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Introduction to Selecting Projects

Key Learning Points

1. Recognize and explain the steps for selecting projects.
2. Explain how projects align with corporate strategy.
3. Work with your Champion to create a project charter.

Guidelines for Project Selection

Step 1: Leaders Nominate Potential Projects

Step 2: Champions are Selected to Obtain Information to Verify Problems

Step 3: Leadership / Council Evaluates and Selects Projects

Step 4: Belts Create Project Charters

Step 5: Champion and Belts Select Team

Step 6: Project Begins

Where To Begin: The Project Nomination and Selection Process

By Joseph M. Juran

Most projects are chosen through the nomination and selection process, involving several steps:

- Project nomination

- Project screening and selection
- Preparation and publication of project goal statements

Sources of Nominations

Nominations for projects can come from all levels of the organization. At the higher levels, the nominations tend to be extensive in size (the vital few) and multifunctional in their scope. At lower levels, the nominations are smaller in size (the useful many) and tend to be limited in scope to the boundaries of a single department.

Nominations come from many sources. These include

- Formal data systems, such as field reports on product performance, customer complaints, claims, returns, and so on; accounting reports on warranty charges and on internal costs of poor quality; and service call reports. (Some of these data systems provide for analyzing the data to identify problem areas.)
- Special studies, such as customer surveys, employee surveys, audits, assessments, benchmarking against competitors, and so on.
- Reactions from customers who have run into product dissatisfactions are often vocal and insistent. In contrast, customers who judge product features to be not competitive may simply (and quietly) become ex-customers.
- Field intelligence derived from visits to customers, suppliers, and others; actions taken by competitors; and stories published in the media (as reported by sales, customer service, technical service, and others).
- The impact on society, such as new legislation, extension of government regulation, and growth of product liability lawsuits.
- The managerial hierarchy, such as the council, managers, supervisors, professional specialists, and project teams.
- The workforce through informal ideas presented to supervisors, formal suggestions, ideas from circles, and so on.
- Proposals relating to business processes.

Effect of the Organization-wide or Big Q Concept

Beginning in the 1980s and continuing for the near future, the scope of nominations for projects broadened considerably under the big Q concept. The breadth of the big Q concept is evident from the wide variety of projects that have already been tackled:

- Improve the precision of the sales forecast.
- Reduce the cycle time for developing new products.
- Increase the success rate in bidding for business.

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- Reduce the time required to fill customers' orders.
- Reduce the number of sales cancellations.
- Reduce the errors in invoices.
- Reduce the number of delinquent accounts.
- Reduce the time required to recruit new employees.
- Improve the on-time arrival rate (for transportation services).
- Reduce the time required to file for patents.

The Nomination Process

Nominations must come from human beings. Data systems are impersonal-they make no nominations. Various means are used to stimulate nominations for breakthrough projects:

- Call for nominations. Letters or bulletin boards are used to invite all personnel to submit nominations, either through the chain of command or to a designated recipient, such as the secretary of the council.
- Make the rounds. In this approach, specialists (such as engineers) are assigned to visit the various departments, talk with the key people, and secure their views and nominations.
- The council members themselves. They become a focal point for extensive data analyses and proposals.
- Brainstorming meetings. These are organized for the specific purpose of making nominations.
- Whatever the method used, it will produce the most nominations if it urges use of the big Q concept-the entire spectrum of activities, products, and processes.

Nominations from the Employees at All Levels

The workforce is potentially a source of numerous nominations. Workers have extensive residence in the workplace. They are exposed to many local cycles of activity. Through this exposure, they are well poised to identify the existence of problems and to theorize about their causes. As to the details of goings-on in the workplace, no one is better informed than the workforce. "That machine hasn't seen a maintenance man for the last six months." In addition, many workers are well poised to identify opportunities and to propose new ways.

Workforce nominations consist mainly of local useful many projects along with proposals of a human relations nature. For such nominations, workers can supply useful theories of causes as well as practical proposals for remedies. For projects of a multifunctional nature, most workers are handicapped by their limited knowledge of the overall process and of the interactions among the steps that collectively make up the overall process.

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In some organizations, the solicitation of nominations from the workforce has implied that such nominations would receive top priority. The effect was that the workforce was deciding which projects the managers should tackle first. It should have been made clear that workers' nominations must compete for priority with nominations from other sources.

Joint Projects with Suppliers and Customers

All organizations buy goods and services from suppliers; over half the content of the finished product may come from suppliers. In earlier decades, it was common for customers to contend. The supplier should solve his problems. Now there is growing awareness that these problems require a partnership approach based on

- Establishing mutual trust
- Defining customer needs as well as specifications
- Exchanging essential data
- Direct communication at the technical level as well as the commercial level

Project Screening

Calls for nominations can produce large numbers of responses-numbers that are beyond the digestive capacity of the organization. In such cases, an essential further step is screening to identify those nominations that promise the most benefits for the effort expended.

To start with a long list of nominations and end up with a list of agreed-upon projects requires an organized approach-an infrastructure and a methodology. The screening process is time-consuming, so the council usually delegates it to a secretariat, often the department. The secretariat screens the nominations-it judges the extent to which the nominations meet the criteria set out below. These judgments result in some preliminary decision-making. Some nominations are rejected. Others are deferred. The remainder is analyzed in greater depth to estimate potential benefits, resources needed, and so on.

The councils and/or the secretariats have found it useful to establish criteria to be used during the screening process. Experience has shown that there is a need for two sets of criteria:

- Criteria for choosing the first projects to be tackled by any of the project teams
- Criteria for choosing projects thereafter
- Criteria for Projects

During the beginning stages of project-by-project breakthrough, everyone is in a learning state. Projects are assigned to project teams, who are in training. Completing a project is a part of that training. Experience with such teams has evolved a broad set of criteria:

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- The project should deal with a chronic problem-one that has been awaiting a solution for a long time.
- The project should be feasible. There should be a good likelihood of completing it within a few months. Feedback from organizations suggests that the most frequent reason for failure of the first project has been failure to meet the criterion of feasibility.
- The project should be significant. The end result should be sufficiently useful to merit attention and recognition.
- The results should be measurable, whether in money or in other significant terms.
- The first projects should be winners.

Additional criteria to select projects are aimed at what will do the organization the most good:

- Return on investment. This factor has great weight and is decisive, all other things being equal. Projects that do not lend themselves to computing return on investment must rely for their priority on managerial judgment.
- The amount of potential breakthrough. One large project will take priority over several small ones.
- Urgency. There may be a need to respond promptly to pressures associated with product safety, employee morale, and customer service.
- Ease of technological solution. Projects for which the technology is well developed will take precedence over projects that require research to discover the needed technology.
- Health of the product line. Projects involving thriving product lines will take precedence over projects involving obsolescent product lines.
- Probable resistance to change. Projects that will meet a favorable reception take precedence over projects that may meet strong resistance, such as from the labor union or from a manager set in his or her ways.

Most organizations use a systematic approach to evaluate nominations relative to these criteria. This yields a composite evaluation that then becomes an indication of the relative priorities of the nominations.

Project Selection

The result of the screening process is a list of recommended projects in their order of priority. Each recommendation is supported by the available information on compatibility with the criteria and potential benefits, resources required, and so on. This list is commonly limited to matters in which the council has a direct interest.

The council reviews the recommendations and makes the final determination on which projects are to be tackled. These projects then become an official part of the

organization's business. Other recommended projects are outside the scope of the direct interest of the council. Such projects are recommended to appropriate sub-councils, managers, and so on. None of the preceding prevents projects from being undertaken at local levels by supervisors or by the workforce.

Vital Few and Useful Many

Some organizations completed many projects. Then, when questions were raised-"What have we gotten for all this effort?"-they were dismayed to learn that there was no noticeable effect on the bottom line. Investigation then showed that the reason could be traced to the process used for project selection. The projects actually selected had consisted of

- Firefighting projects. These are special projects for getting rid of sporadic "spikes." Such projects did not attack the chronic waste and hence, could not improve financial performance.
- Useful many projects. By definition, these have only a minor effect on financial performance but have great effect on human relations.
- Projects for improving human relations. These can be quite effective in their field, but the financial results are usually not measurable.
- To achieve a significant effect on the bottom line requires selecting the "vital few" projects as well as the "useful many." It is feasible to work on both, since different people are assigned to each.

There is a school of thought emerging that contends that the key to market leadership is "tiny breakthroughs in a thousand places"-in other words, the useful many. Another school urges focus on the vital few. In my experience, neither of these schools has the complete answer. Both are needed-at the right time.

The vital few projects are the major contributors to leadership and to the bottom line. The useful many projects are the major contributors to employee participation and to the quality of work life. Each is necessary; neither is sufficient.

The vital few and useful many projects can be carried out simultaneously. Successful organizations have done just that by recognizing that while there are these two types of projects, they require the time of different categories of organization personnel.

Cost Figures for Projects

To meet the preceding criteria (especially that of return on investment) requires information on various costs:

- The cost of chronic waste associated with a given nomination
- The potential cost reduction if the project is successful
- The cost of the needed diagnosis and remedy

Costs versus Percent Deficiencies

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It is risky to judge priorities based solely on the percentage of deficiencies (errors, defects, and so on). On the face of it, when this percentage is low, the priority of the nomination also should be low. In some cases this is true, but in others it can be seriously misleading.

Elephant-Sized and Bite-Sized Projects

There is only one way to eat an elephant: bite by bite. Some projects are "elephant-sized"; that is, they cover so broad an area of activity that they must be subdivided into multiple "bite-sized" projects. In such cases, one project team can be assigned to "cut up the elephant." Other teams are then assigned to tackle the resulting bite-sized projects. This approach shortens the time to complete the project, since the teams work concurrently. In contrast, use of a single team stretches the time out to several years. Frustration sets in, team membership changes due to attrition, the project drags, and morale declines.

A most useful tool for cutting up the elephant is the Pareto analysis. For an application, see the paper mill example earlier, under "Use of the Pareto Principle." For elephant-sized projects, separate goal statements are prepared for the broad coordinating team and for each team assigned to a bite-sized project.

Replication and Cloning

Some organizations consist of multiple autonomous units that exhibit much commonality. A widespread example is the chains of retail stores, repair shops, hospitals, and so on. In such organizations, a breakthrough project that is carried out successfully in one operating unit logically becomes a nomination for application to other units. This is called cloning the project.

It is quite common for the other units to resist applying the breakthrough to their operation. Some of this resistance is cultural in nature (not invented here, and so on). Other resistance may be due to real differences in operating conditions. For example, telephone exchanges perform similar functions for their customers. However, some serve mainly industrial customers, whereas others serve mainly residential customers.

Upper managers are wary of ordering autonomous units to clone breakthroughs that originated elsewhere. Yet cloning has advantages. Where feasible, it provides additional breakthroughs without the need to duplicate the prior work of diagnosis and design of remedy.

What has emerged is a process as follows:

- Project teams are asked to include in their final report their suggestions as to sites that may be opportunities for cloning.
- Copies of such final reports go to those sites.
- The decision of whether to clone is made by the sites.

However, the sites are required to make a response as to their disposition of the matter. This response is typically in one of three forms:

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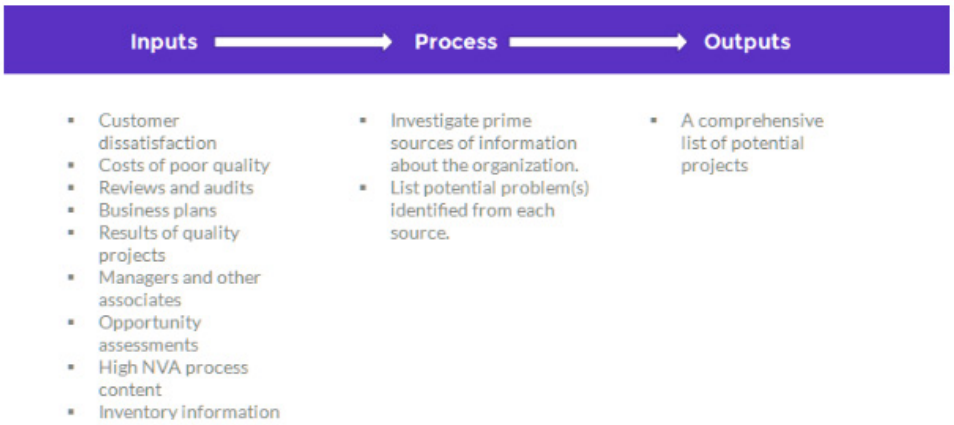
4. We have adopted the breakthrough.
5. We will adopt the breakthrough, but we must first adapt it to our conditions.
6. We are not able to adopt the breakthrough for the following reasons.

In effect, this process requires the units to adopt the breakthrough or give reasons for not doing so. The units cannot just quietly ignore the recommendation.

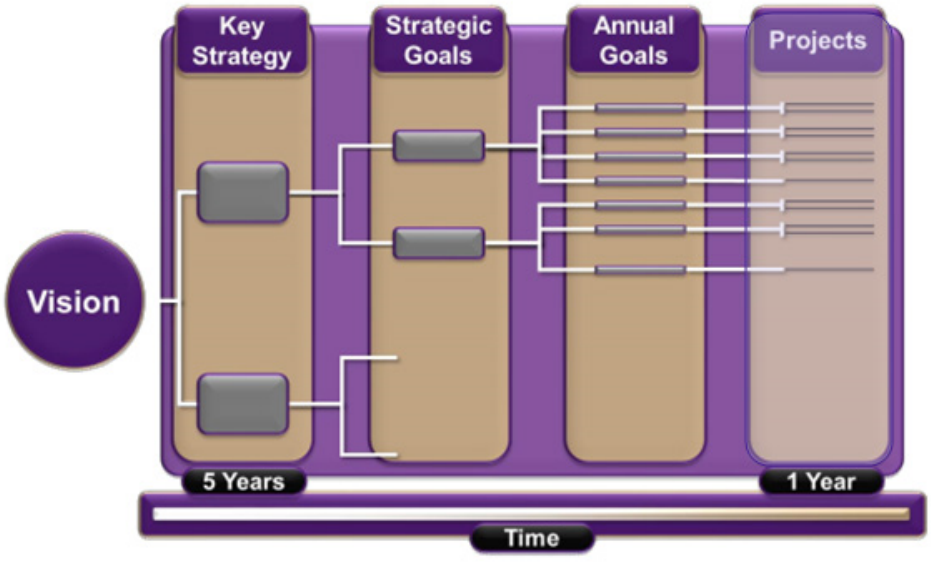
A more subtle but familiar form of cloning is done through projects that have repetitive application over a wide variety of subject matter.

Identifying Potential Projects

The purpose of this step is to develop a list of potential quality improvement projects.



Align Projects to Strategy



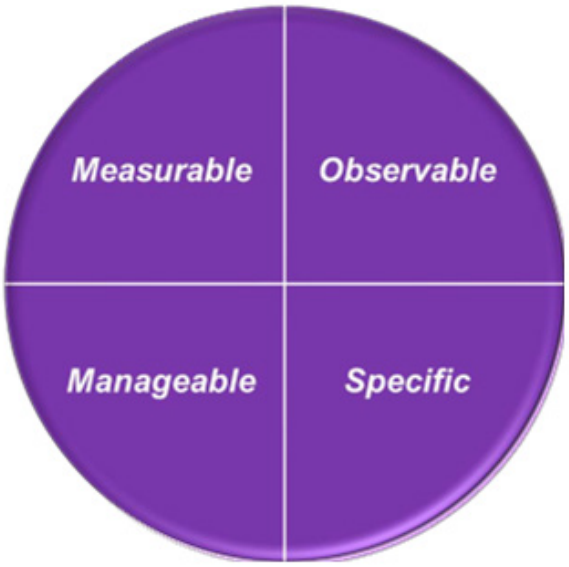
Obtain Information to Clarify Problems

The purpose of this step is to obtain additional data on each high-impact problem and avoid discussing "pet problems."

Inputs	Process	Outputs

▪ List of potential projects	▪ Collect information on each problem or process identified as a potential project.
	▪ Determine each potential project's probable impact on:
	  ▪ Retaining customers
	  ▪ Attracting new customers
	  ▪ Reducing the costs of poor quality
	  ▪ Enhancing employee satisfaction
	  ▪ Improving process flow
		▪ Prioritized list of projects indicating the probable impact of each potential project on the strategic plan

Problem Statement



Preparing the problem statement is the first order of business when establishing a project. The problem statement provides a specific and focused description of what is wrong, arising from the problem that the improvement team is assigned to tackle.

A well-written problem statement should contain four major elements:

- A description of the concern, problem, or opportunity; the problem described should be a known, verifiable, or measurable fact—a defect, not a guess or an assumption
- Background on when and where the problem occurs or is observed
- One or more measures indicating the magnitude or extent of the problem

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- A description of the impact, consequences, or threat presented by the problem

Measurable

It indicates the scope of the problem in quantifiable terms by answering:

- "How big is the problem?"
- "How long has it been a problem?"
- "How often does the problem occur?"

Measurement is important for two reasons. First, it helps to determine whether the problem is large enough to justify attention. Second, if the project goes forward, it provides criteria for evaluating the solution. If no measurements exist, the Champion should not select it as a problem to solve.

Observable

It describes visible evidence of a chronic problem:

- "Where does the problem exist?"
- "What is the impact of the problem?"

Manageable

A manageable problem is one that can probably be solved in three to six months. If a problem is too large, it should be broken down into several smaller, more manageable projects.

Specific

It explains exactly what is wrong, and distinguishes the deficiency from similar problems. The following are examples of problem statements validated with data:

- The organization is not meeting the state mandated level of pre-service authorization requests, resulting in costs of $42,854 in employee resources and potential additional losses because of fines and sanctions from the State.
- Policies are sold or renewed without confirmation that rates quoted match the system, leading to 15% incorrect bills with unverified and/or incorrect rates. This results in rework, increased costs, delays, loss of premium, and customer dissatisfaction.

A Problem Statement Should Not

- Imply a cause.
- Suggest a solution.
- Assign blame.

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- Implying a Cause

It is up to the project team to find the cause of a problem. Preconceived ideas about cause may be inaccurate, incomplete, or mistaken—and can mislead the team.

Write a SMART Goal Statement

An effective goal statement also indicates the objective of the project—that is, the intended result of the project. For an effective goal statement:

- Start with a verb (e.g. reduce, eliminate, control, increase) to clearly describe the change
- Answer the questions:
  - What do you want to achieve with your project?
  - What level of performance do you expect to achieve with your project?
  - What is the time frame needed to achieve the goal?

In other words, goal statements should be SMART – Specific, Measurable, Agreed to by those affected, Realistic, and Time specific.

Caution: Make sure your goal statement contains the same unit of measure as your problem statement. Both the problem statement (magnitude of the problem) and goal statement (amount of improvement to be achieved) should be in quantifiable terms.

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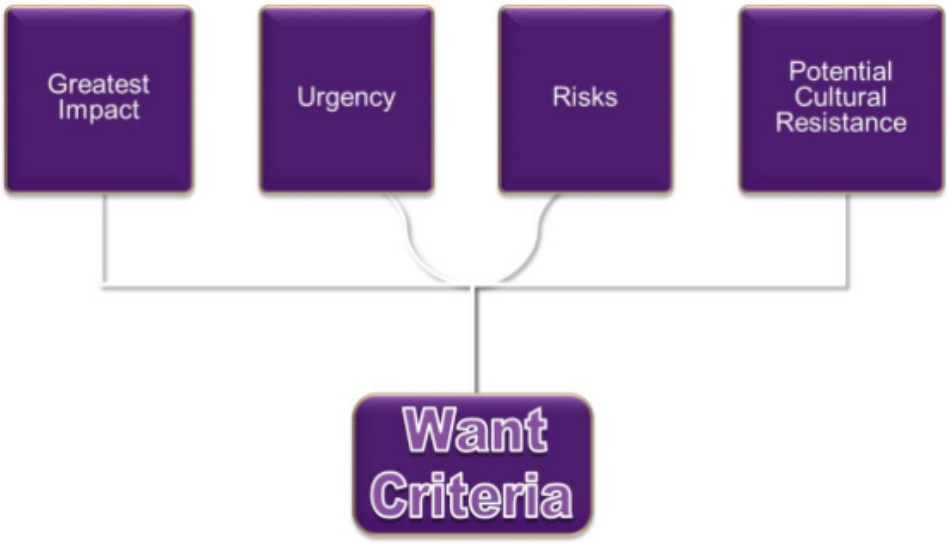
Evaluate and Select Projects

The purpose of this step is to evaluate and select the projects that will result in the greatest benefit to the organization and achieve strategic goals.

Inputs >	Process >	Outputs
Prioritized list of projects Data on each project	Evaluate each project to verify that it meets "must" criteria. Rate the relative strength of each potential project with respect to "want" criteria. Select best project(s).	Projects scheduled for launch

"Want" Criteria



Create a Project Charter

The purpose of this step is to write the project charter and define what the team is to accomplish. The project charter serves as a guide for the project team. The "boss" of the project is the charter.

Inputs >	Process >	Outputs
List of Selected Projects	Describe the problem, goal, benefits, scope, milestones, team, and roles for the project.	Written project charter

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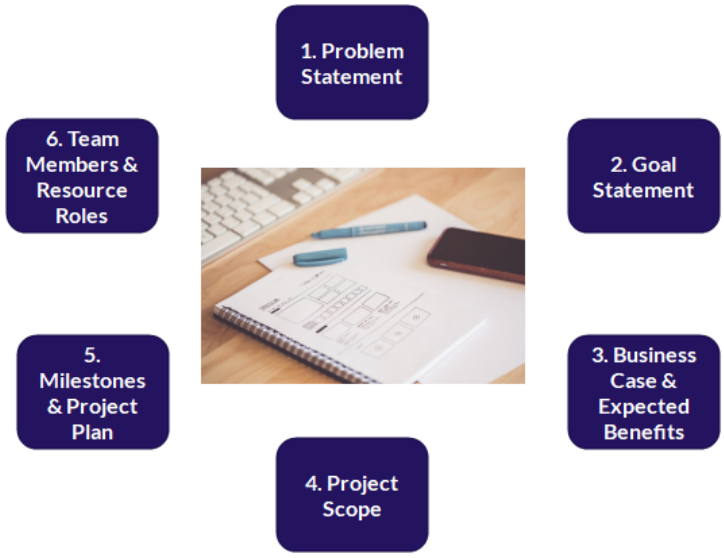
Six Major Elements of a Project Charter



Problem Statement

Descriptions of the problem or opportunity in clear, concise and measurable terms. Remember to use MOMS.

Goal Statement

Description of the goal in clear, concise, and measurable terms. Keep the goal SMART.

Business Case & Expected Benefits

When establishing the project, the Champion will identify the business issues and measure process performance. This will serve as a baseline against which any incremental improvement will be measured and give further objective evidence on how much improvement may be possible. When establishing the business case, the Champion should consider the following questions:

1. Why is the project worth doing?
2. Why is the project important to customers?
3. What is the expected benefit to the organization, key stakeholders and customers?
4. What are the consequences of not doing the project now?
5. How does the project align with organizational and business strategies and goals?

Project Scope

During the chartering process, the Champion will determine the boundaries for the problem. This involves identifying what is in-scope and out-of-scope for the

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project. However, the project charter is a 'living document' that undergoes multiple revisions throughout the project lifetime. It is an agreement between the project Champion and project team. Chartering helps focus the team on what will be key deliverables for the project. It creates a common understanding of the project, and helps avoid what is known as 'project scope creep' which can be lethal and can rapidly drive project results into an organization's structure and culture. Project teams may find it necessary to change the boundaries during this phase, but must seek Champion approval to change them.

Milestones & Project Plan

A project plan must include milestones (significant events in the project plan) that provide a good way to track progress. Milestones provide a sense of urgency, a feeling of accomplishment during the project, and help ensure the achievement of timely results. At a minimum, the project team should set the dates for tollgate reviews, end-of-phase reviews with your Champion and Process Owners to review what you've found, your next steps, and any issues you anticipate.

Team Members & Resource Roles

This is documentation of the responsibilities of the team members, the Champion, the Master Black Belt (if applicable) and others to the project team.

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Sample Project Charter

Project Name:	Capital Expenditure Requests Reduction	**Project #:**	515
Revision Date:	7/5/2017	**Business Unit and Process Focus:**	Accounting
☒	**Six Sigma DMAIC Project**	☐	**Lean Project**

Project Charter Elements

1. **Problem Statement:**	On a monthly basis, accounting teams process 800-900 CERs. The defect rate of these requests is 77%. Defective CERs must be returned or followed up on in order to request additional information or corrections. This leads to delays in the capitalization of assets.
2. **Goal Statement:**	3. Reduce the defect rate of CERs to 35% by the end of Q3 FY 2017
4. **Business Case & Expected Benefits:**	Reducing the CER defect rate will accelerate the asset capitalization process, reduce re-work time, increase the capacity of an FTE on the accounting team, and allow the team to redeploy that time to be used in more productive ways. Additionally, reducing the defect rate will mitigate the risk associated with circumventing key controls and approval levels in the request submission process.
5. **Project Scope:**	**In Scope:** All capital expenditures requests (CERs) received and reviewed by accounting within the request system.
	Out of Scope: Capital expenditure requests (CERs) not received by accounting for review within the request system.

6. **Project Milestones:**		7. **Team Members:**	**Title:**
Start:	July	CFO	Team Leader
Define:	August	Accountant 1	Team Member
Measure:	September	Accountant 2	Team Member
Analyze:	October	Accountant 3	Team Member
Improve:	November	IT Manager	Team Member
Control:	December	Request Supervisor	Resource
Complete:	January	Intern	Resource

Approvals—Sign and Date

Champion	Date	Project Team Leader	Date
Bob Ross, CPO	7/4/2017	Linda Martin Davis	7/4/2017

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Select Team

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The purpose of this step is to verify that the team is composed of the most qualified individuals to work on the problem.

Inputs >	Process >	Outputs
Charter Knowledge of the: Organization Process Team members' background and experience	Ensure the team has representation from those parts of the organization most closely working with the problem. Evaluate each team member and the team as a whole.	A team composed of individuals with the knowledge and skills needed to correct the problem

A team will be comprised of five to seven core team members who are process participants with strong interest in the process you are improving. Core team members get involved in day-to-day work on the project and typically commit their time.

In addition to core team members, select three to five subject matter experts to be called upon as resources from time to time because of their specialized knowledge.

Provide these ad-hoc team resources a clear definition of their responsibilities and a realistic expectation of their time commitment.

How to Select a Team

1. Select the appropriate Green Belt or Black Belt to lead the project.
2. Assess those functions of the organization that are most closely associated with the problem:
   a. Where is the problem observed or the pain felt?

b. Where are sources or causes of the problem found in the organization?

c. Who has special knowledge, information, or skill in uncovering the root cause(s) of the problem?

d. What parts of the organization would be helpful in implementing a solution?

3. Determine that the team has representation from each of the most affected parts of the organization identified above.

4. Evaluate each team member and the team as a whole.

a. Each team member should have:

- Direct, detailed, personal knowledge of some part of the problem.

- Time for team meetings and between meeting assignments (time that is set aside, not "spare time").

b. As a group, the team should be able to:

- Describe major elements of the processes associated with the problem accurately.

- Explain how the parts of the process relate to one another, and work with their departments to implement the remedy (experienced individuals with significant authority and responsibility).

Launch Project Team

The purpose of this step is to launch the team and begin the project.

Inputs >	Process >	Outputs
A team composed of individuals with the knowledge and skills needed to correct the problem.	At the first meeting, the Champion should review the project charter and provide clear communication as to the strategic importance of the project.	An empowered project team motivated to solve the problem and get to work

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