-license plate demonstration of the "FedElecTag" concept. The E-license plate product vision integrates sensor technology, analytics, and wireless communication to bring about novel connected device capabilities for fleet managers. For example, Apple iPhones, Samsung and Kindle tablets include accelerometers, gyroscopes, GPS, and a display screen that fits perfectly for this device. These capabilities make the smartphone and tablets well-suited platforms for developing first prototypes to demonstrate the novel integration of sensing, communication, and analytics that is the core of the E-license plate vision.

However, research challenges must be addressed to select, and efficiently implement, integrate, and optimize our proposed prototype versions of the E-license plate analytics techniques, communication protocols, and basic user interface functionality. This integrated functionality should be sufficiently rich to concretely demonstrate the potential of the E-license plate product vision; sufficiently efficient to validate capabilities of energy efficient, real-time operation on resource-constrained (mobile) platforms; and well-modularized to promote rapid design iterations and experimentation. The proposed two-phase project is centered on addressing these challenges.

# 3 Project Description

## 3.1 Scope of Work

The project scope of work will implement the "Iterative" Systems Development Life Cycle (SDLC) methodology (Iterative: Incremental, Spiral, Agile). Scope of work is centered around a two-phase approach to develop two successive prototypes; one at the end of each project phase to establish a deeper technical understanding of the electronic license plate vision, and to provide initial validation and demonstration of the product concept.

The work in Phase I (alpha testing) will center on requirements analysis, software architecture design, analytics engine design, preliminary algorithm development for data analysis, and development of a rudimentary initial prototype.

Phase II (beta testing) entails further experimentation, refining the data analysis algorithms, and developing a more advanced prototype to include telematics such as in-vehicle user interface development. The Phase II prototype will also provide valuable baseline functionality for future scaling of the product concept to incorporate cloud-based, performance analytics and services for fleet managers.

## 3.2 Technical Approach

The project will be conducted in partnership among the General Services Administration (GSA), Industry Partners, the Federal Prison Industries (UNICOR), and the Department of Homeland Security (DHS). This approach will leverage the unique, interdisciplinary blend of expertise of the project partners in technology innovation, embedded signal processing software and systems, sensor data analytics, manufacturing capabilities, and cyber-physical systems.

**General Services Administration (GSA)**

The GSA, along with the United States Digital Service (USDS), will support this project's technical development and modernization efforts by leveraging top technical talent to help agencies solve the technical challenges posed by upgrading legacy systems and technologies. To help agencies accelerate the modernization of IT infrastructure across the government while leveraging private-sector expertise, GSA is standing up Centers of Excellence to centralize best practices and offer "hands-on" implementation assistance to customer agencies for cloud migration, infrastructure modernization and other foundational technology and security improvements.

In line with this project, the GSA Federal Acquisition Service (FAS), Office of Telecommunications Services (OTS) created the Enterprise Infrastructure Solutions (EIS) program to provide a vehicle for agency customers across government to acquire simple to complex telecommunications and networking infrastructure services from one or more contractors. With the EIS Indefinite Delivery Indefinite Quantity (IDIQ) contract vehicle, an agency selects a contractor, awards task orders, and initiates service orders. Agencies are directly billed and manage their own services throughout the lifecycle of the task order. The EIS contract comprehensively addresses this project's requirements for telecommunications and information technology infrastructure.

**Industry Partners**

Specifically, many of the EIS contract 10 industry partners have a deep-rooted history of serving Federal agencies with standard and customized lifecycle solutions that support mission goals. Incumbent providers prime Networx contract holders such as AT&T, CenturyLink and Verizon are in a prime position to serve the EIS contract. The other non-traditional communications companies such as Harris, British Telecom, MicroTech Telecommunications, Granite Telecommunications, Core Telecom Systems and MetTel provide value as systems integrators and communications companies. They all have the capabilities to assemble solid teams of large, medium and small partners, many from award-winning, small business program.

For example, industry partner AT&T Government Solutions was awarded a government-wide Blanket Purchase Agreement (BPA) that provides Federal agencies with the latest in telematics technology. It has a long-standing, trusted source of network enabled solutions for the U.S. Federal government and international organizations. It integrates network resources and IT and software engineering expertise with innovative technologies from AT&T Labs, AT&T Foundry and industry leading partners. Among government agencies, AT&T Government Solutions is a proven solutions integrator with expertise in areas such as managed voice and data network solutions, cybersecurity solutions, unified communications, advanced mobility solutions and cloud solutions.

The EIS contract industry partner's integrated portfolio offerings includes:

- Communications Solutions
- Custom Design, and IT Solutions & Engineering
- Management and Application Services
- Voice and Data Wireless Services
- Systems Design
- Strategic Consulting
- Hardware & Software Procurement
- Asset Management
- High Bandwidth Services
- Engineering, Construction and Project Management

**Industry Partners Collaboration**

The FFBT coordinators/FedElecTag team already has established open communications with private sector experts and vendors via an exclusive industry outreach portal. The industry collaboration and business development tool is used to communicate with potential Federal government industry partners, pilot partners, and others who will take the technology and transition and commercialize the product capabilities. This arrangement allows us to build our procurement solutions to better understand industry's capabilities and alignment with agency requirements.

**UNICOR**

Currently, only UNICOR produces Federal license plates per 41 CFR 102-34.140 (Made in USA), in which UNICOR already has determined that the E-License Plates project is "technically feasible." UNICOR has the capabilities in line with the National Institute of Standards and Technology (NIST) framework to ensure that the FedElecTag digital license plates can stand up to cyber attacks, vibration, shock, dust, water, etc.

The FedElecTag will undergo climatic testing, be verified via military specifications/standards (MIL-STD-167 Vibration, IP65, IP66), and made with shatter proof gorilla glass (or similar). The devices will be industrial-strength and projected to withstand extreme changes in weather conditions and temperatures from -40c to 85c (or -40 degrees to 185 degrees). E-License plates are designed for manufacturing (DFM) optimization which will pass on savings to Federal agencies.

**Department of Homeland Security (DHS)**

The project will implement the Federal Risk and Authorization Management Program (FedRAMP) approach to ensure that security vulnerabilities are identified and addressed before system designs are complete. The FedRAMP is a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services. Specific member organizations related to this project development are the DHS, NIST, and GSA. Note that the GSA serves as the FedRAMP project management office (PMO) and has a focus on cyber acquisition solutions so that security is integrated into the system acquisition process with its Highly Adaptive Cybersecurity Services (HACS) program.

However, the project specifically will coordinate with the DHS, Cyber Security Division (CSD) which is designed to enable and support research, development, testing, evaluation and transition of advanced cybersecurity and information assurance technologies. The CSD provides specific value-added technical expertise to improve project management, operational analysis, and acquisition management to avoid acquisition failures and costly delays. It ensures that cyber-physical systems and Internet of Things (IoT) security vulnerabilities are identified. More importantly, it also develops technology solutions for automotive initiatives. Below are specific CSD projects and enabling technologies directly related to the FedElecTag.

| **Cyber Security Division (CSD) Projects** | |
|---|---|
| Cyber Physical Systems | • Uptane: Secure Over-the-Air Updates for Ground Vehicles<br>• Side-Channel Causal Analysis for Design of Cyber-Physical Security |
| Cyber Security for Law Enforcement | • Project iVe: Infotainment/Telematics System Forensics |
| Data Privacy & Identity Management | • NFC and Derived Credentials for Access Control |
| Network System Security | • A Trust Platform for IoT |

(Source: CSD Technology Guides at https://www.dhs.gov/publication/csd-technology-guide)

**FedElecTag Dashboard**

We will develop and apply a FedElecTag dashboard or suite of modules and metrics covering vehicle administration tools that are aligned with the Federal government's fleet management practices and operational procedures per the "Guide to Federal Fleet Management" and Federal government sustainability mandates. The preliminary dashboard contains the following seven main categories that will be supported by key performance indicators and metrics: 1) Asset Management, 2) Motor Vehicle Operator Identification Management, 3) Operations Management, 4) Vehicle Diagnostics and Analytics, 5) Risk Management, 6) Motor Pool Management, and 7) Federal Reporting. The FedElecTag will provide information to fleet managers in near real-time, directly on a portable mobile device app, as well as through cloud/web-based reporting tools. This vision of the E-License plate capability will be prototyped in our project using the proposed display device.

The dashboard is intended to display key vehicle information at a high level. The FedElecTag solution is an innovative, end-to-end, bundled products, and one-stop shop option. Many of the telematics features and functionalities are current best practices per industry standards (e.g., vehicle activity and diagnostic reporting, miles driven, travel time, number of stops, stop duration, idle time, mapping functionality, etc.). However, the FedElecTag provides additional functionalities and capabilities that are required by sustainability mandates and needed to effectively and efficiently manage fleets within budgetary limits, while meeting mission requirements.

We will accomplish this in the project by aggregating time-encoded data and applying multivariate statistical analysis and pattern recognition of variables (e.g., Cross-Sectional Analysis, Variance Analysis, Cluster Analysis, Linear Discriminant Analysis, and Recursive Partitioning). Algorithms will be developed to analyze relationships among all of the variables to derive a more accurate view at every phase of fleet management. Rarely should data be analyzed in isolation; thus, multiple data sets provide fleet managers meaningful relationships by cross-referencing information and revealing trends. Through using a Federal crowdsourcing approach, the project coordinators will have connections with an extensive network of fleet managers that will be able to provide large collections of data and input to help in the analysis algorithm development and assessment.

More details about the dashboard can be found at https://fedelectag.ideascale.com/.

## 3.3 Tasks

**Task 1: Requirements Analysis.** We will develop a functional specification for the system through an analysis of user requirements and use cases. Use cases and user requirements will be analyzed through competitive analysis and in later stages, through experimentation with the evolving E-license plate prototype. Use cases will include data capture, real-time analytics, and post-use analytics. We propose the use of a dashboard format for post-use analytics. We will develop documents to describe the results of competitive analysis and to describe use cases and user requirements. We will write a functional specification to describe data capture, real-time analytics, and post-use analytics. The functional specification will include UML state and sequence diagrams.

**Task 2: Software System Architecture Design.** We will develop a preliminary software system architecture that defines interfaces for the key application subsystems, including the sensor interface, fleet analytics engine, and user interface. We will employ the lightweight dataflow design environment (LIDE) for the software architecture design to optimize implementation of software components on mobile devices. LIDE is a design tool that facilitates agile, cross-platform development of complex embedded software systems for efficient signal processing.

**Task 3: Analytics Engine Design.** We will investigate algorithms to process data collected from the E-license plate and provide real-time feedback for storage and display on the display device.

**Task 4: Preliminary Algorithm Design.** The focus here will be on algorithm exploration to identify methods for extracting data from the measured data. The objective will be to develop algorithms and perform simulation experiments to derive analytics approaches that provide accurate and meaningful feedback for fleet managers that are efficient in terms of processing and storage complexity. In Phase II, these algorithms will be migrated from simulation to the targeted Android devices, and optimized for energy-efficient, real-time execution.

**Task 5: Hardware Mechanical Design.** We will develop a robust mechanical design with specialized shielding, thermal management and enclosures to ensure that E-license plate can endure harsh environmental conditions including extremes of heat and cold, vibration, humidity and more. Furthermore, the development and test process requires advanced prototyping for optimal accuracy.

**Task 6: Initial Prototype.** We will develop a basic user interface for the E-license plate device. This will be a very simple user interface that is meant primarily for testing and diagnostic functions to support development, troubleshooting, performance optimization, and feasibility demonstration.

## 3.4 Anticipated Results

This proposed Phase I project will bring about the following results: (1) in-depth understanding of use cases and operational requirements for the proposed E-license plate vision; (2) novel algorithms for fleet management analytics that are optimized to support these use cases; (3) first versions of sensor interface and user interface software to enable experimentation with E-license plate functionality; and (4) interdisciplinary training of UNICOR and industry partners in areas that span technology innovation, embedded signal processing, and user interface application development. Our Phase I work will provide a critical foundation for developing the prototype in Phase II.

## 3.5 Deliverables

The Phase I items deliverables will include: (1) a detailed report on use cases, user requirements and functional specifications; (2) application programming interfaces (APIs) and associated documentation for the developed first-version software system architecture; (3) software code and documentation for the E-License plates sensor interface subsystem; (4) a report on recommended algorithms for the analytics engine, and on associated analysis of the algorithms in terms of their accuracy and potential for efficient real-time implementation on mobile devices; (5) software code and documentation for a basic user interface that runs on a mobile device.

## 3.6 Risk Factors

First, there are risks involved in not being able to achieve adequate real-time analytics performance on resource-constrained smartphone platforms. We will manage this risk by considering processing complexity, energy efficiency, and analytics accuracy jointly and in a balanced manner throughout the project. This is in contrast to conventional approaches that often treat embedded implementation issues as an afterthought to the algorithm development process.

Second, the project inherits risks that are involved in the prototyping of any product vision that brings about new ways of using technology as the digital license plate. The E-license plate concept provides a vision for a major advance in what is shown on registration plates and how to regulate the use of vehicles. For such a novel product concept, unforeseen challenges may arise in linking relevant use cases efficiently and reliably with the required hardware and software support.

Third, resource-related risks could impact the project if the FFBT implementation team is not timely fully staffed, thus affecting the program to meet key milestones and the target go-live date.

We will manage this risk throughout the project by using an incremental, iterative research and development approach, where advances to the algorithms, analytics software, and user interface software are designed, implemented, and tested in small units. This disciplined approach will allow the project team — spanning GSA, UNICOR, and industry partners to assess and discuss the evolving prototype together in incremental steps, and detect design inconsistencies or software defects relatively early rather than having them accumulate into complex problems.

# 4 Key Milestones

Key milestones will require management approval through the appropriate governance channels. Program governance will be managed by an integrated FFBT Program Management Office (to be established when appropriate). The key milestones included within the parameters of the Phase I and Phase II project schedules will require senior leadership approvals at each interval phase and ultimately documentation of operational readiness via a "Go/No-Go Decision."

## 4.1 Technical Development Timeline (Phase I)

The target go-live date is approximately 24 months after obtaining project funding for all in-scope processes, data conversion, reporting requirements, systems, interfaces, training, etc. The figure below shows a high-level timeline of Phase I for prototyping only within the first 12 months.

Phase I for Prototyping

| SCHEDULE ITEM (PHASE I) | | MONTH | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | DESCRIPTION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | Task 1: Requirements Analysis | | | | | | | | | | | | |
| 2 | Task 2: Software Architecture Design | | | | | | | | | | | | |
| 3 | Task 3: Analytics Engine Design | | | | | | | | | | | | |
| 4 | Task 4: Preliminary Algorithm Development | | | | | | | | | | | | |
| 5 | Task 5: Hardware Mechanical Design | | | | | | | | | | | | |
| 6 | Task 6: Initial Prototype | | | | | | | | | | | | |

The two figures below provide a more detailed timeline of Phase I software and hardware activities.

**Software**

| | |
|---|---|
| (2 Months) | •User Interface Design (UID), Online Analytical Processing (OLAP), Data Visualization |
| (1 Month) | •Intermediate algorithm model testing |
| (1 Month) | •Firmware Optimization (e.g., programming code, non-volatile memory, ROM, EPROM, flash memory) |
| (2 Months) | •Final function checks |

**Hardware**

| | |
|---|---|
| (2 Months) | •Intermediate design of electronics and housing |
| (1 Month) | •Durability and lifecycle testing |
| (2 Months) | •Finalize design of electronics & housing (Pilot Build) |
| (1 Month) | •Design for manufacturing (DFM) optimization |
| (2 Months) | •Tooling start and production run |
| Focus Group and Pilot Testing | |

## 4.2 Brief Statement of Phase II Plans

It is anticipated that launch will be within 6 - 12 months of commencing Phase II. The major milestone development activities will take place in Phase I, thus leaving only prototype refinement, acquisition activities, and tooling for manufacturing. Note that this immediate project effort focuses on a streamlined iterative approach to quickly develop/refine the prototype. Cost estimates for manufacturing to fulfill out-year orders is covered separately in the full-costing Independent Government Cost Estimate (IGCE). It is anticipated that cost savings and manufacturing profit margins will be reinvested into operations to support out-year cost of goods sold (COGS); thus, minimizing the need for outside investment for inventory (i.e., a self-sustaining initiative).

The specific primary plans for Phase II are summarized as follows: (1) we will develop optimized implementations of our analytics algorithms on an Android smartphone device (the display device); (2) we will develop a user interface for the display device along with communication between the display device and the sensor interface on the E-license plate; (3) we will refine our analytics algorithms to tune trade-offs among accuracy, real-time performance and energy efficiency; (4) we will experiment with the E-license plate display device prototype, and perform refinement of application functionality and the underlying software implementations based on feedback from this experimentation; (5) we will begin post prototype activities as provided in section 4.3, Focus Group and Pilot Testing, to also include some form of User Acceptance Test (UAT).

## 4.3 Focus Group and Pilot Testing

Building on the initial prototype, this phase involves developing a minimum viable product (MVP) with core features which allows collection of the maximum amount of validated learning about customers. The product could be deployed to a subset of key customers, such as early adopters that are able to grasp the MVP vision. Initial analysis and learning of key customer segments could focus on 1) Government Operations and Regulations, and 2) National Security and Safety.

- Government Operations and Regulations – The GSA Motor Vehicle Policy Division develops government-wide policies and framework for Federal agencies motor vehicles, and it also establishes fleet processes via the Federal Motor Vehicle Registration System (FMVRS). GSA specifically coordinates all aspects of its government-owned vehicles (GOV) or GSA Fleet which makes up 189,291 (30 percent) of all the Federal fleet as of 2015. Thus, primary beta testing could include the GSA Fleet vehicle population at different geographical locations and climate conditions.

This could be a phasing approach by first targeting the 967 GSA Fleet headquarters vehicles, then phasing to the top 10 government-wide departments with GSA Fleet vehicles, and ultimately targeting the total GSA Fleet vehicle population of 189,291.

- National Security and Safety – The overt unique display on law enforcement vehicles is paramount for quick government vehicle recognition and authentication to help ensure public safety, and to address national security issues that can arise if a license plate is stolen. Departments and agencies with law enforcement vehicles represent 96,569 (15 percent) of all the Federal fleet as of 2015. Because of the sensitive nature of this population, the feedback will be invaluable for all other vehicle analysis and learning. Thus, secondary beta testing could include the top 10 departments and agencies with law enforcement vehicles.

Focus Group Key Customer Segments

## 4.4 Ideation Product Development Workflow

The project will implement a proven product development workflow with stakeholder involvement. The below is an approach from similar successful high-performing ideation communities for product development (Source: adapted from IdeaScale).

| | |
|---|---|
| **Ideation** | •Stakeholders provide product improvement ideas. Specific questions used for additional context. Community members vote on their favorite ideas. |
| **Team Build** | •Team of subject matter experts (SMEs), "champions," or the entire community can volunteer to evaluate most promising ideas. |
| **First Review** | •Popular or promising ideas are rated for their potential impact and viability on a scale of 1-5. The top ideas progress into the next stages. |
| **Make a Case** | •More in-depth review of how ideas will work in practice. Ideas that have answered all viability questions are elevated for leadership consideration. |
| **Development** | •Leadership evaluates all information against organizational objectives. Approved ideas moves on so that community members can note progress. |
| **Prototype** | •Develop first prototype solution or minimum viable product (MVP). |
| **Testing** | •Prototype deployed to a subset of key customers/early adopters that are able to grasp the MVP vision for initial analysis and learning. |
| **Results** | •Validate initial predictions by reporting on the interim savings, as well as the costs that it actually took to implement ideas. |
| **Launch** | •Leadership approval of operational readiness via a "Go/No-Go Decision." Move to the acquisition and manufacturing stages for full implementation. |

# 5 Operational Readiness

The elements listed in the below will be taken into consideration for assessing operational readiness. These criteria should be met through the implementation process prior to go-live.

| Operational Readiness Criteria | |
|---|---|
| **Readiness Category** | **Readiness Criteria** |
| **Data** | **Data Conversion**: Conversions have been fully tested and no critical issues remain |
| | **Data Extracts Defined/Designed**: Data extracts have been defined and designed |
| | **Reporting**: Managerial, reconciliation, and Federal reports have been tested |
| **Operations** | **Project Schedule**: Month-end, year-end close activities and other initiatives do not present a risk to the go-live schedule |
| | **Risk**: All risks have been documented and tracked and no high severity risks / issues remain without mitigation |
| | **Contingency Plan**: All contingency plans have been developed and approved |
| | **Planning Phase and Execution and Control Phase Gate Reviews**: Engagement and Migration tollgates have been completed |
| | **Service Desk**: Help Desk processes documented and communicated to end-users |
| **Organization** | **Communications Delivery**: All communications planned, drafted, and delivered |
| | **Training Delivery**: All training materials/sessions have been planned/scheduled |
| | **Resource Readiness**: Service provider resources, infrastructure, and contracts are in place to support expected transaction volumes |
| **Process** | **Business Procedures / Standard Operating Procedures**: Business and Standard Operating Procedures (SOPs) have been designed for future state |
| | **Workforce Transitions**: Business process changes have been documented (Change Impact Assessment, Updated Workforce Assessment, Workforce Transition Strategy, Rewritten Position Descriptions) |
| **Technology** | **Configuration Changes**: All configuration changes have been documented, implemented and tested |
| | **New Core Interface Solution**: All interface control documents have been completed and approved |
| | **System Integration Testing**: No critical issues remain after the completion of Systems Integration Testing (SIT) based on SIT exit criteria |
| | **User Acceptance Testing**: User Acceptance Test (UAT) exit criteria have been met and signed off |
| | **Security Reviews / ATOs**: All required security reviews, assessments, and approvals have been completed and any necessary Authorization to Operate (ATO) requests have been approved |
| | **Business Continuity / Disaster Recovery**: Business continuity and disaster recovery plans have been defined and communicated |

# 6 Pricing Summary

The development, modernization, and enhancement (DME) labor costs for the prototyping phase will use the EIS contract and will not exceed $275,528,000. The estimated total project time is 2,076 hours over 52 weeks. The government full-time equivalent (FTE) represents about one hour per month to attend coordination and status meetings. Contractor personnel represents software and hardware engineering activities that will run concurrently over 52 weeks with Tasks 1 and 3 requiring about 13 weeks, and Tasks 2, 4, 5, and 6 requiring about 6 weeks each. Pricing is based on the defined scope of work and assumptions. Labor service performed under this project will be on a time and materials or firm fixed price basis. The below fully-loaded average hourly rates were determined using the Office of Personnel Management (OPM) 2018 General Schedule (GS) Salary Table (2018- WASHINGTON-BALTIMORE-ARLINGTON, DC-MD-VA-WV-PA), and the GSA Contract-Awarded Labor Category (CALC) tool covering the continental United States (CONUS).

| Labor Category | Level | Hours | Rate | Pricing |
|---|---|---|---|---|
| **Federal Personnel (Govt. FTE):** | | | | |
| GSA Program Manager | GS-15 | 12 | $64.59 | $775.08 |
| GSA Acquisition Manager | GS-15 | 12 | $64.59 | $775.08 |
| UNICOR Program Manager | GS-15 | 12 | $64.59 | $775.08 |
| DHS Cybersecurity Specialist | GS-15 | 12 | $64.59 | $775.08 |
| **Subtotal** | | **48** | | **$3,100.32** |
| **Industry Partners Personnel (Contractor):** | | | | |
| Information Technology Project Manager | Senior/SME | 338 | $172.00 | $58,136.00 |
| Software Developer – Systems Software | Senior/SME | 338 | $128.00 | $43,264.00 |
| Hardware Developer | Senior/SME | 338 | $120.50 | $40,729.00 |
| Computer Systems Engineers/Architect | Senior/SME | 338 | $123.50 | $41,743.00 |
| Telecommunications Engineering Specialist | Senior/SME | 338 | $120.50 | $40,729.00 |
| Information Security Analyst | Senior/SME | 338 | $141.50 | $47,827.00 |
| **Subtotal** | | **2,028** | | **$272,428.00** |
| **Grand Total** | | **2,076** | | **$275,528.32** |

# 7 Life Cycle Costs – Federal IT Dashboard

In line with the Federal information technology (IT) dashboard for IT investments, provided are the 5-year total estimated life cycle costs per a full-costing Independent Government Cost Estimate (IGCE). Year 1 (base) represents DME costs for prototyping using the EIS contract. Years 2 – 5 represents Operations and Maintenance (O&M) / Steady State (SS) costs mostly for inventory, and reasonable labor costs to support the FedElecTag cloud-based platform. It is anticipated that cost savings and manufacturing profit margins will be reinvested into operations to support out-year cost of goods sold (COGS); thus, minimizing the need for outside investment for inventory (i.e., a self-sustaining initiative).

| Life Cycle Costs – Federal IT Dashboard | | | | | |
|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| **Planning Costs:** | **$0.00** | **$0.00** | **$0.00** | **$0.00** | **$0.00** |
| DME (Excluding Planning) Costs: | $275,528.32 | $0.00 | $0.00 | $0.00 | $0.00 |
| DME (Including Planning) Govt. FTEs: | $3,100.32 | $0.00 | $0.00 | $0.00 | $0.00 |
| **Sub-Total DME (including Internal Labor (Govt. FTE)):** | **$275,528.32** | **$0.00** | **$0.00** | **$0.00** | **$0.00** |
| O & M Costs: | $125.00 | $792,571.03 | $2,984,782.01 | $2,992,394.72 | $3,000,235.81 |
| O & M Internal Labor (Govt. FTE): | $0.00 | $3,193.33 | $3,289.13 | $3,387.80 | $3,489.44 |
| **Sub-Total O & M Costs (Incl. Internal Labor (Govt. FTE)):** | **$125.00** | **$792,571.03** | **$2,984,782.01** | **$2,992,394.72** | **$3,000,235.81** |
| **Total Cost (Including Internal Labor (Govt. FTE)):** | **$275,653.32** | **$792,571.03** | **$2,984,782.01** | **$2,992,394.72** | **$3,000,235.81** |
| **Total Cost Internal Labor (Govt. FTE) costs:** | **$3,100.32** | **$3,193.33** | **$3,289.13** | **$3,387.80** | **$3,489.44** |
| # of FTE rep by costs: | 1 | 1 | 1 | 1 | 1 |

# 8 Contact Information


**CONTACT**

**The Federal Government Electronic Tag (FedElecTag) Team**

**O: 202.461.9959 l M: 240.486.6476 l E: admin@fedelectag.com**

**Visit us at https://www.fedelectag.com**