Fixing the Supply System: Bringing ATLASS Into the 21st Century

by Capt Joseph L. Moreno, USMCR

The case is made to adapt software systems to better suit the ground supply needs of the organizations the system is serving.

The Marine Corps continues to hype the wonderful features of ATLASS II to solve our ground supply and maintenance cycle challenges, but the "new paradigm" system has yet to be fielded. In the computer world, this is known as "vaporware"—nonexistent software solutions. Meanwhile, we waste our time with the currently outdated version of ATLASS. If the Marine Corps is serious about a 50 percent reduction in order ship time (OST) and repair cycle time (RCT)—the time from when a repair part is ordered to its delivery and installation—as directed in *ALMAR 029/98*, then better software must be deployed now along with a more sensible way to bring the supply system into the Information Age without doubling the workload. Simply put, ATLASS has put the cart before the horse. Organizations should not revamp their standing operating procedures to adapt to software systems, instead software systems must adapt to the organization's way of doing business for seamless integration.

In plain English, get rid of the PC-based ATLASS and replace it with a web-based version of ATLASS allowing supply sections direct access to the mainframe databases without compromising the mainframe's database integrity.

Background

Although the Marine Corps' ATLASS has existed for over 6 years, the Marine Corps has labeled it "transitional," meaning it is supposed to be temporary until ATLASS II arrives. The latest word on the street is that ATLASS II will not debut until the 2000–2001 timeframe. The reason for the continuous delay is the misguided belief that, since mainframes are old technology and microcomputers are new technology, the number crunching—also known as the business logic—must be moved from the mainframe to a microcomputer. Although microcomputers have numerous advantages over the older mainframe technology, our rush to utilize it has cut us off from the world of realtime computer networks. Currently, the supply system business logic has been duplicated on each supply section's ATLASS microcomputer, which is no different than any other personal computer (PC), while the mainframe attempts to mirror it, resulting in both systems always remaining one step behind the other. This needless redundancy is not just the cost of doing business, it is a ridiculous duplication of effort that severely hinders our supply system. It effectively doubles a supply section's work load with no end in sight since ATLASS II is stuck due to seemingly unanswerable questions. Should the business logic be kept on the mainframe or moved to a PC? If it is moved to a PC, how can higher headquarters maintain visibility on subordinate units' equipment? Giving each supply section their own network server is certainly not a financial option.

The ideal answer is a system that utilizes the current mainframe legacy databases, already in place, while processing transactions in realtime across a nonproprietary computer network. In plain English, get rid of the PC-based ATLASS and replace it with a web-based version of ATLASS allowing supply sections direct access to the mainframe databases without compromising the mainframe's database integrity. This solution is simpler than many believe and, unlike the present version of ATLASS, it does not require a unit's supply section to maintain, for example, a copy of the table of equipment mechanized allowance list (MAL) on both their ATLASS PC and the SMU's (Supported Activities Supply System (Sassy) Management Unit) mainframe com-

puter. Additionally, the Internet is an excellent medium for accessing unclassified, nonsensitive data throughout the world. Although there is a legitimate concern over the lack of security the Internet provides, it is not an issue for this type of information. If it were an issue then the Department of Defense (DoD) would not allow routine business to be conducted via electronic mail (e-mail). In fact, the Internet is the very medium ATLASS currently uses to communicate with mainframe computers in both forward deployed and garrison units without any security issues.

Accessing the World Wide Web, which is a part of the Internet, is easily accomplished using web browsers that are freely available from companies such as Netscape and Microsoft. Additionally, any web browser can access all data over the Internet regardless of whether the information is stored on or accessed by an Apple, Intel, or mainframe computer system. The web completely removes any barriers between previously incompatible computer systems and web browsers will soon replace the current, arcane method of using the International Business Machine 3270 terminal (or emulation) to access mainframe databases. Smart and savvy organizations have already begun the transition from redundant and locally accessible distributed databases to centralized databases with global access via the web. In this latter environment, everyone is reading from the same sheet of music without installing a new, proprietary network or discarding the mainframe computers. As a matter of fact, this was the entire purpose of the Internet when DoD began developing it 30 years ago.

Today's Challenges

Every supply section must maintain two sets of records for audits—the PC ATLASS records and the Sassy mainframe records—because each ATLASS PC attempts to duplicate the mainframe's database. For a unit to keep one MAL up to date is time consuming; to reconcile both the ATLASS MAL and the Sassy mainframe MAL, especially in a high operation tempo (optempo) unit, is almost in the "too hard" box. It does not make sense for a unit to order a repair part, have it processed on their ATLASS PC just to be sent to the SMU to be reprocessed and possibly rejected. It is not as if computers make mistakes and the transactions need to be double checked by more than one computer. Unfortunately, the knee-jerk reaction in the early 1990s was to move the supply system from the mainframe (supposedly "outdated technology") to the PC (supposedly "better technology"). However, the mainframe is where the true supply system begins since it is physically networked in realtime. If a supply requisition is not in the mainframe database, but only in ATLASS's database, it will never be delivered. It is true that mainframe computers, if made with today's technology, would be cheaper and faster, but mainframes are more reliable than PCs since they are dedicated systems. Instead, the focus should be on removing or improving the less reliable systems. The space shuttle is a perfect example; the 1970s technology inside its computer systems is laughable by today's PC standards, but it is more reliable than any PC. (It is an understatement to say that you do not want the space shuttle's onboard computer systems to crash or lock up like today's PCs.) Mainframes were not designed to run just important applications, they were designed to be dedicated hardware running mission critical software.

Aviation Supply Systems

by LtCol Curtis J. Powell & Maj Jay E. Ferriss

It is apparent from Capt Moreno's article that the ground side of the supply business is using technology that aviation supply has had since the 1970s. The bottom line in any supply operation is that the user or customer will only receive what he ordered in a timely manner if the information supplied to the system is accurate and quickly relayed. Aviation has placed a priority on aircraft material readiness and, as such, has developed information systems that achieve that goal. Fortunately, Marine aviation supply "piggybacks" off the substantial investment made by the Navy.

Currently the aviation supply community is utilizing an automated information management system that uses a local area network (LAN). This LAN is resident within a unit (i.e., a Marine aviation logistics squadron), creating a real-time environment. Our system consists of aviation logistical applications such as the Shipboard Uniform Automated Data Processing System–Real Time (SUADPS-RT), the Naval Aviation Logistics Command Management Information System (NALCOMIS), and the Streamlined Automated Logistical Transmission System (SALTS). The first two, SUADPS-RT and NALCOMIS, are aviation material ordering, inventory, and financial/maintenance account-

Every transaction that is entered into a PC ATLASS system is validated, sometimes against faulty or outdated information, and sent to the mainframe to be revalidated against virtually the same criteria because each system must maintain its own database. For example, a supply clerk could mistype a cost job order number (JON)—the code indicating which funds to debit (think of it as a credit card number)—when entering a transaction, and it would process fine in ATLASS since ATLASS does not have access to the comptroller's mainframe JON database; but the SMU's mainframe does have access. Therefore, a unit's ATLASS records show that an item has been ordered when, in fact, it has been rejected by the mainframe. There are procedures to later catch errors, but it would be much more efficient if a clerk could catch a mistake as soon as it is keypunched rather than days later. Many supply officers have truthfully reported to their commanding officers that a critical repair part was on order only to report a day or two later that it was rejected by the supply system resulting in lost lead time and increased RCT. The current system is exactly like two people attempting to maintain an accurate account balance in their joint checking account while concurrently writing checks.

ATLASS handles supply transactions using a method called batch processing, which means that each day's 100+ transactions are stored in the ATLASS PC until the end of the day and then processed in a single batch. This procedure is known as running the daily cycle, and its output is stored on a courier diskette. Garrison supply sections then e-mail the courier files to the SMU while forward deployed supply units hand deliver the courier diskette to a service support group. If a transaction is rejected by the SMU, the supply section will not know about the rejection until the next day, at the earliest, when receiving a status update from the SMU. This results in lost procurement lead time which directly translates to increased OST and RCT. The supply system would be much more effective if, as soon as a transaction is keypunched, it is immediately processed against a single set of business logic on the SMU's mainframe. Since all valid and invalid supply transactions create a permanent audit trail, any discrepancies between ATLASS and Sassy not corrected or documented in a "memo to the record" by the supply section can be identified, even years later, especially by the experienced eye of a field supply and maintenance analysis office inspector. With realtime transaction processing through a web-based ATLASS, there is absolutely no reason why a repair part could not be ordered and received the same day if it is in stock at the SMU's general account warehouse. Currently, one day OST is not uncommon for staple items such as class II equipment (i.e., 782 gear).

Once a valid supply requisition is accepted into the SMU's mainframe it is automatically passed along the supply chain until it is filled. But today's challenge is simply getting the requisition to the mainframe, inducted into Sassy, and then tracking it without chasing ghosts, i.e., ATLASS reports a valid requisition status while Sassy reports nothing. A forward deployed supply section's ATLASS computer can be over 10,000+ miles away from its supporting SMU's mainframe. To make matters worse, there are two support levels between the forward deployed ATLASS and the SMU: the service support group and the deployed support unit. At each of these two levels, individuals must physically hand deliver a courier diskette on a daily basis; even the most dedicated "hard chargers" can misplace things.

ing systems, while SALTS is a stand alone PC-based system that facilitates communications regarding the external supply system (both outgoing and incoming transactions).

All applications/system software operate simultaneously and reside on the tactical advanced computer (TAC) server, allowing multiple clients/users to access the information through individual personal computer (PC) workstations. Conveniently, all application changes/upgrades can be accomplished by loading the server—thus only one computer. In a nutshell, information starts at the individual PC, travels through the LAN to the TAC server and back to the user.

The advantages:

- Systems are in sync—not one remaining one step behind the other
- No duplication of effort—every record is updated realtime
- No batch processing of daily transactions (only incoming requisition status via SALTS)
- No redundant systems (backup data archives are maintained, however)
- No duplicate records to wonder which is more current
- Electronic and instantaneous data transfer—no hand-carrying
- Do not have to upgrade every PC—just the server
- Possesses up-front validation

Marine aviation has benefited greatly from this investment in logistical information and continues to improve on the systems in place. Our ground supply brethren stand to gain equally through similar investment. The quicker ATLASS improvements get to the Fleet Marine Force, the quicker precision logistics can become more than just an idea—it can become reality.

US MC

>LtCol Powell is currently assigned as the aviation supply officer, HMX-1, Quantico. Maj Ferriss is his assistant.

Correcting mistakes, by identifying which repair parts or replacement end items have "fallen out" of the supply system, is the purpose of a supply reconciliation. For example, ordering a repair part, such as an M-16 firing pin, requires that an armorer fill out a "4-card" equipment repair order shopping list and pass it to a supply clerk to enter into the ATLASS PC. A single digit mistake when keypunching the repair part's national stock number (NSN) and the correct repair part will not be received. If not caught immediately, it can take a couple of weeks to correct the mistake. Unfortunately the interested party, in this example the armorer ordering the firing pin, has no way to explicitly catch the supply clerk's error until the next reconciliation in a week or two. In the meantime, precious lead time is lost. Due to the day-plus lag between order entry and order confirmation, catching mistakes during reconciliations is a needlessly time-consuming task, since each transaction has to be validated against both the ATLASS PC records and the mainframe Sassy records. Additionally, supply reconciliations are difficult to schedule. In a high optempo unit such as a battalion landing team (BLT), it is extremely challenging to maintain both the ATLASS and Sassy records while successfully conducting thorough weekly reconciliations with the "commodities" sections and the physically separated and maintenance intensive attachments such as tanks, amphibious tractors, and the artillery battery.

Tomorrow's Solution

ATLASS II is still years away and ATLASS, first implemented in the early 1990s, is Microsoft Disk Operating System (MS-DOS) based. To put this into perspective, the Marine Corps began using MS-DOS's successor, *Windows 3.1*, before ATLASS was even deployed. Although ATLASS II promises to be a *Windows*-based system, the problem lies in the misguided approach of attempting to mirror the real-world supply system, the mainframe, each day on every PC running ATLASS.

Unlike ATLASS, which was a short-term solution, a much better approach is a web browser-based ATLASS that accesses an application server. An application server, such as *WebObjects*, simply provides applications over a network to users, called clients. The actual business logic and database access is maintained centrally by the application server that would be directly tied into the SMU's mainframe and its databases. A robust application server is dynamic enough to access any database regardless of whether its format is Oracle, Informix, Sybase, or a legacy mainframe database in order to integrate independently developed computer systems known as "stovepipe" systems that were never designed to communicate with each other (see Figure 1). A huge benefit of running an application on an application server is that redundant information processing and storage is eliminated. For example, DoD currently maintains the Joint Personnel Asset Visibility (JPAV) system that accounts for all Armed Forces personnel. This system tracks information such as each person's home of record, unit identification code, rank, number of dependants, etc. Even though this information is centrally located, it is not distributed, via an application server, for all units to access their own information. Each time a member of the Armed Forces transfers to a new duty station the same information is reentered into a local PC at that servicemember's company, division, department, etc. Since the JPAV system, which reflects official unit diary entrees is current, why should a company clerk reenter this information for the local alpha roster? Of course an admin clerk should not be able to change the JPAV data since that is the purpose of the unit diary, but there is no reason the clerk should not have read-only access to the relevant information from the JPAV application server.

Additional Benefits

Currently, each ATLASS upgrade must be installed on every supply computer by an expert—usually a single staff noncommissioned officer per division, group, or wing. A web-based solution accessing an application server would eliminate this software installation process since only one computer, the application server, per SMU would need to be updated. Upgrading from one version of a web-based ATLASS system to the next version would be transparent to the using units.

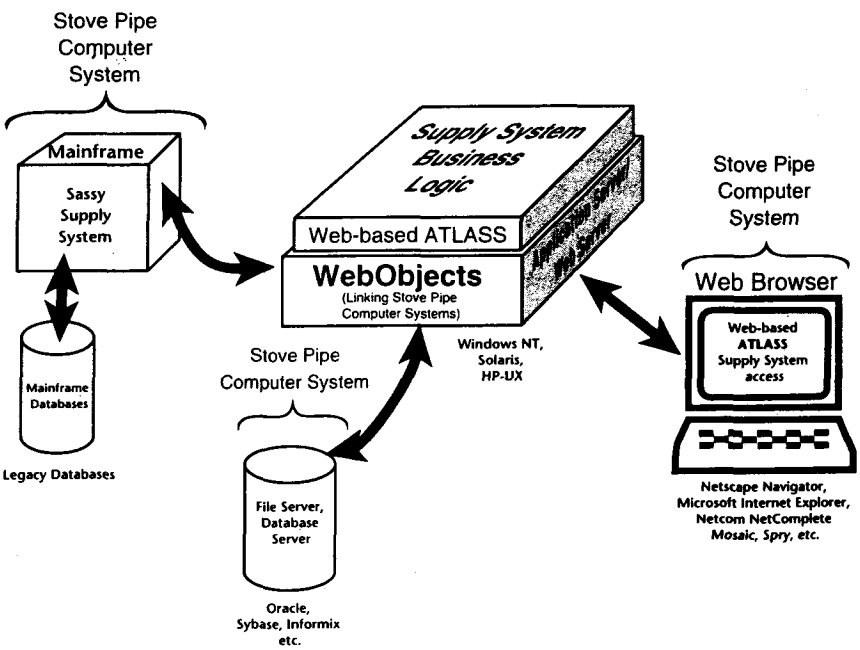

Figure 1.

Nearly all supply sections, especially at the using unit level, maintain only one ATLASS PC even though the section may have three or four PCs. Since ATLASS was not designed to run on a network, only one supply clerk can enter transactions into the supply system at a time while the others wait their turn. With the web-based ATLASS solution accessing an application server as described above, the only limit is the number of computers and supply clerks available to keypunch requisitions. Preventing the same repair part from mistakenly being ordered twice can be accomplished by using the current method of assigning each requisition a unique tracking number referred to as the document number. A web-based ATLASS system could simply alert the supply clerk that the requisition is a duplicate. Additionally, the web-based ATLASS could detect if, for example, two supply clerks attempted to order two firing pins for a single M-16 since the same NSN would be processed against the same equipment repair order. The benefits of multiuser keypunching would be a great timesaver following a maintenance standdown. Likewise, a web-based ATLASS supply system could easily allow an armorer, or any other commodity, to look up (read-only access) their requisition's status in the supply system. In addition to these time savings, another 30 to 90 minutes would be saved each day since the ATLASS daily cycle would no longer need to be processed.

Although beyond the scope of this article, a web-based ATLASS supply system would remove any problems as a result of the Sassy/Mimms (Marine Corps Integrated Maintenance Management) bridge, resulting in a better integrated ground supply and maintenance system.

Show Stoppers?

How does a supply section process requisitions when access to a local area network (LAN) or the web is not available? Since the current version of ATLASS also requires LAN connectivity in order to e-mail the batch transactions to the mainframe, it too cannot operate without network access. So there is no more of a productivity loss with a web-based ATLASS operating off-line than with the current version of ATLASS. However, a simple solution to be productive while off-line would be to download all necessary databases that would be stored on the off-line computer's hard disk. Repair parts not filled by rapid requests could be entered into the off-line computer's temporary database and uploaded into Sassy at the next opportunity. This is exactly what occurs on a daily basis with the present version of ATLASS, however, the reality of the situation is that a supply section performs very little formal supply requisitioning while in the field unless there is LAN connectivity. By using a web-based ATLASS, off-line keypunching would be the exception not the rule. Also, units remaining in the field for more than several weeks usually have at least occasional LAN access at either the using unit's level or its immediate higher headquarters. Most important of all, the procurement life cycle and cost savings for a web-based ATLASS would beat the current PC ATLASS II costs.

What Are We Waiting For?

It is not a matter of using untested systems, but simply due to the fact that application servers and web browsers are new technology. Only within the past couple of years have people realized that the explosion of the World Wide Web has made information access instant and simple. Rather than immediately replacing the legacy mainframe computers, organizations are realizing the incredible benefits of accessing this information over the web.

The supply system could easily transition from the once-a-day batch processing of supply requisitions to realtime supply chain management, especially since the legacy databases are already in place. Less time between order entry and item receipt at all levels would reduce inventories, save funds, speed up the maintenance cycle, and bring the Marine Corps closer to the very heart of a just-in-time supply system: the procurement of the necessary units in the necessary quantities at the necessary time. However, we may never see these benefits unless the Marine Corps transitions to a web-based application server to replace our lacking "transitional" ATLASS.

US MC

>Capt Moreno has previously served as the supply and fiscal officer for BLT 2/1 from 1994–1998. During that timeframe he participated in two Mediteranean deployments. He is currently employed with Apple Computers and resides in Reston, VA.