Warner Robins and the Buy Purchase Request Process

Jessica Lauren Cohen
Lean Aerospace Initiative
Technology and Policy Program
Massachusetts Institute of Technology
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Introduction

Throughout the United States Air Force, Warner Robins Air Logistics Center (ALC) has a reputation of being ahead of the game when it comes to lean implementation. Efforts on the shop floor have contributed vastly to that reputation. In addition, administrative accomplishments need to be recognized as a significant contribution to the lean effort at Warner Robins.

At the Warner Robins Air Logistics Center (ALC), the ultimate goal of every employee is to serve the warfighter effectively and efficiently through the maintenance and repair of aircraft. The ALC's main work is in Program Depot Maintenance (PDM) which supports aircraft sustainment operations for seven Product Directorates. Within Product Directorates are the System Program Offices (SPOs), such as C-5 or C-130, of Air Force weapon systems. As Figure 1 shows, sustainment is a dauntingly complex process for the Air Force involving the Depot and PDM efforts, movement and storage of parts, and the base repair process.

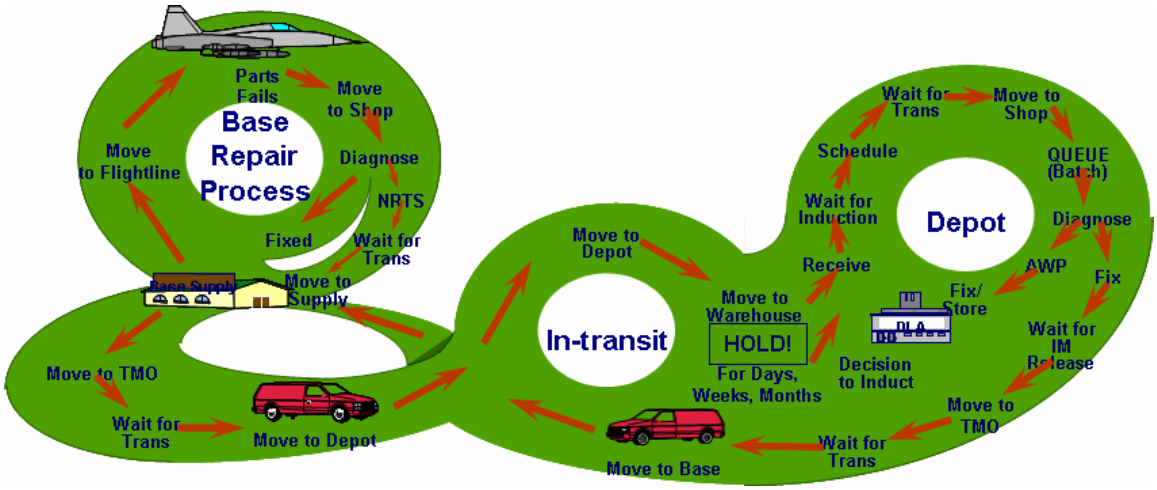

Figure 1 Air Force Sustainment System

A few statistics illustrate the scope and complexity of the Air Force Sustainment system:[1]

- 172,850 National Stock Numbers (NSNs) Managed
- 644 Logistics Information Systems
- $700M Inventory Management Cost
- More than 600,000,000 Transactions Per Year
- Logistics Response Time (LRT) = 29.8 Days

[1] source: US Air Force, "Air Force Logistics Transformation," Executive Level Briefing, Acquisition and Logistics Reform Week (June 7-11, 1999).

Warner Robins is one of three ALCs used to serve the entire Air Force fleet. Together with headquarters, they make up the Air Force Materiel Command (AFMC). Warner Robins sets up contracts and orders parts for sustainment based on schedules and requirements that Air Force Material Command provides The air craft repair work that Warner Robins performs on planes while they are at the ALC also depends upon parts being contracted, ordered and available in a reliable and timely manner.

In 2002, Warner Robins embarked upon a lean journey to improve the reliability, timeliness and costs associated with its repair operations. Within the context of that improvement attempt, this case study examines the efforts to maximize purchase request efficiency, (i.e., shorten the time needed to acquire parts). Moving to a lean purchase request process presents an interesting challenge because it focuses on information, administrative processes, and people rather than on physical goods like in repair and maintenance.

The Purchase Request Package and Process

In October of 2002, ALC commander General Wetekam called for an off-site meeting to discuss lean implementation. His new efforts were to focus on the deployment outside of the large maintenance organizations, and throughout the other organizations, what he called the Rest of the ALC or ROTA. General Wetekam asked each ROTA organization to identify its top three priorities for improvement in lean transformation. From the combined list of top priorities, leaders identified the top ten overall "targets of opportunity." The purchase request process was on this top ten list.

- purchase request packages and people that create them

Purchasing is a function and a process at Warner Robins. The purchasing process creates a product – the "purchase request package." Every purchase request package is nearly unique in terms of the myriad of attached forms. Multiple factors determine the number and types of forms required. These factors include the length of contract, whether it is for a new item or with a new supplier, whether the supplier is a sole source or not, and so on. Purchase request packages can be for single or multiple parts or services.
The assembly of purchase request packages is different for parts and services. Further, within purchase request packages for parts, the assembly process differs depending on whether it is for a repairable (a repair purchase request) or disposable (buy purchase request) part.

The purchasing process involves all the steps in determining requirements, assembling, and submitting the package to the contracting organization (called the Procurement or Contracting Directorate at Warner Robins). People in the contracting department act upon appropriately completed purchase request packages to establish contracts for buying parts and services. Parts and service are then available, or should be available, as specified in the contracts with suppliers.

Item Managers, Product Managers, Equipment Specialists, and Engineers are all involved in the process that compiles purchase request packages. The Item Manager "manages" the assembly of the purchase request package. His role is to understand the part or service, what is needed, accurately update the requirements systems with availability information, determine when specific parts or services are needed, specify what forms need to be in the purchase request package, assemble the package, and obtain all required signatures. While he is doing all these tasks, he also gathers inputs about the part or service and its suppliers from Equipment Specialists and Engineers associated with the part or service. Each Item Manager is responsible for approximately 600 items, of which 10% are active at any particular time.

Item Managers are employed by the Logistic Directorate, but sit within the seven Product Directorate organizations. Product Managers from the Product Directorates supervise Item Managers. The Product Managers, acting as team leads, eliminate duplicate work by combining multiple parts or services into single purchase request packages. Other people contributing to purchase request packages are Equipment Specialists and Engineers. These people provide detailed product or service specifications. Item Managers, Product Managers, Equipment Specialists, and Engineers all report to supervisors within the Product Directorates.

- organizations involved in purchase requests

Outside of the Product Directorates, the Logistic Directorate houses the Office of Primary Responsibility for Purchase Requests. This office sets the standard operating procedures for purchase request packages. These procedures and standards specify the process for completing packages, forms required, and signatures needed. The Logistics Directorate has lean experts with purchasing experience. These experts include a lean "change manager" and lean team members that work to improve the process for completing purchase request packages.

A common Air Force System called D200A initiates purchase requests, and the assembly of purchase request packages by Item Managers. D200A uses a linear programming model that examines the available inventories currently in stock, type of use, and predicted replacement times to specify the parts to be purchased. A two-year time horizon is required in initiating orders due to the average time needed to fulfill purchase requests. D200A specifies requirements for every part, based on NSN, for Warner Robins, other ALCs, and all Air Force Commands throughout the world. Item Managers update and maintain the data that D200A uses in determining what to order.

There are two D200A computer runs, or computational cycles, in each fiscal year. Within these cycles there are specific time standards across all ALCs in which purchase request packages must be completed and submitted to the contracting organization. The first cycle, starting in March, has the majority of allocated funds. The purchase request packages initiated in the March cycle have to be completed by following August. An important metric for the overall purchase request process is the percentage of available

funds requested through completed purchase request packages. Funding that is not committed by initiating a purchase request in that fiscal year is no longer available in the next fiscal year. The second cycle begins in September and ends in February. There is another D200A computational run that initiates new purchase request packages requirements. The September cycle involves fewer purchase request packages because there is less funding available at this time. Each computational cycle determines the Item Managers', Product Managers', Equipment Specialists' and Engineers' work during the following six-month period.

The Purchase Request Package and Process Lean Effort

Everyone agreed that the place to start improving purchase requests was with a center-wide value stream mapping event. In December 2002 the Electronic Warfare Product Directorate hosted this event. It was led by personnel from Logistics and Contracting organizations and facilitated by Simpler Consultants. Thirty-four people participated including representatives from all seven Product Directorates and four supporting Directorates. The most significant outcome was the realization that the three types of purchase requests – service, buy, and repair – were markedly different and that each purchase request process type would need to be improved independently.

Buy purchase request packages

The buy purchase request package improvement event happened in March 2003. The people involved created current-state, ideal-state, and future-state value stream maps. The metric to assess and measure progress would be flow days, or time from identification of a buy requirement to the contract issuance. Although participants acknowledged that their ideal state was overly simplistic for the realities at Warner Robins, they had identified significant opportunities for reform and removal of non-value added steps.

In order to facilitate future work and evaluation, the improvement event team divided the buy purchase request value steam into three segments (see Figure 2). Segment 1 (at 194 days of a total 204 days) was identified as the priority for improvements. This segment started with the output from the D200A system to initiate a purchase request, and ended with the A card from the completed purchase request package being entered into the J041 computer system. The other segments essentially had to do with computational cycles and processes by which the purchase request package was passed on to the Contracting Directorate. The focus for lean improvements would be on sub-processes within Segment 1 in which the buy purchase request package was assembled.

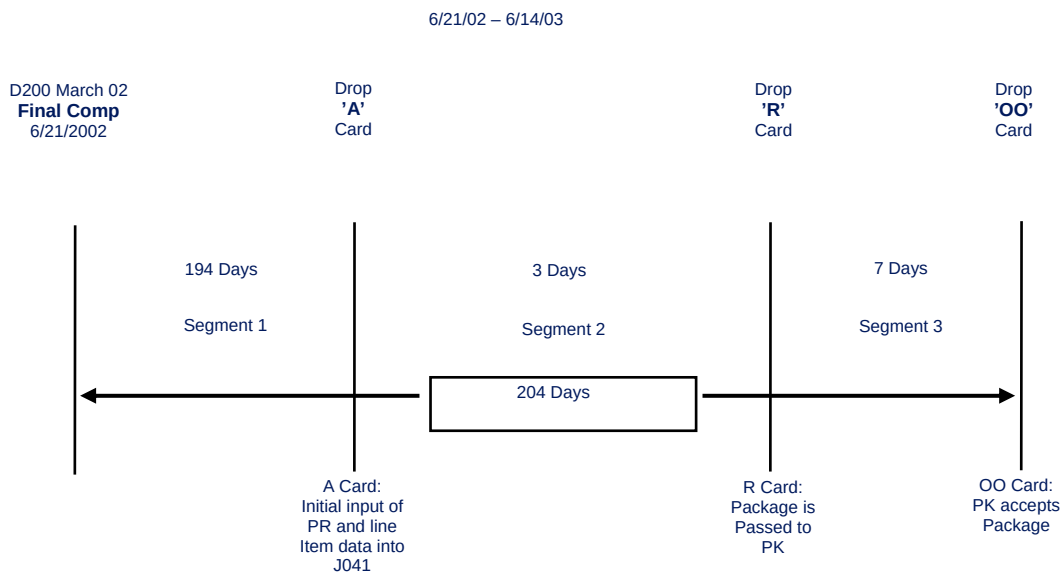

Figure 2. Delineation of the buy purchase requesting process into three segments.

Subsequently, three Segment 1 lean events were scheduled and completed, one each in August and September of 2003, and one during February of 2004. Each event included top personnel from different organizations that used each process being examined. They worked together, used lean approaches and principles to analyze and propose solutions to reduce flow days, and eliminated any outstanding problems. These events were part of a sequence of recommendations created within a broad implementation strategy to avoid stand-alone fixes.

- facing the challenges of lean improvement

As the purchase request lean team conducted lean events, they realized that there were difficult challenges in their improvement efforts. 1100 people work in purchasing functions at Warner Robins. They were distributed throughout the seven Product Directorates and the two supporting directorates (Logistics and Contracting). The number of people involved and different organizations in which they worked led to two related problems: First, each of the seven Product Directorates had different purchase request processes. It would be difficult to get everyone to agree on one standard process. A key tenant of lean is to standardize work first and then improve it. Second, supervisors from the purchasing organization provided direction for people working on purchase request packages, but supervisors in the Product Directorate organizations did their evaluations. Mixed messages, particularly in making changes, made this situation difficult.

The three lean events in Segment 1 resulted in efforts to create standard processes by combining the best practices from each of the seven Product Directorates. The lean

teams documented these proposed standard processes in an MS Word file that they emailed to people in creating purchase request packages in the Product Directorates. Processes were not equally well documented and efforts to deploy those processes in various Product Directorates were inconsistent. Individuals that were to use the new processes were not prepared to give up the way they currently did things. Their supervisors were often uninformed on requested changes, and reluctant to relinquish their control of how they assembled purchase request packages locally to a standardized, ALC-wide approach.

The lean team reacted to these problems with potential solutions All had good intentions, but when the initial efforts were not monitored and sustained, progress was lost. Three examples of these solutions and the challenges in implementing them are described below. In the end, many administrative staff members – Item Managers, Product Managers, Equipment Specialists and Engineers – affected by these changes were left confused and isolated.

- procedures solution – establish Contract Buy Team process

One of the ways to improve the time it takes to assemble purchase request package for "buy" items was to have a meeting with all parties. As part of lean-style improvement efforts, the goal was to establish specific procedures for this meeting. Assembling repair contract packages had long been aided by meetings, with procedures in place for these meetings. The lean improvement team decided to require a meeting of the people involved in every buy purchase request worth over $100,000 annually. This team of people was called the "Contract Buy Team."

The Contract Buy Team members follow a four-step procedure. First, all team members – the Item Manager, Program Manager, Equipment Specialist, Engineer, and Contracting Officer – met to discuss package requirements, to make sure all members understood their own and others' responsibilities, and to consolidate contracts as appropriate. Second, the Item Manager initiated the paperwork process, asking team members to add required attachments and signatures. Third, the Item Manager, functioning as the team lead, monitored progress to ensure that no one person held up everyone else. Fourth, and finally, the Contract Buy Team met again to verify that all requirements were met and the package was complete. The package, along with minutes from both meetings, was then submitted to the Contracting Directorate.

The Contract Buy Team process was, in theory, reasonable and straightforward. Implementation, however, was not smooth. Item and Program Managers resisted these meetings, and many created excuses to avoid even attending. They argued meetings were too frequent and time-consuming. People from the Contracting Directorate often changed between the first and second meetings. Contracting officer "A" asked for specifications A, B, C, and D in the first meeting and then Contracting officer "B" came to the second meeting, after the Contract Buy Team prepared these items, asking for specifications C, D, E, and F. There were no mechanisms by which to track

miscommunications. Each party fended for themselves, and protected themselves without regard for the whole of the purchase request package that the team had to produce.

To force the issue, the Contracting Directorate instituted a policy that it would not accept purchase request packages without Contract Buy Team minutes. According to Program Mangers interviewed, meetings were not held and people started fabricating minutes. Contract Buy Teams were not trained in effective communication. Contracting and Logistics Directorates sought to make sure that Item and Program Managers and Contracting officers had and used identical procedures and specifications. A method of tracking problems and rework was not developed. Initially no one knew the number of purchase request packages that were "fixed" by Contracting because of Contract Buy Team errors.

- communication solution – take the show on the road

The new procedures for Contract Buy Teams, along with updates to Contract Repair Teams, needed to be communicated to the Product Directorates. The lean improvement team developed a "road show." The road show was a brief presentation that highlighted how the responsibilities of each job in the purchase request package had changed. The presentations, in an effort to create buy-in from people who were not in the lean events, provided background on the contracting value stream mapping and rapid improvement event processes. Bottlenecks and proposed solutions were described, along with continuous improvement concepts and the inevitability of future changes.

To bring home the need for change, the presenters in the road show tried to bring everything back to meeting warfighter requirements. They made efforts to describe the reasoning behind every change. The road show was designed to be an introduction to these changes, with active training on new procedures by the Logistics Directorate to follow. Two considerations limited the effectiveness of the road show. First, senior managers in the Product Directorates were not briefed about changes in advance, and second, the follow-up training never occurred.

Without advanced notice, senior managers were introduced to new procedures along with their employees. When employees asked questions or voiced concerns, their managers were unfamiliar with the details. Senior managers, uninformed about the changes, did not allow their employees sufficient time to comprehend the changes; they expected all work done on the normal time scale. There was much confusion among all levels of people involved.

There was no time for formal training following the road show. The Logistics Directorate (LG) had not communicated with the Product Directorates. LG, as primarily responsible for purchase request packages, was expected to provide all necessary training. LG, however, saw the road show as providing introductory lessons on new procedures and expected each Product Directorate to follow-up with its own training.

This training was to be tied to the introduction of standard work for purchase request packages in each Product Directorate. LG saw the road show as a "train the trainer" briefing, and anticipated that each directorate would pick up where they left off.

In the end, no follow-up training was provided. The lean improvement team emailed the information describing the new procedures for purchase request packages, called standard work packages, to all personnel involved in creating them many weeks after the road show was completed. Most Item Managers, the leaders for implementing new procedures, never even looked at these standard work packages. One Item Manager deleted the email within weeks of receiving it, and was never able to look at it again. They found the attached files daunting, and expected that they would learn what they needed to know in training. But the training never came. The purchase request package road show illustrated a shortcoming of lean deployment. After initial enthusiasm for the effort, the effective momentum for change was lost due to inaction, a lack of follow-through, and no training.

- technical solution – Automated Purchase Requesting System

Assembling purchase request packages requires considerable paperwork involving different forms and many release signatures. Every step of this process required a piece of paper. Paper was sent through an internal mail system and physically put into recipients' mailboxes. The paper waited in the recipient's mailbox or on his desk for a signature or information to be added before it was sent on by mail again. This paper-based flow, or lack of flow in most cases, resulted in long wait times, difficulties in scheduling, challenges in prioritizing, and many days being lost to inaction.

A dramatic improvement to this situation would come from a newly proposed Automated Purchase Request System (APRS). This electronic, web-based system consolidated all paperwork digitally and allowed all additions and signatures to be acquired electronically. Its process fit the recently developed Contract Buy Team procedures. APRS allowed Contract Buy Teams to view each team members' progress, eliminate wait times and better schedule their workload more effectively. One of the Product Directorate's needs had determined the system's design. Lean improvement team members, and experts from the Transformation office, proposed that APRS become the standard for all seven Product Directorates. APRS was being deployed in the original Product Directorate, and a second Directorate had volunteered for the second deployment round.

These early efforts were not without problems. No help desk services were available. There is a lack of computer literacy, training and skills among Item and Program Managers. Many Item Managers do not have college degrees, and the use of advanced paperless systems is beyond their current capabilities. Many Item Managers are among the older personnel, having worked their way into these positions from clerical functions. They are decidedly set in their ways, and do not want to learn a new system at this point in their careers. They can wait this change out because they know that Warner Robins, like other government agencies, rarely fires people. The Office of Primary Responsibility

for purchase request packages Item Manager has flatly stated that he will not learn a new system.

The new system is based on a "standard work" approach, which is itself a change from how purchase request packages are currently assembled. The system design is based on one Product Directorate's processes. Since the system will not be tweaked for each Product Directorate, the other six Directorates will need to make changes in their processes when adopting this system. In addition to the procedural changes required to implement APRS, significant cultural changes are expected. Currently, nothing in the purchase request process is electronically time-stamped or tracked. APRS will give administrators and managers specific visibility into where and with whom there are bottlenecks. Item Managers do not want their performance to be that visible; many stated that they feel that their privacy is being invaded. The preparation for the changes associated with APRS still requires considerable communication and education.

To further complicate matters, and provide another reason for resisting APRS, Air Force Material Command (AFMC) is in the process of releasing the D203 electronic purchasing system. With its investment in D203, AFMC has forbidden Warner Robins to invest any significant amount of money in APRS or its needed training activities. D203 has already been delayed once. Warner Robins expects that there will be other delays in D203 because of a recent AFMC-wide program called Purchasing and Supply Chain Management Improvement Effort. The contention among alternative solutions, need for changes in procedures, and resistance due to changing skill requirements and consequences of a computerized system, creates significant uncertainty around APRS implementation. Each of these factors individually, and their combination in particular, illustrate the challenges of enterprise-wide improvement initiatives.

The Limitations of Warner Robins Metrics

Of the various metrics available to track the progress of purchase requesting package improvements, Warner Robins has chosen to focus on flow days (including total flows days and touch time) and initiation rate. Flow days track the cycle time of all purchase requesting packages as they are compiled and submitted to Contracting for contracting approval. The goal is to reduce the flow days from a real rate of 204 days during 2003 to a future state rate of 45 days. Initiation rate tracks the amount of money spent by the center on new buys as a percentage of the total amount allocated to the center by Congress for that fiscal year. The goal is to spend 100% of the money by December of each year, while still meeting all requirements generated. This is motivated by the fact that any money that is not spent is lost, as opposed to being rolled over into the next fiscal year. Warner Robins has seen some progress with both of these systems of measurement due to lean efforts (Figure 3).

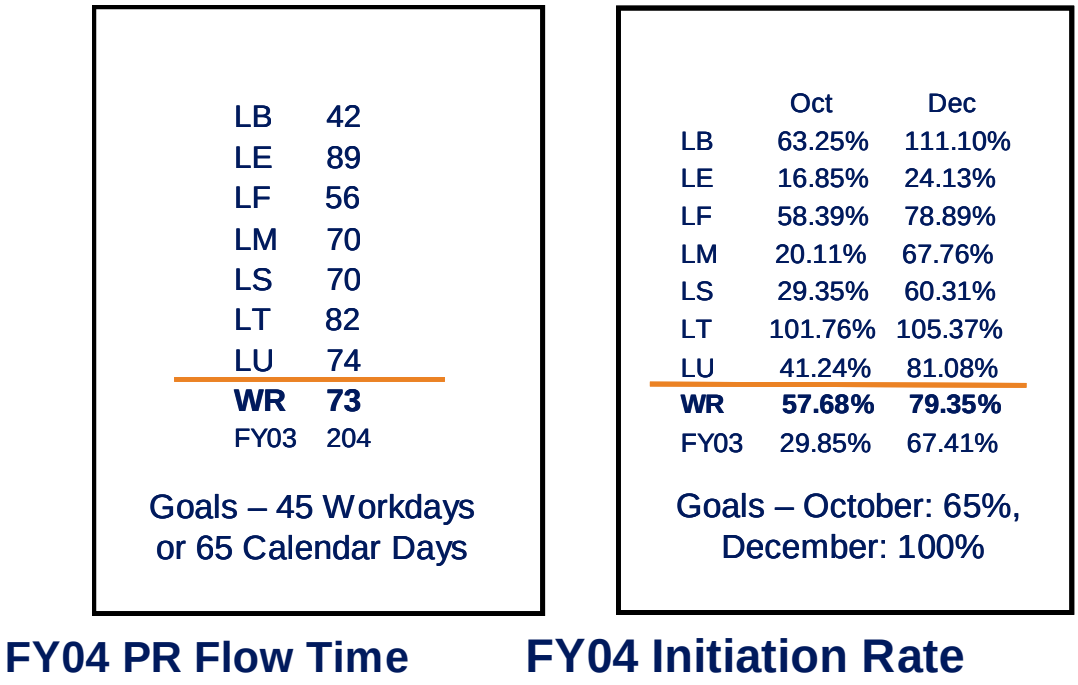

Figure 3. Metrics collected at Warner Robins to track lean progress in the Purchase Requesting process include flow time and initiation rate.

In addition to these two metrics, others have been proposed and later rejected on the basis of ease of collection, as well as ease of understanding and communication. One such metric was designed to track all national stock numbers (NSN) identified as requirements during each computational cycle. The goal was to ensure that all stock numbers identified would be purchased in the correct quantities by the end of the fiscal year. This metric was eventually abandoned due to the fact that many Item Managers chose to ignore some requirements, and filled others not specified by the D200A system, when the need arises. This is not to say that Item Managers are just buying parts as they please, but rather that they are expected to always have some money available for emergency buys that were not predicted by the system in time. Because the electronic data collection system was based solely on the stock numbers generated by the D200A system, it was impossible to explain why some numbers were not purchased and others were entered in their place, without allowing too many people access to the database. Therefore, this metric was dropped from the list of those reported to the command.

Within Logistics, metrics were only designed to capture progress within the time required to assemble and prepare a purchase request package. Once a package was submitted to Contracting for approval, no metrics were captured as to the number of times a package was returned due to errors or insufficient data. This was due, in part, to the fact that many times, even if there were errors, packages were not returned to the responsible Item Managers. Instead, Contracting officers would tend to each situation as “fire-fighters” and fix the errors themselves. Because of this, Item and Program Managers, Equipment Specialists, and Engineers were not learning from their mistakes, and the Logistics home

office could not help alleviate the problem. However, the lack of actual data to support these occurrences did not stop Contracting from reporting to the Commander (in January 2004) that Logistics was not doing its part to ensure purchase requesting package quality. Bickering ensued as the two directorates defended their own policies and procedures to the Commander. (As of March 2004,this situation had not been resolved.)

Enterprise Transformation and Competing Efforts

Warner Robins is not an isolated center. Staff at AFMC headquarters must approve all significant process improvements suggested by lean events at Warner Robins. This is not always an easy task.

The D200A AFMC system is used to determine requirements for all purchasing activities within the product directorates at Warner Robins. Twice per fiscal year, in March and September, Item Managers are required to adequately update the D200A database such that it accurately reflects the inventory currently available, as well as the forecasted level of repair and replacement that is necessary to meet the needs of the warfighter and protect the country. The D200A system is then used to predict what the ALC will need in 18 to 24 months. These requirements are printed and then acted upon by Item Managers in by way of purchase request package initiation.

In August of 2003, a lean event was held to examine the D200A computational process. Facilitated by Simpler and change managers from the Logistics directorate, the event was attended by over 20 people from all levels of the purchase request world. Many felt the event was well intentioned and productive. Participants in the value stream mapping event, including an AFMC employee, identified waste such that only value added steps would be included in the final standard work package. Once example of waste identified was the entire September computational cycle. Participants felt that this cycle was non-value added because there was never any actual money left to allocate by this time in the fiscal year. The amount of paper work and time required to produce documents that no one at Warner Robins read was too great and unnecessary. By the end of the meeting, the team agreed to recommend to AFMC Headquarters that the March computational cycle be dropped in favor of a more substantial September cycle.

Over the following fours months, no response was received from AFMC headquarters. Then, in January of 2004, AFMC declared that the March computational cycle and the documents produced were, in fact, value added to them, and that Item Managers at Warner Robins could not be relieved of this task. The team at Warner Robins was reminded that AFMC would soon be releasing a new system to replace D200A, D203 (already late by months) and so recommendations for change, including the APRS system under development, could not be approved at this time.

When they heard the news, participants from the lean event were only a bit surprised, and thoroughly frustrated. Some began to express a lack of faith in the lean process if this is how their recommendations would be treated. In an attempt to defend their work, middle and senior managers from Warner Robins traveled to Dayton, OH to meet with people

from AFMC Headquarters. While the AFMC representatives were adamant that the March cycle was beneficial to them, they acquiesced to a compromise proposed by the Warner Robins team. Both sides agreed to complete the March computational cycle during the next fiscal year. At the same time, Warner Robins will collect the same data required by AFMC in a substitute manner. After a review of that data, the ultimate fate of the March cycle will be determined. It was not the ideal solution, but the team from Warner Robins was satisfied that at least the AFMC team had listened to them.

Recommendations and Conclusion

Warner Robins' attempt at "leaning" its purchase requesting process was profound. They followed a standard lean process of value stream mapping events, followed by smaller, rapid improvement events, projects, and do-its. They established rules and procedures for standard work, and publicized these changes to the best of their ability. New internet-based tools are being developed to address the need for automated information collection and package generation. Flow rates have decreased from the baselines collected in 2002, and initiation rates are rising. The culture of those people working within all seven product directorates, as well as each supporting directorate, has begun to change as people realize that they cannot "wait this out."

Yet, it is apparent that the ultimate, long-lasting success of Warner Robins' lean journey will depend on how it manages the challenges that still lie ahead. For instance, the current restrictions placed on automated system development may prevent Warner Robins' from automating the purchase requesting process. New enterprise-wide requests and re-organizations may throw another wrench into an already precarious situation In addition to the new D203 system, all three ALC's (Warner Robins in Georgia, Ogden in Utah, and Oklahoma City in Oklahoma) are currently involved in an overhaul of the entire Purchasing and Supply Change Management procedures within AFMC. While this new group is expected (by whom?) to be successful, some recommendations will likely be contradictory to the initiatives underway currently at Warner Robins. Because an enterprise approach was not taken from the beginning, it is possible that much of the work done at Warner Robins to date will be moot. Competing efforts, if not managed appropriately, could ultimately devastate the new lean culture that is emerging at Warner Robins. Clearly, diligence on the part of leadership is necessary: without their support, these efforts will flounder, and ultimately fail.

Sidebar A - Case Study Methodology

Research for this case was conducted in two parts: 1) qualitative data were collected though on-site interviews of employees, attendance at lean implementation and planning meetings, and phone call and email follow-up questions and answers; and 2) quantitative data collected by staff at Warner Robins was reviewed by MIT researchers.

Field research at Warner Robins was conducted over two weeks during January 2004. Between January 12th and January 15th I conducted 14 interviews, and between January 26th and January 30th I conducted another 15 interviews. The first week was spent speaking primarily with lower level workers and front-line managers of the purchase request process, while during the second week I was given access to upper and middle management personnel. I spoke with people in 5 of the 7 product directorates, as well as staff from Logistics (LG), Contracting (PK), Transformation (XPT), and Acquisition Excellence (AE). The views expressed during these interviews were all encompassing, ranging from "lean is just the flavor of the month," to "I enjoy lean events and see the benefits for my job." The wide variety of views expressed and employment level of people interviewed suggests we had collected enough first-hand information to present a cross section of the organization and the people involved with the "leaning" of the purchase request process.

During the interviews, a pre-determined list of questions was not used. Rather, each interview was conducted such that the interviewee could speak freely and continuously. Questions were tailored so that I could act as a facilitator, rather than a questioner. I encouraged each participant to be open and honest, and went over the research design and COUHES forms as appropriate. In the event that an answer given was to potentially be used as a direct quote, I obtained permission and assured anonymity.

To begin each interview, the participants were asked to explain a little bit about their personal history and involvement with Warner Robins, and then to move on to describing their role in the purchase request process. If it was not mentioned by the participant, I then asked about their impressions of lean as a method for transformation, if they had been through and formal but generic lean training, and if they could describe for me their participation in and experiences with any lean events concerning the purchase request process. Discussion usually followed from here and most participants seemed willing to share their thoughts and opinions. Each interview lasted for approximately 50 minutes.

While on-site at Warner Robins, I attended two Lean Corporate Council meetings and one planning and training session for the new Automated Purchase Request system. Each of these meetings proved very informative and useful in terms of background information and providing a contextual and culture framework for information garnered from interviews. I was identified as an MIT researcher on all occasions, but did not actively participate in the meetings.

After returning to MIT, phone calls were made and email messages were sent regarding clarifications of statements. Also, I spoke with my host on a weekly basis, just to make

sure my assessment of the process was correct. No further interviews were conducted.

While on-site, I was able to explore quantitative databases maintained by staff within the Logistics directorate. These included raw data collected (such as every time an item number is entered into the system as having been identified as a requirement by D200A or as having been included with a purchase request that has been accepted by Contracting) and well as synthesized data (such as flow days or percentage of budget that has been allocated). Precise data collection within Logistics is a rather new phenomenon, having been started in June of 2003. All data presented as being collected prior to that date are actually estimates, and should not be taken as an exact representation.

After returning to MIT, I identified other data, primarily historical and related to man-hours instead of item numbers, which I would have liked to analyze. However, after numerous emails back and forth between myself and a number of Warner Robins employees, it became clear that this data we were searching for did not exist. Therefore, due to a lack of nomenclature understanding, as well as lack of specificity of historical numbers, no further analysis or data manipulation was done by MIT.

Sidebar B – WR and Simpler Consulting Group

Warner Robins has contracted with the Simpler consulting group to evaluate its administrative programs. Simpler advised Warner Robins to continue using their 3-1-3 schedule for lean events, with some modification for slightly smaller, rapid improvement events. The 3-1-3 schedule refers to three weeks of planning by the team leads, one week for the event with full participation, and three weeks for follow through activities, again coordinated by the team leads. Further follow up review was expected at 30, 60, and 90 days after the event. At the same time, Simpler urged Warner Robins to conduct a total of (n/100) events per month, where n is equal to the number of employees working the particular division or process affected. Warner Robins agreed to both suggestions and began its administrative lean journey in this fashion.

Each week-long lean event was called a *kaizen* or continuous improvement event, and was designed to bring people together from every directorate affected, as well as from all levels of participation. Event participation varied from over 40 people to under 10 people, depending on the extent of the process being examined. Throughout the week, a value stream map would be documented, and non-value added steps would be identified for elimination of at least modification. At the conclusion of an event, the team was supposed to have generated a list of do-it's, projects, and subsequent rapid improvement events. Do-it's are tasks thought to take one person two to three days to complete, while projects were intended to take two to three people three to four weeks to complete. Subsequent rapid improvements events were to be conducted for processes requiring fuller analysis, but that are complimentary to the process at hand.

One obstacle that quickly arose was that of over taxed personnel resources. One change agent was named within each product and support directorate. These people were usually at the GS-11 or GS-12 grade level. Each change agent was to work within a team of 4-5 people, all at or below this grade level. It soon became apparent that there were more events to run than these few people could handle, even with the help of Simpler facilitators. Event schedules began to overlap, and lean change teams were stressed. However, because success was measured by the number of events held each month, and not by the number of process changes successfully adopted, the follow through period was often neglected.

Additionally, these change agents lacked the power to truly implement the majority of process changes suggested during lean events. They simply did not have the authority required to impose new process suggestions on the Directorate heads, most of whom are at the General or civilian equivalent to General level. To correct this imbalance, the change agents were re-named change managers and the change agent title was given to the Directorate heads themselves. Implicit in this designation was that all Directorate heads would now participate in lean activities and implement suggestions as appropriate. Some Directorates have been more successful with this transition than others.

A second and separate challenge was presented by the sheer volume of people involved with the processes administered by the Logistics Directorate. Logistics serves as the

"home office" for a number of processes used by other Product Directorates. Also, to some degree, Logistics serves as liaison between the Product Directorates and Contracting and other support directorates. This creates a unique tension because change agents or managers within Logistics do not necessarily have the authority to impose process improvements onto other Directorates. This means that while a great suggestion was devised during a lean event that could ultimately effect over 1300 people, no one is in direct control to the extent necessary for everyone to be impacted and ultimately, helped.

Sidebar C – Islands of Success within LG

Despite troubles and challenges outlined above, there have been a number of small success stories facilitated by the Logistics lean team. In all cases, the standard Simpler strategy was followed. These success stories all have one thing in common: they all involved a limited (< 15) number of people in the process. Also, in the last two cases, the team lead in each case has the authority to mandate change.

Foreign Military Services - Modification Kits

Over the years, numerous aircraft and maintenance contracts have been sold by Warner Robins to approved foreign countries. Within the US Air Force, as aircraft age, modifications are made to both the external and internal components, to ensure further safe flight ability. When deemed appropriate, components of an individual modification step are packaged and sold as modification kits to foreign owners of the same aircraft.

An audit of the Supply Management Mission Area turned up many over age back orders (over 180 days) in the Foreign Military Services (FMS) department. It turned out that there was no process in place for dealing with FMS Orders for modification kits, especially for the F-15 aircraft. The Policy and Guidelines office of FMS decided to use the lean event process to jump-start the creation of standard work for FMS modification kit order fulfillment. During the lean event, the team completed a value stream map of the process, and utilized handoff mapping and spaghetti diagram techniques to identify the source of the backlog.

Subsequent to the event, process guidelines were formalized and made available center-wide. At first, a communication gap existed between the F-15 Directorate and FMS regarding the use of these process guidelines. However, differences were worked out, and the standard work is now in use. Time and cost savings have not yet been realized, but the team lead has faith that they will surface within the next year.

This lean success story is interesting because it marked a difference in opinions regarding results between the Warner Robins personnel and the Simpler facilitator. The Warner Robins team was satisfied with the outcome, and felt like they had dedicated significant time to developing a solution that could be appreciated by all. However, the Simpler facilitator was up front with the group in telling them that he felt no progress had been made by the end of the event. This discrepancy made the whole team feel discouraged about the lean process and their part in it.

Personal Computer Installation

As in any other office working environment, personal computers (PCs) are necessary for the majority of employees at Warner Robins (outside of the Maintenance Directorate) to complete their job tasks effectively. Five people within the Logistics Directorate are responsible for PC installation on individual desks. Prior to December 2003, they found that installation requests routinely required up to three weeks of paper work and

processing before an individual's PC was functional. Additionally, the team acknowledged that their regular, weekly, one hour meetings were focused on fire-fighting and crisis management, as opposed to calm discussions of overall work practices. Again, a lean event was scheduled to address significant process improvement possibilities.

The event began with boundaries being set by the team lead, and a clear goal of 2-hours with no re-works for every PC installation was set. This ambitious and focused goal was originally met with trepidation, but was eventually embraced after a value stream map showed clearly that it was possible. While the event was originally planned for only three days, all of the participants felt the final time frame of four and half days was worthwhile in terms of the outcomes. In addition to specific process improvement plans generated, the team lead cited as a primary outcome that team members were finally beginning to see passed their "stove-piped" notions of how things should proceed, and began to see and understand the needs of the entire Directorate.

At the time of this case study it was clear that progress was being made, although the goal of 2-hours has not yet been achieved. Again, it must be noted that progress and change were made possible by the small number of people involved in the process, and the direct authority of the team lead over the process in questions.

Foreign Military Services – Tech Orders

The home office for tech orders and engineering drawings is housed within the Logistics Directorate. This office employs approximately 63 government employees and 75 contractors in order to maintain access to over 20 million drawings. The office represents all of Warner Robins in terms of tech orders and engineering drawings policy, procedures, conversion, electronic access, information structure and support, and warehouse and mailroom maintenance. Requests for information packages come from a myriad of sources, including organic depot maintenance shops, field maintenance locations, public appeals under the Freedom of Information Act, and foreign military organizations.

The supervisor of this office has set the lofty goal of eliminating all paper copies of tech orders and engineering drawings. He feels Warner Robins would benefit from the save warehouse space, and his customers would be better served in terms of time from request to receipt of information. With this in mind, a lean event was designed to examine the process of foreign military tech order distribution. During the event, a value stream map was created, and eventually, the process was reduced from 120 steps to 70 steps. Included within this process improvement was the fact that personnel changes were possible and would need to be made, and that the appropriate resources would be dedicated so that the process could be streamlined.

Since this event, tremendous gains have been made in terms of time taken to fill a foreign military tech order request. Warner Robins has gone from being third of the three ALCs to first in terms of Foreign Military Services. People in the home office are very proud and protective of this status, and so continue to make small improvements as necessary.

They feel like the lean approach to process improvement is akin to “losing weight and dieting”: you may struggle, but if you keep at it long enough, results will appear.