

# Mercury Federal Systems

## Providing Consulting and Software Engineering Services

- Deploy edge computing capabilities for C4ISR systems
- Increase client agility and compatibility
- Reduce technological and financial risk
- Accelerate system performance



### Defense Industry Trends

Program managers in intelligence and C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) are faced with many challenges, as they deploy more sophisticated technology with surveillance capabilities. They are tasked with developing open-system sensor-related solutions in data-intensive, multi-core computing environments, which are pushing the limits of size, weight, and power (SWaP). Many platforms for collection are getting smaller, while larger platforms are adding more sensors. Performance requirements are on the rise, even as platforms shrink. Business challenges also apply: reducing the risk, lowering the cost, and meeting the schedule. Mercury Federal Systems is positioned to accommodate all these industry trends and to deploy high-performance solutions rapidly and at lower cost.

### Mercury Federal Systems

The mission of Mercury Federal Systems (MFS), a wholly owned subsidiary of Mercury Computer Systems, Inc., is to be the government's trusted business partner for providing consulting and software engineering services that enable clients to deploy edge computational capabilities for C4ISR systems on an accelerated time cycle. We have world-class domain expertise in deploying COTS and open-system solutions that increase client agility and compatibility, reduce technological and financial risk, and accelerate system performance.

MFS has a DCAA auditable business model, employs open systems, is both hardware and software agnostic, engages collaboratively with clients, and has the ability to call on the unparalleled competencies of Mercury's core engineering business.

### Wide-Ranging Capabilities

MFS draws upon Mercury's 25 years of experience as the leading provider of computing systems and software for data-intensive high-performance and embedded applications. Mercury has a laudable track record of successfully deploying COTS-based products aboard

demanding platforms in air, on land, and at sea. Mercury specializes in technology for high data-rate computing and I/O, 2D and 3D image processing, signal processing, and visualization. This domain expertise includes multi-processor algorithm optimization, SIGINT, imaging, hyperspectral imaging (HSI), compression, and radar.

MFS adds further value by reducing clients' costs and risks. We leverage our expertise in accelerating solutions for data-intensive throughput and computation systems. By leveraging our systems engineering and integration expertise, we enable our clients to:

- Improve density
- Reduce cost of solution and ownership
- Reduce risks related to scheduling, cost overruns, and objectives
- Improve interoperability
- Extend service life
- Enhance overall performance

### MFS Offerings

MFS offers a wide range of engineering architecture and design services, involving comprehensive, purpose-built solutions that capture, process, and present data. MFS services include:

- Product development
- Engineering/integration services
- System architecture, design, analysis, and consulting for computational density
- Application architecture design, analysis, and consulting for computational acceleration
- SETA/TEMS: third-party evaluation, benchmarking, testing to specification, system and component specification design

## Typical Engagement: Acceleration Services

Acceleration services deliver game-changing application performance through focused computation acceleration and innovative algorithm implementations. MFS engineers deliver acceleration services through a deep understanding of the application processing requirements, and by calling upon our extensive expertise in high-performance embedded multiprocessor computing.

### Benefits

Acceleration services improve both new and modernization programs.

*For new program starts:*

- Higher performance SWaP
- Reduced program risk
- Reduced time to market

*For modernization programs:*

- Reduced SWaP
- Higher performance in the same SWaP
- Increased functionality in the same SWaP

### Engagement Model

Acceleration services are delivered in four phases:

1. **Discover** – Communication of the application needs, performance requirements, and solution goals
2. **Characterize** – Architecture studies, benchmarking, solution proposals, and SOW creation
3. **Develop** – Algorithm and system optimization, IP leverage, integration, and module test
4. **Deliver** – Delivery of the product, system test, and integration support

## Typical Results

Mercury has delivered acceleration services to customers in several defense and commercial markets with impressive results.

## Acceleration Results

Market	Application	Acceleration Delivered
Radar	Target discrimination	30x speed-up in processing of Bayesian network algorithm
Electronic design automation	Optical proximity simulation	60x speed-up in processing
Computed tomography reconstruction	Baggage scanning and clinical CT	Up to 30x speed-up in image reconstruction algorithms and system performance

### Customer Reference Story

#### Counter IED Support

IEDs (improvised explosive devices), commonly called “road-side bombs,” are an ever-present threat. The US Army has awarded Mercury Federal Systems a contract to develop and demonstrate a testbed for counter-IED systems development. MFS is leveraging the advantages of an open architecture with a software-programmable environment that includes Component Portability Infrastructure™ middleware to help the Army affordably and rapidly develop new applications and insert new technologies into deployed mission-critical systems, enabling new and emerging threats to be detected, countered, and tracked in a time-critical manner.

**For more information on Mercury Federal Systems, call 703-413-0781.**

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1901 South Bell Street, Suite 402  
Arlington, Virginia 22202 US  
Main: +1-703-413-0781  
[www.mercfed.com](http://www.mercfed.com)

### About Mercury Federal Systems

Mercury Federal Systems, Inc., a subsidiary of Mercury Computer Systems, Inc., provides consulting and engineering services for demanding intelligence, surveillance, and reconnaissance problems.

Visit us on the web at [www.mercfed.com](http://www.mercfed.com).