

# Aerospace & Defense Innovation

## *with Invention Machine Goldfire*

Industry consolidation. Contract-based logistics. Aging technical staffs. Dramatically new market conditions are forcing aerospace and defense players to commit to more aggressive pricing, product innovation, and delivery dates to win contracts. Manufacturing excellence has never been more important to long-term competitive advantage and profitability and having a reliable time and cost saving innovation process is a requirement.

Invention Machine Goldfire is unique innovation software that transforms ideas into commercial products, making innovation a repeatable and sustainable process.

Fusing proven innovation tools and methods with precise access to corporate and external knowledge and a framework for collaboration, Goldfire systematically guides users through innovation tasks from identifying a new market to developing a new product to improving existing products. Goldfire brings structure, uniformity and repeatability to inventive problem-solving, concept discovery, and idea generation and validation.

Leading aerospace and defense manufacturers and suppliers—including Boeing, Goodrich, Honeywell, Northrop Grumman, and Pratt & Whitney Rocketdyne—are using Goldfire to:

- Conceive of breakthrough concepts for new, challenging requirements
- Design for quality and reliability to optimize long-term profitability
- Overcome loss of corporate wisdom due to aging workforce and accelerate and expand skills of junior employees
- Reuse proven technology and lessons learned
- Improve collaborative access to internal documented information and knowledge
- Rapid failure analysis and problem solving and first time fix outcomes
- Capture original design intent
- Reduce operating costs associated with research and development
- Accelerate product time-to-market (commercial)
- Minimize risk of non-compliance
- Better leverage internal and external knowledge - avoid re-inventing the wheel

*"The software [Invention Machine Goldfire] has been very effective at solving the types of technical problems we face when developing new instruments for space exploration."*

- NASA



## SNAPSHOT OF PAST AEROSPACE & DEFENSE PROJECTS WITH INVENTION MACHINE GOLDFIRE

- Improve the design for a jet engine fuel delivery system, to avoid the problem of fuel remaining in the pipe and clogging the nozzle when the engine is stopped.
- Improve process for fixing a jet engine by solving problems associated with horizontal "on-wing" disassembly - which enables faster and cheaper inspection and repair.
- Optimize the current design of an optics bench by reducing its size, weight, cost while improving its serviceability.
- Reduce the thermal and vibration response of a fiber optic gyroscope's coil by modifying its material such that the coil is optimally stiff when vibrated, but flexible when heated.
- Solve an optical fiber problem that causes alignment distortion and time consuming adjustments when structural epoxy, which joins inlet and outlet fibers in a glass block, shrinks asymmetrically or slips due to gravity.
- Improve the design of a submarine subsystem to eliminate the need for several very complex and expensive parts - making the unit lighter and reducing the overall subsystem cost by 12 percent.
- Correct the sonobuoy launching mechanism to overcome problem of sonobuoys not efficiently clearing the aircraft envelope.
- Improve breaching of mine fields by reducing weight and increasing the speed and flexibility of the breaching equipment.
- Improve combat mission execution and risk mitigation by optimizing commanders procedures when mines and booby traps are present.
- Explore methods and technologies to support future combat systems, such as the use of acoustic cavitations as an offensive weapon for enemy force disruption.

The aerospace and defense industry has long been a source of great innovation. And while aerospace and defense manufacturers continue to produce cutting edge technologies that push the envelope of human achievement, an aging workforce, increased regulation and cost-cutting measures underscore that the rules of the innovation game in aerospace and defense are changing.

Explore how Invention Machine Goldfire can transform your innovation processes to drive optimum innovation results for your organization.

During user-acceptance testing, a leading manufacturer of electronic sensors suffered an erroneous (false positive) signal in a critical military surveillance device - risking delivery schedules and contract awards. Using Goldfire's semantic Root Cause Analysis, the fault was rapidly found and user confidence restored.

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Global 2000 manufacturers in more than 25 countries rely on Invention Machine Goldfire for product innovation, process improvement and market expansion. For additional information, please visit [InventionMachine.com](http://InventionMachine.com).