

ACCELERATING LEAN SIX SIGMA RESULTS

*How to Achieve
Improvement Excellence™
in the New Economy*

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Accelerator #2: Robust Deployment Planning

This accelerator identifies the major themes of improvement that are required to meet or exceed the business plan. It also involves a formal process for stepping down the major improvement themes into specific project and improvement opportunities. In our deployments, we have developed several templates to guide our clients through this process. Although these will be covered in greater detail, we will introduce you to them now:

- *Macro Charter*—A template used to collect and identify potential project information such as a description of a problem, probable root causes, cost of quality or waste, proposed project name, project objectives, improvement goals, benefits, and deliverables.
- *Project selection*—This template allows executives to evaluate projects against each other relative to business plan contribution. Projects are scored and ranked against attributes such as cost reduction, growth, level of resources, time, availability of data, capital investment, etc. The object is to remove subjectivity or executive preference, and instead, focus the organization's limited resources on critical projects that will take the least amount of effort and create the greatest impact.
- *Project or resource alignment*—This simple template evaluates potential participant resources against a variety of required skill sets and direct experiences, facilitates in the identification and selection of team leaders and team participants, and helps to objectively align people with projects.
- *Team assignment*—Another objective within deployment planning is to spread and develop critical mass as much as possible. We exercise the one-resource, one-team rule that forces a deeper development of bench strength. When everything needs the involvement of a handful of people in the organization, something is definitely wrong.

- *Project charters*—This is the team’s reference document for their specific project. Project charters define a specific team leader and team, executive sponsor, and the project title. Project charters also include a crisp problem statement, probable root causes (clue data), project objectives, scope, boundaries, performance metrics, current baseline performance and cost of poor quality (COPQ) data, improvement goals, quantified benefits, expected deliverables, and a rough timetable for the project. Project charters are living documents that continue to evolve and target in on more specific opportunities as the team works its way through the DMAIC methodology.
- *Micro Charters*—A template used to facilitate a uniform process for identifying, assigning, completing, and summarizing Kaizen or Quick Strike improvements.

Figure 5.1 provides an overview of deployment planning relative to the other Lean Six Sigma accelerators. In Chapter 4 we discussed policy deployment—a formal practice used in strategic planning and in managing complex projects or initiatives with many components, each of which requires alignment, execution, measurement, and feedback for the plan. Policy deployment has been accomplished in two ways:

1. Policy deployment is a formal planning process that enables alignment between the strategic plan, the operating plan, and medium-term, short-term, and daily business activities. Policy deployment also incorporates execution plans, measurement, and feedback for all plans at all levels of planning. Policy deployment is effective in aligning key business process activities and other general business activities of the enterprise.
2. Policy deployment is a formal planning process that enables alignment between the strategic plan, the operating plan, strategic improvement initiatives, and daily improvement initiatives.

Although both can be handled via formal policy deployment practices, it is within the second that we have experienced a high level of administrative tinkering to keep everything aligned. The improvement activities under the umbrella of business excellence (e.g., Kaizen, Lean, Six Sigma, enabling InfoTech, etc.) are much more dynamic than the well-defined key business processes, operating plans, or strategic plans. Often, these improvement activities are launched or shifted around in response to critical customer needs or complaints and emerging global market opportunities. If an organization attempts to align every major Lean Six Sigma project and every localized Kaizen or Quick Strike activity, their improvement initiative will soon be replaced by the administrative requirements of policy deployment. Common sense tells us that all of these improvement methodologies require balance and mental awareness. Some 12 to 15 years ago, many organizations dabbled with a popular process for evaluating proposed new product features and functionality called *quality function deployment* (QFD). Followed blindly, the objective of improving product development was replaced with the tedious analysis and maintenance of QFD matrices, which actually

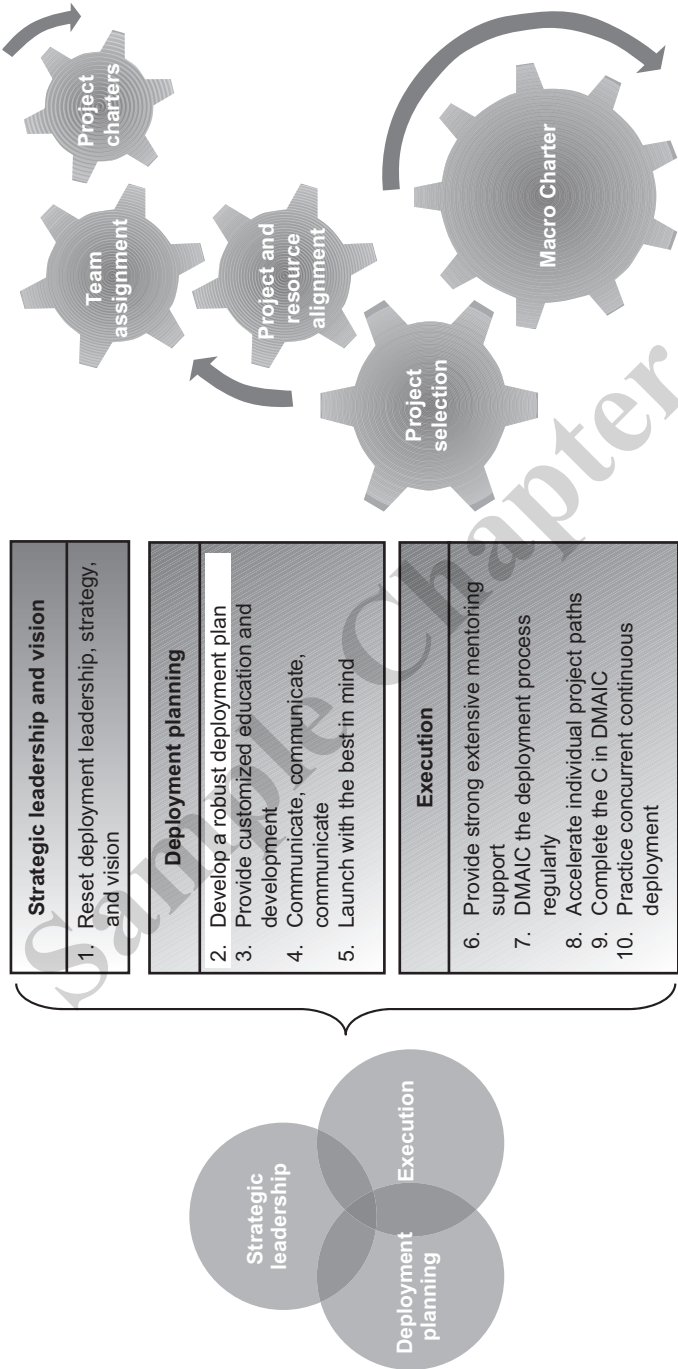


Figure 5.1 Elements of deployment planning.

made the product development cycle worse. If an organization spends more time on planning the improvement than they spend improving, there is a fundamental problem with their deployment process. When Lean Six Sigma becomes overshadowed by the training, planning, management, and measurement processes inherent within Lean Six Sigma, it is time to stop the process. For the specific improvement initiatives identified in a Lean Six Sigma deployment, there is a simplified version of policy deployment called Macro Charter planning, developed as an integral part of our Scalable Lean Six Sigma™ model.

Macro Charter Planning

One of the most frequent mistakes organizations make in a Lean Six Sigma deployment is the failure to define, scope out, and charter projects at a level of detail where they are legitimately *doable* for the organization and *assignable* to an improvement team. As organizations work through their business diagnostic and policy deployment efforts, they begin to develop improvement opportunities at a theme or boil-the-ocean level of detail. Some examples of this include improving the customer experience, improving new product development, reducing warranty and returns, or improving sourcing quality. When organizations assign improvement projects at this level of detail, teams flounder with an assignment that is too ambitious, too ambiguous, and effectively impossible. The result is an unsuccessful project and team experience. Taking this a step further, when teams and people experience these outcomes, the organization loses their commitment and interest because they tried Lean Six Sigma and it did not work. People not only internalize this bad experience, but they share it with others in the organization. In the examples cited above, there could be 20 to 50 separate targeted improvement projects to move these performance needles in the right direction. This is related to the core competency of Improvement Excellence™. The organization is anxious to achieve improvements as soon as possible, but they fail to take the time to define, scope out, and characterize projects with data and facts. In the process, they fail to set up the organization and improvement teams for success.

The Macro Charter

The Macro Charter (see Figures 5. 2, 5.3, and 5.4) are planning templates that logically break down the ambiguous inputs and improvement opportunities from the business diagnostic and higher-level policy deployment activities.

As we stated previously, the business diagnostic results in a significant amount of attribute data (e.g., perceptions, observations, intuitive inputs from structured interviews) and variables data (e.g., standard financial reports, daily and monthly performance reports, etc.). This is accomplished by preliminary analysis in each of the fuzzy areas to further refine more specific opportunities. The objective is to shake out the 80 percent of the problems and the corresponding 20 percent of

Business diagnostic summary

Business unit	Primary functional area	Problem discussion summary	Effect on business	Probable root causes	Key business processes affected
Consumer products	Sales & operations planning (focus PURELY on demand forecasting)	Low forecast accuracy leading to premium freight, inventory, OTD and customer service issues; Europe 70% of sales — can better manage variation than us with 30% of orders with wider variation; don't access sell-through info, access sell-to info to dealers; don't know sell-through to ultimate customers (Media Market in Europe, like xxxxx); not getting (any or reliable) sales forecasts from regions; not a priority for the sales group, not measured for performance; handle everything the same, proliferation of products and SKUs; sales does not recognize problems — Top \$ forecast is accurate; constant changes throughout month especially last week	More of a Pareto relationship in Europe than US with lower volumes; priority, lack of process (evolving); frequency of review; dropping in requirements without impact on whole; revenue-driven; way too much manual intervention	Forecast, master schedule, MRP but can't handle multi-warehouse; SAP process will be automated by April; currently analyzing product data to clarify root causes, where to focus to get largest, quickest, improvement, etc.	Same
Aerospace products	Quality	Warranty and nonwarranty returns are growing significantly; some returns have been in system for as long as 268 days; many "no problem found" returns — send back to customer and fails again; rev updates not getting done; customers are unhappy because we are not turning these around fast enough; customers applying their own billing adjustments causing waste in invoicing and collections; nonwarranty returns in queue represent \$8.2m in incremental revenue	Lost revenue opportunities, customer complaints, potential catastrophe at customer, excessive costs of onsite repair, airframe costs, expedited freight, disruptions, etc. when products fail and customer has no spares	Warranty and nonwarranty turnaround not a priority, sales talks customers into buying more new products, giving deep concessions when there is a warranty problem, probably giving away new products; product documentation weak on rev level change dates, difficult to tell what configuration customer purchased, may have sat in warehouse for 6 months before purchase	Sales, warehouse, quality, customer service, finance (returns and billing processes)
Consumer products	Operations	Poor on time delivery; sales sells and the complaining about OTD and availability of stock, threatening to cancel orders; don't order enough inventory, vendor quality issues, designs failing in field; shipping department takes too long lunches and too many breaks	Losing market share, one of our largest retailers threatening to throw us out; lots of expediting, crisis meetings, running around, nobody really knows why, just fighting flames, dealing with same problems over and over	Consumer market moves fast, customers will buy competitor's product if ours not available; China manufacturers and suppliers need to be more flexible, not responding fast enough; wrong metrics — inventory, costs, efficiency and utilization can be OK but have terrible OTD	S&OP, order entry, supply chain

Figure 5.2 Macro Charter, Tab 1.

root causes. Figure 5.2 illustrates that improving sourcing quality can be broken down into six separate projects, segmented by specific vendors and groups of products with the highest defect or field reliability failures. At the risk of challenging conventional quality philosophies, organizations do not need to deal with every sourcing quality issue to make a big improvement hit. In effect, the Macro Charter promotes the notion of knocking down the tallest poles in the Pareto chart and then moving on to additional improvements. This scoping, breaking down, and characterization of obscure and fuzzy improvement activities is conducted from left to right across the template through a process called *funneling* or *chunking*. This scoping is also conducted from top to bottom as larger opportunities are broken down to multiple specific projects. Finally, scoping is conducted by the interpretation of preliminary clue data and facts, where multiple projects may either be consolidated or further segmented into more specific improvement projects. These projects may be further refined after they are assigned to improvement teams that throw the lower Pareto pole project segments back into the hopper for a future effort by the existing or new team. These initial Macro Charter activities usually result in more projects than an organization has the capacity to launch all at once. The executive core team regulates the level and scope of launched improvement initiatives based on organizational capacity and resource constraints. The Macro Charter rules prevent Lean Six Sigma from initiating activities for activities' sake and taking on an ineffective life of its own. Over time, the Macro Charter becomes the Lean Six Sigma project hopper of queued up, scoped, chartered, and assignable improvement projects. Maintenance of the Macro Charter is the responsibility of the core executive team. The Macro Charter template includes the following components:

Tab 1—Business Diagnostic and Policy Deployment Inputs

- Business unit
- Primary functional area
- Problem discussion summary
- Effect on business
- Probable root causes
- Key business processes affected

At this level of the Macro Charter (see Figure 5.2) there are many inputs, observations, and usually an abundance of conflicting data. Further fact-finding and analysis is required to separate the wheat from the chaff, and funnel or chunk out specific projects with specific objectives, improvement goals, and deliverables.

Tab 2—Definition and Scoping of Specific Projects

- Problem statement
- Project name
- Project objectives and scope

- Key performance metrics
- Baseline performance
- Improvement goal
- Benefits statement
- Quantified benefits
- Project deliverables
- Barriers to success

At this level of the Macro Charter (see Figure 5.3) there is much analysis and deep mining of data occurring in the background. The result of this deep-core drilling is the ability to translate world hunger projects into specific, well-defined *doable* projects. For example, a single problem discussion summary in Figure 5.2 (sales and operations planning) has been separated into four specific but inter-related improvement projects in Figure 5.3 (sales and operations planning improvement, customer rationalization, product rationalization, and premium freight reduction). In addition, there is substantial detail determined prior to handing these projects off to an improvement team. It is typical for the initial business diagnostic to result in 30 to 40 or more potential specific improvement project opportunities. If Quick Strike or containment opportunities are identified during the business diagnostic, they need not go through this funneling activity. These Quick Strike opportunities are reviewed with management as they are uncovered, and many short-term containment or improvement actions are made on the fly. The Macro Charter methodology allows executives to step back and objectively synthesize the results of the business diagnostic with the identification of specific improvement opportunities. This process also provides a rare opportunity for executives to step out of their daily routines and view their organization from a different perspective. Collaboration and constructive discussions on the identification and prioritization of improvement opportunities clarifies improvement and places it within believable reach. This process establishes continuity and consensus on strategic improvement needs.

Tab 3—Project Chartering

- Executive sponsor
- Process owner
- Team leader
- Team participants
- Extended team resources
- Standard team meeting schedule
- Next four- to six-week plan
- Initial mining data

At this level of the Macro Charter (see Figure 5.4), the actual chartering process takes place. This does not occur in a casual manner. The Lean Six Sigma executive core team has numerous discussions and debates about how to put the

Project definition and scoping

Problem statement	Project name	Project objectives and scope	Key performance metrics	Baseline performance	Improvement goal	Benefits statement	Quantified benefits	Savings category	Project deliverables	Barriers to success
Forecast accuracy is extremely low; not enough effort is put into SKOP process to tie sales, supply chain, and finance together. All products treated equally; measure and report out forecast error monthly; no accountability	SKOP Improvement	Improve forecast accuracy (the combo of forecast and MPS that drives MRP)	Forecast accuracy, forecast error, by product, category, region, sales associate, customer, distributor, etc.	Current US is 40-50%; EMEA is 60-70%	Shoot for 80-90%+	Forecast accuracy will improve OTD and F/G turnover	\$784K	A, B, D	Accurate forecasting process with proven best practices and metrics	Sales not interested, wants to sell and hit \$ goals; new forecasting process will expose waste and accountability
There is no distinction of customers; treat a \$100 customer exactly as a \$150n premier customer; involving sales more to apply individual discounts and collect receivables than the value of the order; obvious negative margins on too many orders. 14 customers represent over 90% of U.S. sales, sell to 3874 customers	Customer rationalization	Develop more targeted sales, customer service and fulfillment practices that recognize distinctions between customers; eliminate excess hidden costs to service low volume, unprofitable market segments; look for other options to smooth out selling cycle; might consider new policy for small customers to deal direct with dealers but determine based on data	\$ revenue by market, region, distributor, customer; P&L \$ by same	Billing employs 6 fte people (\$238K) to deal with errors on orders under \$250; sales spending too much time on same COPOQ being determined)	Work with product rationalization team; reduce low and negative margin orders, including cost of quality to sell and service smaller customers	Significant COPOQ reductions and waste from handling low and negative margin customers; sales will have more time and resources to focus more on top 50 customers, tail pole	This project will reduce COPOQ by \$370K - \$438K	A, B, C, D, E	Recommended actions to reduce, realign customers to appropriate channels	Sales does not want to lose the flexibility of selling to these customers
Too many products, many with low and negative margins, especially during striping and ceiling products. Sales \$ falls but XYZ falls short on P&L, asset mgmt. goals	Product rationalization and pruning	Reduce the number of SKUs through data-driven logic and analytical science; also develop a formal ongoing process to evaluate and phase out old SKUs	Number of SKUs; profitability by category; product, SKU	Current \$76 SKUs	Reduce the number of active SKUs by at least 25%	40% of order entry time is spent on order entry; estimate a P/N reduction of over 6000 R/M components; many products with negative margins	Eliminate negative margins on \$170M revenues (\$18M drain to profits); improve avg. profit margin by 0 points	A, B, C, D, E	Recommended SKU reductions with justification; ongoing SKU rationalization process with metrics	Sales will not give up SKUs, will complain that they can not sell X without offering Y; some customers prefer older products
Spending \$25M/year on premium freight from suppliers; 36% of F/G are premium freight; then excess inventory next month; sales instructing warehouse to ship premium freight; premium freight is a free for all, everyone using as a security blanket, no process or controls	Premium freight reduction	Define best practice to control and reduce premium freight by 75%; to beat goal by year end	Premium freight \$; look at premium freight by supplier, category, product, by time of month, etc.	Current \$25M	Reduce by 75%	Defining root causes of premium freight will identify future projects; these savings are hard \$, bottom line savings	This project should reduce premium freight by \$25M - \$38M	A, D	Premium freight procedure, control, and ongoing metrics; visibility to root causes (who, when, why, approved, etc.)	Will need to do a much better job in SKOP to enable this; engineering and supply chain groups will argue they need this to get products out on time

Figure 5.3 Macro Charter, Tab 2.

Project chartering

Project name	Project objectives and scope	Executive sponsor	Process owner	Team leader	Team participants	Extended team resources	Standard team meeting schedule	Next 4-6 week plan complete	Initial mining data
SOP improvement	Improve forecast accuracy (the combo of forecast and MPS that drives MRP)	Steve Boeder	Dave Johnson	Christine Williams	John McKrill, Scott Claywell, Larry Bonner, Amanda Griggs	Jeffrey Spands, William Hendle, Lamborne, Randy Rodrigues	Monday, 11AM-1PM, executive conference room	Y	Pareto analysis by revenue \$, customer, dealer, distributor, region; prior Pareto forecast accuracy by product line
Customer rationalization	Develop more targeted sales, customer service and fulfillment practices that recognize distinctions between customers; eliminate excess hidden costs to service low volume, unprofitable market segments; look for other options to smooth out selling cycle. Might consider new policy for small customers to deal direct with dealers but determine based on data	Sandra Smith	William Trask	Steve Miller	Ben Burton, Sandra White, Tim Hardwig	Marc Flint	Tuesday, 1PM-3PM, conference room 1	Y	Pareto analysis of revenue \$ by customer, gross margin by customer & by product
Product rationalization and pruning	Reduce the number of SKUs through data-driven logic and analytical science; also develop a formal ongoing process to evaluate and phase out old SKUs	Bradley Jones	Brenda Rooks	John Bender	John Lawson, Craig Allen, Roger Marconi, Richard Caldwell	Sales — TBD	Wednesday, 10AM-12PM, conference room A-2	Y	Analysis of products and revenues, volumes, gross margins
Premium freight reduction	Define best practice to control and reduce premium freight by 75%, to beat goal by year end	John Moore	Melanie Shafer	Richard Hertz	David Arthur, Robert Mondavi, Katharine Hall, Raymond Partridge	Kelly Quigley, Tammy Lamborne, Randy Rodrigues	Thursday, 9AM-11AM	Y	Premium freight dollars by month

Figure 5.4 Macro Charter, Tab 3.

organization's best foot forward while balancing daily activities and deployment requirements, and optimizing the deployment as a great professional development opportunity. One of the goals in this activity is to select and assign resources from a particular project area who should already be concerned with improving the area defined in the problem statement and project objectives. Rather than viewing Lean Six Sigma projects as a responsibility *in addition to* normal workloads, it is an individual's normal duty, but one in which they are being equipped with new skills and improvement tools. It is impossible to achieve this alignment unless the executive core team follows the deliberate process of chartering.

In practice, jumping over Tab 3 and prioritizing projects (project prioritization matrix) saves a little time with chartering details. The Lean Six Sigma executive core team can return to Tab 3 after project prioritization and focus chartering efforts on the top-priority projects. Time is saved on chartering activities for projects that may fall down the priority list. However, Tab 3 is a must before improvement projects are actually assigned to a team. Projects that remain in the Macro Charter hopper in the first go-around will eventually float to the top of the priority list.

During Macro Charter development, the executive team may immediately assign Kaizen improvement (containment) activities to a particular manager or department supervisor as quick containment actions. These actions are common sense improvements and do not require deep knowledge of DMAIC or Lean Six Sigma. Every improvement opportunity does not require a formal Lean Six Sigma project or a complex statistical analysis. Another role of the executive core team may be to launch specific projects even if they did not score highest on the priority list because it may be a foundation or dependency project for other projects in the hopper. The Macro Charter methodology endorses the old Chinese proverb, "It is possible to move a mountain by carrying away small stones."

Project Prioritization Matrix

The project prioritization matrix (see Figure 5.5) is used by the executive core team to rank the relative importance of each project against the strategic plan and operating plan, and other critical factors or constraints unique to a specific client's Lean Six Sigma deployment. Other considerations might include personal and organizational development or career exposure opportunities for the organization's high-performing employees. Projects are scored and ranked against attributes such as cost reduction, growth, strategic positioning, or market availability. Other attributes may include the level of required effort, availability of the right resources, time, risks, availability of data, capital investment, etc. These attributes may also be assigned a rating for relative importance. Specific improvement projects are listed in rows, and the evaluation attributes are listed across the top of the template. Each attribute factor is assigned a weight from 1 (not important) to 10 (very important). Each project is evaluated in terms of how it contributes to the attribute criteria using the same 1 to 10 scoring procedure.

Project prioritization matrix

*=Reverse scoring, High score=low cost, low difficulty

Project name	Project objectives and scope	Growth impact	P&L impact	Cash flow impact	Strategic position	Resource availability	Availability of data	Level of difficulty*	Probability of success	Timeliness of completion	Ease of implementation	Cost of implementation	Total score
SOP improvement	Improve forecast accuracy (the combo offforecast and MPS that drives MRP)	9	10	9	7	5	6	4	6	5	7	9	Weights 629
Customer rationalization	Develop more targeted sales, customer service and fulfillment practices that recognize distinctions between customers; eliminate excess hidden costs to service low volume, unprofitable market segments; look for other options	4	9	7	6	6	5	7	7	7	6	8	510
Product rationalization and pruning	Reduce the number of SKUs through data-driven logic and analytical science; also develop a formal ongoing process to evaluate and phase out old SKUs	6	9	9	6	7	7	7	8	7	6	8	569
Premium freight reduction	Define best practice to control and reduce premium freight by 75%; to be at goal by year end	5	10	8	8	9	9	9	9	9	9	9	651

Figure 5.5 Macro Charter, Tab 4.

The matrix multiplies the project rating by the criteria weight in each cell and accumulates the total score across the matrix. The object is to remove the subjectivity, business unit, or individual executive preferences, and focus on the organization's highest impact improvement opportunities with limited capacity and resources. The total scores for each project are meaningless; the relative ranking of projects against each other is what really matters. The executive core team is also responsible for rationalizing and scrubbing the project prioritization matrix. Rationalizing and scrubbing is not to be interpreted as arbitrarily changing ratings to make favorable projects float to the top of the list. Sometimes reviewing the attribute ratings of certain groups of projects results in a justifiable modification, and hence a revision in project scores and project priorities. One of the largest benefits of the project prioritization matrix is in building executive commitment that simplifies the executive sponsor and project chartering efforts.

Project or Resource Alignment

Another key requirement of deployment planning is making sure that the proposed improvement activities are spread across the organization and participants to create the initial momentum and critical mass. Project or resource alignment is the final check to validate that proposed improvement projects are staffed for success. One of the things to look for at this stage is the diversity, depth, and balance of mixed skill levels, and process knowledge of the proposed teams. For accounting and financial projects, having accounting resources who understand the financial accounting system, general ledger, and chart of accounts is a must. Otherwise, the team will exhaust time trying to understand accounting rather than completing their project. Another example is new product development where a proposed improvement team needs resources who are involved in product development on a daily basis. We want to avoid having five design engineers or five cost accountants on a team.

There are occasions where a team leader without expertise in a particular area may be used for total objectivity and possibly a career exposure opportunity. For example, a bright woman from human resources was assigned to lead a team on reducing tooling costs. Because she was not tainted by specific screw machine experience or other engineering factors, she had to follow the DMAIC methodology precisely, and subsequently made her team follow it as well. She was a great team leader and brought out the best in her team. Within four months they identified over \$430K in tooling and downtime cost reductions. There are no set-in-stone rules for staffing teams, but it is a leadership responsibility to set up the projects and teams for success. During this stage, the executive core team is aligning projects to individual participant functional areas to minimize the in-addition-to-my-normal-work feelings of the team leader and the team.

At this stage it is necessary to look for individuals who may have been assigned to multiple teams. During the dialogue about how best to staff improvement projects, there is a natural tendency for executives and managers to select their

go-to people—the people they trust the most at getting things done. Through discussion after discussion, project after project, there are always a few individuals assigned to multiple teams. We encourage organizations to follow a single-team position, single-individual rule so the deployment learning and execution activities are widened across as many people as possible for the proposed projects. The other factor to consider at this point is the realization of an individual's commitments as a team leader or member as well as their daily commitments. There are some occasions where a particular member is slated for an improvement team, but may be buried already with complaints from the largest customers. A word of caution here—it might be the old *we-don't-have-the-time-to-do-things-right-but-we-always-find-the-time-to-do-things-over* syndrome. Asking the question “Why?” five times about a major customer complaint may result in a good reason for this busy individual to participate on a team.

There are so many positive experiences in a consultant's career that come to mind while writing this book. We were going through the Macro Charter effort with one client and a restless executive said, “Is all of this necessary? Why don't we just form some teams and get them going on something?”

Before I could respond, the CEO said, “Yes it's necessary and revealing. We're going to get this right. You can't just throw a group of pathetic people together, give them a vague assignment, and call them a high-performance team. You build-in high performance up front.”

That was much more compelling and gutsy than my response would have been. On a more serious note, a well-orchestrated Lean Six Sigma deployment is a tremendous learning and personal development experience for the organization. When executives stick it out for the long haul, root-cause problem solving and fact-based decision making become the new cultural norms. Executive debates and controversy are healthy emotions when reaching for success with Lean Six Sigma. When the broader components of Lean Six Sigma become an inherent behavior in enough people in the organization, fact-based decision making becomes a self-managing peer process.

Team Assignment

The final step of this segment is the official assignment of specific individuals as team leaders, team participants, and extended team members. This is a formal process where each team is stepped through their project by the executive core team, executive sponsor, and process owner(s). The group reviews the problem, project objectives, scope, improvement goals, preliminary clue data, expected deliverables, project timing, and a work plan for the next four to six weeks. These project parameters are negotiable as the team digs into more data, as they are actually in a better position to refine these project parameters. Although this seems like a lot of groundwork, the team leaves the starting gate with a solid understanding of their assignment. Team assignment is the official launching of improvement teams, and is followed by communicating these details to the

organization. In Chapter 4, we discussed the improvement vision and executive commitment to provide more details in two to four weeks. Now is a good time for the CEO and executive core team to update the organization with summary-level details developed in the Macro Charter, and the official improvement teams. During this communication, one must not forget to explain that everyone cannot participate up front, but mention the rollout plans for Lean Six Sigma with the expectation of opportunities to participate in the near future.

Earlier in this chapter we discussed resource and project alignment to optimize the perception of improvement as a part of, instead of in addition to, one's normal work responsibilities. Having discussed this goal, there are always exceptions to the process. During the creation of teams and assignments, another motivation may be to designate participants for the purposes of career exposure or to evaluate how individuals perform outside their normal routines. It is typical for some resources to end up working in areas that are totally new to them, and it is difficult to view these assignments as anything but an addition to daily work (rather than part of the daily workload). Sometimes these assignments are given purposefully to evaluate how a particular individual performs in more of a leadership role across new and broader functional areas. Sometimes the same-people-same-thinking-same-process-same-results people are left out intentionally. In these examples, the team assignments often tend to be the most interesting projects. An individual working in an area with little to no experience is not tainted by the habits and thinking of the normal process or area experts. These individuals have no choice but to lead and follow their team through the DMAIC methodology, discovering root causes and opportunities that have been previously missed or discounted by the typical firefighting activities of resident employees. In the process, everyone benefits from more knowledge and empathy of other people's roles and responsibilities. As a reminder, this is not a bad reflection on the resident experts—it is the power of structured root-cause problem solving, looking at process through a different lens and with more robust improvement tools.

A few years back, we worked with a client to improve yields in a proprietary restricted area of their operation. This organization had their secret room—a clean room where a proprietary assembly process was located, and where access was limited to only a few key employees. This was a complex high-tech assembly area that had 60 percent yields on a good day. There was a belief that 60 percent was the best they could do because of the design—an assumption they made because they had been at that level for years.

We were looking at a perfect Lean Six Sigma pilot candidate. Why? Because this is the type of situation where everyone walks around back-patting and telling each other how technical and smart they are, and legends soon become facts. This process was supported by Tom Smart, an arrogant senior-level engineer who had designed and developed the assembly and test equipment since day one. This was a highly profitable product and Tom had the president's ear. He could out-talk, out-excuse, and out-blame anyone in the organization about the details of the

clean-room processes. Unfortunately, it was all based on his perceptions, opinions, and experiences. Since access to the process was limited, it became impossible to do anything without overpowering Tom. Sadly, the organization felt stifled with Tom's close-mindedness, protective behaviors, and the potential threats of shutting down the process if changes other than his were made. Neither Tom nor anyone else in the organization understood the true root causes of process variation. One day in a meeting, Tom became so angry when questioned about key process variables and root-cause data that he refused to participate in a Lean Six Sigma project. It was a silly standoff based on this argument: "You people just don't understand the complexities and I can't show you or tell you because it's proprietary."

The vice president of operations sponsored a Lean Six Sigma yield improvement project with the condition that only two team (internal) members were allowed into Tom's clean room (and a silent condition that Tom would not be on the team). Tom did all he could to undermine the project. He told the team that they were wasting their time because he already knew (and was working on) the real problem of purchasing's low-cost suppliers who could not provide parts as good as the previous higher-priced suppliers. Tom never paid much attention to supplier quality data, which was analyzed by the team. The team validated that the same recurring yield problems was present with the previous suppliers. The initial analysis isolated most of the rolled throughput yield fallout to a tungsten inert gas (TIG) welding operation, a technology over fifty years old. Tom replied, "I'm the company's TIG expert, it's running fine, and you should be working on the real problems."

The team conducted Internet searches and learned a lot about TIG welding, key process input variables (KPIVs) and key process output variables (KPOVs) without even peeking through the drapes of the secret room. The team also found several completed TIG welding yield improvement references and articles on the Internet. We created a *design of experiments* (DOE) plan for the TIG welder on the white board of a remote conference room, and generated the Minitab data collection worksheets for the two authorized team members. The two authorized team members and the operator ran the trials and collected data. During the study, the operator was pleased that the team was looking at the right areas and shared ideas (ones Tom had previously shot down) with the two team members. Within three weeks, the team analyzed the DOE results and were able to develop, implement, and replicate process setting changes on the TIG weld operation that improved yield to 75 percent (about a \$600K per year in savings). Tom Smart was furious with the study results and put up a last-ditch fight against implementing the recommendations. He went to the president and told him that the yield improvement team breached the company's security in the secret room and that the outside consultants were given confidential facts about their proprietary process. This rapidly escalated into an urgent meeting with the president and his staff. In the final showdown, the yield improvement team presented their project to the executive team and described how they acquired their knowledge about TIG welding on several public websites. They walked everyone through

their fact-based and air-tight DMAIC phases of the project. They mentioned that the consultants helped them only with the DOE setup and running and interpreting the Minitab analysis, but never entered the clean room. We acknowledged our limited TIG yield experiences with previous automotive industry Lean Six Sigma projects and agreed that our primary purpose was leading the way for the team and helping them to analyze the process and draw the right data driven recommendations for improvement. The team shared the normal TIG yield results with key factors set on Tom's settings, and the higher TIG yield results on their proposed and replicated settings. The more Tom interrupted, the more the executive team shut him down. The team also shared over a dozen additional yield improvement ideas and expressed their interest in continuing with their efforts because they thought that they could eventually raise yields to 95 percent or higher. The team's well-executed and fact-based yield improvement project won out over the deep hole that Tom and his ego had dug for them. The secret room was now open for more improvement business. There is no secret to Lean Six Sigma's success, just common sense and persistence at chasing down root causes with a different set of eyes and improvement tools. The facts, empowerment, and results win out over politics and nonvalue-added games.

Using the Macro Charter for Planning and Project Management

The Macro Charter becomes a useful living template for a Lean Six Sigma deployment. Some of our clients have created a tab to post actual results and other project details to the Macro Charter. At the conclusion of every project is also a formal lessons-learned activity in which teams have the opportunity to comment on how their project or the deployment in general could be improved. This information is used by the executive core team and executive team to steer or reset the course of the deployment. Successful Lean Six Sigma deployments are not a steady-state cookbook of tasks. Active and creative leadership in the leadership strategy, deployment planning, and execution phases is what makes these deployments so successful. There is a constant stream of information and activity around how the deployment can get even better. Organizations that have used this methodology successfully have used the Macro Charter in several planning and analysis activities such as:

- Sorting and displaying launched and planned projects by business unit, key process, or functional area, and anticipated benefit timelines to determine how the organization's formal Lean Six Sigma initiative will contribute to the operating plan or financial plan. Some committed organizations are also aggressive and build the planned savings into their budgets.
- Analyzing projected and cumulative rates of improvement over a specified timeline and adjusting the deployment to maintain or improve the rate

of improvement. Typically, the rate of improvement becomes difficult to grow as the initial “sweet improvement fruit” is harvested during the first two years. Organizations maintain or increase the rate of improvement by new thinking, new innovation, new boundaries, new people, and improving the deployment process.

- Evaluating the relative value of launched and queued up projects by business unit, functional area, or as a baseline to measure actual project performance. This is another check to validate the load of projects across business units that may need to improve the most. This is also another check to make sure that Lean Six Sigma is positioned as an organizational improvement initiative, not a manufacturing or quality initiative. It is typical for many teams to actually exceed the anticipated benefits of their projects. Some of this happens by a natural lean toward fact-based conservatism on defining projected benefits, but most of this occurs because true root-cause problem solving reveals opportunities that were hidden and unknown to the organization.
- Evaluating current and planned professional development needs, developing backstop organizational skills and capabilities, or recognition and rewards.
- Providing a knowledge repository for completed, launched, and planned improvement projects. For completed improvement projects, the Macro Charter is usually supplemented with a searchable directory of detailed DMAIC information for each project. Future projects are able to leverage off the work of previous projects for needs such as process SIPOCs (supplier, inputs, process, outputs, customers) and value stream maps, root-cause considerations of previous projects, references for all Lean and Six Sigma tools and applications, or additional extended team members who might be useful on a current project.

The Macro Charter is a living template. It should be updated in real time as new information is discovered about queued up projects, or a totally new planned project is placed in the hopper. The Macro Charter provides all the current characterization information for all projects. After its initial creation, the Macro Charter is the active hopper of current and planned improvement projects. The hopper helps to keep the momentum high because there should always be more improvement opportunities than there is capacity to complete improvement opportunities. It is the responsibility of the executive core team to manage the hopper so that there is always a clean inventory of characterized, mission-critical improvement opportunities ready for assignment. The executive core team periodically needs to empty the trash and emotions out of the Macro Charter decision-making process. The hopper should not be the trash compactor of unqualified improvement ideas, and it should never be empty. When organizations let this happen, they are admitting that they no longer need to improve and, thus, are losing the *continuous* aspect of continuous improvement.

Individual Project Charters

The first assignment of a launched improvement team is to create their project charters (see Figure 5.6). This is the team's reference document for their specific project. Project charters define a specific team leader, team, executive sponsor, and project title. Project charters also include a crisp problem statement, probable root causes (clue data), project objectives, scope, boundaries, performance metrics, current baseline performance and COPQ data, improvement goals, quantified benefits, expected deliverables, and a rough timetable for the project. As the team progresses further into their project, the project charter may be refined or more targeted as the parameters of their project become more defined. Project charters are living documents that continue to evolve and target more specific opportunities as the team works its way through the DMAIC methodology.

The Micro Charter—Quick Strike Area Improvements

The Macro Charter incorporates an *above-the-line* and *below-the-line* process for identifying potential project opportunities. *Above-the-line* items are fully characterized and prioritized projects. These projects are either in an assigned or planned status. There are two different *below-the-line* categories:

1. *Below-the-line, Section I*—These are potential project ideas where there are questions about feasibility, benefits, or if it is even a real project or a symptom of another opportunity. Project ideas in this section need more fact-finding and data analysis to verify whether it is a real recurring problem or an emotionally stimulated problem. There are always situations where people will define problems with their emotions instead of with the facts. Project ideas in this category may make their way up the list, may fall off the list, or may become rolled into another defined opportunity.
2. *Below-the-line, Section II*—These opportunities may or may not be legitimate improvement opportunities, but it is certain that their resolution will not require a formal project with a formal team. Some of these are legitimate Quick Strike or Kaizen opportunities, and are assigned to the area manager or supervisor for further investigation and resolution.

Another element of Scalable Lean Six Sigma™ is called *basic improvement skills* (BIS). Prior to initiating Kaizen or Quick Strike activities in a particular department, the manager or first-line supervisors attend a one-day BIS education session. During this session, participants are exposed to the application of simple data analysis tools, Quick Strike templates, and the DMAIC methodology retrofitted for these types of improvement activities. At this level, DMAIC is a structured set of the right questions to ask when walking through a Quick Strike activity. Next, the managers and first-line supervisors are developed via a train-the-trainers effort. In turn, these individuals provide a short two- to four-hour education module to their people followed with a Quick Strike assignment.

PROJECT CHARTER					
Project name: Billing Errors		Annual savings: \$ 6.7M cash flow, \$70K avoidance			
Green belt: Gretchen Hancock		Champion: Mike Hall			
Team members: Robin Hood Sandy Ramsey		Business unit: All			
Start date: 6/6/2009		Target completion: 12/10/2009			
Problem statement:		<p>* Billing errors are caused somewhere in the quote through invoice process (wrong price, incorrect quantity, RMAs, manual NRE billings, etc.).</p> <p>* Extend A/R, creates NVA in reconciling invoices and correcting errors before we can collect our money.</p>			
Project objectives:	What improvement is targeted and what will be the impact on critical business metrics?	Projects Y's	Baseline	Goal	Units
	Primary metric	Reduce billing errors	3 2.5	1.5 1.25	% qty % \$
	Secondary metric	Education	unknown	100%	
	Other metrics				
	Counterbalance				
Financial impact					
Benefits and improvement goals:		<p>* Reduction in payment delays</p> <p>* Reduce manual corrections/transactions</p> <p>* Accurate cash availability</p> <p>* Improves monthly revenue projections (accurate baseline)</p> <p>* Enhance business control processes</p>			
Baseline performance:		<p>* Perception of high percentage of errors</p> <p>* Actuals Mar-May 2009</p> <p>- 3% credit transactions (non RMA)</p> <p>- 2.5% of revenue</p> <p>* Delays in payments</p>			
Current performance:		% credit transactions	% credit of dollars	Comments	
	Mar-May	3.03%	2.50%		
	June	1.30%	0.41%		
	July	1.61%	1.40%		
	Aug	3.26%	1.21%	MPO contract closure	
	Sept	1.21%	0.59%		
	Oct	1.58%	0.86%		
	Nov	1.88%	0.24%		
Support required		IT for SAP reporting only (minimal \$)			

Figure 5.6 Project charter.

The manager and area supervisors provide mentoring support to their people, or reach out to people outside of their immediate area for assistance. This element of Scalable Lean Six Sigma™ ensures a consistent improvement structure and language of improvement throughout the entire organization.

BIS demonstrates that improvement is not limited to a top down process. Employees throughout the organization and at all levels are encouraged to identify and participate in Quick Strike improvement opportunities. A Micro Charter is another template used in a Lean Six Sigma deployment to promote early involvement in department or area focused Kaizen or Quick Strike activities. The Micro Charter includes a consolidated tab of all open and completed Quick Strike activities, and a tab for each area that displays their particular open and completed Quick Strike activities. It provides a standard process and structure for identifying, prioritizing, assigning, tracking, completing, and summarizing Quick Strike activities. Since the Micro Charter is in spreadsheet format, it can be easily manipulated to view projects by area, projects completed by associate, savings by department, organization, or business unit, and many other options. We are advocates of integrating Micro Charter activities into individual performance reviews, reinforcing the notion that improvement is an expected part of everyone's job.

Keeping the Lean Six Sigma Lifecycle Alive

Organizations missing or underestimating the importance of deployment planning lose the sense of urgency over time. Weaknesses in the elements of deployment planning described in this chapter are the major causes of deployments running out of steam. For nearly four decades, organizations have allowed continuous improvement to follow a birth-death lifecycle. In the beginning, there is interest followed by some improvements. Then something changes (usually good news) that shifts the focus away from improvement, then something else changes that again shifts focus to the next improvement program. It is time to reverse this birth-death cycle of improvement, and this is so simple to achieve with the right leadership and infrastructure.

If an organization is really committed to continuous improvement, it is impossible to run out of things to improve. Over the next decade, the face of Lean Six Sigma and improvement in general will evolve, but the basics of success will remain pretty much the same. We are entering a new era of improvement that we call *Adaptive and Innovative Lean Six Sigma*. This is improving an organization's capability to sense, interpret, decide, act, and measure improvement activities with the integration of technology with an expanded, innovative applications tool set, and in real time. These types of improvement are rapidly becoming a differentiator in this new economy. Whether it is developing software applications in India or designing new products in California, building products in China, synchronizing a global supply chain, or selling multiple versions of the same product in a dozen different countries and markets, improvement is necessary to survive. Organizations must improve for the long haul if they wish to be competitive in the next decade and beyond.

The Macro Charter and Micro Charter instruments, combined with the supporting infrastructure described in this chapter, keep improvement opportunities current, aligned to customer and business needs, and ready to go. These instruments also create a positive psychological effect because they visibly identify and queue up more opportunities, promote raising the bar, and provide the impetus for improving how an organization improves. Deployment planning is an important factor in enabling Improvement Excellence™—the mastery of developing and implementing successful strategic and continuous business improvement initiatives, transforming culture, and enabling organizations to improve how they improve.

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Chapter 5 Take Aways

- One of the most frequent mistakes organizations make in a Lean Six Sigma deployment is the failure to define, scope out, and charter projects at a level of detail where they are legitimately *doable* for the organization and *assignable* to an improvement team. As organizations work through their business diagnostic and policy deployment efforts, they begin to develop improvement opportunities at a theme or boil-the-ocean level of detail. Some examples of this might include improving the customer experience, improving new product development, reducing warranty and returns, or improving sourcing quality. When organizations assign improvement projects at this level of detail, teams flounder with an assignment that is too ambitious, too ambiguous, and effectively impossible.
- The Macro Charter is a deployment planning process used to collect and identify potential project information such as a description of a problem, probable root causes, cost of quality (or waste), proposed project name, project objectives, improvement goals, benefits, and deliverables.
- Project selection is a deployment planning process that allows executives to evaluate projects against each other relative to business plan contribution. Projects are scored and ranked against attributes such as cost reduction, growth, level of resources, time, availability of data, capital investment, etc. The object is to remove subjectivity or executive preference, and focus the organization's limited resources on critical projects that will take the least amount of effort and create the greatest impact.

- Project or resource alignment is a deployment planning process that evaluates potential participant resources against a variety of required skill sets and direct experiences, facilitates in the identification and selection of team leaders and team participants, and helps to align people with projects with a level of objectivity.
- Team assignment is a deployment planning process for resource improvement activities. One objective is to spread and develop critical mass as much as possible. In our deployments, we exercise the one-resource-one-team rule that forces a deeper development of bench strength. When everything needs the involvement of a handful of people in the organization, something is definitely wrong.
- The Macro Charter methodology allows executives to step back and objectively synthesize the results of the business diagnostic with the identification of specific improvement opportunities. This process also provides a rare opportunity for executives to step out of their daily routines and view their organization from a different perspective. Collaboration and constructive discussions on the identification and prioritization of improvement opportunities clarifies improvement and places it within believable reach. Finally, this process establishes continuity and consensus on strategic improvement needs.

Guest Article Contribution

Elpitha Votsis is vice president of finance at Harman Music Group (HMG), a business unit of Harman Professional (HPro) and part of Harman International Industries. Elpitha is the executive deployment champion for their Lean Six Sigma and continuous improvement initiatives, and is a passionate, disciplined, high-energy executive with outstanding interpersonal and project management skills. Elpitha earned her black belt and is also certified by PMI® as a Project Management Professional. Prior to joining HMG, Elpitha worked for 10 years as controller of EDO Corporation, a defense industry company and another 10 years as vice president of finance for a division of Baker Hughes, an oil industry company.

Continuous Improvement Initiative at Harman Music Group

Elpitha Votsis
VP of Finance
Harman Music Group

HMG embarked on its Lean Six Sigma journey four years ago. Senior management recognized the need for process improvement in a methodical formalized way that would change the culture of the organization, streamline processes, and

eliminate waste. With increased competitive pressure, it was obvious that the company needed a lean and efficient infrastructure to give it a competitive advantage by eliminating waste to increase profitability. We were so fortunate to be well on our way to realizing savings when the economic crisis hit our business during the fall of 2008, and we were able to maintain our profitability as a percent of sales even when our revenue levels dropped 30 percent.

With the help of the Center for Excellence in Operations (CEO), we launched our Lean Six Sigma initiative in 2006. Initially, employees viewed this as the most recent fad—something temporary that would pass with time. CEO was able to get us started by helping us to plan and organize the deployment, provide customized Lean Six Sigma education, and mentor our initial 22 improvement projects to a successful conclusion. This initial experience with Lean Six Sigma demonstrated the power of improvement, and HMG recognized the importance of adopting and perfecting the process internally to keep it alive. HMG has succeeded in keeping Lean Six Sigma and continuous improvement alive, and well integrated into their culture. This has been accomplished through several practices:

- The number one secret is to have a senior executive champion the project. Someone who has a proven track record of accomplishments, has authority, and is well respected by the employees. Without senior management support and involvement, such initiatives will fail. Senior management needs to walk the talk.
- HMG formed a core team with our president, vice president of operations, vice president of engineering, and me—executive vice president and CFO—to review the macro project charter, rank projects in order of importance based on our business strategy, and decide on which projects the teams will work on during the fiscal year. This team also decides on who will lead each project as a green belt. These lead people are assigned to select their team members based on skill sets that they think are needed to complete the project.
- HMG holds the teams accountable for results. The team always takes the time to set clear expectations and hold regular meetings to check on the teams' progress. The teams are expected to hold weekly recurring meetings and to make assignments for each team member that would require one to two hours of effort during the week. The team members are expected to come to meetings with their assignments completed and ready to discuss with the other team members so that the project can move forward. Based on this concept, each project (depending on the number of members on the team; usually three or four) dedicated resources for six to eight hours per week working on their project. In addition, I meet with each team monthly to receive a status update on the project.
- The teams are expected to use the DMAIC process and are not allowed to move to the next phase until each step is completed (in order) and approved by me. This has become HMG's common language of continuous

improvement. The teams are given a problem statement and high-level objectives and their first task is to complete their individual project charter, which includes defining the problem statement, defining project objectives and scope, identifying current baseline performance, identifying improvement goals, defining benefits to the company, and calculating potential savings.

- We provide training to employees so they develop the skills needed to be successful. We have engaged a local university to hold ongoing training and development for both green belts and yellow belts at our facility. Employees attend classes during regular business hours, which show the company's commitment to this initiative. The training is running parallel to the projects, and employees use their projects to apply skills they learn in the classroom and are encouraged to bring challenges to discuss with the teacher and their peers.
- HMG is committed to removing ambiguity from projects by breaking them down into chunks that the team can accomplish in the time allowed. Small wins give confidence to the teams; each success reinforces the fact that they can make a difference. Large projects are therefore broken down into several phases and the teams can close and implement each phase independent of the next. Be happy with small incremental improvements, as over time they can add up to a lot of savings.
- All teams are required to produce the following prior to project completion:
 - Process flow chart
 - Business process procedure released with an engineering change notice signed by all major stakeholders
 - Train all employees using the process (training sign-off sheet)
 - Develop an audit form that the auditors can use to verify compliance with the new process
 - Develop a formula to calculate on-going savings (after go-live) compared to the baseline
 - Submit a new project for FY11
 - Presentation slides with short description of project and major accomplishments to the core team
- We audit improvements and new processes for as long and as often as necessary to ingrain the importance of improvement in the organization, and to ensure the improvement is sustained so employees do not return to comfort zones after the completion of the project. We have trained six improvement auditors, and at the end of each project, each green belt is required to submit an audit sheet that contains key tests that the auditor can use to verify and validate financial savings and compliance with the new process.
- Each process owner calculates and reports the monthly savings of the improvement compared to the baseline. I personally receive such calculations and prepare a schedule of consolidated savings for the month and

cumulative year-to-date, and we use this as a KPI in measuring the company's continuing performance with improvement.

- We involve as many employees as possible to raise awareness and integrate the continuous improvement methodologies in the culture of the organization. At any given time, we have one-third of the employees working on Kaizen, Lean, Six Sigma, IT, or other improvement projects. These employees are from all functional areas—hourly, salaried, and production workers as well as management.
- Last but not least, we recognize the efforts of the teams in front of all employees during our monthly employee meeting and give them a small gift as a token of appreciation. Since Harman has a consumer products division, it is easy and cost effective to reward people with cool products (e.g., several varieties of iPod players, docking stations, and PC speakers) that have a perceived high value.

HMG's initial Lean Six Sigma deployment of 2006–2007 has evolved to an expected behavior and norm of our culture. We have progressed to the point where our people are regularly identifying new opportunities and volunteering to be part of an improvement team. Improvement is built into performance reviews, and improvement is an expected part of people's jobs. We are fortunate to have begun our improvement initiatives and to have continued these initiatives through the recent recession. Despite our progress and results to date, HMG is continuing to learn, and improve, how we can improve even further.

