U.S. Marines – First Into Battle and First With a Unique Pay and Personnel System

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The Marine Corps Total Force System (MCTFS) is the only integrated military pay and personnel system in the Department of Defense (DoD). MCTFS manages more than 498,000 Marine records for active, reserve, and retired members; processes in excess of 17 million transactions yearly; and computes an average gross payroll of $238 million per semimonthly pay period totaling $5.712 billion in payments annually. MCTFS provides added value to the customer's mission – paying service members accurately and on time. Cumulative for fiscal year 2004, MCTFS demonstrated that it paid all active duty and reserve Marines on time with 99.92 percent and 99.83 percent pay accuracy, respectively. To date for fiscal year 2005, the accuracy is 100 percent for both active duty and reserve Marines. The positive emotional and financial impact of paying deployed Marines accurately and on time is especially noteworthy to the commanders in the field in terms of unit morale and welfare.

The U.S. Marine Corps (USMC) is one tough customer with demanding expectations, especially when it relates to the Marine Corps Total Force System (MCTFS), the USMC's integrated military pay and personnel system. MCTFS manages more than 498,000 Marine records for active, reserve, and retired members; processes in excess of 17 million transactions yearly; and computes an average gross payroll of $238 million per semimonthly pay period, totaling $5.712 billion in payments annually. Most importantly, MCTFS needs to pay service members accurately and on time.

The Kansas City Technology Services Organization (TSO-KC) and their prime contractor, Computer Sciences Corporation, are dedicated to ensuring continuous, responsive, and effective military pay and personnel information technology support. The technical managers of MCTFS clearly understood the task at hand when the commandant of the Marine Corps stated:

> We remain committed to transforming our manpower processes by leveraging the unique capabilities resident in the Marine Corps Total Force System, our fully integrated personnel, pay, and manpower system that serves active, reserve, and retired members … Additionally, MCTFS facilitates our single source of manpower data, directly feeding our Operational Data Store Enterprise and Total Force Data Warehouse. This distinctive capability allows us to accurately forecast manpower trends and fuels our Manpower Performance Indicators, which provide near real-time graphical

representation of the Corps' manpower status such as our deployment tempo. [1]

The Unique Pay and Personnel System

MCTFS is jointly sponsored and funded by the Defense Finance and Accounting Service (DFAS) and the USMC. It is the only integrated military pay and personnel system in the Department of Defense (DoD). *System integration is a major contributing factor* to successful management and administration of pay and personnel functions for the DFAS and the USMC. *Having management from these two organizations co-located with the system developer* (TSO-KC) *has proven to be a key component* of MCTFS success.

System and business integration of these two domains (pay and personnel) means that from a single source, one event can be reported and MCTFS will properly update both domains. A simplified example of single source reporting is when a Marine is promoted in rank from corporal to sergeant. System processing of the promotion transaction within MCTFS encompasses all the required programming logic to ensure both pay and personnel information are concurrently updated by the single input promotion transaction.

The other components of the armed services utilize separate information systems to manage pay and personnel functions and, therefore, must input multiple, and by definition duplicate, transactions to report an event such as a promotion in rank. Integration of pay and personnel and single source reporting is unique to MCTFS and yields tangible and intangible benefits. These benefits include fewer resources to perform simplified input

reporting procedures, seamless integration of pay and personnel functions, and no synchronization problems between disparate pay and personnel systems.

MCTFS is the single, authoritative data source and system of record for all pay and personnel information for Marine service members. Input MCTFS transactions are generated from a variety of net-centric ancillary applications that include stand-alone, client/server, and Web-based systems. The stand-alone systems such as Remote Access Pay Transaction Reporting System allow users to create transactions while not connected to a network in a remote deployed environment. These transactions can then be submitted into MCTFS once connectivity is available.

Client/server systems such as the Unit Diary/Marine Integrated Personnel System allow users to work in a Wide Area Network environment, share data, and pool transactions with other system users.

The award-winning[1] MCTFS front-end Web-based system Total Force Administration System (TFAS)/Marine OnLine provides users the ability to generate self-service transactions. Transactions originating from these ancillary systems are processed by MCTFS in conjunction with other transactions, and are subsequently available for querying by users in the Operational Data Store enterprise (ODSe), an Oracle 10g relational database. This database is optimized to support the entire Marine Corps and the breadth of process stakeholders and decision makers.

Founded on a strict set of business rules, MCTFS is architected on the premise that Marine commanding officers are accountable and responsible for the personnel and pay management of Marines. MCTFS stores data that includes opera-

tions and deployment dates, promotions, performance evaluations, duty-station assignments, personal awards, reserve drills, skills and occupations, and training/education information. MCTFS contains data to correctly pay every Marine with regard to state/federal income taxes, residency information, entitlements and allowances, special incentive pay, and allotments. Manpower, personnel, pay, and training data are readily available via the ODSe component in the form of preformatted reports or via commercial off-the-shelf software such as Cognos Impromptu and Powerplay tools.

Software Engineering Maturity

Software quality assurance and organizational institutionalization of software engineering practices are keys to ensuring timely and accurate Marine pay and personnel administration. MCTFS achieved the Software Engineering Institute's (SEI) Capability Maturity Model® for Software (SW-CMM®) Level 2 rating in 1997, and SW-CMM Level 3 rating in 2000. The key process areas associated with Level 2 and Level 3 are thoroughly institutionalized. MCTFS has institutionalized processes consistent with SW-CMM Level 4, and was informally assessed at SW-CMM Level 4 in May 2004 by an SEI Authorized Lead Appraiser. A formal SW-CMM Level 4 assessment was conducted in June 2005[2], even while plans are afoot to transition to CMM Integration[SM].

TSO-KC subjects its family of systems to annual benchmarks conducted by Gartner, Inc. <www.gartner.com>. Benchmarking conducted by Gartner, Inc. captures and stores information technology performance metrics then compares those TSO metrics to metrics obtained from similar participating organizations.

Since 1997, the average defect rate per 1,000 function points (FPs) for MCTFS is 1.76. This low average defect rate consistently ranks MCTFS in the top quartile of its software industry database. The quality of the MCTFS software releases continues to exceed expectations based on empirical data.

TSO-KC managers attribute much of the success to the institutionalized software process improvement activities that ensure managerial and engineering functions are standardized, defined, and documented throughout the life cycle. The following highlights are from the most cur-

The Total Force System winning team included, from left, Director Clinton L. Swett, Defense Finance and Accounting Service, Technology Services Organization; Chief Warrant Officer Harry Sanchez, U.S. Marine Corps Manpower and Reserve Affairs; Robert Brown, U.S. Marine Corps Manpower and Reserve Affairs; and Director Gary Hayes, Kansas City Operations, Computer Sciences Corporation.

rent Gartner benchmark for MCTFS:
- FPs supported per person at 4,623 is 89 percent better than government peer group (2,440 FP/full-time employees).
- Cost per FP supported at $33 is 8 percent lower than the government peer group.
- Cost per FP developed at $168 is 54 percent lower than the database average and 81 percent lower than the government peer group.
- The 903 FPs developed per person is five times higher than the government peer group.
- Quality levels, as measured by defects per 1,000 FPs (slightly more than five, including cosmetic defects), remain lower (better) than average for support.
- The complexity of the business environment in development is higher than the government peer average for both enhancements and new development.

The USMC, TSO-KC, and their prime contractor Computer Sciences Corporation are proud of their tradition of cooperation in managing MCTFS and its family of integrated applications. MCTFS today represents the government's and industry's leading practices, hardware, software, and programming languages. MCTFS will meet the Marine Corps' needs into the next decade and beyond: the system is sufficiently scalable and adaptable to provide capabilities for enter-prise-wide use within the DoD.◆

Reference
1. Hagee, Gen. Michael W. Senate Armed Services Committee, 10 Feb. 2005.

Note
1. TFAS was awarded the 2003 Department of Defense Chief Information Officer Award, the 2003 Department of the Navy e-Government Award, and the 2003 Government Computer News Innovation in Technology Award.
2. The assessment resulted in MCTFS achieving SW-CMM Level 4.

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