Army Lean Six Sigma

Deployment Guidebook

Version 3.0

1 February 2008
## Revision History

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Section 1. Vision

1.1 Mission

Six years of war, coupled with modernization and force restructuring, have severely strained the Army’s institutional policies, practices, and programs. To meet its operational requirements, while improving its support to soldiers, families, and civilians, the Army must continue to transform the way it does business. Accordingly, the Army employed Lean Six Sigma (LSS) as the continuous process improvement methodology to support Army Business Transformation. LSS combines the principles of Lean (reducing and eliminating non-value activities) with Six Sigma (reducing variation and increasing quality) to improve process efficiency and process effectiveness. The purpose of the LSS deployment is to achieve a full and lasting cultural transformation of the Army’s business practices in order to ensure the Army maintains its long-standing commitment to the American people.

1.2 Situation (Lessons Learned)

When the Army began its LSS deployment, we relied upon lessons learned from the commercial sector as we were barely “crawling looking to walk” in our CPI journey. Over the course of our Army-wide rollout, we’ve also learned from internal organizations that deployed LSS previously. This approach has yielded some notable successes. For example, the Army Materiel Command (AMC) received 12 Shingo awards in October 2007, up from four in 2006, for achievement in implementing Lean principles in support of the manufacturing, repair, overhaul, and maintenance of warfighter equipment. The DUSA-BT also accepted an award on behalf of the Army for Leadership in Government Transformation presented by the E-Gov Institute in conjunction with the Federal Enterprise Architecture Certification (FEAC) Institute. Finally, the Army received another accolade when the Army’s Armament Research, Development and Engineering Center (ARDEC) earned the annual Malcolm Baldrige National Quality Award for performance management and achievement.

Despite achieving initial momentum in our LSS deployment, there are still some significant challenges and obstacles that must be overcome. As we work to address those challenges and obstacles, however, we are now able to apply lessons learned from our own experiences.

First, the impact of senior leadership on the deployment’s success cannot be overstated. When the senior leadership of an organization is engaged and ensures that projects are aligned with that organization’s most important goals and objectives, those projects are completed and always produce meaningful results. When the organization’s senior leadership is not engaged, projects tend to languish and/or do not produce results that matter.

Second, we have learned the critical role that Project Sponsors play in LSS project execution. Invariably, we have found by examining hundreds of project results that the most successful projects have Project Sponsors that are senior leaders within the
organization, the Project Sponsors proactively choose the project team, and that the projects are directly linked to the Senior Leadership’s priorities and objectives. In short, we need well-trained and aggressive Project Sponsors supervising the progress of projects from beginning to completion.

Third, we found that success requires a significant up-front commitment of resources, primarily in terms of personnel and time. When leaders commit to selecting and training the right people and then giving those people the time to work projects, the returns on investment are tremendous. When we try to execute Lean Six Sigma “on the cheap,” the results are much less satisfactory.

Fourth, we found that project selection is critical. Projects that are selected because they are easy to complete in order to achieve certification seldom produce significant results. Projects that are selected through a rigorous and disciplined process, are meaningful to the organization, and are launched with a sound project charter developed by the Project Sponsor are far more likely to be completed (and therefore acceptable for belt certification) and will almost always produce meaningful results.

Fifth, we learned that failing to have rigorous processes and mechanisms in place to validate and record project benefits has hampered progress. In order for continuous process improvement and LSS to become part of the Army fabric, we must be able to clearly articulate success stories by showing verifiable operational and financial benefits in the database of record. Attempting to retroactively capture and record benefit data has only been partially successful and has cost us valuable time and resources.

Finally, we have observed that much more has to be done to achieve wide-spread acceptance of LSS as the Army’s chief, long-term process improvement methodology. Some in the Army still see Lean Six Sigma as the process improvement “flavor of the month.” Much work remains to change that perception.

1.3 Guidance

This Deployment Guidebook takes these lessons, many of which have been learned the “hard way,” and provides Army LSS leaders with guidance to exploit the early successes and overcome the obstacles that remain to achieve the cultural transformation required. Areas of emphasis include:

1.3.1 Senior Leader Engagement: LSS deployment leaders and practitioners must continue to develop and maintain a dialogue with senior leaders at all levels of the Army. We must seek increased endorsements and support for the methodology and on-going projects from those leaders. It is important that Commanding Officers, Program Directors, and Staff Directors demonstrate proactive engagement and visible participation in the upfront decisions about LSS to ensure projects stay focused on organizational and Army priorities.

1.3.2 Project Sponsors: We must further develop and exploit the role of the Project Sponsor in project selection and execution. Senior leaders and Deployment Directors must identify potential Project Sponsors, get them trained in Project Sponsor Workshops, and hold them accountable for project completion and achieving returns on investment. The Project Sponsors are key players and must deliver results.
1.3.3 **Commitment of Resources:** We must do everything possible to improve our training and certification results. We must identify qualified people for training, improve our class-fill percentage, and maximize graduation rates. We must train as many belts as possible, as quickly as possible, while we still have the benefit of hired consultants as enablers. Once belts are trained, Deployment Directors and Project Sponsors must remove barriers and provide the tools necessary, including appropriate Master Black Belt or Black Belt coaching, to ensure project completion and belt certification.

We must allow Black Belts and Master Black Belts the time to function as full-time project leaders and process improvement practitioners. Organizations should strive to achieve and maintain a population of at least 0.5% to 1.0% full-time Black Belts and a minimum of 5% part-time Green Belts.

Finally, long-term Business Transformation requires taking the steps now to build the bench of future Army Master Black Belts, who will lead the Army’s LSS deployment and continuous process improvement efforts in the future. The MBB course has been revamped to accommodate preparation time and allow absorption of the new course construct over multiple installments. We must identify the most qualified and promising candidates and get them through the training and certification processes so that the Army can operate with its own cadre of experienced practitioners of change.

1.3.4 **Accountability for Project Selection, Completion, and Results:** As we move into the next phase of the LSS deployment, the emphasis must be on selecting the right projects, completing those projects, and capturing the associated tangible and verifiable benefits. Each organization must establish and maintain a pipeline of projects that addresses the most important areas of opportunity directly supporting the organization’s goals and vision. The Deployment Director and Project Sponsors must ensure there are a manageable number of projects in progress at any given time. The focus should be upon rapid project completion rather than having a large number of projects in progress at any given time. The optimal number of projects in process depends on the number of Green and Black Belts available, the availability of team members, and the organization’s experience level with LSS. Until they gain sufficient experience, it is best to limit each new Black Belt and Green Belt to one project at a time.

The LSS methodology provides a flexible approach to problem solving that matches problem solving methodologies to the complexity of the project. Deployment Directors and Project Sponsors should follow these guidelines when selecting projects and writing charters.

- **Rapid Improvement Events (RIEs)** are used for relatively straightforward problems. A team of 5 to 8 people can reasonably attack this type of problem over a period of 5 days, not including preparation time before the event or time afterward to implement the solution(s). An experienced facilitator, with or without LSS certification, should lead RIEs.

- **Green Belt projects** typically require between 1 and 3 months to perform with little or no additional time for preparation or follow-up. Such projects fall within the Green Belt’s organization and functional expertise and do not usually span multiple organizations or cross functional/technical expertise boundaries.
• **Black Belt projects** require more time than Green Belt projects, typically 3 to 5 months, and require a deeper understanding of LSS. These projects do not have a straightforward solution and often involve several departments or organizations comprised of multiple technical or functional disciplines.

1.3.5 **Project and Results Tracking:** During the summer of 2007, the LSS PM asked the Army Audit Agency (AAA) to conduct an “attestation review” to determine whether the financial data entered in PowerSteering were reasonable and reliable, and whether the data were developed in accordance with published guidance. The AAA review pointed out several systemic problems with our ability to capture financial data and we have since taken steps to respond to the findings of the AAA review (see the October issue of the Army Lean Six Sigma Newsletter). The AAA review underscored the need for Project Sponsors to ensure that their Resource Managers are involved early in each project and validate the associated financial benefits. We also developed standardized tollgate templates to assist belts and Project Sponsors in the execution of effective tollgate reviews. Project Sponsors and Resource Managers are responsible for ensuring validated benefit data is entered into PowerSteering before signing off on the Control Tollgate. These steps and others you’ll see outlined in this guide and in our LSS training materials will help ensure the Army’s LSS deployment has credible returns on investment (ROI) associated with it.

1.3.6 **Strategic Communications:** LSS leaders must actively seek opportunities to articulate success stories throughout the Army and with the academic, political, and commercial sectors. Each command’s LSS leaders should help the commander build and communicate an effective “burning platform” to stakeholders that articulates the need for change. The message should contain specific goals to communicate over the next one to three years that support the organization’s vision. The Army has established a burning platform at the HQDA level at [https://www.us.army.mil/suite/folder/10001298](https://www.us.army.mil/suite/folder/10001298) (This requires access to the DUSA BT AKO Knowledge Center referenced in Section 1.6 below.) Each organization must be familiar with the HQDA message and use it to create a tailored message specific to its mission and vision.

1.4 **The Way Ahead**

As we lead the Lean Six Sigma deployment into 2008, we are now “walking looking to run.” We must capitalize upon prior successes and accelerate the existing momentum. In order to do so, we must address the lessons we have learned and focus upon the guidance areas discussed above. The remaining sections of this Deployment Guidebook will expand upon that guidance and provide the details to support the Army’s Business Transformation.

1.5 **Latest Version of the Army LSS Deployment Guidebook**

The DUSA BT LSS Program Management Office will periodically release routine updates to this Guidebook. The current version will always be found in the Policy and Guidance folder on the DUSA BT website on Army Knowledge Online (AKO) at [https://www.us.army.mil/suite/folder/6055391](https://www.us.army.mil/suite/folder/6055391).
1.6 Additional LSS Deployment Documents

More information about the Army LSS Deployment policy, plans, operating procedures, training, project case studies, best practices, and deployment metrics may be found at the following web sites:

- The Secretary has established the Deputy Under Secretary of the Army for Business Transformation (DUSA BT) as his Enterprise Deployment Director to coordinate Business Transformation. For more information about the DUSA BT, Business Transformation, and LSS, visit [http://www.army.mil/ArmyBTKC/index.htm](http://www.army.mil/ArmyBTKC/index.htm).

- DUSA BT Army Knowledge Online (AKO) collaboration portal (requires AKO password) at [https://www.us.army.mil/suite/page/187912](https://www.us.army.mil/suite/page/187912) contains all Army policy and guidance documents related to LSS, program metrics, training modules, links to PowerSteering, newsletters, a LSS discussion forum, link to the DUSA BT Knowledge Center, links to other LSS sites, and a calendar of events.

- DUSA BT AKO Knowledge Center at [https://www.us.army.mil/suite/kc/4578389](https://www.us.army.mil/suite/kc/4578389) contains files posted by the LSS Program Management Office to include copies of related policy memos, LSS Deployment Guidebook, monthly briefings to the LSS Deployment Directors, LSS deployment metrics, LSS program points of contact, training calendars, and LSS training materials. To request permission to access the Knowledge Center, visit the DUSA BT AKO page referenced above and click on “register” under the “File Management” heading.

- The Army PowerSteering Portal (requires an AKO password) at [https://bt.army.mil/ps/](https://bt.army.mil/ps/) is a LSS project tracking and portfolio management system. It contains team members, charters, status, and related documents for all proposed, active, completed and cancelled LSS projects.

- The Army Cost and Performance Portal (CPP) (requires user account) contains tools to assist LSS project teams in developing cost estimates for their projects. These tools are consistent with the guidance in this Guidebook. The CPP is located at [https://cpp.army.mil](https://cpp.army.mil)
Section 2. Leading Change in the Army

The objective of the Lean Six Sigma initiative is to fundamentally transform the way the Army does business. At the strategic level, LSS leaders must aggressively monitor the transformation within their respective organizations and exploit opportunities to advance the maturity of the LSS deployment. Simultaneously, leaders must identify potential problems within the deployment and take steps to mitigate the risks associated with those problems. Finally, leaders must direct efforts to communicate successes in order to accelerate momentum and achieve support throughout the Army. Accordingly, this section will focus upon the efforts of senior leaders, Deployment Directors, and Project Sponsors to monitor the LSS deployment maturity, manage risk within the deployment, and conduct strategic communications to support that deployment.

2.1 Deployment Maturity

Figure 2.1 depicts the current organizational change maturity model that the Army is using to monitor the transformation of our business processes. We launched the initiative in FY06 and have thus far achieved many early successes. We are now in the process of trying to accelerate the pace and scale of those successes and replicate them across the Army. Simultaneously, we are working to institutionalize LSS processes and methodology. Eventually, we seek the true cultural transformation of the institutional Army that has been mandated by the Secretary of the Army and the Chief of Staff.

Figure 2.1: Organizational Change Maturity Model
The left, vertical axis of Figure 2.1 illustrates the parameters within which we must operate to achieve the vision we seek. At the end state, cultural change will be achieved when a culture of continuous process improvement is ingrained in the “DNA of the Army.” Eventually, we want to move beyond the DMAIC methodology to embrace more sophisticated and more powerful tools that not only help us improve current processes, but design better ones from their outset. We will ultimately have a mature strategy that completely integrates Army (and subordinate commands) goals, objectives, project selection, and training in a “closed loop” system. Our software and reporting systems will be fully integrated with other Army training and tracking systems. The impact of our efforts will be significant enough to influence our budget proposals. LSS practitioners and leaders will be promoted and assigned to exploit their training and experience. Training will be focused on Army requirements and conducted at the appropriate levels. Finally, leadership at all levels will view LSS and continuous process improvement as THE means for managing change within the Army.

We are making progress in each of these parameters, although the pace of progress is not even across all of the areas. Likewise, various organizations find themselves at different levels of maturity in the LSS deployment.

### 2.2 Deployment Metrics

To assist each organization in assessing its own deployment maturity, the following “spider” chart metrics (Figure 2.2) have been developed. Senior leaders, Deployment Directors, and Project Sponsors should continually assess their organization’s ability against the performance metrics identified by each radial spoke in the chart. The operational definition for each performance metric is explained in detail in Appendix G.

**Figure 2.2: LSS Deployment Maturity Metrics (Spider Charts)**
The score within each performance metric is based upon the falling scale:

0 – No evidence to support that the behavior/result is being exhibited.
1 – Limited evidence to support that the behavior/result is being exhibited.
2 – Evidence exists to support that the behavior/result is being exhibited, but the performance is inconsistent, at best.
3 – The behavior/result is being exhibited, but sustainability has not been demonstrated.
4 – The behavior/result is being exhibited and steps toward sustainability have been demonstrated.
5 – The behavior/result/process is embedded into the fundamental fabric of the organization (business as usual) and is highly likely to be sustainable.

LSS leaders should use these deployment maturity assessments to identify and reinforce outstanding efforts within their organizations, to include recognizing and rewarding those responsible for those efforts. Similarly, leaders must use the assessments to identify gaps in their deployments, implement corrective actions as necessary, and mitigate risks within the deployment. The LSS PMO will periodically collect these assessments to evaluate the status of the LSS deployment across the Army.

2.3 Army-Based Deployment Maturity Model

The Maturity Model and “Spider Charts” depicted in Figures 2.1 and 2.2, like the lessons learned with which we began the LSS deployment, were borrowed from the commercial sector. Just as we have begun applying Army-centric lessons learned to the LSS deployment, we are now revising the maturity model and deployment metrics using Army parameters. Figures 2.3 and 2.4 depict a draft maturity model and deployment metrics that we will develop further for the next version of this deployment guide. Commands are encouraged to begin considering these revised parameters and provide input to the PMO. The intent is to be able to articulate the LSS program and the progress of the deployment in terms that resonate with the larger Army audience.

The top, horizontal axis of Figure 2.3 depicts the phases through which the Army intends to achieve the intended cultural transformation of our business processes. We launched the effort in FY06 to seize the initiative toward achieving business transformation. In FY07, we achieved early successes and built momentum in the LSS deployment. In FY08 and FY09, we must exploit those early successes to replicate successes across the Army and institutionalize LSS processes and methodology. Eventually, we will achieve the true cultural transformation of the institutional Army that has been mandated by the Secretary of the Army and the Chief of Staff.
At the end state, we must achieve **returns on investments** that meet best practice standards and assist the Army in addressing long-term resourcing issues. We will have a formal doctrine for continuous process improvement that completely integrates Army (and subordinate commands) strategy, goals, objectives, project selection and execution, and training in a “closed loop” system. A LSS organizational infrastructure will be in place that includes an adequate MBB/BB cadre and a LSS Center of Excellence to sustain and expand the best practices learned and applied within the Army. A self-sustaining training infrastructure will be in place to sustain and expand the LSS program. Training will be focused on Army requirements and conducted at the appropriate levels. **Leadership** at all levels will view LSS and continuous process improvement as THE means for managing change within the Army and LSS principles will be integrated into leadership courses within the Army. LSS practitioners and leaders (people) will be promoted, assigned, and rewarded to exploit their training and experience. Our software and reporting systems (materiel/facilities) will be fully integrated with other Army training and tracking systems. **Project** selection and execution will ensure that the “right” projects are effectively executed to meet Army objectives and appropriately influence the future state of Army business processes.
2.4 Revised Deployment Metrics

In accordance with the potential revised maturity model above, we will eventually transition to “spider” chart deployment metrics similar to those depicted in Figure 2.4. Again, Commands are encouraged to consider the merits of these metrics and provide feedback to the PMO before the editing of the next version of this deployment guide.

Figure 2.4: LSS Deployment Maturity Metrics (Spider Charts)

2.5 Risk Management

Risk management is critical to the LSS deployment, in general, as well as to the success of individual projects. Senior organizational leaders and Deployment Directors should apply these principles to identify potential problems early enough to mitigate risks before they affect deployment objectives or timelines. Project Sponsors are also responsible for applying these principles to ensure the success of projects and LSS events.
Whether applied to the LSS deployment or to the execution of projects, LSS leaders should apply the following risk management steps:

- **Risk Identification:** Identify issues or concerns that may prevent the deployment or project from progressing as planned. Risks may include organizational, technical, political, operational, and managerial aspects.
- **Risk Analysis:** Classify risks according to likelihood and consequence.
- **Risk Management:** Develop a mitigation strategy for risks to either eliminate or reduce the likelihood and/or consequence of the risk.
- **Risk Monitoring:** Review risks periodically based on their classification. Risks will undoubtedly change in likelihood and consequence. The benefit of maintaining and following a formal risk management process is that the negative consequences of an uncontrolled action can be minimized or negated.

### 2.6 Strategic Communications

As mentioned in sections 1.2 and 1.3.6, LSS leaders at all levels must execute a strategic communications strategy that generates support and commitment among all stakeholders who can impact, or will be impacted by, the Army’s business transformation. The DUSA BT, with the support of the office of the Chief of Public Affairs (OCPA), executes its own strategic communications plan that targets internal and external audiences. The strategic communication objective is to generate support across the Army as a whole, and among other external political, commercial, and academic institutions.

OCPA coordinates among Army-level agencies to communicate strategic themes through Army-level media, national media coverage, legislative liaison, and academic/industry collaboration. OCPA collaborates with command-level and local Public Affairs Offices (PAOs) to integrate locally generated communications into Army-level messages.

Army Commands, Service Component Commands, and Direct Reporting Units, with their local PAOs, must execute a command-level communications plan aimed at generating support and commitment among their own constituents. Communications at this level includes:

- Identifying target audiences and analyzing their commitment to business transformation and the LSS deployment.
- Identifying overarching themes, according to the needs of their audiences.
- Aligning events and communications opportunities with media, resources, and themes in a coherent plan to communicate regularly with those audiences.

Commands should consider the following guidelines for communications planning.

#### 2.6.1 Engage Command and Installation-Level Public Affairs Offices

Commands should involve PAOs in all Business Transformation activities. Deployment Directors, Project Sponsors, Master Black Belts, and Black Belts should engage PAOs
and build sustained relationships. These leaders should encourage PAO participation in appropriate meetings where milestones, progress, and successes are discussed and set expectations that PAOs will share appropriate newsworthy events with OCPA for possible Army-wide dissemination.

2.6.2 Collaborate with PAOs to Target Appropriate Army Audiences

LSS Deployment Directors and Project Sponsors should work with PAOs to target all appropriate audiences that will be impacted upon, or who might influence the success of Army Business Transformation. Typical communications messages to internal Army audiences should include:

- The Command’s vision for Business Transformation.
- The sense of urgency (“Burning Platform” for Business Transformation and Lean Six Sigma Deployment.
- Progress reports and success stories that demonstrate the irrevocable shift to a culture of continuous improvement.
- Professional development opportunities.
- Celebrations of achievement, belt certifications, project completions, etc.

2.6.3 Address External and Public Audiences

The PAO should help initiate outreach/partnerships in the following areas:

- Contact local community colleges/university business schools.
- Encourage Army personnel attending civilian schools to tell the Army story and share their experiences in their classrooms.
- Contact the local Chamber of Commerce and other business organizations.
- Invite local dignitaries to observe business transformation efforts.

2.6.4 Supporting Documents for Communications Planning

Sources for Army-level over-arching themes and supporting messages, tips, and techniques for BT communication may be found in the following sites and documents:

- Public Affairs (OCPA) Center on AKO http://www.us.army.mil/suite/page/216363
Section 3. Leadership Roles and Responsibilities

The Army has developed a LSS management structure to ensure that the program is applied consistently across Commands, Direct Reporting Units, and the Army Staff. Essential elements of the approach are described below.

3.1 HQDA Leadership

The Army Program Management Office provides guidance; develops policy; validates and resources requirements; and serves as the central point of contact within the Department for the LSS initiative. The PMO also centrally manages a contract that enables the Army to grow its organic capability. The instrument provides all of training plus much of the coaching and mentoring support. The scope and size of the instrument is decreasing over time as the Army’s organic capability grows.

The PMO’s responsibilities include, but are not limited to:

- Facilitating deployment workshops.
- Training Army personnel.
- Customizing and evolving the POI to meet changing Army requirements.
- Validating resource requests and providing required resources to the field.
- Tracking deployment progress and addressing issues impacting deployment success. For example, the PMO tracks the following performance metrics to ensure performance meets expectations:
  - Green Belt training and certification
  - Black Belt training and certification
  - Master Black Belt training and certification
  - Number of Project Sponsors entered into PowerSteering
  - Number of projects entered into PowerSteering
  - Number of projects completed (to include the number of gated and non-gated projects and number of Green, Black, and Master Black Belt projects)
  - Total sum of financial benefits
- Routinely collecting Voice of the Customer data from the field to adjust the overall deployment plan, as necessary.

3.2 LSS Leadership at the Organization Level

Figure 3.1 illustrates the key LSS roles at the organizational level. It is important to note that the Black Belts and Master Black Belts report to the Deployment Director who, in turn, reports to the Commanding General, Director, or Staff Director. The Black Belts and Master Black Belts are part of the organization they support and should not come from an outside organization. The command/agency owns these resources as well as
the accountability for results. The responsibilities of each of the individuals depicted in Figure 3.1 are summarized in Figure 3.2 and explained in detail below.

**Figure 3.1 LSS Organizational Structure**

**Figure 3.2: Key Individual Roles and Responsibilities within LSS Deployment**
3.2.1 Command Executive Leadership

As noted in section 1.3.1, engaged executive leadership is critical to the success of implementing LSS and managing LSS activities. The executive leadership must:

- Inspire, own, drive, and provide resources for the LSS initiative.
- Lead by example with a clear and consistent message communicating the need to establish LSS as a standard operating procedure throughout the command.
- Hold their organizations accountable for the success of LSS.
- Ensure consistency and continuity of efforts.
- Demonstrate commitment to LSS by selecting the best people as Black Belts and Green Belts and assigning them to solve the biggest problems.
- Identify the greatest areas of opportunities across the command.
- Enforce process discipline and rigor.

A major facet of executive engagement and involvement is the establishment of a Command Lean Six Sigma Steering Committee. This Committee generally consists of the organization’s senior leader or his deputy, the Deployment Director, a senior resource manager, critical process owners, and the Master Black Belt (deployment advisor). The purpose of this Committee is to provide oversight and management of the LSS initiative and to champion the implementation of LSS activities and policies throughout the command. Their specific functions include:

- Providing overall Lean Six Sigma policy and guidance.
- Creating a strategic plan and a system of metrics – an “aim” for the organization.
- Allocating resources (human, material, and financial) to the project teams.
- Assigning Black Belts and Green Belts to Project Sponsors for team leadership.
- Reviewing and approving solutions derived by the project teams.
- Actively managing implementation efforts.
- Assessing control metrics (output metrics) for a minimum of six months after project completion to ensure that performance improvement gains are maintained.

3.2.2 Deployment Director

The Deployment Director is a senior leader within the organization who reports directly to the Commanding General, Director, or Staff Director. He/she develops the strategy, policies, objectives, plans, and procedures to integrate LSS into the command’s operations. Additionally, the Deployment Director ensures that the command’s LSS efforts meet the guidelines, criteria, and metrics established by the senior leadership and the Command Lean Six Sigma Steering Committee.

3.2.2.1 Deployment Director Functions

- Develop and maintain the internal processes (e.g. metrics; opportunity identification and project selection; project gating; resource allocation; best practice sharing; etc.) to support the LSS activities within the command.
- Ensure that projects are appropriately justified, properly defined, and suitably staffed.
• Provide the command’s leadership with feedback on deployment metrics and recommend appropriate corrective action, if necessary.
• Recruit Black Belts into the LSS infrastructure; help them define and justify their projects; provide resources, guidance, and direction; and help the Belts remove project barriers.
• In accordance with the guidance provided in sections 1.3.6 and 2.6, coordinate strategic communications efforts with key stakeholders on behalf of the organization.
• Ensure two-way open communication throughout the command concerning LSS initiatives. This includes keeping the Command Lean Six Sigma Steering Committee informed of program status and ensuring the coordination of activities between Black Belts working on projects within the organization.
• Track the overall progress of the LSS Deployment within the command. Table 3.1 provides suggested routine reviews for the Deployment Directors and the commands to assess the status of the deployment.

Table 3.1 Suggested Command LSS Status Reviews

<table>
<thead>
<tr>
<th>Meeting Title</th>
<th>Audience</th>
<th>Responsible Organizer</th>
<th>Frequency</th>
<th>Media</th>
<th>Agenda/Details</th>
</tr>
</thead>
</table>
| Monthly Project Status   | Master Black Belts, Black Belts, Green Belts, & Project Sponsors | Deployment Directors & Deputies        | Monthly   | Power Steering | 1. Review Projects (10 min) at Phase Gates  
2. Review new project submissions for potential “in-queue” status.         |
| Weekly Project Deck Update | Master Black Belts, Project Sponsors | Black Belts Green Belts                | Weekly    | Power Steering | 1. Input Project Status to Power Steering project tracking system  
2. Exception reviews scheduled as required to maintain project schedules      |
| Project Toll Gates       | Master Black Belts, Black Belts, Green Belts, & Project Sponsors | Project Lead                           | As Required | Power Steering | Approval to move to next phase                                                 |

3.2.2.2 Suggested Deployment Director Professional/Educational Background

Ideally, a Deployment Director possesses the following professional and educational background:

• Experience as a senior leader within the organization, with direct access to the senior leadership.
• Bachelor’s Degree, preferably in Business, Engineering, or a technical/scientific subject (or equivalent work experience). An advanced degree is desirable.
• A minimum of 10 years of professional work experience, ideally in leadership or management capacities.
• 3-5 years of experience in Process Improvement with prior supervisory or personnel management responsibility.
• Solid project management and team leadership skills.
• Sound knowledge of other key functions that provide critical inputs (e.g., Finance and Accounting, Purchasing, Engineering, Supply Chain/Logistics, or Operations).
• Broad understanding of contemporary quality theory and a working familiarity with improvement tools and statistical analysis.

3.2.3 **Project Sponsor**

In accordance with the guidance articulated above in Section 1.3.2, the role of the Project Sponsor must be clarified and expanded. Project Sponsor is the key linchpin in the LSS deployment who integrates the “strategic” guidance and direction provided by the senior leadership with the “tactical” efforts of the project teams. The Project Sponsor is the organizational leader who owns the process and resources under consideration. He/she has the responsibility to ensure that the project team understands the expectations of the leadership and is responsible for delivering project results that meet the objectives of the organization. This role cannot be delegated. Specific responsibilities of the Project Sponsor include:

• Identifying organizational gaps/opportunities and nominating potential projects to the organization senior leadership or Steering Committee.
• Writing the project charter that provides initial guidance to the project team.
• Selecting, in coordination with the senior leadership or Steering Committee, the Green Belts or Black Belts to lead projects.
• Selecting team members, to include a Resource Manager.
• Providing resources and guidance to the team to ensure project success.
• Removing or mitigating any obstacles that the team may encounter.
• Overseeing the tollgate reviews. The Project Sponsor decides whether the team is ready to move to the next phase of the DMAIC process.
• Reviewing and validating, with the resource manager, the benefit estimates at the appropriate DMAIC phases (see Sections 7 and 8).
• Capturing and sustaining the improvement results.
• Supporting the strategic communications efforts of the command.

3.2.4 **Resource Manager**

In accordance with the guidance articulated in Section 1.3.5 above, the Project Sponsor must ensure a Resource Manager is involved in each LSS project. The Resource
Manager helps the team develop the benefit estimates at the appropriate DMAIC phases. Before a project can be completed and closed, the Resource Manager, in coordination with the Project Sponsor, must validate and sign off on the final benefit estimate during the Control Phase. For a more complete discussion of the roles of the Resource Manager, see Section 7.2.

3.2.5 **Master Black Belt (MBB)**

3.2.5.1 **Roles and Responsibilities**

The Lean Six Sigma Master Black Belt is a full-time dedicated position reporting to a command’s Lean Six Sigma Deployment Director. The Master Black Belt is the command’s “in house” expert for disseminating knowledge and training/coaching Black Belts (and Green Belts when appropriate). Additionally, the Master Black Belt takes a direct leadership role in conducting large, complex LSS projects.

3.2.5.2 **Master Black Belt Functions**

- **Leading Transformational Change.** The MBB is the leading catalyst for continuous process improvement within the organization. The Master Black Belt, in coordination with the Deployment Director, is responsible for driving the long-range vision for LSS throughout the organization.

- **Major Project Leadership.** The MBB leads large-scale projects and complex projects that involve multiple subordinate elements within the organization. He/she must coordinate these projects with the Deployment Director and the various Project Sponsors. MBB leadership includes identifying opportunities; defining and justifying projects; negotiating resources; launching project teams; managing team activities; training and coaching of belts assigned to teams; leading teams to execute projects; tracking project status and results; anticipating and removing barriers; and developing team members. In these circumstances where the MBB is leading a project, he/she is responsible for producing results in conjunction with the Project Sponsors.

- **Technical Leadership.** The MBB provides direction as a subject matter expert on the application of LSS methods to the command’s Deployment Director, Project Sponsors, and Black Belts. He/she challenges Black Belts on their technical application of problem-solving tools to develop their skills. The MBB assists Black Belts in preparation for tollgate reviews and participates in those reviews, when necessary. The MBB consults with the other MBBS concerning managing change and the activities of the larger (Army-wide) Lean Six Sigma deployment.

- **Recruiting, Coaching, and Training of Team Members.** The MBB assists the command’s Deployment Director in identifying potential Black Belts and recruiting team members into the LSS infrastructure. He/she provides the necessary training, coaching and consultation to team members to spread the understanding of LSS tools and methods. The MBB will also be tasked to use the Army standard POI to teach the LSS methodology to Black Belt candidates in the Army “School House.”
• Communications. The MBB assists the Deployment Director, Project Sponsors, and Black Belts in executing the strategic communications plan for the organization. The MBB also ensures two-way open communication throughout the organization regarding LSS activities. This includes keeping the Deployment Director informed of program status and ensuring the coordination of activities with Project Sponsors and Black Belts. The MBB must ensure best practices are communicated across the organization.

• Measuring Results. The MBB provides the Deployment Director with project results and recommends corrective project action, as required, to improve processes when overall results do not meet expectations.

3.2.6 Black Belt (BB)

3.2.6.1 Roles and Responsibilities
LSS Black Belts establish, coordinate and provide leadership for LSS projects. These projects should meet the guidelines established by the Command’s Lean Six Sigma Steering Committee and the command’s Deployment Director.

3.2.6.2 Black Belt Functions
• Leads LSS projects under the direction of the Project Sponsor and with the support of the Master Black Belt. Project leadership includes identifying opportunities; defining and justifying projects; launching project teams; leading team activities; tracking project status and results; removing barriers; and developing team members. The BB must also identify integration issues with other projects/processes and coordinate the improvements with the appropriate Project Sponsors or process owners.
• Provides the Deployment Director and Project Sponsor with the project results and recommends appropriate corrective action, when necessary.
• Recruits other Black Belts, Green Belts, and team members into LSS efforts and ensures the continuing development of team member skills.
• Ensures projects are integrated with other command activities, improvement projects, and the overall organizational mission.
• Leads the project team in preparing for and executing tollgate reviews.
• Assists the Deployment Director, Master Black Belt, and Project Sponsors in the execution of the organization’s strategic communications plan.
• Ensures two-way open communications throughout the organization for regarding LSS activities. This includes capturing project lessons learned that should be replicated to other projects or to other elements within the command.

3.2.7 Green Belt (GB)
Green Belts are the “tip of the spear” in the LSS initiative and are responsible for managing and leading improvement projects on a day-to-day basis. Green Belts are trained in basic problem solving techniques and receive regular guidance and direction
from Black Belts assigned to their projects. Specific Green Belt responsibilities include:

- Leading individual projects that can be conducted within their level of expertise.
- Supporting more complex Black Belt projects by leading specific efforts within their functional area of responsibility.
- Advising Project Sponsors on the selection of team members.
- Managing the administration and daily work assignments of team members.
- Retaining official project records (e.g., collected records and data, spreadsheets, presentations, process maps, meeting minutes, etc.).
- Directing the preparation and presentation of tollgate reviews.
- Assisting the Project Sponsor in implementing approved process improvement recommendations.

3.2.8 Team Members

Most project teams are composed of 5-7 team members led by a Green Belt and guided by a Black Belt. These team members are subject matter experts who apply their individual skills and expertise to the problem under examination. Green Belts and Black Belts are expected to coordinate and exploit this expertise by applying the LSS methodology. Team member activities include, but are not limited to:

- Gathering information, interviewing people, and analyzing data.
- Participating in regular team meetings to identify, analyze, and select possible solutions to problems.
- Preparing Tollgate Review presentations.
- Implementing solutions, under the supervision of Project Sponsors.
- Identifying other project opportunities.

While LSS team members normally participate as part-time resources, they provide a significant part of the effort in a typical project. Project responsibilities normally consume approximately one working day per week for each team member. This time may increase substantially prior to critical project milestones.

3.2.9 Summary

To summarize the discussion above, the RACI chart in Figure 3.3 depicts who in the organization is Responsible (R), Accountable (A), Consulted (C), and Informed (I) for various activities. The following definitions apply to each category:

- **Responsible:** This is the person who is expected to accomplish the designated task. If multiple actions are required, there can be multiple people designated as responsible in the RACI chart.
- **Accountable:** This is the person who is ultimately answerable to the senior leadership for accomplishing the task or activity. There can only be one person accountable for any task or activity. Accountability **CANNOT** be delegated.
- **Consulted**: The individual(s) to be consulted prior to a final decision or action. This requires ongoing two-way communication.
- **Informed**: The individual(s) that need to be informed after a decision or action is taken. This is one-way communication.

**Figure 3.3**: LSS RACI Chart

<table>
<thead>
<tr>
<th>Senior Leaders</th>
<th>A</th>
<th>I</th>
<th>A</th>
<th>A</th>
<th>I</th>
<th>I</th>
<th>A</th>
<th>I</th>
<th>I</th>
<th>A</th>
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<td>C</td>
<td>R</td>
<td>R</td>
<td>A</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<td>C</td>
<td>C</td>
<td>R</td>
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<td>C</td>
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<td>A/R</td>
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<td>C</td>
<td>C</td>
<td>C</td>
<td>R</td>
<td>R</td>
<td>I</td>
<td>C</td>
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<td>Team Member</td>
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<tr>
<td>Master Black</td>
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<td>C</td>
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<td>R</td>
<td>I</td>
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<td>A</td>
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<td>Consulted</td>
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</table>
In addition to the RACI chart above, Senior Leaders, Deployment Directors, and Project Sponsors can use Table 3.2 below to manage the coaching, teaching, and mentoring responsibilities of Master Black Belts, Black Belts, and Green Belts.

**Table 3.2: Coaching, Teaching, and Mentoring Responsibilities**

<table>
<thead>
<tr>
<th>LSS Role</th>
<th>Administer Green Belt Exam</th>
<th>Administer Black Belt Exam</th>
<th>Co-Teach Black Belt POI (Note 1)</th>
<th>Co-Teach Green Belt POI (Note 1)</th>
<th>Lead-Teach Black Belt POI (Note 2)</th>
<th>Lead-Teach Green Belt POI (Note 2)</th>
<th>Lead DMAIC Projects</th>
<th>Lead PISWs</th>
<th>Coach BB Projects</th>
<th>Coach GB Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB Candidate</td>
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<td>MBB Candidate (certified BB)</td>
<td>Note 3</td>
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<td>Certified MBB</td>
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<td>Deployment Director</td>
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Note 1: Co-teaching is defined as being the assistant instructor in the course.

Note 2: Lead teaching is defined as being the instructor responsible for coordinating all delivery of instruction with the assistant instructor, to include providing appropriate evaluation of the assistant instructor.

Note 3: An MBB candidate can be the lead instructor for a Green Belt course and administer the appropriate exams if, and only if, they meet the following criteria:

- They are a certified Black Belt.
- They have successfully graduated from the Army Master Black Belt course.
- As a co-instructor, they have successfully taught all modules of the Green Belt POI.

Note 4: Due to the significant increase in complexity of instruction, as well as the experience and knowledge base required, only certified Master Black Belts will lead-teach the Black Belt POI.
4.1 Overview

The Army’s LSS training is currently conducted by contract instructors using predominantly commercial training products. While these products are effective, they are not well integrated with the standard Army training management system. HQDA is converting these materials into standard Army training products that are fully compliant with the Army’s Systems Approach to Training.

The objectives of the LSS training program include:

- Producing a critical mass of trained Army Green Belt and Black Belt practitioners.
- Producing a sufficient number of Army Master Black Belts to make the Army self-sufficient in terms of LSS instructors.
- Producing trained Project Sponsors and informed Executive Leaders.
- Producing a standard Army LSS curriculum.
- Facilitating integration of the LSS curriculum into the Army’s institutional training base.

HQDA is meeting the first three objectives by providing the training and resources described below. HQDA is achieving the remaining two objectives through a methodical application of the Army’s Systems Approach to Training. To that end, HQDA is conducting a Task Selection Board in FY08 to finalize the Army’s task list for various LSS roles. The completed task list will support a full curriculum review, resulting in modification, standardization, and documentation of the Army’s LSS curriculum. HQDA will integrate LSS into institutional training on a case-by-case basis until completion of the curriculum review. At that time, more comprehensive integration initiatives will be possible.

4.2 Resources

4.2.1 HQDA Responsibilities. HQDA provides LSS program management and the following training resources:

- Standard LSS curriculum.
- LSS instructors.
- LSS textbooks.
- Electronic course completion certificate files.
- Electronic training poster files.
- Electronic course notebook files.
• Information on creating or buying SIM kits.
• Centralized planning of course offerings.
• Centralized management of training registrations and LSS training records.

4.2.2 Army Command Responsibilities. Commands are responsible for providing the following training resources:

• Training facilities. A classroom is required that accommodates 30 students and has internet access, overhead projection capability, and standard classroom supplies.
• Quality and prepared students. Quality students are those that have the qualities described in Table 4.1. Prepared students are those that have completed pre-work assignments, meet all prerequisites, are registered in ATRRS, and have a laptop computer. LSS Belt candidates must also have an assigned LSS project assigned and recorded in PowerSteering prior to registration.
• Printed notebooks.
• Printed training posters.
• SIM Kit (constructed locally or purchased).

4.3 Curriculum
The Army LSS curriculum consists of the five courses described below.

4.3.1 Executive Leader/Project Sponsor Workshop (EL/PSW)
The Executive Leadership Workshop and the Project Sponsor Workshop share the same two-day curriculum. This curriculum provides students with an understanding of Lean Six Sigma (LSS) and the Army’s LSS strategy. Students gain an understanding of the Lean Six Sigma DMAIC methodology, as well as an understanding of the project identification and selection process; LSS roles and responsibilities; and Toll Gate Reviews. This course is a mix of simulations, presentations, and individual projects. A third day is added for those attending the PSW to allow project sponsors time to draft LSS project charters for use by their organizations.

The target audiences for these workshops are Executive Leaders (General Officers and Senior Executive Service) and Project Sponsors (normally in the grade of Colonel and GS15). Attendees of lower grades will be accepted if requested by the command Deployment Director.

The Project Sponsor Workshop (PSW) should not be confused with the Project Identification and Selection Workshop (PISW) described in the next section and discussed further in Section 6.4.

4.3.2 Project Identification and Selection Workshop (PISW)
The Project Identification and Selection Workshop is a three-day working session designed to identify and prioritize important LSS projects. Participants in this facilitated
workshop identify strategic goals, customer requirements, organizational priorities, and potential LSS projects. Successful completion of the workshop yields a prioritized list of potential LSS projects that are of high value to the organization.

4.3.3 **Green Belt (GB)**

Green Belt training is a two-week course that provides students with an understanding of LSS principles and tools, as well as project management fundamentals. Successful graduates can be active contributors to Black Belt projects and lead small-scale LSS improvement projects. Topics include establishing effective improvement teams, understanding the voice of the customer, and implementing the DMAIC methodology. There is generally a three-week break between the two weeks of training so that candidates can work on their assigned LSS project.

4.3.4 **Black Belt (BB)**

Black Belt training is a four-week course that familiarizes students with the principles, practices and tools of LSS to maximize cost reductions and improve customer satisfaction. Topics covered include an overview of LSS, as well as all aspects of traditional DMAIC methodology and tools. Successful graduates will be able to identify non-value-added activities and lead teams tackling more complex projects. The BB curriculum accommodates students with no prior LSS experience and Green Belt training is not a prerequisite for Black Belt course attendance. There is generally a three-week break between each week of training so that candidates can work on their assigned LSS project.

4.3.5 **Master Black Belt (MBB)**

Master Black Belt is a three-week course that provides the foundation for organizations to have in-house experts to disseminate LSS knowledge and training. Successful graduates provide training and coaching to Executive Leaders, Project Sponsors, Black Belts, and Green Belts. Topics covered include teaching and coaching LSS, reinforcing behavioral concepts, and LSS curriculum “teach backs,” in which students instruct their peers. All MBB candidates must be certified Army Black Belts. In addition to LSS skills, MBBs must demonstrate leadership ability, good instructional techniques, and organizational change skills. There is generally a three-week break between each week of training so that candidates can work on their assigned LSS project.

**MBB Certification:** Army Master Black Belt Candidates (MBBc's) are required to teach each Unit of Instruction (UOI) in the Army Black Belt Program of Instruction (POI) to achieve Army Master Black Belt (MBB) certification. They will teach with either other MBBc's or certified instructors from the DUSA-BT LSS Training Team. Figure 4.1, below, provides a high-level overview of the steps required to fulfill the requirements of this policy and the order in which they are to be completed. MBBc's must teach each module as both an assistant instructor (Instructor 2) and the primary instructor (Instructor 1) to achieve certification.

The MBB Candidate Co-Teaching Policy and the Co-Teaching Schedule may be found under “Training Policies” on the Army LSS Training page within the DUSA BT Website at [https://www.us.army.mil/suite/page/413478](https://www.us.army.mil/suite/page/413478)
### Term | Definition
--- | ---
Instructor 1 | An instructor (MBBc or certified instructor from the DUSA-BT LSS Training Team) who has ultimate responsibility for a class and who is responsible for teaching the more technical UOIs.
Instructor 2 | An instructor (MBBc or certified instructor from the DUSA-BT LSS Training Team) who teaches all other UOIs not taught by Instructor 1.
MBB Mentor | A certified MBB assigned to an MBBc for the purposes of (1) assessing readiness for teaching and (2) providing guidance throughout the certification process.

### 4.4 ATRRS
The Army Training Requirements and Resources System (ATRRS) lists all Army Lean Six Sigma courses and their respective schedules under school code 142. ATRRS is the system of record for approved course offerings and student registration.
Commands may request to host training from the Army LSS Training Team. Upon approval, the Training Team will upload the classes into ATRRS and make them available for student registration. Each command must have a designated ATRRS Quota Manager to manage registrations for their command. Further information on hosting training can be found in paragraph 4.8.

4.5 Army Knowledge on Line (AKO)

HQDA maintains a LSS training page on AKO at: https://www.us.army.mil/suite/page/413478. The LSS training page contains:

- Training schedules.
- Links to ATRRS.
- LSS course materials.
- LSS course pre-work.
- Information and resources for hosting LSS training.
- Training policy.
- Frequently Asked Questions (FAQs).
- Training Point of Contact List.
- Link to PowerSteering training.
- Minitab information.
- Training updates.

4.6 Selecting Students

Senior Leaders and Deployment Directors should select LSS training candidates that are proven leaders. LSS belts are the catalysts for change in the organization. They are responsible for bringing new ideas to their teams and creating a positive environment for improvement within the organization. Leadership skills are the essential element for success in implementing real change. For example, while a Black Belt must be competent in statistical methods, experience shows that leadership skills are often more difficult to learn than statistical methods. This is particularly true with the advent of statistical software, which can perform the required calculations.

Table 4.1 shows the attributes normally associated with the various LSS roles. Senior leaders, Deployment Directors, and Project Sponsors should consider the skills associated with Green Belts, Black Belts, and Master Black Belts when selecting candidates to attend those courses.
Table 4.1 Recommended Skill Levels for Various LSS Roles

<table>
<thead>
<tr>
<th></th>
<th>Team Members</th>
<th>Green Belts</th>
<th>Black Belts</th>
<th>Sponsors</th>
<th>Command Deployment Director</th>
<th>Master Black Belts</th>
<th>Army Depl. Dir.</th>
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</thead>
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<tr>
<td><strong>Problem Solving Tools</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Basic problem-solving</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td>H+</td>
<td>M</td>
</tr>
<tr>
<td>- Statistical tools</td>
<td></td>
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<tr>
<td><strong>Program Management Tools</strong></td>
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<tr>
<td>- Scheduling</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>M</td>
<td>H</td>
<td>H+</td>
<td>H</td>
</tr>
<tr>
<td>- Task mgmt &amp; execution</td>
<td></td>
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<tr>
<td>- Delivering results</td>
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<tr>
<td><strong>Team Building and Leading</strong></td>
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<td>H</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
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<td>- Facilitation</td>
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<tr>
<td>- Conflict management</td>
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<td><strong>Leadership</strong></td>
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<tr>
<td>- Strategic thinking</td>
<td>L</td>
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<td>M</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
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<tr>
<td>- Ability to influence</td>
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<td>- Others</td>
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<tr>
<td>- Sound decision-making</td>
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<td><strong>Change Agent</strong></td>
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<tr>
<td>- Initiative, self direction</td>
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<tr>
<td>- High risk tolerance</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>H</td>
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<td>- Desire to drive</td>
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<td>- Improvements</td>
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<td>- “Can-do attitude”</td>
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<td>- Passion for improvement</td>
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<td><strong>Coaching</strong></td>
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<tr>
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<td>M</td>
<td>H+</td>
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<tr>
<td>- Applied Experience</td>
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<tr>
<td>- Holistic approach</td>
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<td>- Integrative outlook</td>
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</tbody>
</table>

**Key:**
- L, M, H, H+ denote level of competence ranging from Low (L) to Medium (M) to High (H) and very high competence (H+).

Due to their importance in completing large projects and instructing LSS, Master Black Belt and Black Belt candidates require special consideration. Commands should also use the following screening criteria when nominating MBBs and BBs.

**4.6.1 Master Black Belts:**
- LSS Black Belt certification and a proven record in the application of LSS methods.
- Bachelors Degree, preferably in Engineering, Business, Operations Research (or a scientific/technical subject), or equivalent work experience.
- 8-10 years of professional experience.
- Demonstrated project management and team leadership skills.
• Knowledge of other key functional areas that support business processes (e.g., Finance, Accounting, Procurement, Engineering, Logistics, etc).
• In-depth understanding of statistical analysis tools/methodology, project management software, LSS continuous improvement techniques, quality theory, and basic financial principles.
• Ability to lead and direct two or more improvement teams simultaneously.
• Ability to manage risk and ambiguity within a project scope.

4.6.2 Black Belts:
• Associate’s Degree, preferably in Engineering, Business (or a technical/scientific subject), or equivalent work experience.
• 2-4 years of professional experience.
• Prior supervisory experience.
• Solid project management, communications, and team leadership skills.
• Familiarity with other key functional areas that support business processes (e.g., Finance, Accounting, Procurement, Engineering, Logistics, etc).
• Sound quantitative reasoning skills and the ability to do statistical analysis.

4.7 Restrictions on LSS Training

HQDA is responsible for setting Army standards for training of Green Belts (GB), Black Belts (BB), and Master Black Belts (MBB). Training standards are required to ensure standardization of LSS practices across the Army. Therefore, there are some restrictions on who can be trained within the LSS curriculum and how Army LSS training funding is to be spent.

4.7.1 Restrictions on Personnel to be Trained

Army LSS training is limited to active duty military personnel, reserve component military personnel, and Department of the Army civilians. Contractors will not be trained at Army expense, but may work on LSS projects if trained by another source. HQDA can approve the training of the following personnel on a case-by-case basis:

• Army personnel working in Joint or DOD assignments.
• DOD personnel assigned to an Army command.
• DoD personnel on a space available basis.

The LSS Training Team is responsible for evaluating requests to train candidates other than Army personnel.

4.7.2 Restrictions on Funding

It is the Army’s intent that Army funds only be used to train personnel via the Army approved LSS curriculum. Effective 1 October 2007, course completion credit will not
be granted for LSS training conducted outside the Army program of instruction if paid for by Army funding. Course completion credit is possible for outside training if funded by sources other than the Army.

4.8 Hosting Training

Commands may request to host training by contacting the LSS Training Team with the following information:

- Type of training (BB or GB).
- Dates for training.
- Training Location.
- On site POC, phone number, and email address.
- Number of seats to reserve.

When the training team approves the request, the command begins executing the 105 day planning sequence (see Appendix H).

4.8.1 Hosting Organization Responsibilities. The hosting organization must:

- Ensure that all students are properly registered in ATRRS with assigned projects.
- Provide a senior speaker to describe the organization’s “Burning Platform.”
- Distribute textbooks (HQDA provided).
- Retain unused textbooks and contact the LSS Training Team for disposition instructions.
- Buy or create a Federal Budget Simulation kit.
- Print student notebooks for each week of class (including errata sheets as applicable).
- Print wall posters to support the simulation exercise.
- Provide a classroom for 30 students with tables and chairs that can be reorganized to support simulation exercises. The classroom(s) should have projection capability, allow for hanging training aid posters, and have two easels with butcher paper pads.
- Provide student critique sheets for use at the end of the LSS instruction.
- Print and distribute course work completion certificates (HQDA provided) to those students who successfully complete the LSS final exam. Destroy any remaining certificates.
4.8.2 **HQDA Responsibilities.** HQDA must:

- Provide certified LSS MBB instructors.
- Provide electronic files, ready for printing, for the student notebooks and wall posters.
- Provide required textbooks.
- Provide information on Federal Budget Simulation Kit construction and ordering options.
- Provide course work completion certificates in PDF format ready for printing.
- Record students’ successful completion of training in ATRRS.
- Enroll successful students into the “awaiting Army LSS certification course” in ATRRS.

4.9 **Class-Fill Milestones**

In order to ensure classes are adequately filled and that training is cost-effective, HQDA will adhere to the following milestones:

- Six (6) Weeks Prior to Training. The LSS Training Team will open all un-filled seats for Army wide fill.
- Four (4) Weeks Prior to Training: The LSS Training Team will open the remaining vacant training seats to the Office of the Secretary of Defense and the Joint Staff, consistent with policy guidance.
- Three (3) Weeks Prior to Training. The LSS Training Team Lead will cancel the course if there are not at least 12 registered attendees.

4.10 **Curriculum Changes**

The LSS Training Team processes recommended changes to the LSS curriculum in accordance with the LSS POI Change Control Process. In summary, Deployment Directors, Deployment Advisors, and MBB instructors can submit recommended changes. Other persons recommending changes must forward them through a person authorized to submit a recommended change. Submitters should use DA Form 2028 and include the following information:

- Complete identification of which course, version, module, slide and paragraph numbers are the subject of the recommended change.
- Clear and compelling explanation of why the recommended change is needed.
- Clear description of the recommended change.
- Complete contact information for the submitter and for the person who will be able to answer questions about the recommended change (title/rank, full name, email address, and phone number).

A full explanation of the process is contained in the LSS POI Change Control Process.
4.11 Test (and Re-test) Policy

All Black Belt and Green Belt candidates must successfully complete the LSS belt final exam with a minimum grade of 70%. If a student fails the final exam, the following procedure applies:

- The instructor will counsel the candidate prior to the candidate leaving the classroom on the day of the exam. The candidate will be informed that they did not meet the minimum grade requirement and that they will have one additional opportunity to re-test.
- The instructor will forward the candidate’s name, score, and test to the DUSA BT LSS Training Office. The LSS Training Office will notify the candidate’s Deployment Director (DD). The DD and or Command MBB will contact the candidate, conduct review sessions, and provide coaching as needed.
- The candidate must take a re-test within four weeks of the original test. The candidate may choose either of two methods for taking the re-test:
  - On-site exam proctored by the command MBB and given in the candidate’s work area. The MBB will grade the exam, report the results to the candidate, and submit the results to the DUSA BT LSS Training Office.
  - Re-test with an ongoing LSS belt course near their work location. The candidate may also join the review session conducted the day prior to the exam if space permits and with the approval of the instructor. The instructor will have the responsibility to grade the exam, report the results to the candidate, and submit the results to the DUSA BT LSS Training Office.

Candidates attaining a score of 70% or more satisfy the exam requirement. Candidates who fail to achieve a score of 70% on the re-test will not be allowed to continue as a LSS belt candidate. HQDA will drop from further consideration candidates that do not re-test within four weeks of the original test. The LSS Training Team will notify candidates removed from the program for academic failure.

Requests to re-test are processed through the HQDA LSS Certification email box at ARMYLSS.Certification@hqda.army.mil or by writing to:

Department of the Army
ATTN: DUSA BT, LSS PMO
101 Army Pentagon, Suite 5D564
Washington, DC 20310-0101
Section 5. Army LSS Belt Certification

HQDA is responsible for setting Army standards for certification of Green Belts (GB), Black Belts (BB), and Master Black Belts (MBB). Certification standards are required to ensure standardization of LSS practices across the Army. As noted in Section 1.3.3, once belt candidates receive their training, Project Sponsors and Deployment Directors must provide the required resources and encouragement to ensure project completion and subsequent certification. Getting qualified candidates certified has been an issue in the LSS deployment. Some of the problem may be due to unclear standards and procedures. This section will clarify those standards and procedures.

5.1 Process to Apply for Certification as an Army LSS Belt

The Army has developed certification standards that meet our requirements and allow belts to support those requirements. Upon completing all requirements for the specified belt level, each belt candidate is responsible for initiating the request for certification. Figure 5.1 depicts this process with appropriate responsibilities and handoffs indicated. The candidate will initiate the process with a formal request (DA Form 4187 for military personnel or DA Memorandum for civilian personnel) through their respective Project Sponsor, Deployment Director, and chain of command. The DA Form 4187 or DA Memorandum must address three criteria:

- Level, source, and date of completion of LSS GB or BB training.
- Date and score for respective belt final examination.
- Completed project title and sequence number loaded in PowerSteering.

Upon approval of the candidate’s request, the Deployment Director will forward the packet to the office of the DUSA BT via hard copy or email. If forwarded in hard copy, the packet will be mailed to:

Department of the Army  
ATTN: DUSA BT, LSS PMO  
101 Army Pentagon, Suite 5D564  
Washington, DC 20310-0101

Project Sponsors and Deployment Directors may also create a .pdf version of their candidate’s application and e-mail to the DUSA (BT) LSS Certification e-mail box at: ARMYLSS.Certification@hqda.army.mil

Within the DUSA BT, the LSS PMO will verify the criteria and ensure that supporting documentation is captured in the Army Databases of Record for the respective belt criteria. Requests that do not have the required documentation or that fail to meet the specified criteria will be returned to the originating organization for administrative correction or action. The LSS PMO will contact the candidate’s deployment advisor and/or project sponsor to assist in expediting the corrective action. See Appendix D (DMAIC Project Completion Checklist) and Section 6.8 (Project Tollgates) for additional clarification of required documentation. Requests that are verified are approved and
signed by the DUSA BT and the Military Deputy, Assistant Secretary of the Army for Acquisition, Logistics and Technology. Copies of the approval documentation will be forwarded to the individual through the originating organization. The DUSA BT will forward the necessary documentation to the appropriate Human Resource System for updating the individual’s records for commissioned officers and warrant officers. Enlisted personnel records are updated regularly through a data feed from ATRRS to TAPDB. Currently, there is no series or skill identifier for civilians.

**Figure 5.1:** LSS Certification and Skill Identifier Award Process Map

<table>
<thead>
<tr>
<th>Process to Request for Award of Lean Six Sigma Certification and Skill Identifier (SI) or Skill Code (SC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start</strong></td>
</tr>
<tr>
<td>LSS Belt Candidate</td>
</tr>
<tr>
<td>Belt completes DA 4187 or provides data for DA Memo and submits to DD</td>
</tr>
<tr>
<td>Command/STAFF/ASC</td>
</tr>
<tr>
<td>Verify LSS Belt Candidate’s certification requirements documented on DA Form 4187 or DA Memorandum</td>
</tr>
<tr>
<td>Command/STAFF/ASC Deployment Director</td>
</tr>
<tr>
<td>Review Candidate package and forward to DUSA-BT LSS PMO for certification request</td>
</tr>
<tr>
<td>Command/STAFF/ASC Senior Leadership</td>
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<tr>
<td>N</td>
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<tr>
<td>Y</td>
</tr>
<tr>
<td>Certification requirements met?</td>
</tr>
<tr>
<td>Certification approval</td>
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<tr>
<td>Recommend certification approval</td>
</tr>
<tr>
<td>Document SI or SC in Army HR System</td>
</tr>
<tr>
<td>End</td>
</tr>
<tr>
<td>DUSA-BT LSS PMO</td>
</tr>
<tr>
<td>Approve DA Form 4187 or DA Memorandum for Personnel Action</td>
</tr>
<tr>
<td>Memo and Certificate forwarded to Candidate’s Deployment Director for Distribution</td>
</tr>
</tbody>
</table>

### 5.2 Green Belt Certification Criteria

#### 5.2.1 Requirements

- Complete Army approved LSS GB Program of Instruction or provide proof of completion of formal LSS GB Training from another accepted source.
- Pass Army LSS GB exam with a minimum score of 70%.
• Complete one LSS GB level DMAIC project, or lead three LSS Rapid Improvement Events, or lead sub-tasks of a LSS BB level DMAIC project.
  o DMAIC projects must have completed tollgate templates entered into PowerSteering (see Section 6.7).
  o RIE documentation requirements include an executive review tollgate template uploaded in PowerSteering (see Section 6.7).
  o Leading sub-tasks in BB projects requires the green belt candidate to upload in PowerSteering, under the appropriate phase, the document or tool completed, with their name as the author. It is the expectation that the green belt candidate demonstrate tool knowledge and appropriate usage in each of the five phases of the methodology (see Appendix F, LSS GB Certification through Black Belt Project Support).

5.2.2 What to Submit
• DA Form 4187 for military personnel (enter “LSS Certification and Skill Identifier” in the “other” section of Block 8 and request “Skill Identifier 1X” in Section IV). See the DA Form 4187 examples at Appendix C.
• DA Memorandum for civilian personnel. See the example at Appendix C.

5.3 Black Belt Certification Criteria

5.3.1 Requirements
• Complete Army approved LSS BB Program of Instruction or provide proof of completion of formal LSS BB training from another accepted source.
• Pass Army LSS BB exam with a minimum score of 70%.
• Complete one LSS BB Level DMAIC project that is documented in Power Steering.

5.3.2 What to Submit
• DA Form 4187 for military personnel (enter “LSS Certification and Skill Identifier” in the “other” section of Block 8 and request “Skill Identifier 1Y” in Section IV). See the DA Form 4187 example at Appendix C.
• DA Memorandum for civilian personnel. See the example at Appendix C.

5.4 Master Black Belt Certification Criteria

5.4.1 Requirements
• Be certified Army Black Belt.
• Lead two Black Belt DMAIC projects (including the one used for BB certification) through a successful Control Tollgate with appropriate documentation in Power Steering.
• Complete Army approved Master Black Belt Program of Instruction.
• Pass Army LSS MBB exam with a minimum score of 70%.

• Coach at least 2 Army Black Belt DMAIC Projects through a successful Control Tollgate and be identified as project mentor in PowerSteering. These DMAIC projects must meet the documentation requirements provided in Section 6.7.

• Successfully teach all modules of the Army Black Belt course. The MBB Candidate Co-Teaching Policy and the Co-Teaching Schedule may also be found under “Training Policies” on the Army LSS Training page within the DUSA BT Website at https://www.us.army.mil/suite/page/413478

• Co-facilitate a Project Identification Selection Workshop (PISW) with a certified MBB.

5.4.2 What to Submit

• DA Form 4187 for military personnel (enter “LSS Certification and Skill Identifier” in the “other” section of Block 8 and request “Skill Identifier 1Z” in Section IV). See the DA Form 4187 example at Appendix C.

• DA Memorandum for civilian personnel. See the example at Appendix C.

5.5 Actions to Request Certification under Grandfathering Process

There may be circumstances when Army personnel have completed Green Belt or Black Belt training from sources other than the US Army’s Program of Instruction. Army personnel who completed Green Belt or Black Belt training from a source other than the approved Army curriculum prior to 1 October 2007 can apply for course completion credit under the grandfathering policy. In order to ensure consistent training and certification standards, course completion credit will not be granted for LSS training completed outside the Army program of instruction after 1 October 2007 if paid for by Army funding. Course completion credit is possible for outside training if funded by sources other than the Army. It is the Army’s intent that Army funds only be used to train personnel via the Army approved LSS curriculum.

Candidates requesting course completion credit under the grandfathering policy must meet the same certification guidelines as regular candidates. These include providing documentation of successful completion of formal training, passing the Army Belt Final Exam, and completing an Army project. The grandfathering candidates must complete and enter their Army LSS project(s) in PowerSteering as described in Section 6.8.

Grandfathering candidates that wish to take the appropriate belt exam should contact their LSS Deployment Director to schedule an exam date. Deployment directors will coordinate proctoring of the exam via the DUSA (BT) LSS Certification email box at ARMYLSS.Certification@hqda.army.mil or by writing to:

Department of the Army
ATTN: DUSA BT, LSS PMO
101 Army Pentagon, Suite 5D564
Washington, DC 20310-0101
Grandfathering is not permitted for Master Black Belts. Those MBBs who have received training from sources other than the Army LSS programs of instruction will need to complete the Army Master Black Belt training and follow the Army criteria for MBB certification. Only Army certified Master Black Belts can be the lead instructor for the Army sponsored programs of instruction.

5.6 Award and Recognition of Lean Six Sigma Belt Certification

A memorandum outlining the procedures for awarding and recognizing those individuals who have fulfilled the requirements for certification is pending review by the Senior Review Group – Business Transformation.
Section 6. Project Execution

An effective LSS deployment involves a systematic approach to complete important projects and realize significant results. This approach includes the following steps:

- Train the executive leadership on the keys to a successful LSS deployment and their role in that deployment.
- Select qualified LSS belt candidates and schedule/conduct Green Belt and Black Belt training.
- Conduct Project Sponsors Workshops (PSWs) to train sponsors on the LSS tools and their role in developing project opportunities and identifying belt candidates.
- Conduct Project Identification and Selection Workshops (PISWs) to prioritize projects against organizational objectives, clarify project charters, and assign resources.
- Write effective project charters to guide the LSS teams.
- Coach and mentor belts through DMAIC project phases.
- Conduct project tollgate reviews, complete projects, and verify results.
- Employ PowerSteering to track projects and record results.

These steps are illustrated in Figure 6.1 and described in more detail below.

6.1 Executive Training

As with any initiative, Leadership has to be engaged and supportive. For LSS, this is especially true due to the extensive commitment of resources to make the deployment successful. Leadership must see that this is an opportunity to solve unresolved problems and concerns that have been facing the organization. It is imperative that the Deployment Director get the entire leadership team engaged in the LSS deployment through the training described in Section 4.

6.2 Belt Candidate Selection and Training

The belt candidate selection and training process is described in Section 4.

6.3 Project Sponsor Workshops (PSW)

As discussed previously, Project Sponsors are the critical linchpin in the LSS methodology. In addition to the objectives previously discussed in Section 4, the PSW is designed to ensure project sponsors understand the project identification and selection process, the writing of project charters, and their role in leading Lean Six Sigma activities, including tollgate reviews. It is imperative that potential project sponsors attend one of these workshops.
6.4 Project Identification and Selection Workshops (PISW)

Each organization must establish and maintain a project pipeline that addresses important areas of opportunity. PISWs are conducted to facilitate organizations in understanding how to develop and maintain this project pipeline. The specific objectives of these workshops include:

- Identifying, selecting, and prioritizing high value LSS projects which are aligned and linked to the strategic goals and objectives of the organization.
- Engage key subject matter experts and stakeholders in project opportunities.
- Develop SIPOC maps and project charters for high impact projects.
- Identify projects as Black Belt projects, Green Belt projects, RIEs, or “just do its.”

The PISW teaches organizations how to apply the rigorous, 5-step method outlined in Figure 6.2 to identify and select projects. Deployment Directors should contact the Lean Six Sigma PMO to receive this curriculum and schedule the corresponding workshop.
6.5 Project Chartering

Writing effective project charters is essential for providing LSS project teams with meaningful guidance that will produce significant project results. **Project Sponsors** are responsible and accountable for writing project charters. Project Sponsors should use the Project Charter 10-Point Checklist at Appendix E to verify that charters are appropriately written.

The elements of the charter must also be entered into PowerSteering when creating a new project. Figure 6.3 below is a Screen Shot from PowerSteering that shows the fields that are required to be completed.
6.6 Project Coaching

The Project Sponsor is accountable for the Black Belt and Green Belt project schedule and coaching plans. Each Belt and trainee will have an assigned coach as he or she executes a project. The coach’s responsibility is to provide guidance and reinforce training to ensure a successful outcome (See the LSS Project Completion Checklist at Appendix D). The table below illustrates the number of estimated coaching hours that each Green Belt and Black Belt should receive during project completion:

<table>
<thead>
<tr>
<th>Belt</th>
<th>Estimated Coaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Belts</td>
<td>24-32 Hours/project</td>
</tr>
<tr>
<td>Green Belts</td>
<td>8-16 Hours/project</td>
</tr>
</tbody>
</table>

Belts typically receive coaching in 1-2 hour blocks, which can occur face-to-face, via audio teleconference (ATC), or through e-mail.
6.7 Project Tollgates

6.7.1 Purpose. Project Sponsors will review the progress of LSS projects by conducting tollgate reviews. Tollgate reviews occur at the end of each phase of a DMAIC project and include the following purposes:

- Review/validate/update project charter
- Track progress against the DMAIC Roadmap and answer key questions about tools used, results, conclusions (see leadership questions in Appendix A).
- Review other variables affecting the project (support requirements, barriers, issues, etc.).
- Review project plans/next steps (including decision to move to next phase).
- Ensure a resource manager is involved and concurs with benefit analysis.

6.7.2 Attendees

- Black Belt / Green Belt – Required.
- Project Sponsor – Required.
- Project Team – Required.
- Stakeholders – Required.
- Deployment Director – Recommended.
- Senior Leadership – As possible or at Deployment Director request.
- Master Black Belt – Strongly Recommended.

6.7.3 Potential Causes of Less than Effective Tollgates

- Poor participation.
- Inadequate preparation or documentation.
- Lack of open and frank communication.
- Selecting only “friendly” participants.

6.7.4 Standardized Tollgate Templates.

Standardized tollgate templates have been posted in PowerSteering. Effective 20 December 2007, these tollgate templates are the approved standard and are designed to serve as the basis for each tollgate review. Depending on the nature and complexity of the DMAIC project phase, some slides may not be required or may be used for different purposes. Additional slides may be developed to address the specific circumstances of the project. It is expected that the templates will provide approximately 80% of the slides to be presented at the tollgate review. While these templates form the basis for the presentation, the content of the brief is at the discretion of the Green Belt, Black Belt, or Master Black Belt project leader.

For those projects started after 1 January 2008, the revised tollgate templates released on 20 December 2007 are required as the baseline. For projects in progress as of
1 January 2008, the current phase can be completed with older templates, but subsequent phases will utilize the revised tollgate templates.

The standardized tollgate templates are easily accessible from any project summary page in the “Process” section. Beneath each phase in the Process section of the Project Summary page, the belt will find two links and one placeholder for a “deliverable” (Labeled as #1, #2, and #3 below). These are described below and illustrated in Figure 6.4.

1. The first link takes the belt or project owner to a folder in the Army Methodology area of PowerSteering containing a “Read Me” document that provides guidance that walks the belt through the process of building the tollgate template for that phase and how to post it to PowerSteering upon completion.

2. The second link takes the belt to a folder in the Army Methodology area containing the tollgate template and other tools for the phase.

3. The “Tollgate Completed Briefing” placeholder is where the belt must post the completed tollgate briefing at the conclusion of the phase.

In addition to these phase specific links, links to overall guidance, references, and tools are now available in the Documents section of the Project Summary page.

The intent of standardized tollgate templates is to:

- Standardize the project presentations for tollgate reviews.
- Clarify expectations for phase deliverables.
- Increase GB/BB/MBB productivity by minimizing time spent developing slide formats and increasing time available for substantive project deliverables.
- Document the life cycle of a project from charter to completion to include recording final benefit estimates (Financial and/or Operational).

At the completion of the Control tollgate, it is the project sponsor’s responsibility, in conjunction with the Resource Manager, to ensure the benefits listed in the tollgate are uploaded into PowerSteering.

### 6.7.5 Rapid Improvement Events (RIEs)

Those projects conducted as Rapid Improvement Events (RIEs) are entered into PowerSteering as “Gated” projects. For these projects, an executive review tollgate will be completed and uploaded into PowerSteering. An executive review template may be found in PowerSteering in the “Documents” section of the project page.
6.8 Project Metrics

LSS projects yield a wide range of benefits. Benefits are viewed primarily from two perspectives, based on whether they impact operational performance (e.g. speed or quality) and/or resources (measured in terms of dollars). Both types of benefits should be quantifiable. The following table shows examples of typical project benefits, viewed from the two perspectives.

**Table 6.1: Categories of Project Benefits**

<table>
<thead>
<tr>
<th>Operational Benefits</th>
<th>Financial Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Cycle Time</td>
<td>Savings</td>
</tr>
<tr>
<td>Percentage of end items that meet quality specifications</td>
<td>Cost avoidance</td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td>Revenue generation</td>
</tr>
</tbody>
</table>
Many LSS projects generate both kinds of benefits. As part of the analysis of the current-state process capability, it is critical for the LSS belt and project team to apply sufficient rigor to identify these benefits to substantiate the decision to continue the project effort. It is also critical that a resource manager be involved in this process.

The project team is responsible for entering baseline and estimated data on operational and financial metrics in PowerSteering. Data entry may be required as many as four times during the life of an LSS project, as follows.

- Rough order of magnitude (ROM) estimate. This estimate is optional. A ROM estimate may be developed early in the project, before the Define tollgate, as a tool to help the command prioritize competing LSS projects.

- Projected estimate. The projected estimate is required at the Analyze tollgate. A project will not be permitted to pass through the Analyze tollgate if a projected estimate has not been entered in PowerSteering.

- Forecasted estimate. The forecasted estimate is developed at the Improve tollgate. If a project moves so quickly from the Analyze tollgate to the Improve tollgate that no new information on financial or operational metrics is available, the forecasted estimate is not required.

- Final estimate. The final estimate is developed at the Control tollgate. A project will not be permitted to pass through the Control tollgate if a final estimate has not been entered in PowerSteering.

6.8.1 Financial Benefits

The overarching financial management purpose of LSS is to give the Army greater resource flexibility by either reducing costs or generating revenues. The definitions of these terms, how they are applied in LSS projects, and how they are entered and tracked in PowerSteering are discussed in detail in Section 7.

Below are typical planning guidelines for financial return targets for Black Belt and Green Belt projects:

- Black Belt:
  - Each Black Belt completes (on average) 2-3 projects per year.
  - Each Black Belt project should have an average savings of $250,000.

- Green Belt:
  - Each Green Belt completes (on average) 2-4 projects per year.
  - Each Green Belt project should have an average savings of $50,000.

These results are dependent upon:

- Percent of time a Green/Black Belt is dedicated to projects.
- Availability of mentorship from Black Belts/Master Black Belts.
6.8.2 Operational Benefits

Operational benefits are any benefits that are not necessarily measured in terms of dollars. Examples include cycle time to complete a given process, the timeliness of product deliveries to the end user, and the extent to which a product or service meets user requirements. There can be linkages between operational and financial benefits, and in some cases, an operational benefit can lead to a financial benefit. For example, a reduction in cycle time or a reduction in the amount of rework required in a process will usually result in a cost avoidance or savings. When operational benefits lead to financial benefits, both types of benefits should be entered into PowerSteering.

In general, operational benefits are entered into PowerSteering as either an improvement in Process Sigma Quality Level or Process Cycle Efficiency.

- Process Sigma Quality Level deals with error rates or the number of defective products at each step in the process being examined. If the LSS project reduces the number of defects during the process or increases first pass yield, the sigma quality level is improved. Improvement is shown through process yield and process sigma quality level changes.

- Process Cycle Efficiency addresses process cycle time. If a project reduces cycle time or removes non-value added steps to reduce total processing time, the process cycle efficiency will be improved.

Section 8 discusses how to enter operational benefit data into PowerSteering and calculate Process Sigma Quality Level and/or Process Cycle Efficiency improvements.

6.8.3 Non-Quantifiable Benefits

Generally, LSS projects must define quantifiable financial and/or operational benefits. However, there may be circumstances when a project identifies potential benefits for which a measurement instrument has not yet been developed and for which a follow-on effort is required to quantify those benefits. The Project Sponsor and the belt who is leading the project should identify such benefits and determine whether a follow-on project would serve the objectives of the organization. If so, the potential project should be identified as an opportunity and nominated for consideration in the organization’s project pipeline.

6.9 Project Tracking

The Army is leveraging its investment in PowerSteering Software to track all LSS projects, schedules, and benefits. Deployment Directors and Project Sponsors are responsible for keeping their command's projects up to date in PowerSteering.
6.9.1  **PowerSteering and Tollgate Reviews**

Project Sponsors and gate approvers will ensure that completed tollgate briefing slides are uploaded into PowerSteering for each phase prior to granting approval for the project to move into the next phase. A project must have a completed tollgate for each of the DMAIC phases entered in PowerSteering in order to be used for belt certification.

6.9.2  **PowerSteering Training**

All sponsors and belts are required to utilize PowerSteering as the database of record for all improvement projects, to include non-gated ("just-do-it" type projects) and gated (all Rapid Improvement Events (RIE) and DMAIC projects). Project sponsors, Green Belt candidates, and Black Belt candidates must complete preliminary PowerSteering training via the e-learning module on AKO prior to attendance at the Project Sponsor Workshop or belt training. The e-learning module can be accessed from the DUSA BT web page and [http://www.army.mil/ARMYBTKC/PSeLearning/ps-eLearning.htm](http://www.army.mil/ARMYBTKC/PSeLearning/ps-eLearning.htm).
Section 7. Financial Management Guidance

7.1 Purpose
This section provides guidance for financial management issues associated with transformation initiatives. This guidance applies to all business transformation efforts, whether conducted using Lean Six Sigma or some other technique.

7.2 Role of Resource Managers
Project Sponsors must ensure that the project team has access to a resource manager at the installation or command level. The resource manager’s responsibilities include, but are not limited to the following (see Section 7.3 for definitions and further explanations of the terms used here):

- Assisting the project team with the tasks listed below. Note that these bullets primarily address cost data. The tasks also apply to projects that generate revenue.
- Determining the type of financial benefit (savings, cost avoidance, or revenue generation) that the project is expected to generate.
- Developing cost estimates for the project that identify baseline process cost, revised process cost, and implementation cost. The cost estimates needed during the life cycle of a project are the ROM (rough order of magnitude) estimate, the projected estimate, the forecasted estimate, and the final estimate. Section 7.3 contains definitions of these terms.
- Identifying the information, data sources, and approach that will be used to develop cost estimates.
- Monitoring implementation to determine whether projected financial benefits are being achieved and developing corrective actions, as necessary.
- Ensuring that cost data are entered into the PowerSteering software. (See Sections 7.6 and 7.7 for additional information on PowerSteering.)
- When savings are generated, assisting in identifying other programs to which the savings can be applied.

7.3 Definitions and Descriptions of Key Terms

7.3.1 Cost Reduction.
A cost reduction is a reduction in the number of dollars needed to meet a customer-established requirement by improving a certain process or function. All cost reductions are categorized as savings or cost avoidance.

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1 In this document, "command" refers to the organizations that report directly to HQDA. This includes Army commands, Army service component commands, direct reporting units and field operating agencies.
• Savings. Savings are defined as any cost reduction that enables a manager to remove programmed or budgeted funds and apply them to other uses. In this definition, savings are viewed from an Army-wide perspective: an initiative that reduces costs in one organization or appropriation but increases costs elsewhere represents savings only to the extent that there is a net cost reduction that can be applied to other uses. It should also be noted that the programmed or budgeted funds don’t have to be removed and applied to other uses for savings to occur. The key element in the definition is that the funds could be removed. For example, an LSS project could result in savings in a given process, and a decision-maker could choose to apply the savings to doing more of the same process. The fact that more of the same work, rather than different work, is being done does not alter the fact that a savings has been generated.

• Cost avoidance. Cost avoidances are defined as all cost reductions that are not savings.

• Note: In determining benefits, costs are considered for the entire process that is under evaluation, even if the process is performed in multiple organizations and has multiple funding sources. (In the case of multiple funding sources, the “appropriation type” feature in PowerSteering enables the project team to report funds from various sources separately. See Section 7.7.2.) For example:
  o If the G-3/5/7 at HQDA redesigns the mobilization process, numerous Army organizations might experience reduced costs. The cost estimate for this project should reflect the costs incurred by all organizations to carry out the mobilization process.
  o If a local initiative reduces a requirement for civilian manpower but replaces the civilians with military manpower, the installation’s costs will go down because military personnel costs are paid by HQDA. But the cost estimate for the project must reflect both the reduction in civilian manpower costs and the increase in military manpower costs. From a process-wide perspective, there will be a cost reduction only if the civilian positions being eliminated cost more than the military positions being added.
  o The Defense Finance and Accounting Service (DFAS) processes financial transactions for the military departments and the departments pay DFAS for the service. If the Army simplifies the way it submits transactions and this reduces processing costs at DFAS, the Army’s bill from DFAS will go down. The most likely outcome is that the OSD Comptroller, recognizing the cost reduction at DFAS, will decrease the Army’s funding by a like amount. The net financial impact on the Army will be zero, because the Army’s bill from DFAS and its funding from OSD will decrease by the same amount. However, from a process-wide perspective DoD will have reduced its costs, and the financial estimate for the project should reflect the cost reduction at DFAS.
7.3.2 Revenue Generation. Revenue generation is defined as increasing the dollars that flow into the Army, over and above appropriated funds and customer funding received through a revolving fund.

Examples to help clarify the above definitions are in Section 7.4.

7.3.3 Process Cost (Recurring Cost). Process cost is what it costs to perform a given business process.

7.3.4 Implementation Cost (Non-Recurring or One-Time Cost)
Implementation cost is the incremental cost incurred to conduct the transformation project and put the redesigned process in place.

- Implementation costs include, but are not necessarily limited to, the cost of new or improved hardware or software, one-time training in new procedures, one-time development of new policy documents, building modifications, rearrangement of equipment, travel directly related to the project, and contractors brought on board to support a specific project.

- Implementation costs do not include the cost of deploying and managing the business transformation program, software used to support the program or multiple projects, compensation for government personnel on the project team, or contractors who support the program or multiple projects.

7.3.5 Baseline Process Cost.
The baseline process cost is what the process will cost if we do nothing other than carry out existing plans (i.e., if we do everything we plan to do except implement the process redesign that we're evaluating). The baseline process cost is a snapshot that has a time dimension, meaning that the baseline is established at a point in time and reflects data for all years (year of execution, budget years, and program years) at that point in time.

- If the financial benefit type is “savings,” the baseline process cost is a snapshot that reflects the funding in the program and budget for the process when the transformation project begins.

- If the financial benefit type is “cost avoidance,” the baseline is a snapshot that reflects either the funding in the program and budget for the process when the transformation project begins or the costs associated with a validated but un-financed requirement when the project begins.

- If the financial benefit type is revenue generation, the baseline is a snapshot that reflects the projected revenue stream when the project begins.

The “time dimension” of a baseline requires additional explanation. The baseline is not simply what the process costs today. The baseline also includes what the process will cost in the future if the transformation project is not undertaken but if all other known plans are taken into account. For example, if we know that the workload for a given business process is going to increase or decrease in the coming years, then the
baseline cost should reflect the impact of the workload change. The impact of the change should also be reflected in the estimated cost of the transformed process.

7.3.6 ROM, Projected, Forecasted, and Final Estimates.

The project team develops cost estimates at various points in the life cycle of a transformation project. As the project moves along, the team gains an increased understanding of the process under review and of the associated costs. Thus, each successive estimate has a greater degree of reliability and accuracy than the preceding estimate. As explained below, a cost estimate might be needed as many as four times during the project life cycle. Each estimate includes the baseline process cost, the revised process cost, and the implementation cost. Each estimate covers all years through the end of the program period.

- **ROM Estimate.** The ROM estimate is optional. If used, it is developed and entered in PowerSteering before the Define tollgate and is used to help managers prioritize competing projects.
- **Projected Estimate.** The projected estimate is required. It must be developed and entered in PowerSteering at the Analyze tollgate.
- **Forecasted Estimate.** The forecasted estimate is optional. If used, it is developed and entered in PowerSteering at the Improve tollgate. If a project moves so quickly from the Analyze tollgate to the Improve tollgate that more complete or more reliable cost information is not available, the forecasted estimate is not required.
- **Final Estimate.** The final estimate is required. It must be developed and entered into PowerSteering at the Control tollgate. Because this is intended to be the final cost estimate for the project, it must be an estimate in which the project team and the supporting resource manager have a high degree of confidence. The estimate should be a “budget-quality” estimate – i.e., one that the resource manager would be willing to use in adjusting the organization’s program and budget (even though an adjustment might not be required). See Section 7.7 for an expanded discussion of the final cost estimate.

In the preceding descriptions, the references to project tollgates apply to LSS projects that use the DMAIC methodology. For all other business transformation projects:

- The ROM estimate (if used) is developed early in the life of the project.
- The projected estimate is developed when a decision is made to proceed with the project.
- The forecasted estimate (if used) is developed when the decision is made to implement a redesigned process.
- The final estimate is developed when a comprehensive control plan has been developed and approved.

7.3.7 Summary

The development of a cost estimate has two perspectives: **what** is being costed and **when** the estimate is being developed. Process cost and implementation cost are the
“what” of cost estimating; the ROM, projected, forecasted, and final estimates represent the “when.” The following table captures the two perspectives. The check marks indicate the data that will be entered in PowerSteering.

Table 7.1: Benefit Estimates (By DMAIC Phase)

<table>
<thead>
<tr>
<th>When It’s Being Costed</th>
<th>Process Cost</th>
<th>Implementation Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Revised</td>
</tr>
<tr>
<td>Before the Define tollgate: ROM estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Analyze tollgate: Projected estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Improve tollgate: Forecasted estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Control tollgate: Final Estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

7.4 Examples of Benefits

This section provides examples to help clarify the definitions and descriptions. The table below is an index to the narrative examples that follow.

Table 7.2  Definitions and Descriptions of Types of Financial Benefits

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of Benefit</th>
<th>Distinguishing Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Savings</td>
<td>Reduces civilian or contractor manpower requirement and the associated costs</td>
</tr>
<tr>
<td>2</td>
<td>Savings</td>
<td>Legitimately lowers a customer requirement</td>
</tr>
<tr>
<td>3</td>
<td>Cost avoidance</td>
<td>Makes more efficient use of people’s time, but people must remain on the rolls</td>
</tr>
<tr>
<td>4</td>
<td>Operational</td>
<td>Improves cycle time, on-time completion, and rework</td>
</tr>
<tr>
<td>5</td>
<td>Savings</td>
<td>Reduces unit cost and reapply savings to perform more of the same process</td>
</tr>
<tr>
<td>6</td>
<td>Cost avoidance</td>
<td>Reduces the dollar value of an un-financed requirement</td>
</tr>
<tr>
<td>7</td>
<td>No financial benefit</td>
<td>Reduces expenditures but fails to accomplish the mission</td>
</tr>
<tr>
<td>8</td>
<td>Potential savings</td>
<td>Requires viewing benefits from Army perspective, not local</td>
</tr>
<tr>
<td>9</td>
<td>Revenue generation</td>
<td>Makes use of the sale/out-lease program</td>
</tr>
<tr>
<td>10</td>
<td>Savings and cost avoidance</td>
<td>Makes more efficient use of people’s time, but people must remain on the rolls; reduces the cost of a contract</td>
</tr>
</tbody>
</table>
Example 1: As a result of adding automation to a given process, the number of full-time civilian personnel or contractors working on that process will be reduced by 20. If these 20 people cost $2 million annually, that figure less the cost of the added automation is savings that can be reapplied to other requirements.

Example 2: An organization is performing a given business process to meet established customer requirements. Through discussion with the customer, the process owner determines that the current level of performance is no longer required. The requirement is decreased, and the process owner is able to reduce his need for supplies and material by $3 million per year while still satisfying the revised requirement. Even though the way in which the process is performed has not changed, there is a $3 million savings resulting from the change in requirements that the customer agreed to.

Example 3: Throughout the Army, each of 20,000 employees devotes 10 hours per week to processing officer evaluation reports (OER). As a result of the business transformation initiative that provides improved software for the preparation of OERs, this time is reduced to six hours per week. The employees also perform other functions that require them to remain in the workforce, so there is no opportunity to reduce total labor costs. In this case, there is a cost avoidance equal to the cost of four person-hours per week for each of the 20,000 employees, less the cost of developing and deploying the improved software.

Example 4: Continuing with example 3, a further assessment reveals that the reduction in processing time enables each organization to reduce the percentage of OERs that do not meet required submission dates, and that the software reduces the number of errors employees make when preparing OERs. Thus, in addition to the cost avoidance, there are operational, quantifiable benefits: a reduction in cycle time, an increase in the percentage of OERs that are submitted on time, and a reduction in the number of OERs that have to be reworked to correct errors.

Example 5: An Army depot is responsible for overhauling helicopters. The overhaul process costs $750K per aircraft, and the depot has funding of $75M to meet an Army requirement to overhaul 100 helicopters. The depot negotiates a new purchasing arrangement with external suppliers that grants quantity discounts on purchases of material used in the overhaul process, with the net result being that the depot is now able to overhaul each aircraft for $500K. This represents a cost reduction of $25M, because it will cost that much less to meet the requirement of overhauling 100 helicopters ($25M = 100 aircraft times the difference between $750K and $500K). The reduced cost of the contract represents savings, because as soon as the contract price is renegotiated, the $25M will be available for the depot to use on other functions. In other words, the depot could continue with the current mission of overhauling 100 helicopters and could do so by spending only $50M. If the Army decides to continue to fund the depot with $75M and increase the workload to 150 helicopters, the $25M delta would still represent savings. The key point is that the funds could be removed with no adverse impact on the existing output of 100 helicopter
overhauls; whether the savings are reapplied to a different function or to doing more of the same function does not affect the determination that this is a savings. Said differently, the identification and reapplication of savings can be described as a two-step process. First, the Army decides to implement the new purchasing procedures and thereby reduces the cost of performing the existing mission (overhauling 100 aircraft). At this point a savings has been identified. Second, the Army makes a conscious decision to apply the savings to doing more of the same work.

- Example 6: The Army decides that additional resources – i.e., more dollars than are currently programmed or budgeted – are needed in a given area. (This could be for any number of reasons, such as devoting in-house labor to a newly assigned mission or tasking a contractor to upgrade the capability of an existing weapon system.) The responsible organization determines that additional funding of $10M per year is needed, but the requirement remains unfunded. Before a funding decision is made, a business transformation initiative identifies a way to reduce the additional requirement to $8M per year. The $2M delta is a cost avoidance rather than a savings because it reduces a resource requirement but does not enable the Army to remove and to reapply programmed or budgeted resources.

- Example 7: An Army organization responsible for buying repair parts for combat vehicles is required by Army policy to maintain a 10-day supply of repair parts in its warehouses. The organization unilaterally decides to reduce its warehouse staff and, with the reduced staff, is able to maintain only an eight-day supply of parts. This change is not coordinated with Army policy-makers, who believe that this creates an unacceptable level of risk to mission accomplishment. There is no valid cost reduction in this case, because the organization is no longer able to meet the customer-established performance requirement. On the other hand, if the policy-makers had agreed that the stock reduction was acceptable, then there would have been a savings equal to the cost of the staff reduction.

- Example 8: Ten Army civilians are engaged in performing a business process. The manager determines that the process could be performed more effectively with a mix of six civilians and four military personnel. This reduces the organization’s OMA costs (the cost of four civilians), but increases costs in the centrally managed MPA appropriation. As stated above, savings are defined from an Army-wide perspective. There would be a savings only to the extent that the four civilian positions that are eliminated cost more than the four military positions that are added.

- Example 9: An installation decides to be more aggressive in its pursuit of the sale and out-lease program and, as a result, is able to identify excess acreage that can be brought into the program. The initiative is projected to produce a revenue stream of $3M per year. This is a financial benefit in the form of revenue generation.

- Example 10: At an installation, each of 20 employees spends five hours per week on a given process and they use supplies and materials that cost $800K per year. The installation improves the process so that it requires only three
hours per week from each employee. The employees also perform other functions that require them to remain in the workforce, so there is no opportunity to reduce total labor costs. The improved process reduces the requirement for supplies and materials to $600K. These supplies and materials are purchased on a contract where the funding can be reduced. In this case there is a cost avoidance equal to the cost of two person-hours for each of the 20 employees and a savings of $200K resulting from the reduced purchase of supplies and materials. The reduced manpower cost is a cost avoidance rather than savings because a portion of the compensation for each of 20 people cannot be removed from the budget and reapplied elsewhere.

7.5 Retention of Savings

HQDA will not “harvest” savings generated via business transformation. Commands will be permitted to retain and reapply these savings. In the year of execution and the budget year, the reapplication of savings must comply with established reprogramming and transfer rules, such as the rules regarding transfers of funds from one appropriation to another.

For the program years, the normal PPBE process will occur. HQDA will not specifically target business transformation savings for harvesting. Commands will include their proposed reapplications of savings in their normal submissions of Schedule 8s to support development of the POM and BES. As always, HQDA will assess priorities and will allocate its limited funds to competing requirements to ensure that the Army makes the best possible use of constrained resources.

In most cases, the organization responsible for developing and implementing a transformation initiative will also be the organization that experiences the cost reductions. However, in some situations the responsible organization and benefiting organization will be different. For example, the DCS G-3/5/7 at HQDA is responsible for the mobilization process. If an initiative by G-3/5/7 to transform the process results in cost reductions, the reductions might occur to a limited extent at HQDA but will be felt to a greater extent in organizations such as FORSCOM, ARNG and OCAR. The retention of savings applies to benefiting organizations, i.e., the organizations whose funding is affected.

7.6 Computing Financial Benefits

HQDA has deployed PowerSteering, a project management tool that has been established as the database of record for business transformation. The check marks in Table 7.1 indicate the cost data the user must enter in PowerSteering. When the user enters this data, PowerSteering will compute and display financial benefits as shown in the following table. In this table, the term “benefit” is used to indicate either savings or cost avoidance. Note that for savings and cost avoidance, the basic construct is \( \text{baseline data minus new data} \). In the case of revenue generation the basic construct is reversed and becomes \( \text{new data minus baseline data} \).
Table 7.3: Computing Financial Benefits

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>This</th>
<th>Minus This</th>
<th>Equals This</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Define</td>
<td>Baseline process cost</td>
<td>ROM estimate of process cost</td>
<td>ROM estimate of gross benefit</td>
</tr>
<tr>
<td></td>
<td>ROM estimate of gross benefit</td>
<td>ROM estimate of implementation cost</td>
<td>ROM estimate of net benefit</td>
</tr>
<tr>
<td>Analyze</td>
<td>Baseline process cost</td>
<td>Projected estimate of process cost</td>
<td>Projected estimate of gross benefit</td>
</tr>
<tr>
<td></td>
<td>Projected estimate of gross benefit</td>
<td>Projected estimate of implementation cost</td>
<td>Projected estimate of net benefit</td>
</tr>
<tr>
<td>Improve</td>
<td>Baseline process cost</td>
<td>Forecasted estimate of process cost</td>
<td>Forecasted estimate of gross benefit</td>
</tr>
<tr>
<td></td>
<td>Forecasted estimate of gross benefit</td>
<td>Forecasted estimate of implementation cost</td>
<td>Forecasted estimate of net benefit</td>
</tr>
<tr>
<td>Control</td>
<td>Baseline process cost</td>
<td>Final estimate of process cost</td>
<td>Final estimate of gross benefit</td>
</tr>
<tr>
<td></td>
<td>Final estimate of gross benefit</td>
<td>Final estimate of implementation cost</td>
<td>Final estimate of net benefit</td>
</tr>
</tbody>
</table>

7.7 Special Instructions for Entering Data in PowerSteering

7.7.1 Importance of the Final Cost Estimate

This section is a more detailed discussion of the rationale behind the requirement for a “final” cost estimate, as described in Section 7.3.6.

In a financial management context, an “actual” cost is what something really costs. It is not an estimate of what we think might happen in the future, but rather is a historical statement that tells us what really happened in the past. Under ideal conditions, it might be desirable to require the project team, at the beginning of each fiscal year, to determine the actual cost of the business process for the preceding year and enter it in PowerSteering. However, this annual reporting might be burdensome and, from a practical standpoint, might be difficult to sustain for the duration of the program years. Therefore, the project team need not report “actual” costs, but will develop a final cost estimate and enter it in PowerSteering at the Control tollgate. When the project reaches the Control tollgate, the team has developed a control plan and taken other actions that provide a high degree of assurance that the intended process changes can be implemented as designed. This translates into a high degree of assurance that the estimated financial benefits will be achieved and this is why the final estimate is expected to be such that the resource manager would be willing to use it to adjust the organization’s program or budget. Because of the high likelihood of success, the final cost estimate will be used in lieu of reporting actual cost data. If, during implementation of the transformed process, unanticipated events require the project team or process owner to make significant changes to the implementation plan, it would be appropriate to revise the final cost estimate in PowerSteering.
Although there is no requirement for actual costs to be entered at the end of each fiscal year, commands may enter actual costs if they wish.

7.7.2 Lessons Learned

The PowerSteering financial template enables users to record financial data in ways that are meaningful to managers and decision makers. To capitalize on this functionality, users need to exercise care in using the templates. The points listed below are lessons learned based on HQDA analysis of PowerSteering data entry. (For a full explanation of the PowerSteering functionality, users should refer to the release notes accompanying the software deployment. To access the release notes: from the PowerSteering home page click on Work, then Work Tree, then Army Methodology Area.)

- To enable users to enter ROM, projected, forecasted, and final estimates as described above, the template has four “tabs” as shown in the following screen shot. In the screen shot at Figure 7.1, the red, solid-line oval highlights this feature. When the template first appears, it will be open to the “ROM Est” tab by default. Before entering data, the user must select the appropriate tab.

- To enable users to establish and maintain visibility of multiple funding sources, the financial template calls for the selection of “appropriation types.” Clicking on “Select Appropriation Type” will take the user to a screen that displays several funding sources. At this screen the user selects the funding source or sources that apply to the project. When entering data, the user must first click the down arrow next to the word “Total” and then select the appropriation type for which data will be entered. After the user enters and saves data for each appropriation type, clicking the down arrow again and making the appropriate selection will cause PowerSteering to display the total dollars for all funding sources or the dollar values for each funding source one at a time. In the screen shot at Figure 7.1, the green, dashed-line ovals highlight these features.
7.8 Developing Cost Estimates

One of the more challenging aspects of business transformation is the requirement to develop cost estimates. The primary responsibility for cost estimation rests with the resource manager supporting each project team. In addition to the resource manager, other participants play key roles in developing cost estimates. These include, but are not necessarily limited to, the Black Belts and Green Belts who lead projects and the master Black Belts who coach project owners. To assist all these individuals, the Army has developed the Business Transformation Cost Estimating Guide at Appendix B. The appendix provides guidance on cost estimating policies, identifies the questions that
must be answered to develop a cost estimate, provides guidance on entering cost data into PowerSteering, describes how to maintain supporting documentation to explain how the cost estimate was developed, and provides a step-by-step example of a cost estimate that was developed to support a real-world business transformation project.

Individuals responsible for developing cost estimates for BT projects are encouraged to give their attention to Appendix B, to include the real-world example. In field testing with resource managers and other participants, these have proven to be useful tools. The example provides step-by-step instructions for dealing with a number of cost estimating challenges, to include the following:

- Identifying the questions that must be addressed to develop a cost estimate.
- Obtaining information from subject matter experts and other sources as the first step in developing the cost estimate.
- Using authoritative sources for personnel costing, to include determining when to apply an overhead burden to personnel costs.
- Using authoritative sources for inflation indices and applying the indices (i.e., converting constant dollars to current dollars).
- Evaluating a situation to determine whether the financial benefits are savings, cost avoidance, or a combination.
- Determining the cost impact of process improvements that are implemented incrementally over time.
- Creating and maintaining supporting documentation that shows how the cost estimate was developed.

### 7.9 Supporting Information

The project team should develop and maintain documentation to show how it developed the financial data entered in PowerSteering and should attach this supporting documentation to the project file in PowerSteering. Supporting documentation is important for several reasons:

- During implementation, if unanticipated events require significant changes to implementation plans, the supporting documentation can help to identify the impact of these changes on the final cost estimate.
- Teams conducting similar projects can use the supporting documentation as a point of departure for their cost estimates.
- Internal or external reviewers (see Section 7.10) can use the supporting documentation to determine the reasonableness and reliability of the data.

When proprietary information is involved, attaching the supporting documentation might not be appropriate; in these cases documentation should be attached that describes the nature of the proprietary information and identifies where it can be found.

- To help project teams develop financial data and document the supporting information, HQDA has developed the Business Transformation Financial Workbook. This Excel file can be downloaded from the Army Cost &
Performance Portal at https://cpp.army.mil. To access the workbook, users should log in, scroll down to the box titled “BTM Quick Links” in the lower right-hand portion of the page, and then download the file named “BT Costing and Financial Examples.” This is a compressed file that includes the following files:

- A “read me” file that identifies the contents.
- Appendix B.1 from this Guidebook, which explains the workbook design.
- Appendix B.2 from this Guidebook, which provides a step-by-step example of cost estimate that was developed to support a real-world transformation project.
- A completed copy of the workbook to accompany the example in Appendix B.2.

A first-time user of the C&P Portal may establish a user account created by clicking on the tab titled “Request Access to C&P Portal” and providing the requested information.

### 7.10 Reviews of Financial Data

The Army Audit Agency (AAA) will review financial data for selected business transformation projects. These reviews will not be audits, but rather “attestation” reviews to determine whether the data appear to be reasonable and reliable, are backed up by supported documentation, and were developed in a manner consistent with HQDA guidance.

Because AAA will be able to review only a fraction of the Army’s LSS projects, and because accurate, reliable financial data is an important element in the LSS program, commands are strongly encouraged to conduct additional reviews to complement the AAA reviews. These reviews may be conducted by local internal review staffs or by resource managers from higher headquarters or elsewhere in the command.

Reviews of financial data should focus on projects that have significant estimated financial benefits and those that are expected to receive significant attention with external audiences.

AAA will address the following questions in its reviews of BT financial data. Commands should use these questions in the reviews they conduct.

- Did a resource manager assist the project team?
- Did the team properly apply the definitions of savings, cost avoidance, and revenue generation?
- Did the team properly use the PowerSteering tabs for ROM, projected, forecasted, and final cost estimates?
- Did the team develop and maintain supporting documentation and attach it to the project in PowerSteering?
- Does the supporting documentation adequately explain how the team developed the cost data?
- Did the team comply with guidance on personnel costing and inflation?
Are the financial benefits shown in PowerSteering reasonable and reliable? If not, what is a reasonable, reliable estimate?

7.11 Where to Get Assistance

7.11.1 Points of Contact

- **Business Transformation Financial Guidance**: Questions about any aspect of financial management related to business transformation should be sent to the Business Transformation Financial Management Help Desk at BTFinancial@hqda.army.mil.

- **Cost & Performance Portal**: For questions about the C&P Portal, contact the Cost & Performance Help Desk at 703-614-4405 (DSN 224-4405) or email at: cpp.help@hqda.army.mil.

- **PowerSteering**: For technical questions about PowerSteering software, send email to the Help Desk by clicking on the Help menu in PowerSteering.

- **Business Transformation Mailing List**: HQDA has established an electronic mailing list (or listserv) named “Resource Management Information about Business Transformation” to disseminate the answers to frequently asked questions, tips, and guidance on issues related to financial management. This is a low-volume mailing list, and members will be able to enter or leave the list at any time. To be added to this mailing list, send e-mail to listserv@ardalsrv01.hqda.pentagon.mil. In the body of the message type “SUBSCRIBE ListName Your Name” without the quotes. For example:
  
  SUBSCRIBE RM-INFO-ABOUT-BT Joe Jones

7.11.2 Useful Websites

- **HQDA Cost & Performance Portal**
  - URL: https://cpp.army.mil.
  - What it provides: BT Financial Workbook and other tools.
  - New users: Create account by clicking on “Request Access to C&P Portal.”

- **Army-Military Civilian Cost System**
  - What it provides: Authoritative costing data for military and civilian personnel, See Appendix B.
  - New users: Establish account at initial logon screen.

- **OMB Inflation Indices**
  - What it provides: Official inflation indices for all appropriations and types of cost. See Appendix B.
Section 8. Entering Operational Benefits into PowerSteering

As discussed in Section 6.8.2, operational benefits are entered into PowerSteering as either an improvement in Process Sigma Quality Level or Process Cycle Efficiency. To enter either type of benefit into PowerSteering, open the Project Summary page and select “Operational Benefits” under “Metrics.”

Figure 8.1: Operational Benefits Metrics
8.1 Entering Process Sigma Quality Level Improvements

To enter Process Sigma Quality Level Improvements, follow the following numbered steps illustrated below.

1. Select the appropriate benefit tab: “ROM,” “Projected,” “Forecasted,” or “Final” estimate. All tabs are subsequently edited with the same methodology.
2. Enter the number of defects from historical data or samples.
3. Enter the number of defect opportunities from historical data or samples.
4. Calculate and enter the baseline sigma quality level.
5. Click save.
6. Repeat steps 2 – 5 for the improved process.
7. After reviewing the data for completion and accuracy, return to the summary page.

Figure 8.2: Entering Process Six Sigma Quality Level Improvement
8.2 Entering Process Cycle Efficiency Improvements

To calculate and enter the process cycle efficiency improvements, follow the following steps that are illustrated below.

1. Enter the baseline work in progress amount (estimate if necessary).
2. Enter the baseline exit rate (estimate if necessary).
3. Enter the total customer value added time, if available (this must be in the same unit of measure as the process cycle time, i.e. days, hours, weeks, etc.).
4. Click “save.”
5. Enter the process cycle time after the process improvement.
6. Enter the customer value added time after the improvement. The process cycle efficiency after the improvement and the improvements in process cycle time and process cycle efficiency will be calculated automatically.
7. Click “save.”
8. After reviewing the data for completion and accuracy, return to summary page.

Figure 8.3: Entering Process Cycle Efficiency Improvements
8.3 Conclusion and PowerSteering Support

Whether entering Process Sigma Quality Level or Process Cycle Efficiency improvements, ensure that the data is accurately reflected in the Operational Benefits Metrics section. Direct any technical support questions to the PowerSteering help desk at pshelp@awps.army.mil or (877) 717-4691.
Appendix A. Tollgate Review Questions

A.1 Define Phase

- Is this project important, i.e. has the project been chosen because it is in alignment with organizational goals and the strategic direction of the ‘organization’?
- What organizational goals and strategies does this project align with and what problem is it addressing?
- Who are the customers being served by this project? Describe the plans for involving them.
- What is/are the goal(s) and the improvement targets (in terms of speed, and quality)
- What barriers to success have you identified for this project and what help do you need?
- What is the problem statement – detailing (what) is the problem, (when) was the problem first seen, (where) was it seen, and what is the (magnitude or extent) of the problem. Is the problem measured in terms of Quality, Cycle time, or Cost Efficiency, not expected financial benefits? Ensure there is no mention or assumptions about causes and solutions.
- Is the project scope reasonable? Have constraints and key assumptions been identified? Have IT implications been addressed and coordinated with IT managers?
- Who is on the team? Are they the right resources and has their required time commitment to the project been confirmed with their supervisor?
- What is the high-level work plan? What are the key milestones (i.e. dates of tollgate reviews for DMAIC projects)?
- Who are the key stakeholders? How will they be involved in the project? How will progress be communicated to them? Do they agree to the project?
A.2 Measure Phase

- What did the Value Stream Map indicate about the process (e.g., bottlenecks, types of waste or process lead-time)?
- What is the gap between the baseline and target performance of this process?
- From the gap between the baseline and target performance of the process, what are the opportunities for improvement?
- What “quick wins” or rapid improvement events (RIE) has your team identified?
- What additional barriers are there to the success of this project and what help do you need?
- Has a more detailed Value Stream Map been completed to better understand the process and problem, and where in the process the root causes might reside?
- Has the team conducted a value-added and cycle time analysis, identifying areas where time and resources are devoted to tasks not critical to the customer?
- Has the team identified the specific input (x), process (x), and output (y) measures needing to be collected for both effectiveness and efficiency categories (i.e. Quality, Speed and Cost Efficiency measures)?
- Has the team developed clear, unambiguous operational definitions for each measurement and tested them with others to ensure clarity and consistent interpretation?
- Has a clear, reasonable choice been made between gathering new data and taking advantage of existing data already collected by the organization?
- Has an appropriate sample size and sampling frequency been established to ensure valid representation of the process we’re measuring?
- Has the team developed and tested data collection forms or check sheets, which are easy to use and provide consistent, complete data?
- Has baseline performance and process capability been established? How large is the gap between current performance and the customer (or project) requirements?
- Have any opportunities to do Rapid Improvement Event projects been identified to accelerate momentum and results?
- Have ‘learnings’ to-date required modification of the Project Charter? If so, have these changes been approved by the Project Sponsor and the Key Stakeholders?
- Have any new risks to project success been identified, added to the Risk Mitigation Plan, and a mitigation strategy put in place?
A.3 Analyze Phase

- What would be the difference in process performance if the non-value added steps could be eliminated?
- Has the team developed and entered into PowerSteering a projected cost estimate that includes the cost of the baseline process, the cost of the revised process, and the implementation cost?
- What are the principle root causes that your team is addressing to improve this process?
- What indications are there that your results could be replicated across other process or commands?
- What changes to you problem statement or goals/targets are indicated by your analysis?
- What additional “quick wins” or rapid improvement events (RIE) has your team identified?
- What is the basis for the analysis conclusions that impact People, Equipment, and Budget? Value of re-allocation and/or increase?
- What additional barriers are there to the success of this project and what help do you need?
- Has the team examined the process and identified potential bottlenecks, disconnects and redundancies that could contribute to the problem statement?
- Has the team analyzed data about the process and its performance to help stratify the problem, understand reasons for variation in the process, and generate hypothesis as to the root causes of the current process performance?
- Has an evaluation been done to determine whether the problem can be solved without a fundamental ‘white paper’ recreation of the process? Has the decision been confirmed with the Project Sponsor?
- Has the team investigated and validated (or not validated) the root cause hypotheses generated earlier, to gain confidence that the “vital few” root causes have been uncovered?
- Does the team understand why the problem (the Quality, Cycle time or Cost Efficiency issue identified in the Problem Statement) is being seen?
- Has the team been able to identify any additional ‘Quick Wins’?
- Have ‘learnings’ to-date required modification of the Project Charter? If so, have these changes been approved by the Project Sponsor and the Key Stakeholders?
- Have any new risks to project success been identified, added to the Risk Mitigation Plan, and a mitigation strategy put in place?
A.4 Improve Phase

- What has your team identified as the most promising potential solutions and what criteria did you use to identify them?
- Has the team developed and entered into PowerSteering a forecasted cost estimate that includes the cost of the baseline process, the cost of the revised process, and the implementation cost? (The forecasted estimate is optional. See Section 7.3.6)
- Has a risk mitigation plan been developed to deal with identified improvement recommendations?
- What were the results of your pilot test?
- What adjustments to the process have you or will you be making?
- What are the key features of your improvement plan?
- What have been the key lessons learned to date?
- What additional barriers have you identified from the improvement recommendations to the success of this project and what help do you need?
- What techniques were used to generate ideas for potential solutions?
- What narrowing and screening techniques were used to further develop and qualify potential solutions?
- Do the proposed solutions address all of the identified root causes, or at least the most critical?
- Were the solutions verified with the Project Sponsor and Stakeholders? Has an approval been received to implement?
- Has the team seen evidence that the root causes of the initial problems have been addressed during the pilot? What are the expected benefits?
- Has the team developed an implementation plan? What is the status?
- Have changes been communicated to all the appropriate people?
- Has the team been able to identify any additional ‘Quick Wins’?
- Have 'learnings' to-date required modification of the Project Charter? If so, have these changes been approved by the Project Sponsor and the Key Stakeholders?
A.5 Control Phase

- Has the team developed and entered into PowerSteering a final cost estimate that includes the cost of the baseline process, the cost of the revised process, and the implementation cost?
- What additional potential projects has your team identified?
- What are the key elements of the control plan and who is responsible for them?
- How have the hard work and successful efforts of your team been recognized?
- What is your plan for advising other commands or process owners on your results and how to replicate them?
- Has the team prepared all the essential documentation for the improved process, including revised/new Standard Operating Procedures (SOPs), a training plan and a process control system?
- Has the necessary training for process owners/operators been performed?
- Have the right measures been selected, and documented as part of the Process Control System, to monitor performance of the process and the continued effectiveness of the solution? Has the metrics briefing plan/schedule been documented? Who owns the measures? Has the Process Owner’s job description been updated to reflect the new responsibilities? What happens if minimum performance is not achieved?
- Has the solution been effectively implemented? Has the team compiled results data confirming that the solution has achieved the goals defined in the Project Charter?
- Has the Benefits Realization Schedule been verified by the Financial Representative?
- Has the process been transitioned to the Process Owner, to take over responsibility for managing continuing operations? Do they concur with the control plan?
- Has a final Storyboard documenting the project work been developed?
- Has the team forwarded other issues/opportunities, which they were not able to address, to senior management?
- Have “lessons learned” been captured?
Appendix B. Cost Estimating Guide

B.1 Purpose

The determination of financial benefits of BT projects depends on the development of accurate, reliable cost estimates for business processes. Resource managers throughout the Army play a key role in developing these estimates. (See Section 7 for a full discussion of the role of the resource manager in supporting business transformation.) The purpose of this appendix is to help resource managers and others develop cost estimates for business transformation projects and maintain supporting documentation that shows how the estimates were developed.

B.2 Assumptions and Limitations

This appendix is based in large part on Section 7. Readers should ensure that they have read and understand the guidance and terminology in that section.

Further, this appendix:

- Is intended for use by project teams working on transformation projects. Each project team should include a resource manager, who has primary responsibility for ensuring that cost data are developed in accordance with HQDA guidance.
- Assumes a basic understanding of Army and DoD financial management terms and concepts in addition to LSS terms.
- Is intended for use in developing cost estimates for Army business processes. It is not intended to support cost estimating for such activities as weapon systems development and the fielding of new military units. Guidance for developing cost estimates for these activities can be found in the Army Economic Analysis Manual and the Army Cost Analysis Manual, which are available on the Internet at http://www.asafm.army.mil/ceac/ce/ce.asp.
- Shows the project team how to develop cost estimates.
- Demonstrates how to establish and maintain supporting documentation that shows how the cost estimate was developed.

This appendix is structured as follows:

- The base appendix provides guidance and procedures for developing cost estimates.
- Appendix B.1 explains how to use the BT Financial Workbook, a tool that has been developed to assist project teams in capturing data for their cost estimates and maintaining supporting documentation to explain how the estimate was developed.
- Appendix B.2 is an example of a cost estimate, explained in step-by-step detail.
B.3 Real-World Example

After studying the guidance and reading Appendix B.1, you are strongly encouraged to review the example at Appendix B.2 in order to gain a better understanding of the procedures.

As stated in Section 7, the example has been found to be a useful tool in field testing with many resource managers and other participants. The example provides step-by-step instructions for dealing with a number of cost estimating challenges, to include the following:

- Identifying the questions that must be addressed to develop a cost estimate.

- Obtaining information from subject matter experts and other sources as the first step in developing the cost estimate.

- Using authoritative sources for personnel costing, to include determining when to apply an overhead burden to personnel costs.

- Using authoritative sources for inflation indices and applying the indices (i.e., converting constant dollars to current dollars).

- Evaluating a situation to determine whether the financial benefits are savings, cost avoidance, or a combination.

- Determining the cost impact of process improvements that are implemented incrementally over time.

- Creating and maintaining supporting documentation that shows how the cost estimate was developed.

The narrative explanation of the example is at Appendix B.2 in this document. The example also includes a completed Excel workbook, which can be downloaded from the Cost & Performance Portal at https://cpp.army.mil. After logging in, scroll down to the BTM Quick Links section of the page to find the workbook. (First-time users of the C&P Portal may establish a user account by clicking on the tab titled “Request Access to C&P Portal” at the home page.)

B.4 How to Develop Cost Data

There are three approaches that may be used to develop cost data. In order of preference, from most to least preferable, the approaches are (1) using financial accounting systems, (2) using non-financial systems, and (3) developing independent estimates.
The preferred approach for developing cost data is to draw data from financial accounting systems, using existing account code structures. These structures include management decision packages (MDEP), Army management structure codes (AMSCO), program element (PE), functional cost accounts (FCA), and others. Although this is the preferred approach and in ideal situations is the easiest approach, most business transformation projects deal with processes and costs that cannot be easily identified in official accounting systems.

Non-financial systems can provide information to support the development of cost data. For example, payroll or labor systems may be used to determine employment levels, and supply systems may be used to determine quantities of materials or supplies used for specific processes.

Cost estimates may be developed by means of an independent estimate using established cost estimating techniques. This type of estimate depends heavily on the support of subject matter experts who can describe the business process and how it is performed.

This appendix describes a cost estimating process that uses data from both automated systems and independent estimates. This combined approach is likely to be required in developing cost estimates for most business transformation projects.

B.5 Basic Procedures

Developing cost estimates consists primarily of asking a series of questions about the business process and the transformation project. These questions address what is being costed and when the estimate is being developed.

B.5.1 What is Being Costed

There are two activities that must be costed: process cost and implementation cost. In simple terms, the distinction between the two is that process costs are recurring or ongoing and implementation costs are one-time. These terms are explained briefly here; see Section 6.3 for a more detailed explanation.

- Process cost is the cost of performing the business process. It has two dimensions: the baseline cost (what the process costs today and will cost in the future if the transformation project is not undertaken) and the transformed cost (what the process will cost if the transformation project is successfully implemented). To estimate process cost, identify the resources (people, contracts, materials, etc.) used to perform the business process and then determine the cost of these resources. Address these questions for both the baseline cost and the transformed cost.

- Implementation cost is the cost of conducting the transformation project and putting the new process in place. To estimate implementation cost, identify the resources that will be used and then determine what these resources will cost. See Section 6.3 for guidance on what is included in implementation costs.
B.5.2 When the Estimate is Being Developed

There are four points in the life cycle of a transformation project when the project team might develop cost data. In terms of the DMAIC process these are the pre-Define phase, the Analyze phase, the Improve phase, and the Control phase. See Sections 6.2 and 6.3 for a more detailed explanation.

B.5.3 Combining What and When

When we combine the questions of what and when, the result is that cost estimates for the baseline process cost, revised process cost, and implementation cost may be developed at four points in time, as summarized in the following table. The check marks indicate the data that will be entered in PowerSteering.

Figure B.1: Benefit Estimates (By DMAIC Phase)

<table>
<thead>
<tr>
<th>When It's Being Costed</th>
<th>Process Cost</th>
<th>Implementation Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Revised</td>
</tr>
<tr>
<td>Before the Define tollgate: ROM estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Analyze tollgate: Projected estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Improve tollgate: Forecasted estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Control tollgate: Final Estimate</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

B.6 How to Answer the Questions: Sources of Information

This section identifies information sources that will be useful in many projects. The list is not meant to be exhaustive, but rather to identify primary places to look for the answers to the costing questions.

B.6.1 Project Team

The initial – and by far the most important – source of information is the project team itself, in particular the subject matter experts (SMEs) who understand the existing business process and how it will be transformed. SMEs should be able to provide comprehensive information regarding the resources that are used to carry out the business process, the resources that will be needed to conduct the transformation project, and the resources that will be required after the process is transformed. SMEs
should be asked to address specific rather than general questions. For example, rather than asking “What resources are used in this process?” a better series of questions might be “How many civilian employees and military personnel work on this process? How much of their time do they spend doing it? What is the dollar value of contracts that support this process? What supplies and materials are used? What are the requirements for facilities maintenance? Do we pay for periodic software upgrades?” and so forth, being as specific and exhaustive as possible.

For some processes, particularly those that are performed part-time in numerous organizations, it might be difficult to precisely determine how many people are involved in the process and how much time they devote to it. In such cases the SMEs will have to estimate the resources devoted to the process by applying their knowledge of the process and making informed assumptions. For example, suppose the process being transformed is the writing and processing of military officer evaluation reports (OERs). OERs are written throughout the Army, and it would be impossible to state with precision how many people are involved or how many hours they expend. In this case the project team might first contact the Army Human Resources Command to determine the number of OERs submitted each year. The team should have developed a process map that shows how OERs are processed from beginning to end. Based on its in-depth knowledge of the process, the team would estimate how many hours of work would be required at each step in the process and the rank or grade of the individuals involved, and then multiply these hours by the number of OERs prepared in a typical year. Such an approach requires estimates and assumptions, but if these are developed by subject matter experts, the results should pass the test of reasonableness, which is the primary criterion that will be used to review cost estimates (see Section 6.9). In all cases it important to document the rationale for developing the cost estimate; this is particularly true in cases where assumptions are a major factor.

B.6.2 Project Charter

If a project is being conducted using the LSS methodology, the project team should have produced a project charter and process map that will be rich sources of information about the organizations, individuals, and procedures that make up the business process.

B.6.3 Installation Cost Centers

There are some organizations at installation level that can be used as direct sources of cost information. A prime example is the contracting office. If a business process is supported by a contract, the contracting office will have specific information on the cost and other key elements of the support that is being provided.

B.7 Costing Guidelines

B.7.1 Authoritative Sources

To the maximum extent possible, use authoritative, documented cost factors and rates. Sections B.7.2 and B.7.3 identify specific instances where this guidance applies.
B.7.2 Current Dollars

Always enter financial data in current dollars, also described as “then-year” or inflated dollars. In most cases, cost data for the current year are readily available. And in some cases outyear costs will also be well defined. An example would be the price growth that is built into the option years of a contract. When a contract is written with a base year and several option years, the contract will usually identify the outyear costs, either directly in terms of dollars or indirectly in terms of percentage increase from the base year. In the context of a contract, option year costs are almost always presented as then-year, inflated dollars. When defined outyear costs are available, use them.

In cases where outyear costs are not defined, use the inflation rates published by the Office of Management and Budget (OMB) to convert constant dollars to current dollars. OMB inflation rates for various appropriations and cost elements are available at http://www.asafm.army.mil/pubs/inflate/indices.xls.

Basic instructions for using the inflation indices are provided here. Use of the indices is demonstrated in the complete, real-world costing example described at Appendix B.2.

The following two examples use the table at the top of the next page.

- **Inflating from One Year to the Next.** To inflate dollars from one year to the next year, use the yearly escalation factor. For example, suppose it is May 2007 and a business process involves an OMA-funded contract that will cost $125,000 in FY08. If the contract is going to continue in FY09, the dollar value must be inflated. To make the conversion, go to the inflation indices by using the link above. Select the tab titled OMA07. In the column titled Yearly Escalation Factor, go down to the row for FY09. The value shown here is 1.0230. Multiply $125,000 by 1.0230. This yields $127,875, which is the FY09 cost of the contract in current, then-year dollars.

- **Inflating Across Multiple Years.** To inflate dollars across multiple years (i.e., several years in the future), refer to the columns for the appropriate base year and use the compound factor from the row for the end year. For example, suppose it is May 2007 and a business process involves an OMA-funded contract that will cost $250,000 in FY08. If the contract is going to continue for the next several years, the dollar value must be inflated. To make the conversion for the FY12 contract cost, go to the inflation indices by using the link above. Select the tab titled OMA07. In the pair of columns titled Base Year 2008, use the compound factor on the row for FY12. This value is 1.0888. Multiply $250,000 by 1.0888. This yields $272,200, which is the FY12 cost of the contract in current, then-year dollars. (Note that you would get the same answer if you started with the FY08 cost and applied each of the yearly escalation factors, from FY09 to FY12, sequentially. The compound inflation index is the product of the yearly inflation escalation factors.)
This extract from the inflation indices shows the source of the data for the examples on the preceding page.

B.7.3 Personnel Compensation and Benefits

The official source for cost data on uniformed and civilian personnel, and the source that should always be used in developing cost estimates for business transformation projects, is the Army Military-Civilian Cost System (AMCOS) at http://www.pcs.osmisweb.com/ (an alternate URL is http://www.osmisweb.com/amcos/). Within AMCOS, the specific application to be used is AMCOS Lite. To access AMCOS Lite, go to the website and follow the instructions for establishing a new account. Once you enter the system, select the AMCOS Lite program.

For each person or position included in the cost estimate, AMCOS Lite will require that you identify the component, career management field, skill or military occupational specialty, and other information. If you need assistance in determining this information, you should contact your local personnel or manpower office.

For each type of manpower position, AMCOS Lite displays the Army-funded portion of compensation and benefits, the non Army-funded portion, and the total. In developing cost estimates for business transformation projects, use the total.

In some cases it will be determined that the people involved in a given business process spend all of their time on that process. In these cases, use the total annual cost from AMCOS Lite. However, in many situations it will be found that people spend only a portion of their time on the process. In these situations, simply estimate what percentage of their time is devoted to the process, and then apply that percentage to the total annual cost.

The use of AMCOS Lite is illustrated in the example at Appendix B.2.
B.7.4 “Burden” for Personnel Costs

In developing cost data, questions will arise about whether personnel costs should be burdened or unburdened. Unburdened costs include basic compensation. “Burdens” may be added to account for personnel benefits and a share of support costs such as general supplies, facilities, and overhead. In all cases personnel costs will be burdened with personnel benefits; the data extracted from AMCOS Lite, as described above, include basic compensation and benefits.

To determine whether personnel costs should also be burdened with supplies, facilities, and overhead, a case-by-case assessment must be made. The general guidance is that costs should be burdened as if the financial benefit were savings. (See Section 6 for the definition of savings.) The objective is to be able to answer this question: “If a decision-maker decides to remove this money from the program or budget, what is the correct dollar amount?” Two examples may help to explain the intent:

- **Situation 1**: Five hundred people work in a cluster of buildings. A transformation project eliminates two staff positions in one of the buildings. This small change will have no impact on facilities costs. In this case the costing should include compensation and benefits but no burden for facilities.

- **Situation 2**: Same as situation 1, except that this time the transformation project eliminates the need for all 500 people. The buildings will be “mothballed,” and the local director of public works states that utilities costs for the installation will measurably decrease as a result. In this case, the costing should include compensation, benefits, and facilities costs.

B.7.5 Time Period

Always use the fiscal year (from 1 October to 30 September), not the calendar year. Some of the PowerSteering screen displays indicate that the reporting period is the calendar year, but this is incorrect.

Develop cost estimates for all years – the year of execution, the budget year(s), and the program years.

B.7.6 Common Basis of Comparison

In comparing baseline cost with the cost of one or more alternatives, ensure that data allow an "apples-to-apples" comparison. Among other things, this means that cost estimates must be developed for a full fiscal year and that common units of measure and a common set of cost elements must be used for the baseline and the alternatives.

**Full Fiscal Year Costing**: In most cases implementation of an approved business transformation initiative will begin part way through the fiscal year rather than on 1 October. This means that the baseline business process and the transformed process will each be in place for part of the year. Care must be taken to develop cost estimates that accurately reflect the costs for the first year.

For example: Suppose an ongoing process includes a service contract that costs $150,000 per year. An alternative is being considered that would decrease the contract cost to $100,000 per year, and the alternative calls for the new approach to be
implemented on 1 April 2007, halfway through the year. When developing the cost estimate for FY07, it would be incorrect to project the contract cost at $100,000, because the revised contract would be in effect for only six months. In this situation the alternative cost for the contract in FY07 would reflect $75,000 for the first six months and $50,000 for the second six months, for a total of $125,000. In the second and succeeding years, the cost of the contract would be shown as $150,000 in the baseline and as $100,000 in the alternative. (The amounts in the second and succeeding years would be inflated to reflect current dollars.)

Common Units of Measure: Some cost data might be drawn from information sources that display dollars in thousands of dollars, while other data might be taken from sources that use millions. Before using these data to develop cost estimates, you must convert the dollar values to a common unit of measure, and this common unit of measure must be used at all stages of the analysis. In the PowerSteering software, financial data must always be entered in dollars, with no truncating to thousands or millions.

Common Set of Cost Elements: The elements used to develop the cost estimate must account for all costs in both the baseline and estimated cost. For example: Suppose that in an industrial process the baseline process uses leased equipment and that the lease includes the cost of routine maintenance. If an alternative process under consideration calls for buying the equipment rather than leasing it, then maintenance must be shown as an additional cost element for the alternative. Including only the purchase price would cause the cost of the alternative to be understated.

B.7.7 Dealing with Multiple Financial Benefits

Any given business transformation project may generate revenue, savings, cost avoidance, or a combination of the three. If a project is expected to have more than one type of financial benefit, the process cost and implementation cost must be divided so that appropriate costs are identified with each type of benefit. The splitting of costs between multiple benefit types is illustrated in the example at Appendix B.2.

B.8 Where to Get Assistance / Useful Websites

See Section 6.10 of Guidebook for a list of points of contact and useful websites, to include the sites referred to in this appendix.
Appendix B.1  Using the BT Financial Workbook

1. As explained in Section 6 of this guidebook, HQDA has created the Business Transformation Financial Workbook to help you develop cost estimates and maintain a consolidated source of supporting information to show how the cost estimate was developed. This appendix provides a detailed explanation of the workbook, and Appendix B.2 is a real-world cost estimating example that demonstrates how the workbook can be used.

2. General.

   a. You may tailor or alter the workbook as needed to make it useful for your specific situation. However, you should use caution in changing any cells that contain formulas or links to cells elsewhere in the workbook. These formulas and links are extensive, and changing them might yield unintended results.

   b. Throughout the workbook, cells are color-coded as follows:

      (1) Green: User entry.

      (2) White: Formulas or links to cells elsewhere in the workbook.

      (3) Other colors: Headers or titles.

   c. When entering dollar values, use whole numbers with no truncating to thousands or millions.

   d. Note that you will enter detailed cost data in the workbook, and Excel will compute the total values for process cost and implementation cost. Only the totals will be entered in PowerSteering.

   e. In the white cells, several formulas are used frequently:

      (1) Gross benefit (for savings or cost avoidance) = baseline process cost minus transformed process cost.

      (2) Gross benefit (for revenue generation) = transformed revenue generation minus baseline revenue generation.

      (3) Net benefit (for any type of financial benefit) = gross benefit minus implementation cost.

3. The workbook contains the following tabs or worksheets:

   a. Instructions – Start Here
b. Setup Info

c. ROM Estimate ($)

d. Projected Estimate ($)

e. Forecasted Estimate ($)

f. Final Estimate ($)

g. Financial Benefit Totals

h. Non-Financial Data

i. Additional Info 1 thru Additional Info 5

4. Worksheet: Instructions – Start Here: This worksheet refers the user to this appendix.

5. Worksheet: Setup Info: Use this worksheet to enter identifying information for the project and key participants.

   a. Cell D1, Entry Date. Enter the date you’re initiating or updating the workbook. This cell is just for your information and is not linked to any other worksheets.

   b. Cells C3-C11, Person Constructing this Cost Estimate. Enter the identifying information for the individual who is best qualified to answer questions about how the cost estimate was developed.

   c. Cells C14-C22, Resource Manager. Enter the identifying information for the resource manager supporting the project. If this is the same person who is constructing the cost estimate, enter “Same as above” in Cell C14.

   d. Cell C25, Project Benefits Summary For. Enter the title of the project. This should match the project name entered in PowerSteering.

   e. Cell C26, Anticipated Start Date. Enter the fiscal year in which the project begins. Format this as a four-digit number, not as a date. When you make this entry, the workbook will create the appropriate yearly column headings for remaining worksheets.

   f. Cell C27, Initiative Description. Enter a brief description of the project.

   g. Cell C28, Type of Financial Benefit. Use a check mark to identify the types of financial benefits the project is expected to generate. This entry is not linked to other cells in the workbook but is provided to give you a visual reminder of the nature of the project. To help determine whether your project will result in savings, cost avoidance, or revenue generation, refer to Section 6 of this guidebook, which provides definitions for the three terms and examples to help clarify the definitions.
h. **Cells A31-A45, Customizable Row Headers for Cost Avoidance and Savings Rows in All ($) Benefits Worksheets.** This set of cells, shown graphically below, is one of the more useful features of the workbook. In these cells, enter the cost elements that you will use in your estimate. When you make these entries, Excel will enter the same data in numerous cells throughout the workbook, minimizing your data entry and helping to ensure that your cost estimate uses the same cost elements for all entries.

![Customizable Row Headers for Cost Avoidance and Savings Rows in All ($) Benefits Worksheets](image)

i. **Cells A48-A63, Customizable Row headers for Revenue Generation in All ($) Benefits Worksheets.** If your project is expected to generate revenue, use these cells. These entries will cause the same data to be entered throughout the workbook.

6. **Worksheet: ROM Estimate ($).**

   a. These instructions also apply to the following cost estimate worksheets: Projected Estimate ($), Forecasted Estimate ($), and Final Estimate ($).

   b. Each of these worksheets has five sections. As you will see, sections 1, 2, and 4 call for user data entry while sections 3 and 5 are calculations performed by the worksheet. We will first describe the five sections and then explain the data entry required in sections 1, 2, and 4.

   (1) **Section 1 (rows 2-88) – Cost Avoidance.** This section deals with cost estimates related to cost avoidance. Use the first three sub-sections to enter data on the baseline process cost (rows 4-20), implementation cost (rows 21-37), and process cost after improvement (rows 38-54). In the final two sub-sections (rows 55-88) the worksheet calculates gross and net cost avoidance.
(2) **Section 2 (rows 90-176) – Savings.** This section deals with cost estimates related to *savings*. Just as with the cost avoidance section, in this section there are three sub-sections for you to enter data on the baseline process cost (rows 92-108), implementation cost (rows 109-125), and process cost after improvement (rows 126-142). There are also two sub-sections (rows 143-176) in which the worksheet calculates gross and net savings.

(3) **Section 3 (rows 178-188) – Summary of Process Cost.** In this section, formulas calculate summary process cost data, adding together the process cost estimates for cost avoidance and savings. For projects whose costs are split between cost avoidance and savings, these calculations serve as a check figure to help you ensure that you’ve accounted for all the process costs.

(4) **Section 4 (rows 190-264) – Revenue Generation.** This section deals with projects that are expected to result in *revenue generation*. Use the first three sub-sections to enter data on the baseline revenue generation (rows 192-209), implementation cost (rows 210-226), and revenue generation after improvement (rows 227-244). In the final two sub-sections (rows 245-264) the worksheet calculates gross and net revenue generation.

(5) **Section 5 (rows 266-271) – Net Financial Benefits.** In this section of the worksheet, formulas combine the net benefit from cost avoidance, savings, and revenue generation, providing a convenient summary of the project’s financial benefits.

c. **Sections 1, 2, and 4 of the worksheet deal with the three types of financial benefit:** cost avoidance, savings, and revenue generation. Any project may have no financial benefits or may have one, two, or all three types of benefits. Use the sections as needed based on the benefits expected from your project. If a project is expected to produce both savings and cost avoidance, segregate the cost elements into those that are associated with the cost avoidance and those that are associated with the savings. The example at Appendix B.2 demonstrates this type of situation.

d. The remainder of this paragraph explains the data entry required in sections 1, 2, and 4.

(1) **Green cells in columns B through H.** Use these cells to enter cost data. You may enter costs directly as numbers or as formulas. For example, if you have a known cost in the first year of the project and that cost must be inflated for the second and subsequent years, you should enter the cost in the first year, use columns beyond column I to enter the OMB inflation indices, and then enter formulas to multiply each year’s cost data by the appropriate index. This will enable you to maintain visibility of how you developed the estimate and will be easier to revise if inflation indices are updated. The example in Annex 2 demonstrates this by making extensive use of formulas in columns B through H and entering cost growth factors in columns J through O.
(2) **Green cells in column I.** Use these cells to explain how you developed the cost data on each row. These cells will enable you to explain the cost estimate to someone else several months in the future, when the details are no longer fresh in your memory. Enter as much information as needed to enable yourself or another member of the project team to understand and explain how the cost estimate was developed.

(3) **Rows 5-19 and 93-107, Baseline Process Cost.** Separately for the cost avoidance and savings portions of your costs, use these rows to enter the baseline process cost.

(4) **Rows 22-36 and 110-124, Implementation Cost.** Separately for the cost avoidance and savings portions of your costs, use these rows to enter the implementation cost. (See Section 6.3 of the Guidebook for an explanation of what is included in implementation costs.)

(5) **Rows 39-53 and 127-141, Process Cost After Improvement.** Separately for the cost avoidance and savings portions of your costs, use these rows to enter the estimate of what the transformed process will cost.

(6) **Rows 193-208, Baseline Revenue Generation.** Use these rows to enter the baseline revenue generation, i.e., the revenue that will be generated if the project is not undertaken.

(7) **Rows 211-225, Implementation Cost (Revenue Generation).** Use these rows to enter the cost of conducting the project and of putting the transformed process in place. (See Section 6.3 of this Guidebook for an explanation of what is included in implementation costs.)

(8) **Rows 228-243, Revenue Generation.** Enter the revenue generation expected from the transformed process.

7. **Worksheet: Financial Benefit Totals.** This worksheet provides a convenient summary of data from the preceding worksheets. As your project proceeds through its phases and you enter cost estimates for each phase, this worksheet also gives you a picture of how your expected benefits change over time as the project team defines the project with greater precision.

8. **Worksheet: Non-Financial Data.** The project team may use this worksheet to capture non-financial performance data associated with the project.

9. **Worksheet: Additional Info.** Five blank worksheets are provided as places where you can enter or paste back-up material that might help you explain how you developed the estimate. Insert additional worksheets as needed to store back-up material. The example in Appendix B.2 demonstrates this by using several Additional Info worksheets. For ease of identification, in the example we changed the tab color for these worksheets to bright pink and named each worksheet to describe its content.
Appendix B.2  Cost Estimation Example

This example is based on a real-world business transformation project conducted at an Army installation.

The example begins with a scenario that describes the current situation, and then describes the proposed alternative process that is being considered, and then presents a step-by-step explanation of how the cost estimate was developed.

This example is supported by a completed Excel workbook, which can be downloaded from the Cost & Performance Portal at https://cpp.army.mil. After logging in, scroll down to the BTM Quick Links section of the page to find the example. (First-time users of the C&P Portal may establish a user account by clicking on the tab titled “Request Access to C&P Portal” at the home page.) The file name for the completed workbook is Alarm_Modifications_xxxxxxxx.xls. In the file name, the xxxxxxxx entry identifies the date of the file.

In this example, the names of commercial firms are fictitious.

The exercise scenario – comprising the setting, current situation, and proposed alternative – provides the essential foundation for developing the cost estimate. In a real-world situation you probably will not be given a single document that lays out the facts in such a clear fashion. You will have to develop this information by reviewing the project charter and the process map and, more importantly, by questioning the subject matter experts on the project team.

EXERCISE SCENARIO: FORT SWAMPY ALARM MONITORING SYSTEMS

Setting

It is now 1 October 2007. The location for this project is Fort Swampy, an installation located in the Washington-Baltimore metropolitan area.

Current Situation

Fort Swampy has two alarm monitoring functions that are performed in a single building. The functions are located in two adjacent rooms separated by a wall. The security manager believes that the installation could save money by combining the two monitoring functions into a single operation.

One side of the facility is operated under a contract with the ABC Security Company that costs $150,000 in FY08. The contract has four option years, with price growth as follows: 3% per year for two years (FY09-FY10) and 4% per year for the following two years (FY11-FY12). After FY12, a new contract would have to be negotiated. The government may terminate the contract at any time during the year, but must pay a termination fee if this happens. The fee is $20,000 if 9-11 months remain on the contract, $15,000 if 6-8 months remain, and $10,000 if five or fewer months remain. The contract period of performance runs from 1 October to 30 September.

The other side of the facility is operated by three GS-3 civilian employees.
The security manager, who is a GS-11, performs functions throughout the installation. She estimates that she currently spends four hours per week (10% of her time) overseeing and supervising the monitoring facility.

The installation pays a contractor, the XYZ Maintenance Company, to perform maintenance on all alarm systems. The contract costs $2500 in FY08. This contract has four option years, with price growth as follows: 3% per year for two years (FY09-FY10) and 4% per year for the following two years (FY11-FY12). After FY12, a new contract would have to be negotiated. If the contract is terminated at the government’s request, there is no termination fee but the government is required to pay the full annual amount on the contract.

Each year the installation buys back-up tapes and logbooks that are required under the current monitoring procedures. The cost in FY08 is $195.

All costs are funded with OMA dollars.

**Proposed Alternative**

An opening will be constructed in the existing wall, enabling the government employees to monitor all alarms. The alarm monitoring contract would be terminated. The employees would not require any additional training. At the same time, the personnel staffing requirement would be increased to a total of four GS-3s in order to provide better coverage of the 24/7 monitoring requirement, annual leave, etc.

The Boden Construction Company has submitted a proposal of $50,000 to build the opening in the wall and complete the associated wiring. The company states that it can complete the project within 90 days of contract award. The installation contracting office projects that a contract can be awarded 30 days from the day a decision is made to proceed with the proposed alternative.

A new alarm monitoring system will be installed that will eliminate the need for back-up tapes and logbooks, and for the annual maintenance contract with the XYZ Maintenance Company. This system, which is built and sold by the Acme Detection System Company, will cost $8500, to include delivery and installation, and will require annual software updates beginning 12 months from the date of installation. The cost of the software upgrade contract in FY09 would be $3500. Acme has a backlog of orders and has projected that the system could be shipped and installed by 1 June 2008.

The security manager estimates that the new arrangement will reduce the amount of time she has to spend overseeing and supervising the monitoring facility to three hours per week.

**Cost Estimating Solution**

As described in Section 6 of this document, HQDA has developed the Business Transformation Financial Workbook to assist in developing cost estimates and to serve as a back-up record that shows how the cost estimates were developed. To accompany this narrative example, we have used the BT Financial Workbook to capture the cost data and supporting information. You should begin by downloading the completed workbook from
the C&P Portal as described above. The name of the filled-in file is *Alarm_Modifications_xxxxx.xls*. In the file name, the xxxxxx entry identifies the date of the file.

The detailed instructions for using the workbook are in Appendix B.1.

As stated in Appendix B.1, you may tailor the workbook as needed to support each unique situation. In *Alarm_Modifications_xxxxx.xls* we made several modifications to make the file more useful for our project. We created and entered cost elements that are descriptive of the alarm monitoring operation, added data in various cells to support the calculations, and pasted copies of source data to ensure that all the supporting documentation is available in one place.

In developing this solution, we will refer to several websites that contain useful information to support cost estimating requirements. A complete list of websites is provided in Section 6.10 of the Guidebook.

One of the first questions that must be addressed is whether the project will generate cost avoidance, savings, revenue, or some combination. Our assessment of the Ft. Swampy alarm monitoring project is that the project will generate both savings and cost avoidance.

- **Savings.** The savings will be found in several areas. The contracts with the ABC Security Company and the XYZ Maintenance Company will be terminated, and the installation will no longer have to buy tapes and log books. These savings will be offset by the contract termination fee paid to ABC Security, the cost to modify the wall, the purchase of the new system and annual software updates from the Acme Detection System Company, and the addition of a GS-3 employee. Of the offsetting costs, three are one-time implementation costs: the contract termination fee, the cost to modify the wall, and the purchase of the system from Acme. The cost of the annual software updates and the additional employee are recurring costs that will become part of the transformed process cost.

- **Cost Avoidance.** The cost avoidance will result from the supervisor spending fewer hours overseeing the monitoring facility.

We will therefore enter some data in the cost avoidance section of the workbook (rows 2-88) and some in the savings section (rows 90-176).

- One cost element clearly belongs in the cost avoidance section: The cost of the GS-11 supervisor.

- Several cost elements clearly belong in the savings section: The contracts with the ABC Security Company and the XYZ Maintenance Company, the tapes and log books, the termination fee paid to ABC Security, the cost to modify the wall, the purchase of the new system and annual software updates from the Acme Detection System Company, and the addition of a GS-3 employee.

- The cost of the three GS-3s employees currently working in the facility will not change, resulting in neither savings nor cost avoidance, and therefore could be
entered in either section of the workbook without impacting the benefits calculation. We chose to enter these costs in the cost avoidance section.

We also have to determine whether to enter our cost estimate in the worksheet for the ROM, projected, forecasted, or final estimate. We will assume that the decision to go forward with the new arrangement is being made today, 1 October 2007. In the context of a gated LSS project, this decision point would occur at the Improve tollgate, which leads us to enter our cost estimate in the Forecasted worksheet. See Section 6.3 for an explanation of when ROM, projected, forecasted and final cost estimates are used.

In the remainder of this appendix, we will explain the entries on each row of the worksheet. We suggest that the best way to follow the explanation is to print this appendix and use your computer screen to view the Excel file (Alarm_Modifications_xxxxx.xls) that is available for download at the Cost & Performance Portal as described above. This will enable you to read the narrative explanation while simultaneously looking at the formulas in the Excel file. This should help make the explanation more clear than would be the case if you use a printed copy of the workbook.

Worksheet Title: Setup Info

We entered the identifying information of the person developing the estimate, the entry date, and a brief description of the project. We also entered the beginning year of the project, 2008, as a four-digit number in cell C26.

The most important entries on this worksheet are in cells A31 through A45, where we entered the cost elements that define the alarm monitoring process and the transformation project. These entries are important for two reasons. First, by being as complete and as explicit as possible, these entries will make it easier for us to explain or reconstruct the cost estimate at a later date. Second, these entries will be automatically replicated throughout the workbook, significantly streamlining the data entry process.

Based on our review of the scenario, we created the following cost elements and entered them in the cells beginning with A31.

- Civilian employees – 3 GS-3
- Civilian employee – 1 additional GS-3
- Civilian employee – GS-11 supervisor
- Contract: XYZ Maintenance
- Contract: ABC Security
- Contract termination: ABC Security
- New system from Acme Detection
- Annual software updates from Acme
- Wall modification by Boden Construction
- Tapes and log books
Worksheet Title: Forecasted Benefits ($)

Note that we used column I to explain how we developed the cost estimate for each cost element.

Section: Cost Avoidance

Sub-Section: Baseline Process Cost (Cost Avoidance)

Row 5: Civilian employees – 3 GS-3. As described in Section B.7, we used AMCOS Lite to find the cost of the personnel currently on board. Using the information in the scenario, we used the pull-down menus in AMCOS Lite to enter the following information:

- Component ............ Civilian General Schedule
- Group/CMF * ......... All Army
- Skill/MOS ............... blank for the All Army group/CMF
- Locality .................. Washington-Baltimore-Northern Virginia

* CMF = Career Management Field.

Note: In this example the scenario told us the component (civilian general schedule) and the locality. We selected the group/CMF arbitrarily. The group/CMF determined the skill/MOS. If you are uncertain about any of these data elements as they pertain to your project, consult your local manpower or personnel office.

These entries led us to a page in AMCOS Lite that shows the cost of one individual meeting the above description. To keep all our back-up information in one file, we copied the AMCOS page and pasted it in `Alarm_Modifications_xxxxx.xls` at a tab titled `Addnl Info – Civ Pay`. From this page, the figure that should be used is the sum of two rows: Army-Funded Civilian and Government-Funded Civilian. This total - $36,618.28 per year – represents the compensation and benefits cost for one individual. The AMCOS page tells us that these numbers are for FY07 budgeting, but we need the cost figures for FY08-FY14. To convert the FY07 value, we went to the inflation indices website, found the tab for civilian pay, and then entered the year-to-year escalation factors in columns J through O to the right of the table. We entered the calculation directly in the 2008 column, and then created formulas to compute FY09-FY14. We also copied the civilian pay inflation indices into `Alarm_Modifications_xxxxx.xls` in order to keep all supporting documentation in one place.
Row 6: Civilian employee – 1 additional GS-3. This row contains zeros because the additional GS-3 will be needed if the alternative is adopted, but is not involved in the baseline process.

Note that even though the current GS-3s and the new GS-3 will be performing the same function, we chose to show the cost for the current civilian workforce on one row and the cost for the additional civilian on a separate row. Some users might prefer to capture all civilian personnel costs on a single row. There is no prescribed way to use the workbook, and you should use whatever approach works for you. Keep in mind that the purposes of the workbook are to help you develop cost estimates and to help you maintain a record that will enable you (or someone else on the project team) to explain how the cost estimates were developed. You are encouraged to use the workbook to make the supporting documentation as clear and as explicit as possible. You should add any supporting calculations, notes about sources, or other comments that might be helpful in explaining the estimate to AAA or other reviewers.

Row 7: Civilian employee – GS-11 Supervisor. We found the cost of one GS-11 by using AMCOS Lite, just as we did in finding the cost of the GS-3s shown on row 5. In this case we used 10% of the annual cost, because the scenario tells us the supervisor spends 10% of her time supervising the monitoring facility.

Rows 8 through 14. These rows contain zeros because the data for these elements belong in the Savings section of the workbook.

**Sub-Section: Forecasted Implementation Cost (Cost Avoidance)**

All rows are blank because we determined that the implementation costs are associated with the savings aspect of the project, not cost avoidance.

**Sub-Section: Forecasted Process Cost (Cost Avoidance)**

Row 39: Civilian employee – 3 GS-3. This row shows the same data as row 5, because the three GS-3s in the baseline continue to work in the transformed process.

Row 40: Civilian employee – 1 additional GS-3. This row contains zeros because the data for this element belong in the Savings section of the workbook.

Row 41: Civilian employee – GS-11 supervisor. The scenario tells us that the new alarm modification arrangement will reduce the supervisory time from four hours per week to three hours per week. This means that the cost of the GS-11 would be three-fourths of row 7. For FY09-FY14, we used a formula that computes three-fourths of the cost shown in row 7. However, the reduced workload doesn’t become effective until the wall has been modified, which occurs four months into the year. Thus, the cell for FY08 is a calculation that includes the cost of the GS-11’s time for four months at four hours per week and for eight months at three hours per week.

Rows 42 through 48. These rows contain zeros because the data for these elements belong in the Savings section of the workbook.
**Sub-Sections: Forecasted Gross Cost Avoidance and Forecasted Net Cost Avoidance**

All the entries in these sub-sections (rows 55-88) are calculations performed by Excel.

**Section: Savings**

**Sub-Section: Baseline Process Cost (Savings)**

Row 93 through 95. These rows contain zeros because the data for rows 93 and 95 belong in the Cost Avoidance section of the workbook, and row 94 is not part of the baseline.

Row 96: Contract: XYZ Maintenance. The scenario tells us that this contract will cost $2500 in FY08, so we entered that number in the 2008 column. We used columns J through O to the right of the table to enter the cost growth factors for each year and then entered formulas to compute the costs for FY09-FY14. The factors for FY09-FY12 came from the scenario. The scenario states that after FY12 a new contract will have to be negotiated. As prescribed in Section B.7, we used the published OMA inflation indices, which are available at [http://www.asafm.army.mil/pubs/inflate/indices.xls](http://www.asafm.army.mil/pubs/inflate/indices.xls), for FY13-FY14.

Row 97: Contract: ABC Security. The scenario tells us that the contract will cost $150K in FY08 and also provides the cost growth through FY12. We entered $150,000 in the 2008 column. We used columns J through O to the right of the table to enter the cost growth factors for each year and then entered formulas to compute the costs for FY09-FY14. The factors for FY09-FY12 came from the scenario. The scenario states that after FY12 a new contract will have to be negotiated. We used the published OMA inflation indices for FY13-FY14.

Rows 98 through 101. These rows contain zeros because these cost elements are not part of the baseline process cost.

Row 102: Tapes and Log Books. The scenario tells us that these supplies cost $195 in FY08, and we entered that number in the 2008 column. The scenario did not provide specific information about cost growth, so we used the published OMA inflation factors from the inflation indices website. As with other pieces of information, we pasted the OMA inflation indices into Alarm_Modifications_xxxxxx.xls so that we would have a single repository of our supporting documentation.
Part: Forecasted Implementation Cost (Savings)

Rows 110 through 114. These rows contain zeros because these cost elements are process costs, not implementation costs.

Row 115: Contract termination: ABC Security. The scenario tells us that we will be able to award the contract 30 days after the decision is made to implement the proposed alternative and that Boden will have the wall modified within 90 days of contract award. As noted above, we assumed that the implementation decision would be made today, 1 October. Therefore the contract would be awarded on 1 November and the wall modification would be completed by 1 February. Effective 1 February we would cancel the ABC contract, meaning that there would be eight months left on the FY08 contract and we would therefore incur a termination fee of $15,000. We entered this number in the 2008 column. This is a good place to point out that cost estimates should reflect real world experience. For example, if Ft. Swampy’s experience with the Boden Construction Company is that Boden always does good work but is almost always two months late on construction projects, the assumption could have been made that the new arrangement would not be implemented until 1 April. This date would be reflected throughout the cost estimate.

Row 116: New system from Acme Detection. The scenario tells us that Acme can deliver and install the new system in June 2008, so we entered the cost in the 2008 column.

Row 117 and 119. These rows contain zeros because these cost elements are process costs, not implementation costs.

Row 118: Wall modification by Boden Construction. The entry here is the $50K cost of the contract to modify the wall in the alarm monitoring facility.

Sub-Section: Forecasted Process Cost After Improvement (Savings)

Rows 127 and 129. These rows contain zeros because these cost elements were treated as cost avoidance, not savings.

Row 128: Civilian employee – 1 additional GS-3. The entries in this row are based on the AMCOS Lite data developed for the current GS-3s. Row 5 tells us that the cost of three civilians in FY08 is $112,931. The scenario tells us that the new employee will start working on 1 February, the date the wall modification will be completed. That means the individual will be working for eight months in FY08. So to determine the FY08 cost of the additional civilian, we used a formula that computes one third of the cost of three civilians and then takes eight twelfths of the resulting number. For the remaining years, we entered formulas that take one third of the cost of three GS-3s.

Row 130: Contract: XYZ Maintenance. This contract will cost $2500 in FY08. The scenario tells us that this service will not be required when the new process is adopted. We therefore entered zeros in the columns for FY09-14.

Row 131: Contract: ABC Security. ABC will provide its services until the wall modification is completed, which covers the first four months of FY08. At $150K for the full year, four months of service equates to $50K, and we entered this number in the
2008 column. For the remaining years, the ABC cost is zero because the contract will have been terminated.

Rows 132, 133, and 135. These rows contain zeros because these cost elements are implementation costs, not process costs.

Row 134: Software updates from Acme. Beginning 12 months after Acme installs the new equipment, Ft. Swampy will have to purchase annual software upgrades. With the new equipment being installed in June 2008, the requirement for software upgrades will begin in June 2009. The scenario tells us that the FY09 cost will be $3500, and we entered that number in the 2009 column. The scenario did not provide specific information about cost growth, so we used the standard OMA inflation factors from the inflation indices website.

Row 136: Tapes and log books. The scenario tells us that the new system will eliminate the need for these items, so there is no cost in FY09-14. The tapes and log books will be needed only until 1 June when the new system goes into operation, meaning that these supplies would be required for only eight months (October thru May). The $130 entry in the 2008 column represents eight months of the annual cost of $195.

Sub-Sections: Forecasted Gross Savings and Forecasted Net Savings
All the entries in these sections (rows 143-176) are calculations performed by Excel.

Section: Summary of Process Cost
This section has two sub-sections: Total Forecasted Baseline Process Cost (rows 178-182) and Total Forecasted Process Cost after Improvement (rows 184-188). All the entries in these sub-sections are calculations performed by Excel. In situations such as this example, where costs had to be segregated between savings and cost avoidance, these rows provide a check figure to help you ensure that you have entered all the appropriate costs.

Section: Revenue Generation
This section (rows 190-264) was not used because this project is not expected to generate revenue.

Section: Net Financial Benefits
All the entries in this section (rows 266-271) are calculations performed by Excel.
Final Steps: Posting Data to PowerSteering and Attaching Supporting Documentation

After checking the entries and ensuring that the workbook contains sufficient supporting documentation, there are two remaining steps to perform with the workbook.

First, we will enter data in PowerSteering. In PowerSteering we will use the “Select Appropriation Types” functionality (described in Section 6.6) to indicate that all costs are in the Army direct-funded category. We will select the Forecasted Estimate tab in PowerSteering, and then take the “total” values from the following rows in the Excel file and entering them to the appropriate sections of PowerSteering as follows:

- Row 20: Enter in Baseline Process Cost (Cost Avoidance).
- Row 37: Enter in Forecasted Implementation Cost (Cost Avoidance).
- Row 54: Enter in Forecasted Process Cost After Improvement (Cost Avoidance).
- Row 108: Enter in Baseline Process Cost (Savings).
- Row 125: Enter in Forecasted Implementation Cost (Savings).
- Row 142: Enter in Forecasted Process Cost After Improvement (Savings).

Each time we save data in PowerSteering, PowerSteering will compute and display the benefits calculations. We will compare the calculations displayed in PowerSteering with the values in the workbook as a way to double-check our data entry. If the results differ, we probably made an error in entering the data into PowerSteering.

Second, we will save Alarm_Modifications_xxxxxx.xls and attach it to the project file in PowerSteering. This ensures that members of project team will always have access to the costing rationale and supporting documentation and will not be dependent on specific individuals if they are asked to explain the cost estimates at a later date.

Worksheet Title: Financial Benefit Totals ($)

The explanation above shows how to develop a cost estimate, maintain supporting information, and post the required data into PowerSteering. There is, of course, one critical remaining action, and that is to support decision-makers by giving them timely, reliable information upon which to base their decisions.

The Financial Benefit Totals worksheet, which displays results identical to those in PowerSteering, summarizes the financial data that should be factored into the go/no-go decision on the alarm modification project. With a net savings that begins at approximately $1500 per year and grows to approximately $135,000 per year, it would appear that there are sufficient grounds to recommend approval of the project, at least from a financial perspective. The additional financial benefit – the cost avoidance that ranges from $1500 to $2500 per year – is not a significant dollar amount, but it does demonstrate that this project will enable the installation to make better use of the supervisor’s time.
Appendix C. Personnel Requests

Figure C.1: DA Memorandum for Civilians to Request LSS Certification/Skill Code

DEPARTMENT OF THE ARMY
U.S. ARMY MATERIEL COMMAND
1301 CHAPEL ROAD
FORT BELVOIR, VA 22060-5527

5 December 2007

MEMORANDUM FOR Deputy Under Secretary of the Army, Business Transformation, 101
Army Pentagon, Suite 5ISS56, Washington, DC 20310-0101

SUBJECT: Request for Award of LSS Certification and Skill Code (SC)

1. Reference. Memorandum, DACS-ZD, 28 MAR 07, Department of the Army Lean Six Sigma
   (LSS) Master Black Belt, Black Belt and Green Belt Certification Policy and Processing
   Procedures.

2. LSS Belt Candidate Information:
   a) Name: DOE, JOHN M
   b) Belt Level Requested: Black Belt
   c) Organization: Joint Munitions Command
   d) Mailing Address: 1 Rock Island Arsenal, Rock Island, IL 61299
   e) Phone: 309-778-2522 x 113
   f) Grade: GS-13
   g) SSN: 123-45-6789

3. LSS Belt Certification Requirements:
   a) Source of training: (vendor or sponsoring org): JMC
   b) Training end date: 13 May 2007
   c) Training location: Rock Island Arsenal
   d) Final exam date: 13 May 2007
   e) Final exam location: Rock Island, IL
   f) Final exam score: 87
   g) Completed project sequence # from PowerSteering: LD00056

4. Request for Personnel Action:
   LSS BB Certification and Skill Code (SC)

5. Deployment Director Information:
   a) Name: Joe Smith
   b) Organization: US Army Material Command
   c) Mailing Address: 9301 Chapec Road, Fort Belvoir, VA 22060-5527
   d) Phone: 703.555.1212

__________________________  _______________________
Candidate Signature        Deployment Director Signature

DA Memo_Belt_Sample.doc
Figure C.2: DA Form 4187 for Black Belts to Request LSS Certification/Skill Identifier

<table>
<thead>
<tr>
<th>Table Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PERSONNEL ACTION</strong></td>
</tr>
<tr>
<td>For use of this form, see AR 600-8-6 and DA PAM 600-8-21; the proponent agency is OODS/PER</td>
</tr>
<tr>
<td><strong>DATA REQUIRED BY THE PRIVACY ACT OF 1974</strong></td>
</tr>
<tr>
<td><strong>AUTHORIZED:</strong> Title 5, Section 3012; Title 10, USC, E.O. 9397.</td>
</tr>
<tr>
<td><strong>PRINCIPAL PURPOSE:</strong> Used by soldier in accordance with DA PAM 600-8-21 when requesting a personnel action on his/her own behalf (Section II).</td>
</tr>
<tr>
<td><strong>ROUTINE USES:</strong> To initiate the processing of a personnel action being requested by the soldier.</td>
</tr>
<tr>
<td><strong>DISCLOSURE:</strong> Voluntary. Failure to provide social security number may result in a delay or error in processing of the request for personnel action.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. THRU (Include ZIP Code)</th>
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</thead>
<tbody>
<tr>
<td>Deployment Director</td>
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<tr>
<td>Office Address</td>
</tr>
<tr>
<td>City, State, Zip</td>
</tr>
</tbody>
</table>

<table>
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<th>2. TO (Include ZIP Code)</th>
</tr>
</thead>
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<td>Department of the Army</td>
</tr>
<tr>
<td>ATTN: DUSA-BT (LSS-PMO)</td>
</tr>
<tr>
<td>Washington, DC 20310-0101</td>
</tr>
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</table>

<table>
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<tr>
<th>3. FROM (Include ZIP Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT John Doe</td>
</tr>
<tr>
<td>Office Address</td>
</tr>
<tr>
<td>City, State, Zip</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION I - PERSONAL IDENTIFICATION</th>
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<tbody>
<tr>
<td>4. NAME (Last, First, MI)</td>
</tr>
<tr>
<td>Doe, John</td>
</tr>
<tr>
<td>5. GRADE OR RANK</td>
</tr>
<tr>
<td>CPT</td>
</tr>
<tr>
<td>6. SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>SECTION II - DUTY STATUS CHANGE (AR 600-8-6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. The above soldier's duty status is changed from n/a to n/a</td>
</tr>
<tr>
<td>effective hours,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION III - REQUEST FOR PERSONNEL ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. I request the following action: (Check as appropriate)</td>
</tr>
<tr>
<td>Service School (Only)</td>
</tr>
<tr>
<td>ROTC or Reserve Component Duty</td>
</tr>
<tr>
<td>Volunteering For Overseas Service</td>
</tr>
<tr>
<td>Ranger Training</td>
</tr>
<tr>
<td>Reassignment Extreme Family Problems</td>
</tr>
<tr>
<td>Exchange Reassignment (Enlist only)</td>
</tr>
<tr>
<td>Airlift Training</td>
</tr>
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<thead>
<tr>
<th>SECTION IV - REMARKS (Applies to Sections II, III, and V) (Continue on separate sheet)</th>
</tr>
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<tbody>
<tr>
<td>I request certification under the HQDA Loan Six Sigma Certification Policy as an Army Black Belt (Skill Identifier IV). I have completed the following prerequisites:</td>
</tr>
<tr>
<td>a. I completed the Army Black Belt Training Course BB602A, in (Port Swammy, MI) (9 Sep 06 to 15 Dec 06).</td>
</tr>
<tr>
<td>b. I have passed the standard Army LSS Black Belt exam with a passing score. Army course certificate and certificate of passing Army LSS BB exam was presented to Deployment Director.</td>
</tr>
<tr>
<td>c. I have successfully taken one Black Belt DMAIC project to completion (Project Title: Improving Port Swammy HR Review Process, LDD00062). All required documentation is loaded into PowerSteering and the project is listed as complete.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION V - CERTIFICATION/APPROVAL/DISAPPROVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. I certify that the duty status change (Section II) or that the request for personnel action (Section III) contained herein -</td>
</tr>
</tbody>
</table>

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<tr>
<th>X HAS BEEN VERIFIED</th>
<th>RECOMMEND APPROVAL</th>
<th>RECOMMEND DISAPPROVAL</th>
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<table>
<thead>
<tr>
<th>12. COMMANDER/AUTHORIZED REPRESENTATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COL Joe Smith, LSS Deployment Director</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>13. SIGNATURE</th>
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<th>14. DATE (YYYYMMDD)</th>
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<td>20070222</td>
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</table>

DA FORM 4187, JAN 2000 | PREVIOUS EDITIONS ARE OBSOLETE
Figure C.3: DA Form 4187 for Green Belts to Request LSS Certification/Skill Identifier

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<tr>
<th>PERIODICAL ACTION</th>
<th>PERSONNEL ACTION</th>
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<td>AUTHORITY:</td>
<td>Title 6, Section 2012; Title 10, USC, E.O. 6397.</td>
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<tr>
<td>PRINCIPAL PURPOSE:</td>
<td>Used by soldier in accordance with DA PAM 600-1-21 when requesting a personnel action on his/her own behalf (Section III).</td>
</tr>
<tr>
<td>ROUTINE USES:</td>
<td>To initiate the processing of a personnel action being requested by the soldier.</td>
</tr>
<tr>
<td>DISCLOSURE:</td>
<td>Failure to provide social security number may result in a delay or error in processing of the request for personnel action.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. THRU (Include Code)</th>
<th>2. TO (Include Code)</th>
<th>3. FROM (Include Code)</th>
</tr>
</thead>
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<tr>
<td>Deployment Director</td>
<td>Department of the Army</td>
<td>CPT John Doe</td>
</tr>
<tr>
<td>Office Address</td>
<td>ATTN: DUSA-BT (LSS-PMO)</td>
<td>Office Address</td>
</tr>
<tr>
<td>City, State, Zip</td>
<td>101 Army Pentagon, Room 5D556</td>
<td>City, State, Zip</td>
</tr>
<tr>
<td></td>
<td>Washington, DC 20310-0101</td>
<td>Phone number or e-mail address</td>
</tr>
</tbody>
</table>

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<tr>
<td>Ranger Training</td>
</tr>
<tr>
<td>Reassignment Extreme Family Problems</td>
</tr>
<tr>
<td>Airborne Training</td>
</tr>
<tr>
<td>Officer Candidate School</td>
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<tbody>
<tr>
<td>I request certification under the HQDA Lean Six Sigma Certification Policy as an Army Green Belt (Skill Identifier 5X). I have completed the following pre-requirements:</td>
</tr>
<tr>
<td>a. I completed the Army Green Belt Training Course GB602, in (Fort Swammy, MI), (9 Sep 06 to 15 Dec 06).</td>
</tr>
<tr>
<td>b. I have passed the standard Army LSS Green Belt exam with a passing score. Army course certificate and certificate of passing exam was presented to Deploying Director.</td>
</tr>
<tr>
<td>c. I have successfully taken one Green Belt DMAIC project to completion (Project Title: Improving Fort Swammy HR Review Process, LD00062). All required documentation is loaded into PowerSteering (LD00054) and the project is listed as complete.</td>
</tr>
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<tr>
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<td>COL Joe Smith, LSS Deployment Director</td>
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DA FORM 4187, JAN 2006 | PREVIOUS EDITIONS ARE OBSOLETE
**Figure C.4:** DA Form 4187 for Green Belts to Request LSS Certification/Skill Identifier via Support of Black Belt Project

![Image of DA Form 4187](image-url)

**PERSONNEL ACTION**

For use of this form, see AR 600-8-6 and DA PAM 600-8-81; the proponent agency is DDOSPER.

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

| **AUTHORIZED** | Title 5, Section 3012; Title 10, USC, E.O. 9997. |
| **PRINCIPAL PURPOSE:** | Used by soldier in accordance with DA PAM 600-8-81 when requesting a personnel action on his/her own behalf (Section III). |
| **ROUTINE USES:** | To initiate the processing of a personnel action being requested by the soldier. |
| **DISCLOSURE:** | Voluntary. Failure to provide social security number may result in a delay or error in processing of the request for personal action. |

| **1. THRU (Include ZIP Code)** | **2. TO (Include ZIP Code)** | **3. FROM (Include ZIP Code)** |
| Deployment Director | Department of the Army | CPT John Doe |
| Office Address | ATTN: DUSA-BS (LSS-PMO) | Office Address |
| City, State, Zip | 101 Army Pentagon, Room 5D556 | City, State, Zip |
| | Washington, DC 20310-5010 | Phone number or e-mail address |

**SECTION I - PERSONAL IDENTIFICATION**

| **4. NAME (Last, First, M.I.)** | **5. GRADE OR RANK/PMOS/ACO** | **6. SOCIAL SECURITY NUMBER** |
| Doe, John | **OPT.** | 111-11-1111 |

**SECTION II - DUTY STATUS CHANGE (AR 600-8-6)**

7. The above soldier's duty status is changed from:

| From | To |
| n/a | n/a |

<table>
<thead>
<tr>
<th>Effective</th>
<th>Hours</th>
</tr>
</thead>
</table>

**SECTION III - REQUEST FOR PERSONNEL ACTION**

8. I request the following action: (Check as appropriate)

- [ ] Active Duty (End only)
- [ ] Special Forces Training/Assignment
- [ ] Identification Card
- [ ] ROTC or Reserve Component Duty
- [ ] On-the-Job Training (End only)
- [ ] Identification Tags
- [ ] Volunteering For Overseas Service
- [ ] Refusing in Army Personnel Tests
- [ ] Separate Nations
- [ ] Ranger Training
- [ ] Reassignment Mailed Army Couple
- [ ] Leave - Excess/Advance/Outside CONUS
- [ ] Reassignment Extreme Family Problems
- [ ] Change of Name/SSN/DOB
- [ ] Exchange Reassignment (End only)
- [ ] Other (Specify)
- [ ] LSS Certification and Skill Identifier
- [ ] Airborne Training
- [ ] Offsite Candidate School
- [ ] Agift of Pairs with Exceptional Family Members

<table>
<thead>
<tr>
<th>Date (YYYY/MM/DD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20070101</td>
</tr>
</tbody>
</table>

**SECTION IV - REMARKS**

(Applies to Sections II, III, and V) (Continue on separate sheet)

I request certification under the HQDA Lean Six Sigma Certification Program as an Army Green Belt (Skill Identifier IX). I have completed the following prerequisites:

a. I completed the Army Green Belt Training Course OH622, in Port Swepy, MI, 9 Sep 06 to 15 Oct 06.

b. I have passed the standard Army LSS Green Belt exam with a passing score of 85%. Army course certificate and certificate of passing exam was presented to Deployment Director.

c. I have successfully lead sub-tasks from a Black Belt LSS project (Project Title: Improving Port Swepy HR Review Process, LDL00001). All required documentation is entered into PowerSting and the project is listed as complete. Sub-tasks lead are as follows: MSA-Stability analysis, ImR chart, Baseline calculations, cause and effect diagram and matrix, co-facilitator of an R.I.E, co-lead swim lane and VSA maps, built PIK matrix and set up pilot plan, built P and X bar and R charts.

**SECTION V - CERTIFICATION/APPROVAL/DISAPPROVAL**

<table>
<thead>
<tr>
<th>11. STATE THAT THE DUTY STATUS CHANGE (SECTION II) OR THE REQUEST FOR PERSONNEL ACTION (SECTION III) CONTAINED HEREIN:</th>
</tr>
</thead>
<tbody>
<tr>
<td>X HAS BEEN VERIFIED</td>
</tr>
</tbody>
</table>

| 12. COMMANDER/AUTHORIZED REPRESENTATIVE | 13. SIGNATURE | 14. DATE (YYYY/MM/DD) |
| COL Joe Smith, LSS Deployment Director | 20070222 | |
**Appendix D. LSS Project Completion Checklist**

**Belt Name:** ____________________
**Project Name:** ____________________
**PowerSteering ID:** ________________

<table>
<thead>
<tr>
<th>Checklist Item</th>
<th>Accept Criteria</th>
<th>Reject Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the team prepared all the essential documentation for the improved process, including revised/new Standard Operating Procedures (SOP’s), a training plan and a process control system?</td>
<td>PowerSteering Control Phase files contain the updated process maps, SOPs, Training Plan, and Control Plan</td>
<td>Documents are incomplete and/or not loaded into PowerSteering.</td>
</tr>
<tr>
<td>Has the necessary training for process owners/operators been performed?</td>
<td>Training has been completed for the Process Owner and other process participants. Evidence of training, including materials, posted in PowerSteering</td>
<td>Training has been planned but not delivered or no documentation exists in PowerSteering</td>
</tr>
<tr>
<td>Have the right measures been selected, and documented as part of the Process Control System, to monitor performance of the process and the continued effectiveness of the solution? Has the metrics briefing plan/schedule been documented? Who owns the measures? Has the Process Owner’s job description been updated to reflect the new responsibilities? What happens if minimum performance is not achieved?</td>
<td>Control plan containing the required elements loaded into PowerSteering. Briefing held with responsible personnel for metrics monitoring and escalation. Job descriptions modified as necessary.</td>
<td>Ongoing monitoring roles and responsibilities are not assigned and/or not communicated. Belt is not a process owner yet is responsible for ongoing process maintenance. No escalation procedures defined. Documents not posted in PowerSteering.</td>
</tr>
<tr>
<td>Has the solution been effectively implemented? Has the team compiled results data confirming that the solution has achieved the goals defined in the Project Charter?</td>
<td>The solution has been implemented and the process has met desired targets. Improvement data is loaded into PowerSteering.</td>
<td>The solution has not been implemented or the results cannot be measured. The new process does not meet the desired targets. Documentation does not exist in PowerSteering.</td>
</tr>
<tr>
<td>Has the Benefits Realization Schedule been verified by the Financial Representative?</td>
<td>Financial Representative has reviewed the financial benefits and signed off on the Control</td>
<td>Resource Manager has not approved the financial data. the results. The Resource</td>
</tr>
<tr>
<td>Checklist Item</td>
<td>Accept Criteria</td>
<td>Reject Criteria</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tollgate in PowerSteering. Financial metrics filled out and supporting documentation loaded into software.</td>
<td>Manager did not sign off on the Control Phase Tollgate. Documentation not loaded into PowerSteering</td>
<td></td>
</tr>
<tr>
<td>Has the process been transitioned to the Process Owner, to take over responsibility for managing continuing operations? Do they concur with the control plan?</td>
<td>The Control Plan is loaded into PowerSteering and signed off on by the Process Owner. Roles and responsibilities are defined and documented.</td>
<td>The Belt is expected to maintain the project after it has closed. The Transition and Control plans are not complete and/or not loaded into PowerSteering.</td>
</tr>
<tr>
<td>Has a final Storyboard documenting the project work been developed?</td>
<td>A Storyboard detailing the full project has been completed and uploaded into PowerSteering.</td>
<td>The project Storyboard is incomplete and/or not loaded into PowerSteering.</td>
</tr>
<tr>
<td>Has the team forwarded other issues/opportunities, which were not able to be addressed, to senior management?</td>
<td>Issues/Opportunities have been captured and logged in PowerSteering and communicated to Senior Management through the Tollgate Review or other formal channels such as the EQC.</td>
<td>Issues/Opportunities have not been captured and loaded into PowerSteering. Only informal communication has taken place.</td>
</tr>
<tr>
<td>Have “lessons learned” been captured?</td>
<td>Lessons Learned have been captured as part of the Control Tollgate and communicated per the communication plan.</td>
<td>Lessons Learned have not been captured in the Tollgate review or PowerSteering.</td>
</tr>
<tr>
<td>Have replication opportunities been identified and communicated?</td>
<td>Replication opportunities have been noted in PowerSteering documentation and rolled up as part of the best practice process to the EQC.</td>
<td>Replication analysis and recommendations are incomplete and/or not communicated. Opportunities are not logged in PowerSteering.</td>
</tr>
<tr>
<td>Has the hard work and successful efforts of our team been celebrated?</td>
<td>The team has been recognized by Senior Leadership for their contributions to the project. The names of participants are documented in PowerSteering as part of the Project Charter.</td>
<td>The team has not been acknowledged. The names of participants are not documented in the Project Charter.</td>
</tr>
</tbody>
</table>

Overall Comments
<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Score</th>
<th>Score</th>
<th>Comments (Improvement Notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Project focus block is clearly defined and the project title includes an improvement action word and relates to a process.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>2 Problem statement block</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>3 The “What” identifies the location and area which is experiencing the process pain.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>4 The “Where” should be related to the SIPOC Outputs metrics such as Quality, Cycle time, Cost, Safety, EMOC, etc. and preferably balanced and tailored for easy reference.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>5 The “Who” should describe the amount of time or number of transactions the process has been poorly performing.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>6 The “When” should use the SIPOC Name matrix against the “What” section and be included with real historical data or place holders than bulleted for easy reference.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>7 The goal should state the level of reduction as a percentage for each of the matrix items in the problem statement and include a “by which” than bulleted for easy reference.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>8 SIPOC should state the start and end of the process based on the SIPOC, actualize projects, transactions and customers to be included in the Out-of-Scope and state what item included in the In-Scope. The SIPOC should be available as reference in the time of charter assessment is ongoing.</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>9 Project Plan block should contain milestone dates for ultimate and commitment and estimated dates for Measure, Analyze and Improve</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>10 Team Selection block</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
</tr>
</tbody>
</table>

**Optional**

Document should be signed by Sponsor, DC and Financial Rep. before being submitted to Charter Score (10 = Highest, 0 = Lowest) | 0 | 0 | 0 | Overall Project Charter Assessment Here For Score and Report W!
Appendix F. LSS GB Certification through BB Project Support

In accordance with Section 4.2.1, Green Belt candidates can receive LSS certification through their support of a Black Belt Project. In order to do so, the Green Belt candidate must demonstrate tool knowledge and appropriate usage in each of the five phases of the DMAIC project. These tools that the Green Belt “authors” must be posted in each phase of the DMAIC project within PowerSteering.

The screen shots below show how the candidate’s “authored” tools are to be posted in PowerSteering and how the candidate should complete the DA Form 4187 (or DA Memorandum) to request certification via this method.

Figure F.1: Green Belt Deliverable Authoring
Figure F.2: Green Belt Authoring Example

Note the deliverables in PS that GB authors

Figure F.3: DA Form 4187 Example

◆ Example 4187

I request certification under the MOA Lean Six Sigma Certification Policy as an Army Green Belt. I have completed the following prerequisites:

a. I completed the Army Green Belt Training, Course GB602, at Fort Benning, GA, 11 Sep 06 to 15 Dec 06.

b. I have passed the standard Army LSS Green Belt exam with a passing score of 85%. Army Course Certificate or certificate of passing exam was presented to Deployment Director.

c. I have successfully lead sub-tasks from a Black Belt LSS project (Title - Improving Ft. Irwin HR Review Process) to completion and entered it into PowerSizing. PowerSizing Sub-Tasks lead are as follows: MSA-Statistical analysis, IR chart, Baseline calculations, cause and effect, co-facilitator of an RBE, co-lead own lane and YSA reports, built Pugh matrix and set up pilot plan, built F and X bar R charts.

* The tasks listed are not literal on every project. This is just an example of the tasks performed through out the 5 phases of the methodology. The key message is to list sub-tasks on the 4187.
Appendix G. LSS Deployment Maturity Metrics (Spider Charts)

Below are the questions by which commands determine their score on each of the parameters of the “spider” charts discussed in section 2.2. These questions will be modified when the new maturity model and deployment metrics discussed in sections 2.3 and 2.4 are adopted.

The score within each performance metric is based upon the falling scale:

0 – No evidence to support that the behavior/result is being exhibited.
1 – Limited evidence to support that the behavior/result is being exhibited.
2 – Evidence exists to support that the behavior/result is being exhibited, but the performance is inconsistent, at best.
3 – The behavior/result is being exhibited, but sustainability has not been demonstrated.
4 – The behavior/result is being exhibited and steps toward sustainability have been demonstrated.
5 – The behavior/result/process is embedded into the fundamental fabric of the organization (business as usual) and is highly likely to be sustainable.

NOTE: a score for each behavior/result is not required. Only those areas for which evidence exists to support a score should be evaluated.

<table>
<thead>
<tr>
<th>Command Name:</th>
<th>Achieving the Results</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Achieving the Results</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall deployment financial results are meeting expectations and plan</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Projects are achieving the expected financial results</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Projects are being completed in the expected cycle time</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Black Belts are generating the expected results</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Green Belts are generating the expected results</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>The client becomes self sufficient</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td></td>
<td><strong>2.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command Name:</th>
<th>Adherence to Best Practice</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adherence to Best Practice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A clearly articulated and motivational ‘Burning Platform’” has been articulated and communicated to all individuals</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Leadership is actively engaged and leading</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Business leaders own the resources and are accountable for the results</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>The senior deployment leader is actively engaged and reports to the most senior leadership</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>A plan to achieve ‘critical mass’ (i.e. 1% Black Belts, etc.) is in place, funded and being executed</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>The ‘right’ people are being chosen as Black Belts</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
The most important projects to the organization are being selected through a fact-based, objective process.

The number of projects being launched is commensurate with the resources available to complete the projects.

The financial savings generated from the projects are validated in a consistent rigorous way which establishes belief by the organization in their validity.

<table>
<thead>
<tr>
<th>Effective Program Management of Deployment</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployment decisions are being made, and modified as necessary, in a rigorous and expedient way</td>
<td>4</td>
</tr>
<tr>
<td>Deployment decisions, and their modifications, are being effectively communicated and implemented</td>
<td>4</td>
</tr>
<tr>
<td>Risks to deployment success are actively identified and mitigated</td>
<td>2</td>
</tr>
<tr>
<td>A clear and detailed deployment plan has been developed and communicated, and is being actively managed</td>
<td>3</td>
</tr>
<tr>
<td>Deployment progress against objectives is being clearly managed</td>
<td>2</td>
</tr>
<tr>
<td>All key stakeholders in the deployment have been identified and an active communication plan has been developed and implemented</td>
<td>3</td>
</tr>
<tr>
<td>The deployment team’s work responsibilities and products are clear and their performance is being evaluated and corrective action is being taken, as necessary</td>
<td>1</td>
</tr>
<tr>
<td>Deployment Champion performance is being reviewed and managed</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deployment Strategy</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key stakeholders (senior executives and leadership) personal performance is driven by LSS metrics and performance against these metrics is a primary driver of their performance.</td>
<td>1</td>
</tr>
<tr>
<td>Deployment objectives are clear and being updated as appropriate to reflect current thinking</td>
<td>2</td>
</tr>
<tr>
<td>A clearly articulated training plan has been created which will achieve the deployment objectives and is being executed</td>
<td>4</td>
</tr>
<tr>
<td>LSS roles &amp; responsibilities are clear and being followed</td>
<td>2</td>
</tr>
<tr>
<td>A deployment infrastructure, sufficient to meet the deployment objectives, has been articulated and implemented</td>
<td>1</td>
</tr>
<tr>
<td>A clear plan to achieve deployment autonomy has been articulated and implemented</td>
<td>4</td>
</tr>
<tr>
<td>All ‘corporate initiatives’, including LSS, which are competing for scarce resources, have been rationalized such that for those that remain, their connection with each other is clear and there is no competition for resources</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
</tr>
<tr>
<td>Communication and Change Management</td>
</tr>
<tr>
<td>------------------------------------</td>
</tr>
<tr>
<td><em>All employees clearly understand what is LSS, it’s relation to other initiatives and their role in LSS</em></td>
</tr>
<tr>
<td><em>All employees know how to get more information, should they want it, and it is easily obtained</em></td>
</tr>
<tr>
<td><strong>Median</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Candidate Selection and Retention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Certification requirements are standard and clear to all employees and certification is happening in a consistent way</em></td>
<td>4</td>
</tr>
<tr>
<td><em>All LSS role descriptions, compensation strategies, career paths, recognition strategies and reporting relationships are clear and communicated</em></td>
<td>2</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td><strong>3.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>All projects are audited in a consistent manner, which will ensure confidence in the savings generated</em></td>
<td>4</td>
</tr>
<tr>
<td><em>Application of financial benefit categories to each project is consistent and standard</em></td>
<td>4</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td><strong>4.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Realization &amp; Training</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The ‘right’ projects are being chosen and executed, i.e. linked to organization strategy and have the full by-in of the participating organizations.</em></td>
<td>4</td>
</tr>
<tr>
<td><em>Black Belt and Green Belt students are positioned to be successful from the beginning</em></td>
<td>3</td>
</tr>
<tr>
<td><em>The project hopper, for all organizations, is consistently full with high-value projects</em></td>
<td>4</td>
</tr>
<tr>
<td><em>An effective use of Kaizen and ‘Quick Hits’ is being utilized to drive momentum and ROI</em></td>
<td>3</td>
</tr>
<tr>
<td><em>The projects are being executed in a quality and consistent manner</em></td>
<td>3</td>
</tr>
<tr>
<td><em>Project Sponsors are engaged and effective</em></td>
<td>3</td>
</tr>
<tr>
<td><em>Project teams are effectively staffed and participation from the team members is adequate to insure project success</em></td>
<td>2</td>
</tr>
<tr>
<td><em>Cross-functional/organizational projects are being actively identified and prioritized</em></td>
<td>3</td>
</tr>
<tr>
<td><em>Process improvements on similar processes in different organizations are being coordinated</em></td>
<td>4</td>
</tr>
<tr>
<td><em>BB’s and GB’s are effectively sharing best practices</em></td>
<td>3</td>
</tr>
<tr>
<td><em>DC’s are effectively sharing best practices</em></td>
<td>3</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td><strong>3.0</strong></td>
</tr>
</tbody>
</table>
## Training Coordination and Support

*All training logistics, i.e. student sign-up, materials coordination, training execution, are being executed effectively*

*A process to insure curriculum quality and it’s reflection of current deployment thinking, ex. Tollgate templates being updated and financial categories, is in place and effective*

*The broader organization has ready access to a current training schedule, knows where to find it and knows how to sign-up*

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All training logistics, i.e. student sign-up, materials coordination, training execution, are being executed effectively</td>
</tr>
<tr>
<td>A process to insure curriculum quality and it’s reflection of current deployment thinking, ex. Tollgate templates being updated and financial categories, is in place and effective</td>
</tr>
<tr>
<td>The broader organization has ready access to a current training schedule, knows where to find it and knows how to sign-up</td>
</tr>
</tbody>
</table>

**Median** 4.0

## Project Management and LSS Tracking

*Senior executives and key stakeholders (i.e., Deployment Champions, Project Sponsors) have ready visibility to deployment progress and status*

*Black belts and Green belts have access to the appropriate software and hardware tools necessary for their success*

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior executives and key stakeholders (i.e., Deployment Champions, Project Sponsors) have ready visibility to deployment progress and status</td>
</tr>
<tr>
<td>Black belts and Green belts have access to the appropriate software and hardware tools necessary for their success</td>
</tr>
</tbody>
</table>

**Median** 2.5
## Appendix H. LSS Training 105 Day Planning Sequence

<table>
<thead>
<tr>
<th>LSS Training (BB/GB) - Task Countdown - Deployment Director &amp; PMO Tasks</th>
<th>Recommended Lead Time (Days) before Class Start</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning Milestones for Preparing Each Class Start Date</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sponsor DD selects attendees and schedules PSW</strong></td>
<td>105</td>
</tr>
<tr>
<td><strong>DD and Instructors send PSW prework to attendees</strong></td>
<td>84</td>
</tr>
<tr>
<td><strong>Last date to conduct PSW to feed PISWs for specific BB/GB Workshop</strong></td>
<td>63</td>
</tr>
<tr>
<td><strong>Sponsor Organization’s DD Decision Point (Sufficient Opportunities to Achieve Org Goals? If no, DDs schedule more PSWs. Sufficient BBs/GBs to execute projects? If no, DDs identify candidates for BB/GB classes) NLT</strong></td>
<td>56</td>
</tr>
<tr>
<td><strong>Conduct PISW to feed BB/GB Workshop NLT</strong></td>
<td>49</td>
</tr>
<tr>
<td><strong>Sponsor Organization’s DD Decision Point (BBs/GBs Approved to Launch BB/GB Workshops?) NLT</strong></td>
<td>42</td>
</tr>
<tr>
<td><strong>Sponsor DD selects LSS candidates (BBs or GBs) and assigns names and info to specific class roster; sends list of names to LSS PMO</strong></td>
<td>42</td>
</tr>
<tr>
<td><strong>PMO Decision Point Notifies Other Organizations DDs/DAs of Openings Remaining in Classes (if &lt; 30 confirmed)</strong></td>
<td>42</td>
</tr>
<tr>
<td><strong>Sponsor DD and LSS PMO confirm training location, address for shipments, number of students registered, and DD responsibilities (eg. SIM Kits, and printing)</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>Commands notifies Public Affairs of class kickoff and graduation dates</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>Deployment Director/Project Sponsor ensures laptop/software available for candidate</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>DD/Project Sponsor assigns Project (entered in Power Steering, validated project, with charter) to LSS candidate (BB/GB)</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>PMO Decision Point Notifies Office of the Secretary of Defense and the Joint Staff of Openings Remaining in Classes (if &lt; 30 confirmed)</strong></td>
<td>28</td>
</tr>
<tr>
<td><strong>DD/Provost (site coordinator) schedules webinar for PowerSteering training</strong></td>
<td>25</td>
</tr>
<tr>
<td><strong>DD Decision Point: All DDs send CONFIRMED list of LSS candidates for course to PMO</strong></td>
<td>24</td>
</tr>
<tr>
<td><strong>PMO Decision Point: Cancel training/reschedule resources if &lt; 12 students confirmed</strong></td>
<td>21</td>
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<tr>
<td><strong>Provost orders reference books for the course.</strong></td>
<td>21</td>
</tr>
<tr>
<td><strong>DD communicates to candidate confirmation of acceptance in course.</strong></td>
<td>21</td>
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<tr>
<td>Event</td>
<td>Days</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>Commanding Officer scheduled to greet LSS candidates</td>
<td>21</td>
</tr>
<tr>
<td>Sponsoring command POC sends LOI including prework to LSS candidates</td>
<td>14</td>
</tr>
<tr>
<td>(BBs/GBs)</td>
<td></td>
</tr>
<tr>
<td>LSS candidates make travel arrangements to class</td>
<td>14</td>
</tr>
<tr>
<td>LSS candidates (BB/GB) gets laptop with administrative rights for</td>
<td>14</td>
</tr>
<tr>
<td>software loading</td>
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<tr>
<td>DD/site coordinator submits print request for binders</td>
<td>14</td>
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<tr>
<td>LSS candidate receives draft Project Charter from Project Sponsor</td>
<td>12</td>
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<tr>
<td>DD visits or calls site coordinator to discuss class readiness</td>
<td>7</td>
</tr>
<tr>
<td>Provost ensures delivery of reference books to the training location</td>
<td>6</td>
</tr>
<tr>
<td>PowerSteering Admin delivers webinar training</td>
<td>6</td>
</tr>
<tr>
<td>DD/site coordinator sends reminder e-mail and phone call to speakers</td>
<td>6</td>
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<tr>
<td>for kick-off</td>
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<tr>
<td>DD/site coordinator delivers printed binders to the training location</td>
<td>6</td>
</tr>
<tr>
<td>LSS candidates complete LEAN SIX SIGMA prework for week 1 (12-20</td>
<td>5</td>
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<tr>
<td>hours)</td>
<td></td>
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<tr>
<td>Commanding Officer with DD approve start of LEAN SIX SIGMA project</td>
<td>5</td>
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<tr>
<td>work</td>
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<tr>
<td>Date to Kick off Class</td>
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<tr>
<td>Command POC sends LSS Provost the class roster for students starting</td>
<td>-2</td>
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<tr>
<td>course</td>
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<tr>
<td>Sponsoring Command POC sends week 2 LOI for DA Sponsored Classes</td>
<td>-14</td>
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<tr>
<td>LSS PMO Order GB graduation Certificates</td>
<td>-14</td>
</tr>
<tr>
<td>LSS PMO Ship GB graduation certificates</td>
<td>-23</td>
</tr>
<tr>
<td>GB Students graduate (date varies)</td>
<td>-26</td>
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<tr>
<td>Sponsoring Command POC sends week 3 LOI Sponsored Classes (BB only)</td>
<td>-42</td>
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<tr>
<td>Command POC sends LSS Provost the class roster for students completing</td>
<td>-63</td>
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<tr>
<td>course</td>
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<tr>
<td>Sponsoring Command POC sends week 4 LOI Sponsored Classes</td>
<td>-70</td>
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<tr>
<td>LSS PMO Order BB graduation Certificates</td>
<td>-70</td>
</tr>
<tr>
<td>LSS PMO Ship BB graduation certificates</td>
<td>-77</td>
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<tr>
<td>BB Students graduate (date varies)</td>
<td>-81</td>
</tr>
<tr>
<td>Instructors send BB final exams and evaluations to LSS PMO</td>
<td>-86</td>
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</tbody>
</table>

Execute belt workshops

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## Appendix I. Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AAA</td>
<td>Army Audit Agency</td>
</tr>
<tr>
<td>AKO</td>
<td>Army Knowledge On Line</td>
</tr>
<tr>
<td>AMCOS</td>
<td>Army Military Civilian Cost System</td>
</tr>
<tr>
<td>ARNG</td>
<td>Army National Guard</td>
</tr>
<tr>
<td>ATRRS</td>
<td>Army Training Requirements &amp; Resources System</td>
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<tr>
<td>BB</td>
<td>Black Belt</td>
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<tr>
<td>BT</td>
<td>Business Transformation</td>
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<tr>
<td>C&amp;P</td>
<td>Cost and Performance</td>
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<td>CMF</td>
<td>Career Management Field</td>
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<tr>
<td>CPP</td>
<td>Cost and Performance Portal</td>
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<tr>
<td>DA</td>
<td>Deployment Advisor</td>
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<tr>
<td>DD</td>
<td>Deployment Director</td>
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<tr>
<td>DMAIC</td>
<td>Define, Measure, Analyze, Improve and Control</td>
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<td>DRU</td>
<td>Direct Reporting Units</td>
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<tr>
<td>DUSA/BT</td>
<td>Deputy Under Secretary for the Army – Business Transformation</td>
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<td>EL</td>
<td>Executive Leadership Workshop</td>
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<td>FMC</td>
<td>Financial Management and Comptroller</td>
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<td>FORSCOM</td>
<td>Army Forces Command</td>
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<tr>
<td>GB</td>
<td>Green Belt</td>
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<td>HQDA</td>
<td>Headquarters, Department of the Army</td>
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<tr>
<td>LSS</td>
<td>Lean Six Sigma</td>
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<tr>
<td>MBB</td>
<td>Master Black Belt</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>OCAR</td>
<td>Office of the Chief of Army Reserve</td>
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<tr>
<td>OCPA</td>
<td>Office of the Chief of Public Affairs</td>
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<tr>
<td>OER</td>
<td>Officer Evaluation Reports</td>
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<td>OMB</td>
<td>Office of Management and Budget</td>
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<tr>
<td>PAO</td>
<td>Public Affairs Office</td>
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<td>PISW</td>
<td>Project Identification and Selection Workshops</td>
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<td>PM</td>
<td>Program Manager</td>
</tr>
<tr>
<td>PMO</td>
<td>Program Management Office</td>
</tr>
<tr>
<td>POI</td>
<td>Program of Instruction</td>
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<tr>
<td>POM</td>
<td>Program Objective Memorandum</td>
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<td>PS</td>
<td>Power Steering</td>
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<td>PSW</td>
<td>Project Sponsor Workshop</td>
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<td>RIE</td>
<td>Rapid Improvement Events</td>
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<td>ROM</td>
<td>Rough Order of Magnitude</td>
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<tr>
<td>SME</td>
<td>Subject Matter Expert</td>
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<td>SOP</td>
<td>Standard Operating Procedure</td>
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