The Biggest Peoplesoft Implementation Ever – Implications for Systems Engineering

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Abstract. This paper describes the largest Commercial Off The Shelf (COTS) human resources implementation ever attempted. The Department of Defence has chosen to combine its payroll and personnel functions for all four branches of the military: Army, Navy, Air Force and Marines. The software they have chosen is PeopleSoft. Changes will occur for a variety of technical and political reasons, including PeopleSoft release updates, hardware updates, supporting software updates, requirements changes, funding changes and changes in Congressional leadership. How will the project deal with these changes? System engineering expertise is needed to manage the change that will occur inevitably on a COTS implementation as massive as this one is.

Background

Enterprise Resource Planning (ERP) systems are large, complex Commercial Off The Shelf (COTS) software packages that combine a data base with applications and built-in processes. They are designed to supplement or replace existing processes so that anyone in the company can obtain any information he or she wants about the company’s current status. Examples of ERP systems include SAP, Peoplesoft, Oracle, and JD Edwards systems.

If you follow technology news, project management, or politics you may have read about Cal State's implementation of Peoplesoft - 23 campuses, 407,000 students, and 44,000 faculty and staff. By any standards this is a big Peoplesoft implementation and is still on going. Cost-to-date is over $400 million. Or you may have heard about FedEx's Peoplesoft implementation with more than 180,000 active employees in a Peoplesoft HRMS and payroll implementation. But both will be dwarfed by the biggest implementation of any ERP system ever.

This Peoplesoft implementation will replace 80 separate legacy systems, which currently process over 3.4 million employees and retirees. The original Request for Proposal for the project required that the software, “… will provide scalability and perform well in a distributed processing environment supporting up to or more than 80,000 users and 10 million personnel records.” The name of the project is the Defense Integrated Military Human Resources System or DIMHRS (pronounced DIME-hours), and you've probably never heard of it. It's the Department of Defense's (DoD) plan for a single, fully integrated, all Service, all component personnel and pay system. It started in 1998 and is scheduled to run for another ten years.
The justifications for DIMHRS include:
- deficiencies of the current system to track active and reserve status changes,
- inability to track personnel in theater,
- lack of single, comprehensive personnel record of service.
- data is captured in multiple redundant systems
- inconsistent data and processes among existing systems
- lack of adequate security of personnel records

Stories of lost personnel records have plagued the military for decades. Reservists who are called up are often “lost” in the system and not effectively returned to reserve status upon deactivation, affecting both their pay and their credit for service. Some reservists who served in the Persian Gulf War spent years to get their records straightened out.

Reasons for ERP and COTS Failures

The history of ERP implementations is rife with stories on expensive, failed projects, in some cases causing the companies that implemented these systems to declare bankruptcy. Given its poor history, what should the biggest Peoplesoft project expect in terms of problems and issues?

There has been much management research done studying these projects. A recent paper (Umble, 2001) listed the top nine reasons for ERP implementation failures:

1. Top management failure. Top management lacks commitment to the system, does not see the profound changes it engenders, and does not actively participate.
2. Implementation project management is poor. Many companies grossly underestimate the scope, size, and complexity of the project.
3. Lack of education and training. Insufficient education results in a poor understanding of how the ERP system should be integrated into overall company operations.
4. People do not want the new system to succeed. People have a natural tendency to be comfortable with the status quo and may not see the need for a new system.
5. Unrealistic expectations about the implementation. Managers are often surprised by the amount of resources, time, difficulty, and level of outside assistance required.
6. The basic data is inaccurate. Under these conditions, the new package will lose credibility, causing people to ignore the new system and continue using the old system.
7. Companies attempt to automate existing redundant or non-value-added processes. The business must reengineer processes and decide how to operate differently in an integrated environment.
8. There is a mismatch between the business and the ERP system selected. If business practices do not change and cannot be mapped within the requirements of the software, there will be chaos.
9. Technical difficulties can lead to implementation failures. These difficulties can include “bugs” in the software, problems interfacing with existing systems, and hardware difficulties.
In order to avoid the problems of other large implementations, the DIMHRS project has produced its own internal list of reasons why COTS implementations fail (Pang, 2002):

1. Haphazard documentation of requirements, leaving too many viewpoints and too much open to interpretation
2. Lack of clear criteria to promote change to existing practices rather than modifications. This leads to a mentality of adopting rather than adapting, and users may not understand the new processes. In addition, modifications may be made hastily, rather than thought through fully.
3. Insufficient data analysis prior to implementation, which leads to issues when legacy data does not map easily to product, and alternatives for functional gaps are not planned.
4. Insufficient performance planning/testing (Coast Guard).
5. Unrealistic schedules.

Comparing the two lists we see there is there is overlap - a positive sign. However, the first three risks (Umble, 2001) described: management support, project planning, and training are not mentioned in the DoD list, described by Pang.

In October, 2003, the top three risks were updated and presented at the first annual Information Technology Human Resources Conference (VanUs, 2003) as:

- Coordinating Army eHRS and DIMHRS Schedule/Systems Integration
- Coordinating Data Standardization/Conversion, and
- Maintaining Senior Leader Sponsorship and End User Acceptance.

In some respects, this new list of risks is positive. First, it means the process of periodically assessing and re-assessing risks is part of the project. It is generally recognized that risk management is a critical success factor in successful project management. Secondly, the new list recognizes senior leadership must be committed to the project’s success, which is risk number 1 described by (Umble, 2001). It also recognizes end user acceptance is critical, which (Umble, 2001) discusses at a more granular level under 3 and 4. The new list also recognizes data accuracy, which (Umble, 2001) lists as number 6.

The question now is whether the risk management strategies being put into place will truly reduce the project’s risks. There are indications that at least one risk with potentially high impact has yet to be addressed. How will DIMHRS operate in the real world, especially in an environment of constant change?

Systems engineering is in a unique position to reduce this risk. One of the lessons we have learned from Systems Engineering is, “having a Software Operational Concept (how the system will work) as well as a System Operational Concept (how the system will fulfill the customer’s needs) significantly increases the chances that the software will work as intended,” (McKinney, 2001). The good news is that systems engineering can lead this effort. The bad news is that with COTS software, and especially Peoplesoft, this is not an easy process because of its multiple components, high complexity, and associated business process changes. On top of all that, there is the politics associated with all projects, but especially government-funded projects. We’ll review the technical challenges first and reserve the discussion of politics for later in the paper.
Creating this software operational concept is critical to determining realistic operational costs. One of the major challenges the Joint Program Management Office (JPMO) is facing is collecting Services and Defense Finance and Accounting Service (DFAS) cost information for implementation, sustainment and technical refresh. DFAS is the current payroll processor for the military. This data will be used to compile an Affordability Analysis report for DIMHRS. In some respects, planning processes may be more similar to those discussed by (Hagopian et al, 1996) in their discussion of "Continuous Operations Planning" for the International Space Station. Like the space station, the DIMHRS implementation must operate continuously over its lifetime. The approach separates planning into two basic functions: 1) long-range planning for a fixed length planning horizon, which continually moves forward as the project progresses and emphasizes the preparation for operations; and 2) shorter-range project planning, which takes a small segment of the long-range plan and develops the detailed schedules. The approach may provide a more robust and cost-effective method for planning in the continuous operations environment in which DIMHRS will live.

Existing policies should also be leveraged if possible. DFAS has an Information Technology Life Cycle Management Policy to provide a framework for program planning, execution and decision points to realistically project and control cost, schedule, and performance objectives and to ensure that programs are documented, implemented, secured, operated, and maintained. DFAS estimates should be compared with actual results to determine accuracy prior to leveraging this policy, however.

Although DIMHRS is represented as a single repository, many software and hardware components support it. These components will need to be upgraded and changed over time. Typically ERP vendors, including PeopleSoft, release major software upgrades every 18 to 24 months. With the full operation of all 4 branches of the services now scheduled for FY2008, the project should include upgrades of at least two major releases of PeopleSoft. In addition, there are other components that must be upgraded to keep the system current. Given the components in use, upgrades would be expected for the following:

- PeopleSoft application software patches and fixes
- PeopleSoft tools releases
- Web server software
- Application server software
- Supporting software such as the COBOL compiler, Crystal Reports or SQR
- Database software upgrades
- Operating system upgrades

Because of the size of the implementation, there are multiple instances of many components. For example, there will be over 1,000 ‘Tier 2’ database servers that will be part of the DIMHRS project. These database servers will replicate the master database and make it available in the field. Multiple instances are likely to make the upgrade procedures even more complex.

The above list is software components only. Hardware will also need to be upgraded or replaced. In addition, any changes in requirements will introduce new complexities. For example, if a legislative mandate is passed, and the software does not include the functionality,
either the software will have to be modified or a manual work around devised. Existing systems would have to be retrofitted, further increasing the complexity of the implementation.

Systems Engineering needs to be deeply involved in how COTS will be managed in an operational environment that is constantly changing. Systems Engineering has a unique focus, understanding the end product and system purpose, the stakeholder needs and expectations, and the full system life cycle. The systems engineering approach integrates technologies and disciplines. It also balances conflicting consideration. Systems engineers are often in the best position to lead assessments of risk and performance, as well as organize and validate requirements. The DIMHRS project should make sure a Software Operational Concept is part of the project Work Breakdown Structure that they are now creating.

Project Scope

The DIMHRS system will encompass all four branches of the military: Army, Navy, Air Force and Marines. As is common in government systems existing efforts are not being held up waiting for some future software package. The Navy continues to program and spend funds to enhance its Personnel and Payroll system, named the Navy Standard Integrated Personnel System (NSIPS) even though DIMHRS is scheduled to replace the System in FY 2005. By coincidence, the NSIPS is also based on Peoplesoft, though with customizations. The DoD Inspector General’s March 2003 audit report flatly stated, “Because the Defense Integrated Military Human Resources System will replace the System in FY 2005, the $33.4 million that the Navy has programmed for further development of the System after it achieves full operating capability could be put to better use. We recommend that the Navy not expend any more money developing the System after achieving full operating capability in second quarter FY 2003.” These types of actions tend to fuel speculation about management’s commitment to DIMHRS, at least within the Navy.

And the Navy is not the only member of the coalition to start moving in its own direction. In April 2003, the Department of Defense (DoD) authorized the Defense Finance and Accounting Service (DFAS) to initiate a pilot project to demonstrate its ability to develop an interim military pay system, called Forward Compatible Military Pay, before DIMHRS is fully operational. DFAS maintains that an interim system should be developed as soon as possible for two reasons: (1) the planned personnel and pay system that DOD is currently developing as part of the larger DIMHRS, will be implemented later than its projected target date of December 2006 and (2) the current military pay system — the Defense Joint Military Pay System — is aging, unresponsive, and fragile and has become a major impediment to efficient and high quality customer service. The DoD DFAS group estimated that the Forward Compatible Military Pay system could be operational by March 2006 at a design and development cost of between $17 and 30 million (GAO, 2003). The coalition to build a unified system seems extremely weak. An interim system would compete with DIMHRS for resources, put the DIMHRS project schedule at risk of slipping further, and call into question executive support of the DIMHRS project.
Also typical of government projects, the Navy has further hedged its bets. The Naval Sea Systems Command awarded a $6.5 million contract to Peoplesoft to deliver a version of its human resources enterprise application for the DIMHRS by March, 2002. The Navy did not ask Peoplesoft to actually implement the software, just to deliver the package.

In addition to the normal project management problem of every other major ERP implementation, DIMHRS faces additional challenges. As a government-procured system there are significant processes that must be followed to ensure that the project follows the reporting and auditing standards mandated by the federal government. While these standards ensure that a project can be audited, they add a significant overhead burden. Additional resources are required to handle the additional documentation and tracking and the project manager’s time is spent in ensuring that the project is following the standards.

Project Schedule and Cost

Even though the implementation schedule seems long, there are indications that the project plan may be too aggressive. Size, scope, and complexity may have been significantly underestimated as well as the need to meet legislative mandates. Some milestone dates have already been revised. Although the project started in 1997 with a ten year schedule and the goal of using commercial off the shelf (COTS) software, the COTS vendor was not selected until halfway through the project in March, 2001. Milestone 0 was the first project milestone and its approval in December 1998 initiate the next phase for ‘concept exploration’.
The second Milestone, entitled simply Milestone I, Acquisition Program Baseline, was originally scheduled for May 25, 2000. It was actually approved in October 2000, and set an aggressive schedule and targets for subsequent milestones. The second Milestone, initially named Milestone II, was originally scheduled for June 2001. Renamed Milestone B, it encompassed Initial Functional Analysis and Concept and Technology Development. Program officials delayed Milestone B from September 2001 to July 2002, delayed it again until September 2002. The Strategic Plan of the Military Personnel Management Information Management Program restated the milestone date as 2003. Substantial project management research shows that as early as 15 to 20% into a new project, earned value can be used as an early warning signal (Fleming, 2000). Best practices indicate that the project should have been
halted at this point and the entire schedule and budget revisited and rebaselined. In fact, the delay in schedule has already increased costs.

A DoD audit pointed out that DIMHRS program management officials have a substantial amount of work to do for Milestone B, because of the certification required by the Clinger-Cohen Act. The audit (Office of the Inspector General, 2002) stated it was uncertain whether program officials could, “execute the acquisition within acceptable cost, schedule, and performance boundaries.” It also stated that the Milestone B review must validate alternative acquisition approaches have been thoroughly considered, and reduce schedule and performance risks by establishing time limits to resolve potential issues during system development and implementation. While this was good advice, it also changed the project scope and requirements and a change request should have been submitted, evaluated, and approved with concomitant changes to the project plan. Finally, in April 2003, Milestone B was finally approved. The date slippage on this milestone is almost two years.

Schedule and scope changes have not been the only issues on this project. Cost estimates for the project have varied widely. By February 2002, four years after the project began, program officials had not completed detailed costing of DIMHRS. According to a DoD audit, “the overall DIMHRS program may be very expensive and may not be economically advantageous to DoD. The DIMHRS software development and deployment cost estimates, made in December 1999 by an independent source, ranged from $380 million to $1.2 billion depending on key variables, such as the length of development and deployment efforts and the initial “fit” of the COTS software to meet functional requirements. The independent DIMHRS life cycle cost estimates ranged from $1.3 to $3.6 billion in consideration of the same variables. In comparison, the JPMO and the JR&IO estimation of life-cycle costs, as shown in the July 1999 DIMHRS Preliminary Economic Analysis, totaled between $1.4 to $2.5 billion,” (OIG, 2002).

Clearly there is a need to nail down the scope, schedule, and costs of the DIMHRS project further.

**Project Risks**

The first nemesis of delivering a project on time and on budget is scope creep. This is true for even small and medium size projects. For a project as large and complex as DIMHRS the need for scope management is an order of magnitude greater. Even though it is early in the implementation cycle, DIMHRS has already experienced scope creep. The original project was an enterprise pilot program for a military manpower and personnel information. Legislation passed in 1998 revised this to add all ‘appropriate systems’ within DoD for personnel, manpower, training, and compensation. Also added to the effort were:

- an analysis and determination of the number and kinds of information systems necessary to support DoD;
- utilizing an enterprise level strategic approach,
- performance and results based management,
- business process improvement, and
- the use of modular contracting.
DIMHRS can be expected to suffer the same fate as most other large Federal programs. If it starts having problems, as anything this size will, Congress is likely to step in and start investigating the problems and offer political solutions. If DIMHRS is going well, Congress is equally likely to step in and propose changes so that they can claim to be a part of a successful project.

Past history shows us that external events can impede system implementations. The Army has developed their own system, labeled eMILPO (the Defense Department’s multiservice, integrated personnel and pay management system), as an interim step toward DIMHRS. On March 12, 2003, the Army delayed the fielding of eMILPO due to what it termed “current operational tempo.” Translation for civilians: military operations worldwide are first priority over any systems, especially operations in Iraq, where bombing began on March 19. No new dates for rolling eMilpo out to the field have been set. The eMilpo system will be the transition system for the Army until DIMHRS is fully implemented.

The Army’s active implementation for DIMHRS was scheduled to begin June 2003, although final selection of the implementation vendor was also scheduled for June, which made an impossible schedule. There is little enough slack in the schedule currently. The selection of the implementation vendor team of Accenture and Northrop Grumman was contracted in September of 2003. As of November 2003, the vendors are still hiring dozens of staff for work to begin in New Orleans at the Navy Technology Center, University of New Orleans. This means that active implementation will begin Q1 of 2004, over 6 months behind schedule. The go-live date for the Army is now scheduled for 24 months after contract initiation, of September 2005. The project is at a minimum 15 months behind schedule.

In an effort to prevent future requirements changes, in October, 2003, the DIMHRS JPMO issued the “rules of engagement” to be used on the project. The JPMO has stated that the Contracting Officer alone is authorized to direct changes in scope, price, terms, and conditions of the contract. Any change at the direction of any person other than the Contracting Officer will be considered to have been made without authority and no adjustment will be made in the contract price.

Another risk is in the area of performance. Systems engineering needs to be heavily involved in making sure the performance testing that is done truly mitigates the risk. CSC conducted a full-scale, real-world benchmark of its entire proposed architecture. Unfortunately, the test was done using different software than will be used for the project (North American Payroll, rather than Global Payroll) and a different database architecture than that which is now planned (Oracle 9i vs. DB2). These are significant differences that make the benchmark test virtually meaningless. A systems engineering perspective is needed to understand the benchmark cannot be used in the future to show that the risk in the area of performance has been mitigated.
Risk Mitigation

The DoD has been following a risk mitigation strategy based on lessons learned from past projects. The initial DoD strategy for the DIMHRS project includes the following:

- Single source for well documented requirements
- Comprehensive analysis of business rules with process gaps identified and resolved and modifications only for specific criteria. Also, changes to existing practices are to be fully documented.
- Comprehensive analysis of data, with pre-mapping of legacy data to DIMHRS and to identify and resolve data gaps.
- Complete performance testing to optimize database design and to maximize productivity of existing communication infrastructure, and manage operations efficiently.

The DoD has good reason to be concerned about requirements. Military organizations have many unique requirements that commercial enterprises do not have and legislation can update those requirements frequently. As described by (OIG, 2002), the Air Force implemented a COTS package that only met about 25 percent of their specified requirements. They substantially modified the software to achieve the remaining 75 percent. The Navy modified its copy of Peoplesoft for its NSIPS project to achieve about 90 percent of the required functionality, the functionality that DIMHRS is now replacing. The COTS software for the Defense Civilian Personnel Data System, the new DoD standardized civilian personnel management system, initially provided only about 65 percent of the required functionality.

To combat this risk, in May 2001, the DIMHRS program officials took steps to mitigate the risk posed by planned COTS software modification by initiating a ‘fit gap analysis’. A Software Analysis Team (SWAT) was formed to ensure requirements were identified, but the group only logged seven issues. When the analysis later moved to more detailed processes, twenty more issues were identified, perhaps proving that, for an ERP implementation, the devil is in the details.

Of course, a risk mitigation strategy works only if it is identifying all risks, assigning correct relative probabilities to those risks, and assessing each risk’s potential impact. A risk management strategy does not identify requirements but should state that beginning the implementation prior to all the requirements being identified is a high risk item, and the project issue log shows the requirements are still being identified. In addition, the strategy does not mitigate risks of lack of adequate scoping and planning or full management commitment by all branches of the service.

What Are The Consequences if Change Management Is Ignored?

The cost of not dealing with the complexity of change in a COTS implementation can be quite high, especially in the Peoplesoft environment. An international non-governmental organization has actually implemented Peoplesoft three separate times over seven years. They were never able to capitalize on touted advantages of using COTS: access to new functionality through new software release upgrades. The organization has no system engineers on staff, and
has always outsourced the implementation to a Big 4 vendor. Even worse, in their latest implementation, there is a question of whether history data of the financial system will be migrated, even though the source system is also Peoplesoft. The cost of the last implementation is in the range of 15 to 20 million euros.

A similar experience occurred at the University of Texas M.D. Anderson Center in Houston where a heavily customized version of PeopleSoft 7 had been in use. The center re-installed Peoplesoft 8 to fully leverage the PeopleSoft human resources and payroll functions on an Oracle database platform. They switched databases from DB2 to Oracle, and installed the generic Peoplesoft 8 code. The goal of the re-install was to be able to easily upgrade in the future rather than reinstalling the package, so each upgrade had to be examined to avoid the need for future customizations. M.D. Anderson completed the Peoplesoft Project - Wave I at a cost of $21,616,380 on February 28, 2002. The initial budget was $15,772,911 (Texas State Auditors Office, 2003).

**DIMHRS Configuration Control Board**

Managing change is a key driver in developing a system, and a Change Control Board usually oversees this function. The DIMHRS project has a Configuration Control Board (CCB). Its mission is to provide a central control mechanism to ensure that proposed engineering changes to the product’s approved configuration are properly defined, considered, disposed, prioritized, and implemented. The CCB is chartered to act on Engineering Change Proposals and Requests for major deviations. The scope of authority is limited to approved configuration items/documents under Government configuration control. DIMHRS budgets, schedules, non-Prime Mission Product documents, policies, and processes are beyond the scope of this board.

The CCB of DIMHRS has both voting and non-voting members. Voting members include the Joint Project Manager (JPM), one Personnel and one Payroll representative from each Service (i.e., Army, Navy, Marine Corps, Air Force), a member of the project management office (Joint Requirements and Integration Office: JR&IO), and a member from the Defense Finance and Accounting Service (DFAS). A Systems Engineering Representative is a non-voting member, along with a Procurement Contracting Office (PCO) representative, a PeopleSoft representative, and a Development and Implementation (D&I) contractor representative. Decisions made by the CCB will shape the system created and affect its life cycle. The fact that systems engineering is a non-voting member is likely to indicate a lack the systems engineering group’s lack of political power.

For systems engineers who are working within DIMHRS, one of the most important things to understand is power and politics. DIMHRS will change the way the military service Army, Navy, Marine Corps, Air Force operates, from top to bottom. It will also affect DFAS, Defense Finance and Accounting Service. Value judgments from these groups will influence the systems design and progress. It’s been said, "Politics will repeatedly arrive at conclusions quite different from those of engineering logic, based on the same data." Systems engineers need to keep politics in mind, and understand several basic political facts of life.

First, systems engineers will have little control or influence over project funding but will be greatly affected by it. The parties who do have control and/or influence, including the
members of Congress, JPM, and the Services may have their own agendas for the technology and its progress. What technology is allowed to achieve may be set by politics, rather than the technology. Systems engineers need to be informed, aware of everyone else’s vested interests, prepared, and involved. Communications with the CCB members should be carefully planned, especially to those with CCB voting power.

Second, technology is expensive, and the size of the project magnifies this expense. The immense complexity and size of DIMHRS means that solutions may be very costly. Technical problems, especially those requiring substantial sums of money to fix, become political problems. If the price tag gets too costly, the agenda of the parties controlling the money spent can change. Whether the solution is affordable may be decided by the side with the most votes. The need for coalition building is paramount. Systems engineers will need to be persuasive at the CCB meetings, but also carefully line up support beforehand. The wise systems engineer will check the political winds carefully prior to making a technical argument.

Third, systems engineers should understand that the reason why the project is occurring is not because the technology may make it possible – it’s because there is a perceived need to change the way the military works. If the constituency that believes this need exists becomes inactive or displaced, the project may be unlikely to survive in its current form.

Fourth, DIMHRS funding takes away funding from other possible projects. Constituencies of these other projects may view these opportunity costs as unbearably large, and may attempt to move funding away from DIMHRS. Systems engineers on DIMHRS have to be ready, along with everyone else on the team, to be well prepared to defend the project’s progress and record.

And finally, systems engineers should realize the best technologies and an optimized schedule and funding may not have political support. One example in DIMHRS is that, while most military pay is now processed by DFAS in Columbus, Cleveland, Indianapolis, Denver and Kansas City, most of the work of the development of DIMHRS is being done in New Orleans in Louisiana. Why? It’s because New Orleans is in the district of Rep. Billy Tauzin, a 24 year veteran of the U.S. House of Representatives. And Tauzin has made sure New Orleans will continue to benefit from DIMHRS in the future by selecting the National Finance Center in New Orleans as one of four centers nationwide to provide payroll services to the federal government when the system goes online. But early in 2004, Rep. Tauzin announced he is retiring. Although his son may run for his office, he is unlikely, even if he wins, to have the clout his father had. This may mean political struggles in the near future that will affect DIMHRS.

**Implications and Conclusions**

This DIMHRS implementation is an Apollo-program size software implementation compared to all other ERP packages. It is on a scale of size and complexity where there are simply no comparisons with previous systems. System engineering expertise is needed to fully integrate the large system architectures needed and to manage the changes that will occur inevitably on this implementation.

In addition, problem resolution is different in a COTS software environment when compared to a custom software development environment. The systems engineer must
understand the characteristics of a COTS software package and be committed to work within the package limitations. While PeopleSoft is a highly integrated COTS package, it has significant limitations and it is very difficult to incorporate upgrades when the package has been highly modified as this one will be. The systems engineer must be creative and work with the organizations to re-engineer business processes rather than customize code.

One of the JPMO’s most pressing activities is to determine if the project’s costs have been accurately estimated. The JPMO is expected DFAS and the four branches of the services to supply cost information for implementation, sustainment and technical refresh for a DIMHRS Affordability Analysis. Although each branch can supply information, systems engineering must be the orchestra conductor to explain how the overall system will work, and assist in estimating its associated costs. The branches can provide pieces of the puzzle, but systems engineering is key to putting the pieces together and filling in any missing holes.

The risks of not performing a Software Operational Concept are huge. Organizations that implemented a software package, but did not understand how to manage it have had to re-install the software. These organizations have spent millions of dollars in these re-installations. For a project the DIMHRS, the cost would be an order of magnitude higher, and likely to be in the hundreds of millions, or more. DIMHRS faces many challenges on its path to becoming the largest ERP implementation ever. From a project manager perspective, cost, scope and time are of equal importance. To achieve these objectives, the Joint Program Management Office (JPMO) of DIMHRS should harness the capabilities of systems engineering to reduce risk and deal with the complexities of change.

In the bigger picture, though, politics will influence DIMHRS just as much if not more than technical considerations. That’s a fact of life. Political decision-making uses its own information and follows its own logic. Politics, rather than technology, often sets the limits of what is allowed to achieve. The importance of cost should not be underestimated. A vocal, powerful constituency is essential. The best systems engineering solutions are not necessarily the political solutions chosen. Smart Systems Engineers will not only recognize the politics, but anticipate it and creatively think of approaches to deal with it.

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Biography

Frank Parth has undergraduate and graduate degrees in physics, a Masters in Systems Management from USC, and an MBA from the Peter F. Drucker Graduate School of Management. He is certified as a Project Management Professional by the Project Management Institute. Currently he is President of Project Auditors, LLC, a firm that specializes in project management consulting, training, and project quality assurance audits. Formerly, he was a systems engineer and the Assistant Technical Director of a satellite program for Martin Marietta. Mr. Parth has been an adjunct professor at the University of California at Irvine since 1994, and has taught management and systems engineering at Claremont Graduate University and USC’s Graduate School. He is a published author, an international speaker, and a long-time member of INCOSE.

Joy Gumz received her bachelors in Economics and Mathematics at Ripon College. She is both a Certified Public Accountant (CPA) and a Project Management Institute certified Project Management Professional (PMP). She is currently a director at Project Auditors, LLC, a firm that specializes in project management consulting, training, and project quality assurance audits. Formerly, she was a Project Manager with Peoplesoft, an Enterprise Resource Planning (ERP) vendor. She is a published author and a reviewer for Computing Reviews, the publishing arm of the Association of Computing Machinery. Ms. Gumz is also a guest lecturer in Project Management at the University of California at Irvine.