

Matching Warfighter Mission Needs to Employment Assets Worldwide

The Business Issue

The U.S. Navy relied on multiple legacy systems and sources to plan, create, display, and analyze scheduling data for C4I operations. These systems and sources included different schedule management systems, spreadsheets, and even handwritten tabular displays. These disparate systems prevented an integrated picture of fleet scheduling and made locating scheduling information a challenging—and frustrating—experience. The Navy needed a scheduling solution that offered system interoperability, consistency, and real-time integrated information.

The FGM Solution

As part of an Integrated Program Team (IPT), FGM worked under sponsorship of Space and Naval Warfare Systems Command (SPAWAR) Systems Center San Diego (SSC SD) to develop the Web-Based Scheduling (WebSked) Distributed Services (DS) system. WebSked DS is a C4I web-based application that provides a collaborative, near real-time and accurate system for Navy scheduling authorities to plan, create, display, and analyze scheduling data for C4I operations. FGM provides requirements analysis, system engineering design, development, and integration of advanced C4ISR technology. Using incremental development, FGM successfully supported WebSked DS transition from a prototype effort through deployment as an endorsed system-of-record.

The Results

WebSked offers an integrated, homogenous solution for schedule maintenance that improves schedule timeliness and accuracy. Designated as the Fleet's primary scheduling tool, it is the authoritative source of Naval scheduling data. WebSked DS enables the U.S. Navy to maintain and publish the movement of naval vessels. Using WebSked DS, Naval analysts can perform current and long-range scheduling, force planning, fuel planning, and budgeting in support of their operations ashore and afloat. WebSked DS consolidated logistics capabilities from legacy systems at Commander, Fleet Forces Command (CFFC) and Commander in Chief, Pacific Fleet (CPF), and now provides an integrated C4I capability to the warfighter, Military Sealift Command Integrated Command, Control, and Communication System (MSC IC3) and Navy Training Information Management System (NTIMS). The project is managed by SSC SD Code 242 as an Integrated Project Team (IPT) as part of the Global Command and Control System-Maritime (GCCS-M) program.

case study

WebSked—Web-based collaborative scheduling—the right resources for the right mission.



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Methodology & Technology

FGM developed WebSked DS using Software Engineering Institute (SEI) Capability Maturity Model – Integrated (CMMI) Level 2 best practices. As a result of this process oriented development, the WebSked DS team is able to maintain configuration control over multiple releases; translate high-level system requirements into precise software requirements associated with each of the major capabilities that comprise WebSked DS; and provide traceability of requirements for the WebSked DS system to software modules, test cases, and releases.

FGM performed systems analysis and assessment at the beginning of this rapidly developed project, analyzing the strengths and deficiencies of the legacy VIPER scheduling tool, and designing its replacement from the ground up. These activities included developing engineering studies, and resulted in functional specifications from which the system was developed.

To minimize the impact to existing hardware and software programs, FGM investigated existing architectures and designed the WebSked prototype to utilize the CAS Lotus Domino infrastructure currently deployed at sea. The WebSked system works with existing desktop configurations that the Navy already owned, thereby saving costs because new software was not required and installation complexity was reduced. The WebSked DS legacy system uses a client-server architecture that allows remote users to log-in to one of the 6 sites and perform Employment Scheduling tasks. WebSked operates 7/24/365 across multiple connections with limited bandwidth. FGM designed the system in a manner that simplifies installation requirements, uses client-side certificates, and provides web services through the Simple Object Access Protocol (SOAP) for transport to other systems. FGM continues to provide for system design, including migration to a J2EE/Java/Sybase environment from the original Lotus Domino implementation.

WebSked DS is currently deployed with Simple Object Access Protocol (SOAP), eXtensible Markup Language (XML) protocol, and Web Services, featuring read access to Navy Employment Schedules, Force Allocation Schedules, Navy Service Allocation Schedules, Unit, and Reference Data; write access to Navy Employment Schedules; Client public key infrastructure (PKI) certificates for authentication; and utilization metrics and controls for usage tracking. FGM documents and publishes a WebSked Web Services Description Language (WSDL), an XML format for describing network services, and a schema. WebSked DS software is written in a combination of languages, including Java, HyperText Markup Language (HTML), JavaScript, SQL, and scripts. Java Server Pages (JSPs) are used as the underlying foundation of the user interface approach. JSP web technology allows WebSked DS users to access the system through compatible browsers. FGM analyzed the human factors engineering elements of the legacy system and worked closely with Fleet customers to develop an entirely new web-based C4I user interface that emphasizes the ease of use and learning. An integrated online help system guides users through the complex scheduling and Fleet approval process using an innovative assistive user interface.



About FGM

FGM, Inc., is an information technology company delivering sophisticated, technology solutions that improve business efficiency across the enterprise.

As a trusted partner of the Department of Defense, U.S. Government civilian and international agencies, and businesses throughout the world, FGM is an agile provider of technical solutions that enable mission-critical operations and decision-making.

FGM's integrated solutions help our clients improve their business performance through information technology transformation services focusing on architecture, information management, and systems integration.

Headquartered in Reston, Virginia, FGM also has offices in California, Colorado, Hawaii, and Nebraska. With over 200 talented professionals, FGM is a thriving employee-owned corporation.

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Featured Capabilities

- Information Management
- Systems Integration
- Workflow Solutions

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